CORPORATE RISK MANAGEMENT – FIN 6362

Risk management practices of sports franchises – MANCHESTER UNITED

By Group 9
Anirudh Inavola Reddy
Utsav Jha
Dhruvit Shah
Siddhesh Mahadik

CONTENTS:

Manchester United Football Club commonly referred to as "Manchester United/ Man U" is one of the most celebrated and iconic clubs in football history. Based in Old Trafford, Greater Manhattan, the club has gained this prowess by boasting a rich history of 20 premier league titles, 12 domestic FA cups and 3 UEFA Champions League titles. This feat was achieved by a combination of an excellent roster and influential staff that were able to foster an environment that was a steppingstone for their success.

The 1990s and early 2000s were a transformative period for the club which can be attributed to a lot of the success that the club currently enjoys. Under Alex Ferguson, the club dominated the domestic premier league and was able to snag a UEFA champions league win in 1999. This win led the club to new heights in all aspects ranging from influence to sponsorship and finances. The club was the center of attraction to worldwide attention garnering sponsorship deals, merchandise sales and commercial revenues, which were the chief contributors to the club income.

Revenue Growth: The treble and the champions league win influenced an increase in prize money, broadcasting revenue and sponsorship deals. By the end of the year, the club revenue passed 100 million euros, making them one of the wealthiest clubs in the world.

Global expansion: The win was palpable around the world and led to a surge in the popularity of the club in spreading its wings into popular markets like Asia, North America and the middle east.

Commercial Agreements: The treble brought around high value sponsorship deals as the brands wanted to associate with the club to further establish United as a global sports brand paving the way for long term financial growth.

Merchandising: The season was followed by a surge in fans wanting to purchase player kits, flags and scarves as a memento for the historic win. The club was able to capitalize on this opportunity by expanding production, product selection and retail operations.

NEW YORK STOCK EXCHANGE LISTING: (2012)

In 2012, Manchester United made a bold and historic financial move by launching an initial public offering (IPO) on the New York Stock Exchange (NYSE**)**, trading under the ticker symbol **"MANU"**. This step wasn't just about numbers or stock prices—it was about the club taking a significant leap to secure its financial future and broaden its ownership base. By going public, Manchester United opened its doors to investors around the world, offering fans, institutions, and football enthusiasts alike a chance to own a piece of one of the most iconic clubs in sports history.

The IPO raised approximately $233 million, and the funds were primarily directed toward reducing the club's substantial debt, a legacy of the Glazer family's leveraged buyout in 2005. At the time, this debt had been a heavy financial burden, sparking widespread criticism among fans who feared it might hinder the club's ability to compete at the highest level.

Beyond the financial restructuring, the decision to go public represented something deeper. It marked Manchester United's transition from a traditional football club to a globally recognized sports and entertainment brand. The move also came with a symbolic gesture: it allowed everyday fans and investors to become part of the club's journey, sharing in its financial growth and its dreams of continued success on and off the pitch.

Challenges with the rise:

Like any global brand, Manchester United faces financial risks, operational risks and regulatory risks. But due to the brand primarily being a football club, it faces additional risks that can severely impact operations, finances and therefore global image.

Performance related risks

These are some of the most significant challenges Manchester United faces, as what happens on the pitch has a ripple effect on every aspect of the club, from its finances and global reputation to the passion of its fans. In football, success and revenue are deeply intertwined, and for a club as iconic as United, there's no escaping the pressure to perform at the highest level.

A string of bad results or failure to qualify for major tournaments like the Champions League can hurt more than just pride. Less prize money, reduced broadcasting revenue, and diminished appeal to sponsors are just a few of the ways underperformance can take its toll. It also risks alienating the club's loyal fanbase, who expect United to compete for trophies every season.

Brand Infringement:

As a global brand, Manchester United's merchandise, including jerseys, scarves, and other branded items, are highly sought after. However, this popularity also makes the club vulnerable to the sale of counterfeit or unlicensed products, which can significantly impact the club's revenue from official merchandise. Counterfeit goods may also damage the club's reputation if they are of poor quality, and fans purchasing fake products may feel misled or disappointed.

Media Contracts:

For the year ended 30th June 2024, 72.9% of their broadcasting revenue was generated from media rights for the premier league and 24.3% of it was generated from media rights for the UEFA matches. However, the contracts for both are negotiated collectively by the premier league and the UEFA without any participation from Manchester United, as a result they don't have any direct influence on the outcome of these contract negotiations. The limited number of media distributors may further lead to a contract which is not as favorable to the club as it could be if they individually negotiated contracts with media distributors.

Infrastructure risk:

Old Trafford is one of the oldest stadiums in the premier league and the current seating capacity is no longer competitive compared to newer stadiums along with the amenities provided by them. Also, since the stadium is almost always operating at near full capacity, it's hard to get construction or renovation done to keep up with the newer built stadiums. The old infrastructure also poses safety concerns. For this, Manchester United have a plan in the pipelines to build a new stadium which could house a seating capacity of 100k fans and provide exceptional hospitality services. But the investment cost and the maintenance cost thereon based on the footfall could cause financial pressure on the club's resources.

Risk Aware not Risk Averse:

Risk is deeply embedded in the operational structure of the club and a lot of awareness has been developed through necessity, generating understanding of what the risk truly means and is associated with the club. Although primary decisions are made by the top of the business, strategic approaches to risk mitigation are a part of everyday operations of management personnel across the organization.

