

Capstone Module

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“Is the Moneyball approach is a feasible approach for success in Football (Soccer)? An analysis of Brentford’s adoption of a statistical approach.”

Submission of Thesis and Dissertation

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Abstract

This paper will look to identify whether not Brentford Football Club's adoption of a Moneyball style approach to football operations is a feasible approach to success. The approach that this paper will take in researching Brentford's performance will research Brentford's statistics in a variety of factors. Through analysing Brentford's playing aspects will allow the paper to evaluate if the model works from the recruitment side of football activities. The analysis of Brentford's financial aspects is vital in understanding whether the use of the model has grown the club in a financial sense. In the modern game of football clubs with the highest resources are seen as favourites. Brentford adopted a Moneyball model in the hopes of levelling the playing field. The results of the data analysis associated Brentford's statistical model show that Brentford have grown in both playing and financial matters. Brentford went from the lower leagues of the English football leagues to promotion to the Premier League under Matthew Benham. The clubs' financial capabilities grew alongside the success on the pitch through their recruitment policy of Buy low sell high. Contrary to the believe that clubs with greater financial prowess possess greater ability it is not entirely accurate. Richer clubs than Brentford performed better on average in the Premier League, but due to Brentford's analytical approach the club was able to outperform several richer clubs through smart acquisitions. This papers' findings indicate that an analytic approach to the running of a football club is a feasible approach for success based on Brentford's performances both on and off the football pitch.

Table of Contents

Introduction.....	8
Research Question and Hypothesis.....	9
Objectives	10
Review of the Literature	11
Introduction to Brentford FC	11
Matthew Benham	11
Literature.....	12
Literature Review Conclusion	15
Methodology.....	16
Philosophical Assumptions.....	16
Research Design.....	16
Sampling	17
Quantitative Data – Analysis of Data	17
Limitations.....	18
Ethical Considerations	19
Analysis and Findings.....	20
Overview of English Football Leagues.....	20
Brentford Strategy for Growth.....	20
Player Valuation.....	20
Buy low Sell high.....	21
Brentford Compared to other Championship Clubs	23
Comparison of player statistics.....	26
How Does Brentford’s Recruitment Model work?.....	27
Player recruitment from abroad	27
Scrapping Youth Academy	29
Transfer Philosophy	30
Is the Model successful?	32
Performances Under Benham Versus Years before Model	32
Statistics Before Benham ‘Moneyball’ model.....	33
Statistics After Benham ‘Moneyball’ model	33
First season back in the Premier League.....	34
Data analysing and the links to Literature Reviewed	36
Findings Conclusion	37
Discussion/Conclusion.....	38

Interpretations of results	38
Similarities to literature.....	38
Prove hypothesis, right?.....	38
Unexpected outcomes	38
Implications in study.....	39
Limitations in the analysis of Data	39
Recommendations for future studies	39
Bibliography	41

Introduction

This study examines the use of the Moneyball philosophy in Brentford Football club, the model was successfully used by Billy Beane and the Oakland Athletics in Major League Baseball (MLB). The use of the Moneyball model is not widely utilized in Football and this study will analysis Brentford's use of the model and uncover whether a Moneyball model is a feasible approach for success in football. Moneyball is when an organisation studies the market, they are in to find and uncover undervalued assets (players) and sell the assets deemed overvalued the strategy is most referred to the approach the Oakland Athletics adopted (Laramore, 2016). A statistical approach to football can be difficult to undertake as most club structures are rigid and set in old traditions. Brentford are one of the clubs that have adopted this model and this study will assess how the model has been implemented in Brentford.

The application of the model has not been adopted by most football clubs and has been adopted by very few clubs such as Brentford. This study will focus on Brentford as they were promoted to the highest level of English football as of the 21/22 season. Analysis of the model has been discussed whether the model can be transferred to the game of football and analysis solely of Brentford's model have been covered in sports media outlets. The reason that this study is being conducted is in part thanks to the film starring Brad Pitt as Billy Beane and the Oakland Athletics adoption of a statistical approach to player recruitment. The movie provided a clear information on a system that has been shunned by traditional scouts and has provided inspiration to this study and the approach that Brentford have adopted.

A Moneyball approach seeks to find the players that other teams cannot, Billy Beane who is synonymous with the creation of the Moneyball model, used data mining of hundreds of players to identify statistics that would give The Oakland Athletics' an advantage over their high spending counterparts. The statistics that Beane would look for were not the normal statistics that normal baseball scouts would look at. Beane would look for players with good statistics in overlooked aspects of baseball. Instead of looking at total high batting averages Beane used analytics to discover players who could get on base instead, players who were on base were more likely to score as when compared to players with lower on base percentages (University of Wisconsin Data Science Degree, 2016). This study will look to

discover why a Moneyball approach is important for teams such as Brentford to undertake as football is becoming increasingly competitive both on the pitch and from a commercial aspect as many fans believe football has become more about commercial interest rather than the playing side. In 2017 57% of clubs in England's top two leagues were owned by foreign investment groups (Sharma, 2017) illustrating the commercial aspects that have entered the world of football. Clubs such as Brentford operate on miniscule budgets and through an adoption of a Moneyball approach Brentford have changed how their club operates. This study will uncover why a Moneyball approach is important to Brentford and will discover if the approach is a feasible approach for success.

The methods of this study are to analyse Brentford's operations in the board room and on the playing side. Both elements are key to any success that a club may attain as if one side of the operations is faltering it can lead to negative effects on the opposite side. The information gathered will allow this study to analyse Brentford and determine whether the hypothesis of the model being a feasible approach for success is true or not. The information that will allow this study to analyse Brentford will include aspects such as their transfer philosophy, their recruitment model, and the study of previous performances under Benham and his model along with performances from before his ownership. The study will look at how the model has shaped Brentford's operations; majority of football clubs are run in near identical ways but the model that Benham introduced has been implemented in sports other than Football. Brentford are outliers and this study will shed light on the approach and how Brentford have used it and whether the model has truly helped Brentford achieve success or are their other aspects that helped along the way.

Research Question and Hypothesis

The research question and hypothesis that this paper is looking to answer, "Is the Moneyball approach is a feasible approach for success in Football (Soccer)? An analysis of Brentford's adoption of a statistical approach." The importance of this research question is to analyse and determine whether a statistical approach is a feasible approach to success for football teams. Football teams do not use statistics solely for player recruitment and other related activities associated with the running of a club. Brentford under their current owner adopted this model and are one of the few clubs that have used this model. It is important to analyse this question as highlighted teams use traditional methods and Brentford's adoption

of the use of this model is not widespread. Analysing Brentford and their methods can help determine whether their model is a more efficient model. Football has developed into a gigantic global industry with the Premier league alone producing 10.5 billion pounds in revenue (Harris, 2022). Each club uses different approaches to try and gain competitive advantages and Brentford's approach is unique to the game of football and this paper will allow for a conclusion on whether their approach is successful.