As quoted by the chief executive, their risk management strategy is to “It is about trying to make sure that we understand the risks so that we work to mitigate risk where possible and transfer it, but also to allow Manchester United and our other clients to actually take informed risk decisions in the areas of risk. That is what we are here to do, that is the objective that we have her at Manchester United”

Diversifying revenue streams:
The club has diversified its income streams to 3 broad categories: Matchday revenue, broadcasting and commercial (including merchandise and sponsorships). This helps to mitigate any dependency on a singular source and is useful to reduce the impact in case of poor performance from one of the sectors. Even during poor on-field performance, the long-term sponsorship deals continually generate a steady flow of commercial income.

Financial risk management:
The IPO was used to reduce the debt burden by paying off the existing liabilities and ongoing financial restructuring helps the club to maintain manageable debt levels and avoid excess interest costs. Since the club operates globally, they use forward contracts to hedge against risks associated with currency fluctuations.

Performance risk mitigation:
The club prioritizes the main squad and heavily invests in acquiring top players to keep up with the competition and focuses on their academy teams as a pathway to the main team so they can include more homegrown players in the squad to reduce the reliance on the transfer market and avoid any unfavorable contracts and exorbitant transfer fees. They also aim to optimize team performance and employ practices to reduce player injuries and boost player performance to uplift the squad in their matches.

Brand Infringement Risk:
The club works towards protecting their intellectual property by registering their logo in new jurisdictions to combat sales of counterfeit merchandise and unsolicited use of the brand in any way. Since the individual players associated with the team represent Manchester united as a whole, the club has protocols to work through any PR controversies that may arise that could potentially tarnish their global standing

Infrastructure Risk:
Old Trafford and the Carrington training ground are both regularly maintained and upgraded as required to ensure the safety of the players and the fans, functionality for the management and compliance with the regulatory standards that have been established by the nation. The new stadium will further help them to alleviate any risks with the aging stadium and further allow for more income streams generated due to increased footfall and hospitality services.

Operating Revenue Analysis

Objective: To simulate and forecast how the Operating revenue can vary based on the opponent, league or a home and away game until the 2035/36 season to evaluate the impact of different scenarios.

<u>**Data Sources**</u>:

Match attendance- Historical data for stadium attendance on matchday was publicly available based on the opponent and the league that the squad was playing in.

League	No of Matches
Premier League	19
FA/Carabao Cup	3
Champions/Europa League	5

Ticket pricing: Game tickets are sold for multiple tiers with different perks and hospitality services, we were able to find their pricing and the percentage that they occupy at a home game from the official Manchester united website.

Particulars	Lower Tier	Medium Tier	Premium Tier
Price	$ 70.00	$ 150.00	$ 200.00
Share	50%	25%	25%
Occupancy	100%	99%	97%

Assumptions for ticket pricing: With the new stadium expected to be functional starting 2028, no data is available for potential future ticket pricing for the games and therefore we assumed the ticket pricing to grow by 5% annually based on historical industry trends and the new stadium.

Inflation rate for ticket price		5%	
Year	Lower Tier Ticket Price	Medium Tier Ticket Price	Premium Tier Ticket Price
2024/25	$ 70.00	$ 150.00	$ 200.00
2025/26	$ 73.50	$ 157.50	$ 210.00
2026/27	$ 77.18	$ 165.38	$ 220.50
2027/28	$ 81.03	$ 173.64	$ 231.53
2028/29	$ 85.09	$ 182.33	$ 243.10
2029/30	$ 89.34	$ 191.44	$ 255.26
2030/31	$ 93.81	$ 201.01	$ 268.02
2031/32	$ 98.50	$ 211.07	$ 281.42
2032/33	$ 103.42	$ 221.62	$ 295.49
2033/34	$ 108.59	$ 232.70	$ 310.27
2034/35	$ 114.02	$ 244.33	$ 325.78
2035/36	$ 119.72	$ 256.55	$ 342.07

Broadcasting revenue:

Broadcasting revenue and the annual wage bill were available in their financial reports that are publicly available and were used to calculate the operating revenue.

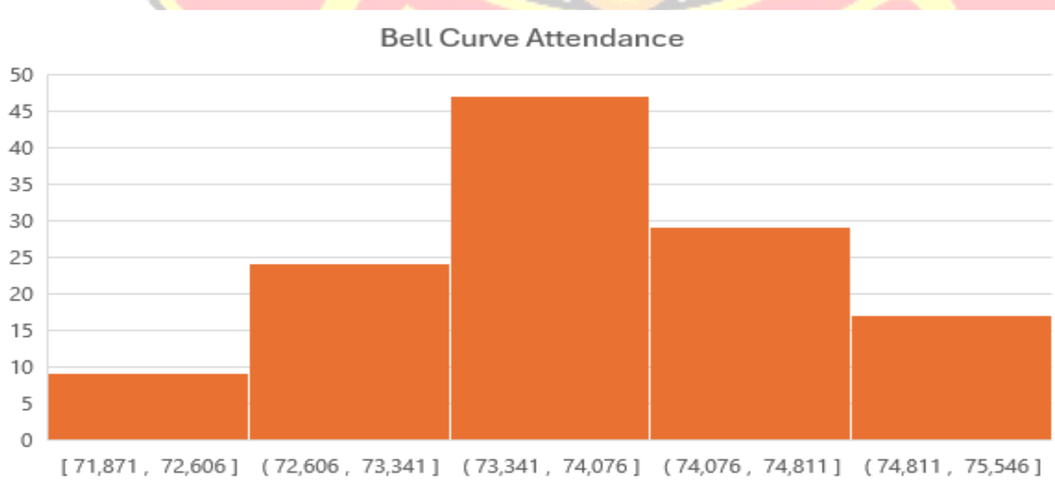
Annual Wage Bill	USD
2014/15	18,16,76,040
2015/16	15,65,70,934
2016/17	19,34,05,506
2017/18	20,70,94,836
2018/19	19,05,51,816
2019/20	20,87,88,000
2020/21	24,43,60,700
2021/22	29,66,46,600
2022/23	24,59,37,638
2023/24	24,94,43,413
2024/25	23,56,86,600
2025/26	23,33,29,734
2026/27	22,86,63,139
2027/28	21,03,70,088
2028/29	21,66,81,191