Objectives

- Assess Brentford's match and season statistics to determine whether the club has improved under their statistical model.
- Evaluate Brentford's player statistics to assess if the players recruited through the model have been successful.
- Conduct analysis on Brentford's financial activities (player sales and recruitment) to verify whether the statistical model is efficient in identifying undervalued players.
- Evaluate findings to verify whether Brentford's model is a feasible approach for success.

Review of the Literature

Introduction to Brentford FC

Brentford Football club was established in 1889, the club was set up by the Brentford local board who wanted to open a new recreation ground for the town of Brentford. There was a meeting to decide which type of sport that the club would partake in, Rugby or association football. With a win margin of eight votes, it was decided that Football would be the sport in which the club would take part in. Negotiations for the use of the Recreation ground collapsed but the decision to form Brentford FC continued where the club played its first game on November 23, 1889 (Brentfordfc.com, 2021). The club turned professional in 1899, effectively by force as they were found guilty of paying their players which was illegal for amateur clubs at the time (Brentfordfc.com, 2021).

In 2009 Matthew Benham and Bee's United (Supporters Trust) agreed to enter a partnership of five years where Matthew Benham would invest money into the club in return for an option to own the club if the Supporters Trust did not wish to repay Matthew Benham the money he had invested into the club. In 2012 Matthew Benham purchased the controlling shares of Brentford FC with overwhelming support from the Bee's United (Brentfordfc.com, 2021).

Matthew Benham

Matthew Benham was a lifelong Brentford fan, and he accomplished the dream that not many fans can achieve, by owning his childhood favourite. As discussed, Benham took over Brentford in 2012 when the clubs supporters agreed to the takeover. Benham in his own right is a genius as he graduated Oxford University with a degree in Physics and in the 1990's he ended up becoming the Vice President of the Bank of America (Tradematesports.com, 2021). In 2001 he moved on from the world of Banking and joined the ranks of PremierBet, his time with PremierBet was not great with Benham having a fallout with his Mentor Tony Bloom. Bloom now as of writing is also a football club owner with Bloom owning a controlling share of Brighton, with Bloom purchasing a controlling share in 2009 (Tomlinson, 2021). The similarities are quite uncanny with Benham following in the footsteps of his mentor in owning a club, not only that both men went on to own their boyhood clubs in the space of three years. After his time with Bloom concluded, Benham went onto found his own betting syndicate 'SmartOdds' in 2004 (Rowan, 2021). Benham had an aptitude for numbers and like many British men he loved football, Benham loved the

statistical side of football, and although not much is known of his betting habits, Benham adopted some of his betting methods from the paper that was published by Stuart Cole and Mark Dixon in 1997 '*Modelling Association Football Scores and Inefficiencies in the Football Betting Market*'. This paper was one of the first that would use statistical analysis to predict the outcomes of football matches (Rowan, 2021). Matthew Benham has taken this statistical approach to Brentford Football Club and has seen relative success with the club being promoted to the English Premier League (PL) in the 2020/21 season and is taken part in the British topflight for the first time since 1947 (Foster, 2021). The current position of Brentford shows relative success for Brentford and Benham and the statistical approach when looking at it on the surface, but can this approach be a feasible approach for success?

Literature

The three pieces of literature that most apply to this study are "Moneyball: The Art of Winning an Unfair game" written by Michael Lewis, "Is the *Moneyball* Approach Transferable to Complex Invasion Team Sports?" a research article written by Bill Gerard. "Modelling Association Football Scores and Inefficiencies in the Football Betting Market." a paper written by Mark J. Dixon and Stuart G. Coles. All literature provides context to what a Moneyball approach is, and it will also provide information on how Matthew Benham and Brentford have used a statistical based approach in the running of Brentford.

"Moneyball: The Art of Winning an Unfair game," is an in-depth analysis of the origin story of the Moneyball philosophy that Brentford have implemented into their club. The book discusses the Oakland A's and their general manager Billy Beane who can be considered the founding father of the Moneyball approach. The book details the approach that Beane and the Oakland Athletics adopted in the search for undervalued players through statistical analysis. Beane and scouts began to focus on college players as the statistics were better compared to the trination route of scouting high school players. Lewis (2003) describes why Beane adapted the Moneyball approach "*We take fifty guys, and we celebrate if two of them make it. In what other business is two for fifty a success? If you did that in the stock market, you would go broke.*" This resonates with the reason that this study will be researching Brentford as like Oakland, Brentford do not possess the same financial power of their counterparts in their respective leagues. This lends to the next point of discussion as the Moneyball style approach in the book was shunned by the scouts in the Oakland Athletics building. As a stats-based approach in baseball was rejected by older generation of scouts,

and still today in football it is not a widely used technique for player evaluation and player acquiring.

Although the book discusses the successes of the model Lewis was not entirely accurate in the portrayal of baseball and its competitiveness, as the playing field in baseball in the period the book was written stands to be a remarkably competitive time in the MLB. *“In the year 2000, for the first time ever, not a single team in baseball history finished above .600 or below .400 ... as the twentieth century went on, the difference between the best teams in baseball and the worst teams narrowed, and by the year 2000 it was smaller than at any other time in baseball history.”* Barra (2002) highlighting the competitiveness of small market teams.

In the 2000's the MLB was an incredibly competitive league as differences between the best and worst teams was twenty percentage points (Barra, 2011). The team with the best record in the MLB in the 2000 season were also a small market team like Oakland and the two teams that possessed the worst records were big market teams (Barra, 2011).

“Moneyball: The Art of Winning an Unfair game” provides a unique perspective into the origins of the statistic-based approach in baseball. Although the book provides information on the processes involved in the model it does not provide any information with regards to how the approach can be used in a football club. But due to Lewis's propensity to favour the Oakland Athletics team and Billy Beane, the book can be called into question on the reliability of the information discussed by Lewis and if the book has skewed opinions on the Moneyball philosophy.

“Is the *Moneyball* Approach Transferable to Complex Invasion Team Sports?” provides a guide on how the Moneyball approach can be used in football as compared to “Moneyball: The Art of Winning an Unfair game” where it solely discusses the Oakland Athletics. This piece of literature is important to understanding Brentford's approach as the Moneyball approach. *“Story is the systematic use of player performance data to guide player recruitment, player valuation, and field tactics as championed by Oakland's general manager, Billy Beane”* Gerrard, B (2007) defining what a Moneyball approach consists of. The paper describes how the Moneyball approach can be transferred to football. The paper states that it is easier to apply the model to a sport such as American football and baseball as they are more statistical orientated. The paper provides an example of how clubs with more capital can maintain a sustainable competitive advantage over their counterparts in

purchasing higher-quality strategic resources. Resource poor firms must develop knowledge-based advantages such as Brentford are adopting the Moneyball model to best use their limited resources. This paper will provide insight on how the model of purely a statistical approach can be transferred into the game of football. As invasion sports (Football) according to Gerrard, B. (2007):

“Invasion team sports are much more complex and hence the separability of individual player contributions is considerably more difficult. Invasion team sports involve a group of players co-operating to move an object (e.g., a ball or puck) to a particular location defended by opponents (e.g., across a line or between goalposts).”

The paper will provide a basis of knowledge that can be used to help analyse Brentford as the analysis of the Moneyball philosophy is complex as data that teams use is usually contained within the organisation or is expensive to acquire. The paper illustrates that it is possible to analyse a football team through a Moneyball model but does present barriers in the analysis itself. Using the paper as an example it will allow this paper to analysis football and the Moneyball model in a more precise manner.

“Modelling Association Football Scores and Inefficiencies in the Football Betting Market.” when compared to the two previous pieces of literature “Modelling Association Football Scores and Inefficiencies in the Football Betting Market.” highlights that there were little papers published at the time of writing based on an analytic basis on football. Papers written for statistical analysis were more relevant in sports such as American football. The paper does not provide insight on Moneyball and its uses in football operations but provides insight on how statistics can be used to predict football results for betting purposes. The paper applies same as “Is the *Moneyball* Approach Transferable to Complex Invasion Team Sports?” that analysing football is harder when compared to other sports as football is a much more fluid game. The paper does though provide some of the first insights into a statistical based approach in football as it considers measures such as team performances in home and away matches to predict results of games which then can be betted on. This paper has been mentioned to be a source of influence for Benham who made himself known through professional gambling as he used statistics to beat book makers.

The paper itself offers no information on a Moneyball approach in the running of football clubs, however it provides a guide on how Benham may have cultivated a style of

statistical analysis for football which can be used to further understand Brentford's use of statistical based analysis.

Literature Review Conclusion

The main take aways from the literature are all seemingly that it is much harder to recreate a Moneyball style model in the game of football. There are a multitude of factors that make this so the main one is that the game of football is much more of a fluid game which makes statistical analysis much harder when compared to sports such as American football. American football is a stop start game where teams take turns attacking which makes it easier to quantify statistics associated with defence and attack. Football is the opposite as both teams can go from attacking to defending in a matter of seconds which makes it harder to predict. Mindset is a predominant factor in the application of a Moneyball approach football as many scouts will shun the approach of statistical analysis in favour of tried-and-true methods of past generations such as the Eye test. In the paper "Is the *Moneyball* Approach Transferable to Complex Invasion Team Sports?" the divide is illustrated with Billy Beane of the Oakland Athletics scouting team consisting of analytic scouts that relied on data. The divide of the styles is further cemented "Moneyball: The Art of Winning an Unfair game" where scouts refused to scout a player who Beane had identified. This divide makes any research in this study hard to analysis outside of Brentford as many scouts hold the ideals of previous generations. But this also allows for analysis of Brentford's statistic-based model against the normal methods of talent identification and club operations as Brentford's can be compared to teams of similar stature and can determine the success of Brentford's model.

Methodology

Philosophical Assumptions

The purpose of this paper is to further understand whether Brentford's adaption to a Moneyball style approach can be used as a route of success. This research paper hopes to uncover and demonstrate if the model is applicable to Football through the analysis of Brentford's operations. One of the main reasons for the conduction of this research is due to Brentford's recent promotion to the Premier League (PL) and gaining knowledge on how Brentford accomplished this feat is what this paper expects to discuss and discover. The paradigm that this paper falls into is Methodology as the paper contains the analysis of data. The data collected will demonstrate that the findings regarding Brentford's Model are valid. Positivism is also present in the paper through the nature of the research papers quantitative nature. The proposition of a hypothesis lends to Positivism. Investigating the data presented on Brentford's use of a statistical model rather than a relationship between variables for example further solidifies that Positivism and Methodology are the paradigms throughout this paper.

Research Design

This study is a quantitative study on the if a purely statistical approach to operations of a football club both on a playing and performance aspect to the financial operations of the club i.e., transfer business and financial growth of Brentford Football Club. The analysis of Brentford in the highlighted aspects will provide knowledge on if the model is a success, as analysing aspects such as financial operations can allow the study to determine if Brentford are growing on the business side of the club. Whereas analysis of transfer business allows for an analysis of the playing side of the club. Through the exploration of secondary data and their influence, this study sought to develop whether Brentford's approach to football operations can be a feasible approach to success in the world of football. This study seeks to provide an understanding of the statistical model that the club uses in their operations. A Moneyball approach is a smart approach for clubs such as Brentford as they cannot match the spending of rivals and through smart analysis of player statistics which the Moneyball approach encompasses Brentford can find value in undervalued and under scouted players.

This study will be based on quantitative secondary data relating to Brentford FC under the tenure of Matthew Benham and when he took 100% ownership of the Club, this data will be compared to previous years of Brentford's operations to establish if Benham's

approach is successful. It was Benham who introduced the statistical model to the running of Brentford, as his background was in professional gambling. The data that will be collected and displayed throughout this study will relate to aspects of player performance on the pitch along with the appropriate financial data. This data will provide detailed view into Brentford's performance on the field of play and in the boardroom, this data will be subsequently compared to Brentford FC's competition to determine if the model is successful comparative to industry norms.

Sampling

Sampling involved in this research paper will involve no participation of individuals and will solely focus on statistics of Brentford football club. The data will consist of statistics from both aspects associated with the running of a football club (the playing side and financial operational side). The reason analyse of both aspects will allow this study to provide an answer to why the model works or does not for Brentford. The inclusion of a sample population through various processes such as surveys and interviews were deemed unessential in the process of the implementation of the study as the period did not permit for anything other than the analysis of secondary data. However, future studies could benefit from aspects such as surveys and interviews with stakeholders of Brentford FC to provide different angles of analysis of the Moneyball model.

Quantitative Data – Analysis of Data

The data collected relates to Brentford's players performance and their financial performance. The quantitative nature of the data collected presents an issue as quantitative analysis can be extremely limited in the validity of the data. Only few statistics offer a significant correlation towards the result of a game of football (Bergmann, 2019). Nevertheless, the statistics collected will allow this study to backup any conclusions gathered on Brentford FC's operations. Through the analysis of the data, it can allow the paper to make a conclusion on Brentford's use of the Moneyball style approach.

Brentford's player statistics will be compared to the league averages to determine a benchmark of performance and this data will be able to draw any conclusions on the quality of Brentford's players. Player data will be drawn from the English Football League (EFL) and the Premier League (PL), the latter being the top professional league in England. Any data correlating to the specific league will be compared to that same league competition in terms of competitors. While data will be compared over the separate league campaigns to

determine if the model is successful through the league's Brentford played in. Player statistics of current Brentford players will also be compared to previous players, to determine whether Brentford were successful in replacing the outgoing players through their use of a statistical model.