Year	Position in Premier League	Broadcasting Revenue Received from Premier League
2014/15	4th	12,28,84,199.24
2015/16	5th	12,25,25,942.40
2016/17	6th	17,92,00,985.26
2017/18	2nd	19,02,04,274.15
2018/19	6th	18,09,91,342.36
2019/20	3rd	21,10,93,911.06
2020/21	2nd	19,20,95,137.78
2021/22	6th	18,13,62,088.38
2022/23	3rd	21,37,06,294.71
2023/24	8th	19,83,74,000.00
2024/25	Currently 9th	20,00,00,000.00
2025/26	6th	21,00,00,000.00
2026/27	4th	23,00,00,000.00
2027/28	3rd	25,00,00,000.00
2028/29	1st	27,00,00,000.00

Methodology:

The historical matchday attendance was used to simulate future attendance until the 2035/36 season and we had the following takeaways:

1) Most matches were clustered around **73,341** to **74,076** and when plotted on a graph, the attendance values resembled a bell curve, indicating that these were normally distributed.
2) The average attendance was **73,798** with a standard deviation of **785** or **1.06%.**
3) Owing to the loyalty of their fans, the Old Trafford almost always operates at near full capacity irrespective of the opponents.



Total revenue calculation:

Based on the attendance and the occupancy of the ticket pricing tiers, we were able to calculate total revenue for all the games in a season and calculated the YOY change in revenue. We made the following observation in the YOY changes –

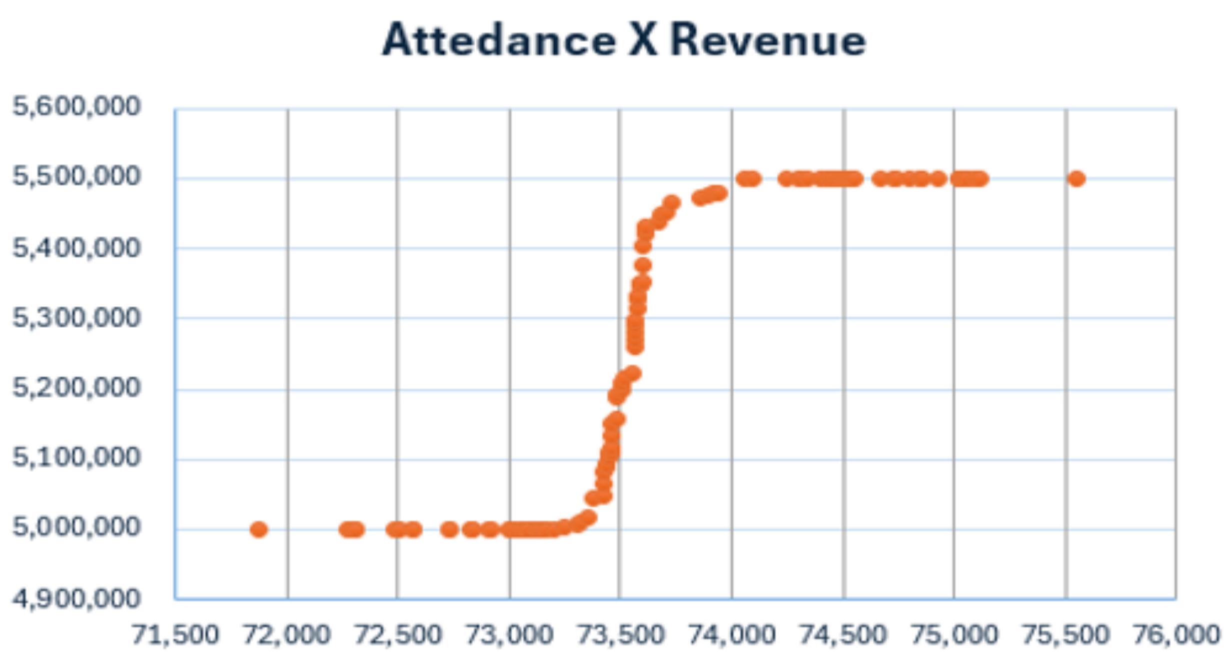
1) The YOY change is **5%** until the **2028/29** season, post which it grows to **40%** due to the proposed inauguration of the new stadium with a seating capacity of 100,000 that would enhance the matchday experience with better seating options, hospitality services and exclusive packages. With the new stadium, Manchester united has been vocal about hosting more non-football related events like concerts, exhibitions and corporate events to increase their popularity and revenue.

   Oxford economics revealed that the new stadium could potentially generate 7.3 billion euros for the British economy, deliver 92,000 jobs, 17,000 homes and an extra 1.8 million visitors per year to the area which would make it the biggest regeneration scheme in the country.