In terms of Brentford's transfer dealings, the player data on incoming business will be compared to outgoing deals to determine whether the statistical model is successful in player recruitment. Brentford are considered a small club in the PL and do not have the capital power when compared to competitors and thus must be wise in their recruitment model. By measuring incoming player to outgoing, a basis can be created to see whether the players that Brentford are using as replacements improve the side or even worsen.

Financial data will also allow the study to compare players in the same league to Brentford's in terms of financial value. This will give a clear indication if Brentford are finding value for money players with a statistical based approach to recruitment.

The purpose of this research is to evaluate the assumption that a purely statistical approach to football operations can be a feasible model for success. On the surface Brentford have had success in the recent years winning promotion to the PL. This study hopes to determine and illustrate what makes the model that Brentford are using successful and is it a sustainable model for further success. Through the measurement of players that come into the club the study can hope to illustrate if their model of recruitment successful compared to the traditional method and clubs that can use money to solve their problems. In terms of financial data gathered it can allow the study to make it clear whether the Brentford model is a successful way of growing the club in a financial aspect. The PL boasts some of the richest clubs in the world and Brentford cannot rely on capital the way that the big clubs do. Through the data of recruitment and financial aspects this study can help understand if Brentford's model is truly a successful model both in terms of the playing side and the financial aspect as well.

Limitations

The limitations of a study are the characteristics of the methodology of the study that have an impact on the interpretation of the findings in the research paper. Limitations present constraints on the papers ability to convey truly accurate analysis (Price and Murnan, 2004). Acknowledging that this paper will contain limitations can allow for future research papers on the topic of Brentford's Moneyball approach can ensure that the limitations of this paper

can be remedied. Limitations of this paper are that the analysis of the statistics of Brentford are not fully examined in an extent as due to magnitude of statistics that are present in the game of football. The sample size of the data presented are minuscule to the statistics that can be found online or in research papers i.e., each new season presents a range of data that can be analysed. New statistical measurements are also being applied to football to try and understand the game. Lack of research papers solely based on Brentford's approach under Benham provides further limitations as designing a paper on Brentford can provide unique challenges that future papers can try and uncover. The measure of data collected can also provide a limitation to the paper as after the completion of analysis and findings added information and statistics can be researched. Access to data provides another limitation as this study relies on secondary data of Brentford and the inability to access primary data from Brentford's model does not allow this paper to truly display what makes the model successful or not.

Ethical Considerations

The conduction of this research paper presented many ethical considerations and the formation of the research question and the design of the paper along with the analysis of data and the interpretations of said results must be considered (Kaiser, 2019). Due to the very nature of the research presented in this paper "Honesty" is one of the main Ethical considerations that this paper must adhere to. This paper strived to provide accurate and appropriate data needed to evaluate Brentford's Moneyball style approach. As the paper is based off second hand data collected the ethical consideration of honesty applied in finding and reporting accurate statistics that represent Brentford's performances correctly. Any data collected was further researched and backed up through various other sources of data to prevent any fabricated or falsified information entering the paper which in turn would undermine the credibility of the research paper. Another ethical consideration that this paper had to consider was academic values, academic freedom is entrusted upon this paper and this paper must reciprocate research that allows any trust presented not to be in vain. This paper focuses solely on providing a quality of research and the methods used in gathering this research. This paper is open to fair and just criticism that may be presented upon review of the paper to uphold the academic values entrusted upon this paper.

Analysis and Findings

Overview of English Football Leagues

Brentford currently play in England's top tier of Football League the Premier league. But analysis of Brentford statistics from other leagues will be needed to show whether Matthew Benham's model indeed played a vital role in their success. Statistics of Brentford under Benham and previous owners will be compared, but to compare the statistics a brief explanation of the English football leagues is needed to provide context. The top league as highlighted is the Premier League. The Premier League consists of twenty teams where the three bottom teams get relegated to the Championship (Premierleague.com, 2022). The Premier League is ranked as the best league in terms of Soccer Power index (SPI) when compared to other leagues around the world (Ackerson, 2022). The championship has twenty-four teams in the league with the top two teams gaining automatic promotion to the Premier league and a third gaining promotion through a playoff between the teams that place from third to sixth, with the three bottom teams getting relegated to league one. The championship ranks 11th in terms of SPI (Ackerson, 2022). League One contains twenty-four teams with the same promotion format as the championship but the four bottom teams are relegated to league two. League One ranks 30th on the SPI rankings (Ackerson, 2022). League Two is the bottom league out of the English professional league, League Two also contains twenty-four teams. Where the top three teams gain automatic promotion and a fourth is promoted through winning a playoff format containing the teams from fourth to seventh place. League Two ranks 33rd out of professional leagues in terms of SPI (Ackerson, 2022). Understanding the English football league structure can provide better analysis of Brentford's performances under the Moneyball model and Brentford not under the model.