   Post the 2028/29 season the YOY change in revenue goes back to ranging between **5%- 6%**

Observing the Attendance – Revenue Chart for Old Trafford:

After obtaining the numbers for both the attendance and the corresponding revenue, we plotted them to examine the relationship between the two, considering all the factors.



Observations:

1) Revenue increased with attendance but stabilizes at 5,500,000 at a capacity of 73,500 attendees. The matchday revenue seems to have an upper limit based on the seating capacity at old Trafford. To generate more revenue at the current seating capacity at maximum occupancy, Manchester United can generate revenue from providing more hospitality options, premium offerings, signed merchandise and fan meetups.
2) Below 73,000 attendees, the graph shows linear growth that reflects proportional ticket sales. Small changes in variance at lower attendance levels seems to have a less of an impact on

Merchandise Revenue Introduction
Manchester United Football Club is a titan in the world of sports, not only because of its achievements on the pitch but also due to its prowess in commercial operations. The club's global following and iconic brand recognition have enabled it to employ sophisticated revenue forecasting techniques to maximize earnings from merchandise, apparel, and licensing. Central to its revenue strategy is the partnership with Adidas, which plays a pivotal role in providing stable income supplemented by performance-related bonuses. This report delves deep into the nuances of the financial strategies Manchester United employs, with a focus on revenue simulation, scenario planning, and the integration of comprehensive risk management practices to navigate the complex dynamics of sports merchandising.

Partnership Overview and Financial Terms
Adidas Partnership History and Contractual Framework
In 2015, Manchester United and Adidas entered one of the most significant commercial partnerships ever seen in sports. This agreement was not merely a continuation of business but a strategic shift that signified Manchester United's approach to leveraging brand partnerships under new commercial dynamics. The deal, initially valued at £750 million over ten years, marked a monumental shift from Manchester United's previous supplier, Nike, who had outfitted the team since 2002. This change was emblematic of Manchester United's broader strategy to revitalize its brand and maximize commercial revenues following less favorable performance periods.

The timing of the Adidas deal was crucial. It coincided with a period of reconstruction and rebranding for Manchester United, emphasizing the club's commitment to returning to the top of both sports and commercial success. Adidas offered Manchester United not only a significant increase in guaranteed income but also brought innovative marketing and merchandise strategies to the table, which were aligned with Manchester United's global branding efforts.

Renewal of the Partnership
Recognizing the success of the initial phase of the partnership and the mutual benefits accrued, Manchester United and Adidas decided to renew their contract before the conclusion of the first deal. The renewal was announced to extend the partnership until 2035, with the terms of the deal adjusted to reflect the ongoing success and upward trajectory of the club's commercial strategy. The new agreement was set at a higher value of £900 million over the subsequent ten years, reflecting an increase in annual payments to £90 million.

Contractual Details
First Contract (2016-2025):
The first contract with Adidas provided Manchester United with an annual payment of £75 million. This

agreement included specific performance-related adjustments to accommodate fluctuations in the club's sporting success:

- **Champions League Qualification:** If Manchester United failed to qualify for the Champions League in any season, the annual payment would be reduced by 30%, reflecting the potential decrease in exposure and associated merchandising opportunities that Adidas would capitalize on.
- **Performance Bonuses:** Manchester United was eligible for up to an additional £4 million annually, contingent on meeting certain performance criteria. These bonuses were designed to align the interests of the club and Adidas in pursuing high sporting achievements.

Second Contract (2026-2035):

Building on the success of the initial agreement, the renewed contract not only increased the annual financial commitment to £90 million but also maintained similar conditional structures to incentivize performance:

- **Champions League Performance:** The stakes were adjusted, with a failure to qualify for the Champions League now resulting in a £10 million reduction in the annual payment, reflecting heightened expectations and the increased financial stakes involved.
- **Performance Bonuses:** The potential bonuses were slightly increased to up to £4.4 million, underscoring the continued emphasis on achieving superior performance metrics.

The strategic foresight in structuring these contracts underscored Manchester United's approach to maximizing revenue through performance-driven incentives, ensuring that the club's commercial interests were tightly aligned with its success in football competitions. This alignment is critical in sports merchandising, where success on the field directly translates into commercial revenue through increased sales and brand visibility.

Factors Influencing Revenue Streams

The revenue generated from merchandise, apparel, and licensing is subject to a variety of dynamic factors that can significantly influence annual financial outcomes. Understanding these factors is crucial for effective planning and risk management.

Team Performance

Success on the pitch translates directly into commercial success off it, particularly in terms of merchandise sales:

- **Champions League Influence:** Participation and success in the Champions League have a pronounced effect on merchandise sales. The global visibility of this tournament enhances the appeal of associated merchandise, driving sales of jerseys, accessories, and commemorative items.
- **Trophy Wins and Tournament Progress:** Winning domestic and European trophies or progressing far in competitions typically results in a surge in merchandise sales. Fans are more likely to purchase branded merchandise as a form of celebration and allegiance to the club.

Market Conditions

The broader economic environment plays a significant role in shaping consumer behavior, particularly in non-essential spending categories such as sports merchandise:

- **Economic Cycles:** Recessions or downturns can lead to reduced consumer spending on merchandise as disposable incomes shrink. Conversely, economic booms might boost spending on leisure and fan merchandise.

- **Regional Variations:** Economic conditions can vary significantly across different markets. Manchester United, with its global fan base, must navigate these regional economic climates, which can affect merchandise sales differently across geographies.

Match Attendance
The direct experience of attending matches at Old Trafford can significantly boost merchandise sales:

- **Game-Day Sales:** High attendance at home games increases the potential for sales at merchandise stands within the stadium. Fans attending games are more likely to purchase merchandise as part of their match-day experience.
- **Enhanced Experience:** The overall experience of visiting Old Trafford, including tours of the stadium and visits to the Manchester United Museum, often concludes with visits to the club's official store, further boosting merchandise revenue.

Global Brand Appeal
Manchester United's strategic efforts to maintain and expand its global brand directly impact merchandise sales:

- **International Tours and Player Signings:** Tours in key international markets and the signing of high-profile players can elevate the club's profile and expand its fan base, leading to increased merchandise sales both locally and globally.
- **Participation in International Competitions:** Participation in international competitions not only increases the club's visibility but also attracts new fans, who then contribute to merchandise sales.

Approach to Revenue Simulation
Data Preparation and Initial Analysis
The forecasting process begins with a thorough analysis of historical revenue data, specifically excluding the financial contributions from Adidas. This step is crucial for isolating and understanding the revenue generated solely from other sources, such as merchandise sales at matches, licensing deals with other partners, and direct retail operations.

Calculating Non-Adidas Revenues:

- **Annual Adjustments:** Revenue figures are adjusted by subtracting the fixed annual payments received from Adidas (£75 million from 2016-2025, and £90 million from 2026-2035) from the total reported merchandise and licensing revenues. This calculation isolates the revenues derived from sources other than Adidas.

Average Growth Rate Determination:

- **Growth Analysis:** An average growth rate of 3.5% is calculated based on the trends observed in the historical data of non-Adidas revenues. This rate is indicative of the general expansion and scaling of the club's independent commercial activities over time.

Simulation of Non-Adidas Revenue
Statistical Analysis:

- **Mean and Standard Deviation:** With the non-Adidas revenues identified, the next step involves calculating the mean (28%) of Adidas revenues and standard deviation (0.065) of these revenue figures. These statistics provide insight into the central tendency and variability of the data, forming the basis for reliable revenue simulations.

Revenue Simulation:

- **Simulation Process:** Utilizing the mean and standard deviation, future revenues up to the year 2030 are simulated. This process entails generating a range of possible revenue outcomes for each year, based on the statistical parameters and assuming a normal distribution of revenue fluctuations.

Integration with Adidas Revenue
Adding Adidas Revenues:

- **Revenue Combination:** The simulated non-Adidas revenues for each subsequent year are added to the corresponding Adidas revenues that are contractually guaranteed for those years. This comprehensive aggregation provides a holistic view of the total projected merchandise and licensing revenues.

Growth Rate Application:

- **Market Expansion:** Each year's combined revenue figure is then escalated by the average growth rate of 3.5%, reflecting overall market expansion and the club's increasing global brand appeal.

AGR 8 years	3.5%
Adidas base pay from 2026-203	90,000,000.00
Adidas base pay until 2025	75,000,000.00
Average of non adidas revenues	28%
St.dev	0.065875397

Scenario Creation

The scenario analysis chart for Manchester United's projected revenues from merchandise, apparel, and product licensing over the years 2025 to 2030 presents detailed financial projections under three distinct scenarios: worst case, base case, and best case. Each scenario reflects different assumptions about market conditions, team performance, and other external factors that could influence the club's revenue streams.

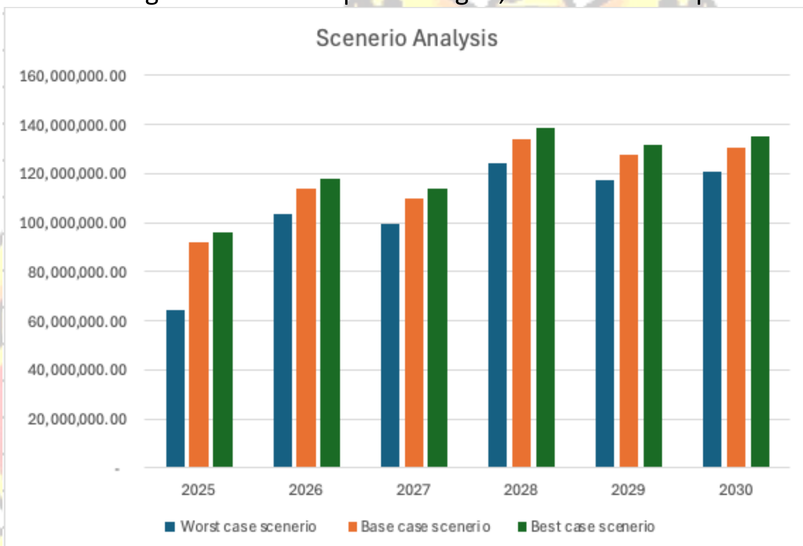
Worst Case Scenario (Blue Bars)

In the worst-case scenario, the projections represent the potential lower revenue bounds under less favorable conditions, such as Manchester United failing to qualify for the Champions League. This scenario significantly impacts merchandise sales due to reduced global exposure and fan engagement. The figures range from £74.27 million in 2025, gradually increasing to £127.89 million by 2030. These amounts reflect cautious estimations accounting for potential economic downturns, poor team performance, and other market uncertainties that could adversely affect the club's revenue from merchandise and licensing.