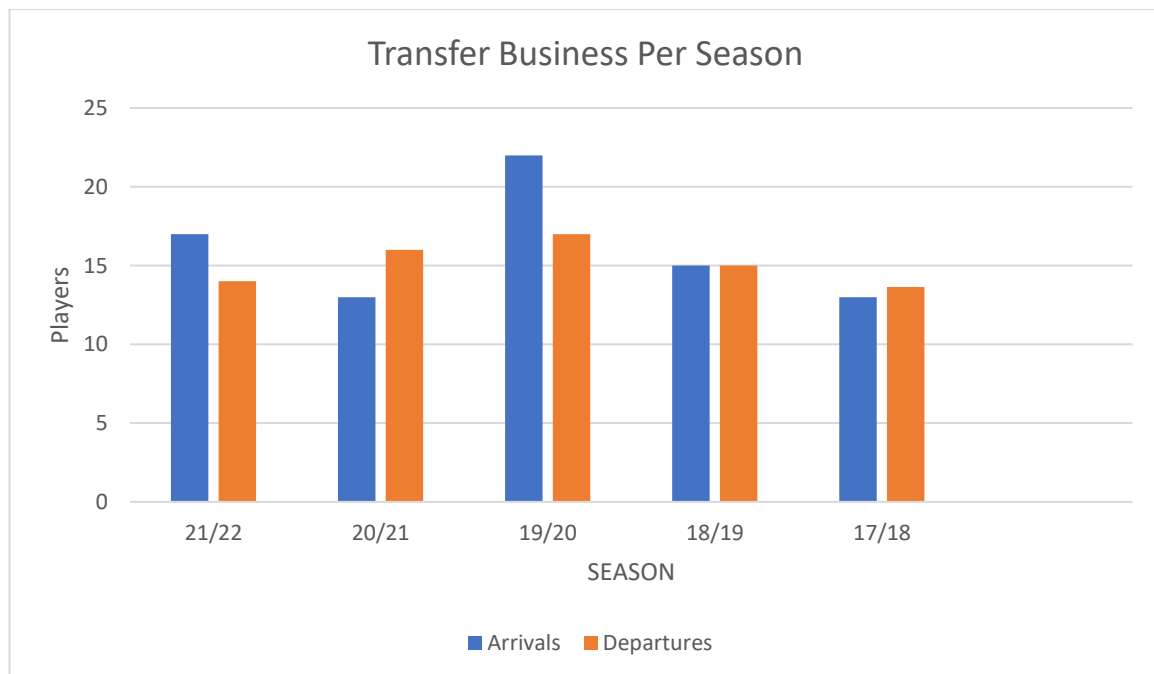
Brentford Strategy for Growth

Player Valuation

Brentford's current squad valuation is estimated to be £197.01 million, with this valuation it ranks them 17th out of twenty teams in the Premier League (Transfermarkt.co.uk, 2022). This illustrates that Brentford are not at the same level financially when compared to their competition. However, current valuation is the highest in Benham's tenure. When Benham took full ownership in 2012 the squad valuation was estimated to be £6.71 million representing a 2836.07% change in valuation (Transfermarkt.co.uk, 2022).

Buy low Sell high

Buy Low Sell High is the personification of Brentford's recruitment model. Extraordinarily little is known about Benham's personal Net worth, but Talksport has his Net Worth at £3 million as of 20th October 2021 (Fordham, 2021). When compared to other club owners Benham ranks last, this unfortunately leaves Brentford in a position where they cannot afford to break the bank when it comes to player recruitment. So, buy low sell high is how Brentford have been able to garner success and reach the highest level in English football. Examples of this philosophy can be seen with players such as Ollie Watkins, who Brentford purchased from Exeter City in the 2017/2018 season for £6.5 million, Watkins was then subsequently sold to Aston Villa in the 2020/2021 season for £30.60 million (Transfermarkt.co.uk, 2020) with money they received from this sale Brentford then reinvested it into Watkins's replacement Ivan Toney for an estimated £5.04 million. Toney in turn has represented a valuable investment for Brentford as he notched a record thirty-one goals in the season Brentford gained promotion to the Premier League (Long, 2021). Toney now has an estimated valuation of £28.8 million (Transfermarkt.co.uk, 2021). Examples of Toney and Watkins are perfect examples of how Brentford's recruitment model works. Brentford's transfer departures and arrivals can be compared in the diagram below.



(Transfermarkt.co.uk, 2022)

Over a 5-season period Brentford have only spent more money on what they have received from player sales once, and the 21/22 season was their first season back in the

Premier league in many years. Brentford's activity in the transfer market based on the last five seasons can show that a club can have success without buying expensive players. But through analysis of players and the buy low sell high philosophy Brentford can be a blueprint for success in a strategy for growth. The club managed to make a profit except for one season, illustrating the club's philosophy in finding undervalued players through their Moneyball model.

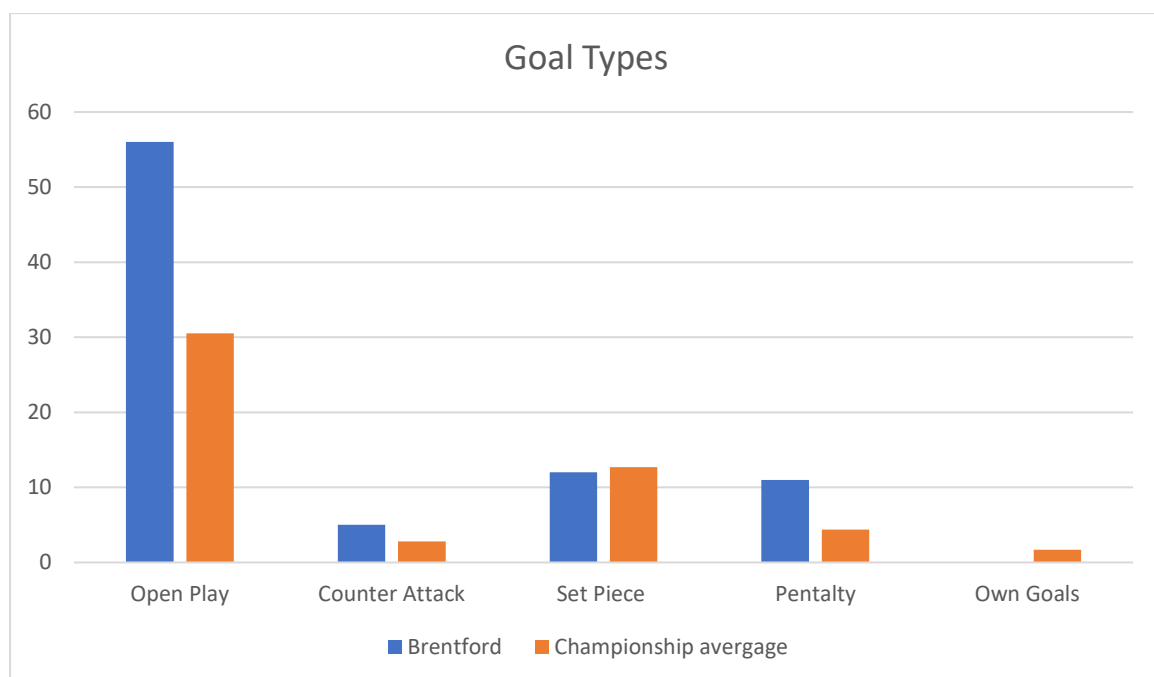
Season	Arrivals (£)	Departures (£)	Profit/Loss (£)
21/22	33,030,000	900,000	-32,130,000
20/21	6,570,000	55,800,000	49,230,000
19/20	31,190,000	36,083,000	4,893,000
18/19	5,900,000	31,460,000	25,560,000
17/18	10,190,000	13,650,000	3,360,000

(Transfermarkt.co.uk, 2022)