Base Case Scenario (Orange Bars)

The base case scenario outlines expected revenue paths if current trends continue without significant changes, if the club maintains its current level of performance and market conditions remain stable. Starting at £106.11 million in 2025, the revenue is projected to rise steadily, reaching £137.89 million by 2030. This projection is based on a continuation of the club's historical revenue trends, considering moderate growth in the fan base and market reach, alongside steady sporting performance. It represents a balanced outlook, not accounting for any significant economic or competitive shocks.

Best Case Scenario (Green Bars)
Conversely, the best-case scenario shows the highest potential revenues, assuming optimal conditions such as exceptional team success in domestic and European competitions, alongside favorable economic conditions that boost consumer spending on merchandise. The revenue starts at £110.11 million in 2025 and is expected to increase to £142.29 million by 2030. This optimistic projection assumes that Manchester United leverages sporting successes to maximize merchandise sales and licensing deals, potentially enhanced by winning key titles like the Premier League or the Champions League, which tend to spike merchandise demand.



Strategic Implications and Planning
These scenarios provide Manchester United with essential insights into possible future financial landscapes, enabling the club to prepare strategically for various outcomes. The detailed projections aid in planning investments in marketing, player acquisitions, and infrastructure development. They also inform risk management strategies, allowing the club to set financial safeguards and contingency plans to handle potential revenue fluctuations.

Manchester United Sponsorship Revenue

Manchester United, renowned for its on-field success, also excels in commercial prowess. This presentation delves into the club's strategic sponsorships that bolster its global brand and financial health. We will explore various partnerships, from kit manufacturers like Adidas to major shirt sponsors like Chevrolet and Qualcomm Snapdragon, highlighting their contributions to the club's revenue streams and market presence. These alliances not only reflect the club's broad appeal but also its ability to engage with leading global companies, ensuring sustained commercial success and global brand visibility.

1. **Kit Manufacturer Sponsorship:**

- **Adidas Partnership**: Since 2015, Manchester United has been in a high-profile partnership with Adidas, valued at approximately £750 million over ten years, making it one of the most lucrative kit deals in sports.
- **Previous Partners**: The previous partnerships with other major apparel brands like Nike and Umbro, underscoring the club's longstanding appeal to top global apparel manufacturers.

2. **<u>Shirt Sponsorship</u>**:

- **Major Sponsors**: The club's shirts have featured sponsors such as Chevrolet and more recently TeamViewer, enhancing the club's global marketing reach.
- **Qualcomm Snapdragon**: The latest significant deal with Qualcomm's Snapdragon brand is mentioned, which extends their partnership through 2029, ensuring continued financial inflow and global brand visibility.

3. **<u>Training Kit and Other Sponsorships</u>**:

- **AON**: Highlighted as a past shirt sponsor, AON now holds the naming rights to Manchester United's training complex, illustrating the depth and longevity of their partnerships.
- **DHL**: Recognized for setting a precedent in non-gamewear sponsorships through its previous sponsorship of the training kit.

<u>Factors considered for predicting sponsorship revenue for next 8 Quarters</u>

For the analysis of Manchester United's sponsorship revenue forecasting, we considered a comprehensive framework that integrates various factors likely to impact sponsorship income. Here's an introduction and framework of the factors included in the analysis:

Introduction

In assessing the sponsorship revenue for Manchester United, it was pivotal to incorporate not only the direct financial data but also the sporting factors that could influence sponsorship appeal and value. These factors include the number of home matches played, total matches played, win percentages, and growth rates in sponsorship revenue, providing a holistic view of potential drivers behind the revenue trends.

Framework of Factors

1. **Sponsorship Revenue:** This is the primary variable of interest, representing the income received from sponsors in a given quarter. Understanding its growth rate helps in identifying trends and projecting future revenues.

2. **Growth Rate:** Calculated as the quarter-over-quarter percentage change in sponsorship revenue, this metric provides insights into the velocity and volatility of revenue changes, helping to model future expectations more accurately.

3. **Home Matches Played:** The number of games played at home can directly affect sponsorship revenue, as these matches are high visibility opportunities for sponsors. More home games can lead to increased exposure for sponsors, potentially boosting revenue.

4. **Total Matches Played (Premier League):** This includes all matches played, both domestic and international. A higher number of matches can increase brand exposure globally, enhancing sponsorship value.

5. **Winning Percentage (Win%):** This is calculated as the ratio of matches won to the total matches played. A higher winning percentage generally boosts a team's popularity and marketability, which can attract more lucrative sponsorship deals.

6. **Predicted Revenue:** This is the forecasted sponsorship revenue based on the analytical models applied, considering the historical data and the variables included in the model.

Conclusion

Integration of Diverse Factors
This method allowes us to capture the nuances of sports economics where factors such as match attendance and team success directly correlate with commercial revenue streams. By closely examining these variables, we can provide a more granular insight into how each element contributes to fluctuating sponsorship incomes.

Predictive Accuracy
The inclusion of the growth rate, as a measure of quarter-over-quarter change, will offer a clear view of potential volatility and growth trends, which will be crucial for long-term strategic planning and negotiations with potential sponsors.

Impact of Sporting Success
The correlation between the club's winning percentage and sponsorship revenue underscores the importance of on-field success in enhancing the club's marketability and attractiveness to current and prospective sponsors. This insight is particularly valuable to the club's marketing and finance teams as they strategize on enhancing team performance and aligning it with commercial objectives.