Brentford Compared to other Championship Clubs

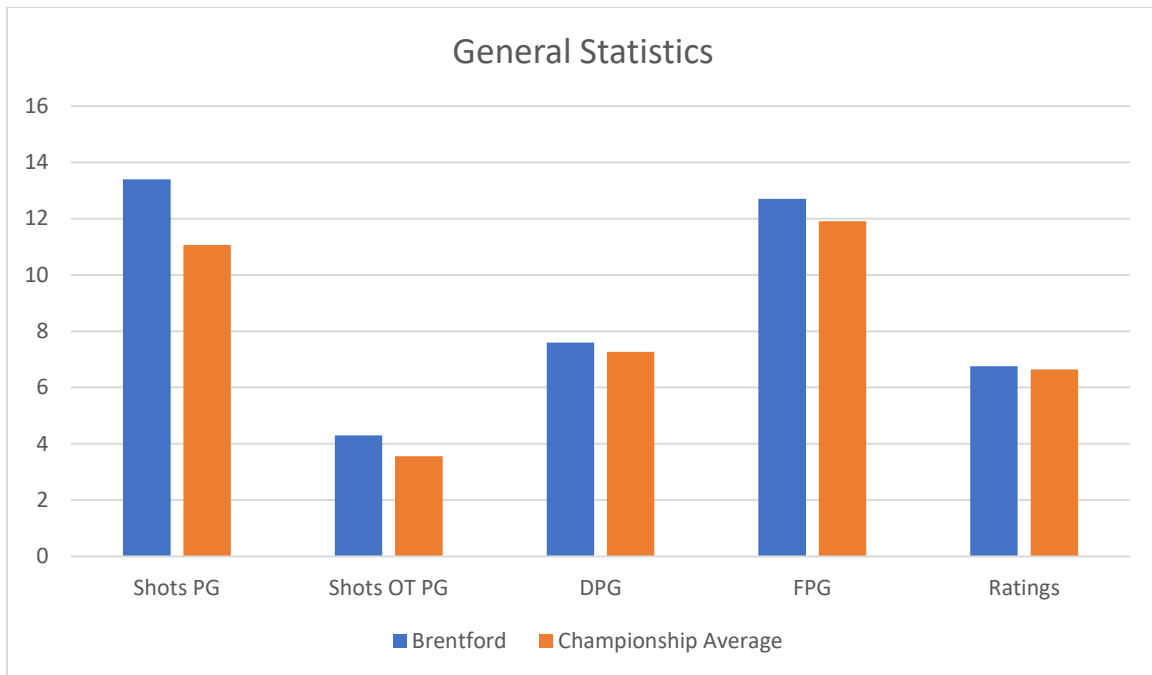
Brentford gained promotion out of the championship in the 20/21, this section will look to cover Brentford's statistics compared to other championship clubs to determine whether Brentford were better than competition. Analysis of Brentford's offensive play and defensive play compared to other teams in the championship. Key statistics from both aspects of play will be evaluated to determine what aspects of Brentford's play allowed them to gain promotion.

Offensive play:



(Whoscored.com, 2022)

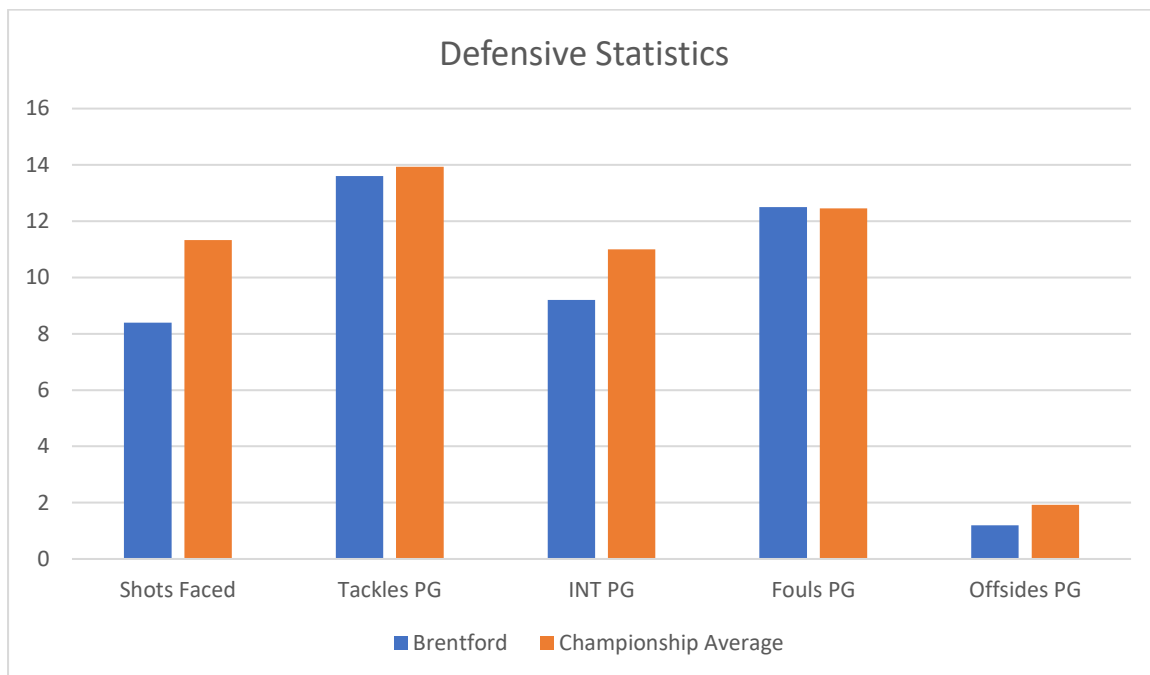
Brentford when compared to other championship clubs' goals ranked higher than the leagues club's on average in most of the statistical categories. Illustrating that Brentford's attack was one of the most formidable in the season in which they were promoted.



(Whoscored.com, 2022)

In terms of general statistics Brentford were one of the best statistically, Brentford's shots per game (Shots PG) rank third in the championship. This elite chance creation resulted in Brentford ranking top in terms of open goals over the course of the season Brentford gained promotion. Brentford's ball progression through Dribbles per game (DPG) ranked 11th in the division. Brentford's match Ratings ranked in the top three illustrating that the team was a consistent performer in the championship which translated to Brentford gaining promotion based off their performances.

Defensive play:



(Whoscored.com, 2022)

Brentford's defence was ranked second best in shots faced per game in the championship in the 20/21 season. With tackles per game (Tackles PG) Brentford ranked below average and ranked 15th in the league, however, the caveat to this statistic being lower can be related to Brentford's possession statistics. Per 90 minutes for Unsuccessful touches (Failed to control ball) Brentford ranked fourth in least unsuccessful touches. Brentford ranked fifth in times disposed, both sets of defensive statistics being below average illustrates that Brentford's defence had to work less compared to other teams as their attack lost the ball less.

Upon comparison of Brentford's offensive and defensive play it can be determined that Brentford rank among one of the best team's statistics wise. Brentford accomplished these feats while also departing with a large quantity of players with fourteen players departing from the club while also bringing seventeen players in the 20/21 season per graph (transfers per season). Brentford were promoted to the PL in the 20/21 and based off the statistics gathered Brentford were justified in gaining promotion to the Premier League.

Comparison of player statistics.