<u>Liner Regression – Sponsorship Revenue Analysis</u>

We conducted a comprehensive analysis aimed at understanding trends in Manchester United's sponsorship revenue over 44 quarters. The methodologies employed to ensure accuracy and reliability in the forecasting process.

Analytical Approach:

- **Data Cleaning:** The analysis began with a box plot analysis to identify and remove outliers, refining the dataset to 35 observations for a more accurate trend analysis.

- **Trend Analysis:** A linear regression model was applied to the cleaned data. This involved plotting sponsorship revenue against time to detect any underlying trends that could inform future revenue predictions.

Results:

- **Regression Equation:** The derived regression equation y=−0.0028x+40.864y = -0.0028x + 40.864y=−0.0028x+40.864 indicates a slight negative trend in sponsorship revenue. However, the very low R2R^2R2 value of 0.003 suggests that the time variable alone provides minimal explanatory power regarding revenue fluctuations.

- **Graphical Representation:** The scatter plot displayed alongside the regression line visually represents the weak correlation between time and revenue, confirming the minimal impact of time on revenue changes.

Predictive Analysis:

- **Future Forecasting:** Predictions for future sponsorship revenue were extended for the upcoming 6 quarters based on the existing trend. Despite the model's low explanatory power, as indicated by the low R2R^2R2 value, these forecasts provide a tentative outlook on expected revenue, suggesting a continuation of the marginal negative trend.

Conclusion:
The analysis, while detailed, highlights the challenges of using linear regression for forecasting with such a low R square value, indicating that other variables and perhaps more complex models might be necessary to achieve more reliable forecasts. The slide concludes by advising that these forecasts should be interpreted with caution due to the limited predictive capability of the current model.

<u>Regression Analysis</u>

In our project we analyzed the impact of Premier League matches played and wins on Manchester United's sponsorship revenue, we conducted both single-variable and multi-variable linear regression analyses. These analyses aimed to determine if these factors could predictively explain changes in sponsorship revenue. Here's a breakdown of the analyses and their implications:

Analysis Overview

Objective: To investigate whether the outcomes of Premier League matches (both matches played and wins) have a statistically significant impact on Manchester United's sponsorship revenue.

<u>Single Variable Regression Analysis</u>

Methods:

- We analyzed the relationship between the number of matches played (as a single variable) and sponsorship revenue.

Results:

- **R-Squared**: 0.0124, indicating that only 1.24% of the variance in sponsorship revenue could be explained by the number of matches played.
- **Adjusted R-Squared**: -0.011, suggesting that when the number of predictors is taken into account, the model does not reliably explain the variance in revenue.
- **Significance of F**: 0.4718, which shows that the model is not statistically significant.

<u>Multi-Variable Regression Analysis</u>

Methods:

- This analysis included both the number of matches played and the number of wins as independent variables to see if a combination of these factors would better explain the variance in revenue.

Results:

- **R-Squared**: 0.0223, slightly higher than the single-variable model, indicating that together these variables explain 2.23% of the variance in sponsorship revenue.

- **Adjusted R-Squared**: -0.0254, again suggesting a lack of model fit after adjusting for the number of predictors.
- **Significance of F**: 0.6301, indicating that the model does not achieve statistical significance.

Conclusion and Implications

The regression analyses, both single and multi-variable, indicated very low R-squared values. This means that the number of matches played and the wins by Manchester United have very little association with how the sponsorship revenue fluctuates. Such low levels of explained variance and the lack of statistical significance (high p-values) suggest that these variables, in isolation or combined, are not strong predictors of sponsorship revenue.

Given these outcomes, it was clear that linear regression models using these variables were insufficient for predicting sponsorship revenue accurately. This inadequacy led to the decision to not rely on these models for revenue forecasting.

Transition to Monte Carlo Simulations

Due to the limitations observed in the regression models, you moved to Monte Carlo simulations. Monte Carlo simulations were considered as they allow for the modeling of different scenarios by incorporating randomness and variability in the input variables. This approach is beneficial in capturing the uncertainty and potential range of outcomes for sponsorship revenue, which linear regression failed to address due to its reliance on fixed relationships.

The Monte Carlo method provided a way to explore more complex dynamics that could affect revenue, such as economic conditions, team performance variability, and market trends, which are not easily captured by traditional linear models.

<u>Detailed Analysis Using Monte Carlo Simulations in Excel</u>

Introduction:
In our project, we set out to forecast Manchester United's future sponsorship revenues using Monte Carlo simulations within Excel. Monte Carlo simulations are a robust method for financial forecasting as they allow for the exploration of various possible outcomes based on random variations, making them ideal for accounting for uncertainty in revenue predictions.

Data Preparation:
1. **Gathering Data:**
   - We meticulously collected and organized Manchester United's quarterly sponsorship revenue data over several years, ensuring all entries were accurately dated to maintain consistency in the analysis.
2. **Initial Calculations:**
   - To establish a foundation for the simulations, we calculated the growth rate for each quarter. This rate is essential as it helps simulate future revenues by projecting past trends into the future.

Setting Up the Simulation:
1. **Defining Parameters:**

- We also determined to run a relatively small number of iterations, about 10 simulations for each quarter. This choice was influenced by Excel's limitations in handling large datasets and the need to keep the analysis manageable and comprehensible.

2. **Randomization Process:**
    - Using Excel's capabilities, we generated random factors to modify historical growth rates, thereby creating diverse growth scenarios for each simulation. This approach ensures that each simulated path reflects possible variations but remains grounded in historical performance.

3. **Revenue Projection:**
    - For each simulation path, we projected revenues for upcoming quarters by sequentially applying the modified growth rates to the last known quarter's revenue. This process was repeated in each simulation, allowing each to independently project potential future revenues based on its unique set of random growth factors.

Analysis of Simulated Data:

1. **Compiling Results:**
    - We compiled the outcomes of all simulations into an Excel spreadsheet, which detailed potential revenue outcomes for each quarter across all simulated scenarios.

2. **Statistical Analysis:**
    - Using Excel's built-in functions, we calculated descriptive statistics for the simulated revenues of each future quarter, including mean, median, and variability measures. These statistics help pinpoint the central trend and the variability of the forecasts, providing insights into both the expected revenue paths and the associated risks.

3. **Visualization:**
    - We visualized the results using Excel's graphical tools, creating histograms to display the distribution of forecasted revenues and line charts to illustrate the mean revenue projections over time.

Conclusion:

The use of Excel for Monte Carlo simulations in this context provided valuable preliminary insights into the future sponsorship revenue scenarios for Manchester United. By conducting a limited number of simulations per quarter, we were able to gain a foundational understanding of potential revenue trends and their variabilities. Despite the computational constraints of Excel, this approach was instrumental in highlighting the need for careful consideration of financial uncertainties in strategic planning.

However, the limited number of iterations—only 10 per quarter—meant that the results, while insightful, lacked the robustness that higher iterations could offer. Recognizing this limitation, we transitioned to using Python, where we conducted over 200,000 simulations. This significant increase in iterations allowed for more reliable and statistically sound predictions of future revenues, providing a stronger basis for strategic decision-making and planning. This shift not only enhanced the accuracy of the revenue forecasts but also offered a deeper understanding of the potential risks and variabilities involved.

Reflection:

The experience reinforced the utility of Excel for conducting initial financial simulations with manageable datasets. It was effective for straightforward scenarios and provided quick visualizations and statistical outputs. However, the limitations became apparent when considering larger and more complex datasets, suggesting a shift towards more powerful tools like Python for extensive simulations, which could handle increased complexity and provide more detailed analytical capabilities.

Detailed Analysis Using Monte Carlo Simulations in Python:

To address the limitations encountered with Excel simulations, we shifted to Python for a more comprehensive Monte Carlo analysis, aiming to harness its superior computational capabilities. The decision to use Python was driven by the need to generate a larger number of simulations, enhancing the reliability and accuracy of the sponsorship revenue forecasts for Manchester United.

In the Python-based Monte Carlo simulation for forecasting Manchester United's sponsorship revenue, we employed a more sophisticated and detailed methodology to enhance the accuracy and reliability of the predictions. Below, we detail the entire calculation process and discuss the actual versus predicted revenue analysis.

Detailed Calculation Process:

1. **Data Preparation:**
   - We began by importing the necessary Python libraries: pandas for data handling and numpy for numerical operations.
   - The sponsorship revenue data was loaded into a pandas DataFrame from an existing dataset. This dataset included quarterly revenue figures over several years.

2. **Growth Rate Calculation:**
   - We calculated the quarter-over-quarter percentage change in revenue, which served as the basis for predicting future changes. This was done using the pct_change() method in pandas, which automatically computes the percentage change between consecutive elements in the DataFrame.

3. **Setting Up the Simulation Parameters:**
   - We defined the number of simulations (200,000) to ensure statistical robustness. The large number of simulations helps in capturing a wide range of possible outcomes and reduces the impact of outliers on the forecast.
   - We also set the number of future quarters for which the revenue was to be forecasted, spanning up to Q4-2027.

4. **Simulating Future Revenues:**
   - For each simulation, a random growth rate from the historical growth rates was selected. This selection was repeated for each future quarter, thus chaining growth effects over time.
   - The future revenue for each quarter was projected by applying these growth rates cumulatively to the last known actual revenue. This sequential application mimics real-world compounding effects in revenue growth.

5. **Aggregating Simulation Outputs:**
    - After running all 200,000 simulations, we compiled the results into a new DataFrame. This DataFrame was structured to show the predicted revenues for each quarter.
    - We computed the mean of the predicted revenues for each quarter across all simulations to get a single forecast value per quarter. This mean represents the expected value of the revenue considering the simulated variability.

Actual vs. Predicted Revenue Analysis:

- **Visualization:** We created visualizations using matplotlib, a plotting library in Python, to compare actual historical revenues against the predicted revenues from the simulations.

- **Plotting Details:** The plot included two lines:
    - A blue line representing actual historical revenues, showing how revenue actually changed quarter by quarter.
    - A green dotted line representing the predicted revenues, extending from the last actual data point into the future.

- **Analysis of Results:** This visual comparison helps in understanding the fit of the model. The closer the green line (predicted) follows the blue line (actual) up to the last known data point, the more confidence we can have in the model's predictive accuracy for future quarters.

Conclusion: The detailed Monte Carlo simulation in Python, with its extensive use of statistical techniques and large-scale data processing, provided a robust framework for forecasting Manchester United's sponsorship revenue. Although the predicted revenues show a steady growth, the actual vs. predicted plot is crucial for validating the model against known historical data, ensuring that the forecasts are grounded in realistic growth patterns. This methodological rigor and the extensive simulations significantly enhance the reliability of the revenue forecasts, making them valuable for strategic financial planning and decision-making.