Glossary

Apps – Appearances, Mins – Minutes, SpG – Shots per Game, Drb- Dribbles per Game

Attacker statistics: Toney versus Watkins

Brentford replaced their outgoing forward Watkins with Toney, to measure if this was a successful transaction, player statistics will be used to determine if Brentford were successful in their replacement attacking option.

	Apps	Mins	Goals	Assists	SpG	Drb	Ratings
Watkins 19/20	49	4430	26	3	2.7	0.8	7.26
Toney 20/21	47	4132	33	10	3	0.5	7.41

(Whoscored.com, 2022)

Through examining both players statistics, it can be determined that Ivan Toney was an upgrade on his predecessor. Toney had better statistics in all the categories except for one. Brentford were able to replace a valuable player that was Ollie Watkins with a player who was cheaper than the money that Brentford had received from the sale of Ollie Watkins. Showing that a Moneyball approach to player replacement can be a successful approach.

Defender Statistics: Ajer versus Jansson

Ajer was purchased from Celtic for Brentford’s return to the Premier league whereas Jansson was a vital member of Brentford’s push for promotion. Comparing statistics from both players can determine whether Brentford upgraded their defence. Both Ajer and Jansson played in Brentford’s return to the Premier league.

	Apps	Mins	Goals	Tackles	Int	Blocks	Rating
Ajer 21/22	24	1995	1	40	49	36	6.73
Jansson 21/22	37	3321	3	36	69	56	6.57

(Whoscored.com, 2022)

Based on the statistics presented Jansson had a better overall season when compared to Ajer, but Jansson's statistics are higher as he played thirteen more matches compared to Ajer. Match rating for Ajer is overall better however, the same agreement can be made with Ajer's statistics as he played less matches his overall sample size for his match rating can skew the rating.

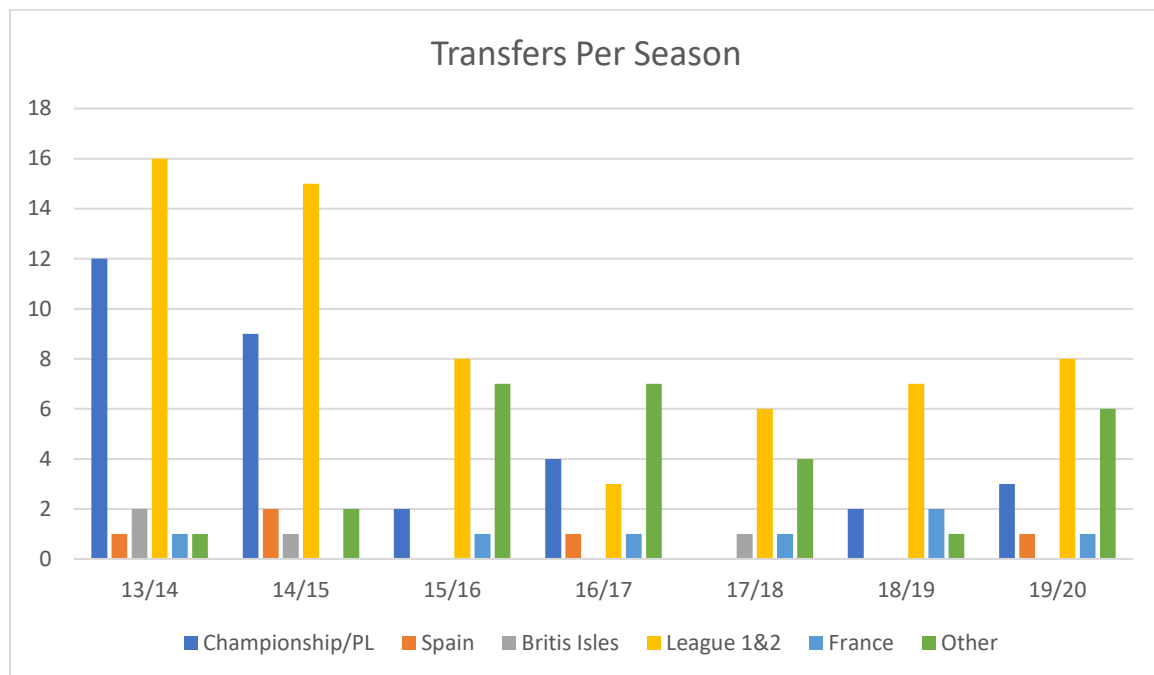
Analysing statistics of players that Brentford have recruited compared to players they have sold in Ollie Watkins and players that currently still have in their squad with Jansson it allows for an evaluation of the Moneyball approach to recruitment. In both circumstances the players that Brentford brought in where improvements based on ratings. Comparing statistics of the players shown cannot be truly an accurate measurement of the exact impact each player has on the team. But comparing their statistics can establish a baseline understanding whether Brentford's approach is successful in scouting players which can provide benefits to the team's performances. As illustrated Brentford where successful when comparing statistics shown, for a more accurate analysis, researching more in-depth statistics in player analysis can provide a clearer representation of how successful Brentford's Moneyball recruitment is.

How Does Brentford's Recruitment Model work?

Player recruitment from abroad

As demonstrated Brentford rely on a buy-low sell-high recruitment model as the club does not possess the capital that other clubs in the Premier league possess. But what does the model actual look like? Buy-low sell-high is the club's philosophy, but how does Brentford identify these players? Matthew Benham built Brentford's recruitment model along with Ramus Ankersen (Ankersen was a professional footballer whose career was cut short through injury, he then proceeded to author books on talent and success) (Wigmore, 2017). Brentford's recruitment model results in the club looking into players from a wide array of leagues that other clubs do not. Graph 1.1 illustrates the leagues and regions in which Brentford have recruited players from the 2013/14 to 2019/20 season.

(Graph 1.1)



(Prabhu Ram, 2020)

In 13/14 Benham had not introduced his model of Recruitment, in the 13/14 season Brentford only signed five players from outside of the country. Over the course of the next six seasons Brentford began to recruit more from other regions which is inherently bold as clubs typically sign players from Leagues in the same country (Prabhu Ram, 2020). In the 14/15 Brentford ranked 21st out of twenty-four in the league for foreign players in their team. Compared to 19/20 where they ranked first out of twenty-four for foreign players (Transfermarkt.co.uk, 2019). The shift in recruitment from English based players to players from foreign countries illustrate the changes that Brentford have put into place with regards to player recruitment. The club has focused their recruitment efforts away from traditional style recruitment for championship clubs during their time in the league and focused on bringing in players from abroad. Recruitment from foreign countries helped Brentford achieve promotion to the Premier league. The season of 20/21 where Brentford gained promotion, they ranked first alongside Norwich in foreign players in their squad. (Transfermarkt.co.uk, 2020).

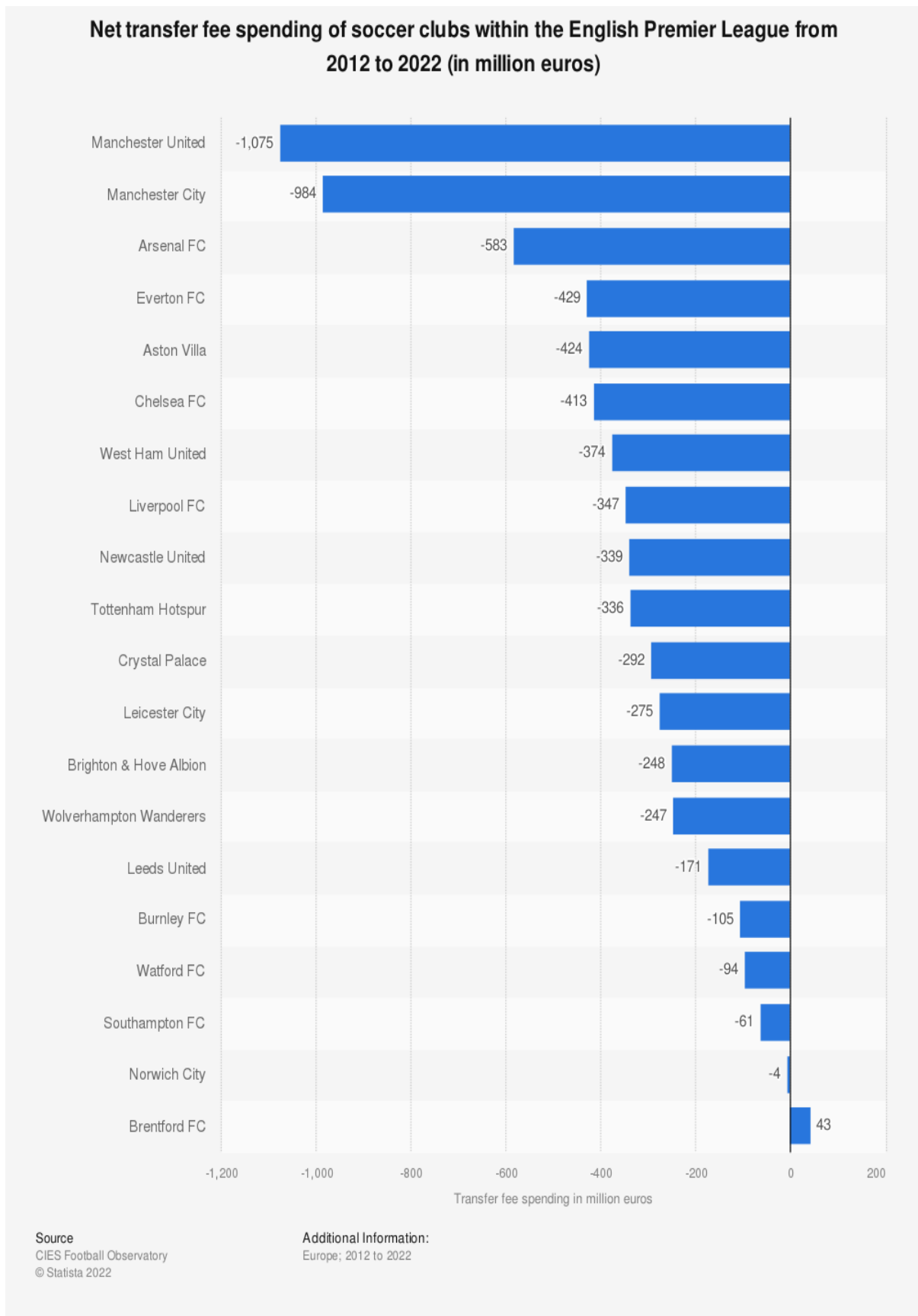
Scrapping Youth Academy

Under Benham Brentford have become a statistical powered club and the effects of this process can be seen with their youth academy. Brentford moved away from a youth academy in favour of a B-Team model. According to the head of Football Operations at Brentford Robert Rowan, a B-Team model provided Brentford with more chance in producing first team-players (Aarons, 2017). Brentford's youth set up was estimated to cost £2 million a year. Brentford is based in London where there are a total of seventeen professional football clubs based and seven alone in the PL including Brentford (Smith, 2021). The competition Brentford faced for youth prospects was another factor the club took into consideration when moving to a B-Team model. Brentford lost two top prospects to Manchester City and United for £30,000 each, a miniscule amount of compensation which the club received for the development of the two players. The club can only receive £30,000 for any player under seventeen as they cannot sign a professional contract until they turn 17 (Wigmore, 2017). The B-Team focused on players ages between 17-20, and the main targets were players released from other English clubs' academies and players based in overseas leagues. A prime example of the model working for Brentford is through Marcus Forss who was released by West Brom in 2017 (Owen, 2019) scored the winner in a playoff semi-final. Brentford's scouts identified Fin Stevens (released from Arsenal) in the seventh tier of English football. Stevens went onto win the player of the season for Brentford's B-team; his rapid progression illustrated how Brentford's B-team takes advantages of the flaws in the academy system (Harris, 2021). Since the B-Team model has been introduced to the club there has been ten players from the B-team promoted into Brentford's first team (Harris, 2021). Compared to the numbers of their youth academy produced the B-Team model is vastly superior as Brentford's youth Academy only produced one player who played regularly for the club (Wigmore, 2017). Approximately ninety-seven percent of elite academy players aged between 21 to 26 have failed to make a Premier league appearance and seventy percent were not handed a professional contract (Cunningham, 2022). The numbers work in Brentford's favour as the likelihood of a youth player ascending the ranks and being promoted to the first team are extremely unlikely as shown and through the B-team model Brentford have been able to cultivate success in an effective manner.

Transfer Philosophy

Brentford's financial capabilities when compared to the rest of the PL are modest, in the 2021/22 PL season Brentford had been the only club with a positive net spend. As illustrated with Graph 1.2. To get the Net spend figure total of transfer fees received from sale of players is subtracted from the total figure spent on purchasing of players (Transferleague.co.uk, 2019). Brentford as a club must generate approximately £15 million a year in the transfer market to stay a profitable business (O'Brien, 2020). This focus on acquiring players to sell on later for-profit shapes Brentford's Transfer philosophy. The club must think differently, they cannot afford to spend copious amounts on players. As highlighted in 'Scrapping Youth Academy' Brentford depend on signing undervalued players such as players released from other academies.

Graph 1.2



(Statista, 2022)

Is the Model successful?

Twenty percent of teams automatically promoted to the PL are subsequently relegated while 9% of teams who come through playoffs get relegated (TheStatsZone.com, 2022). Brentford entered the PL through the playoffs, statistically they were in a better position compared to teams who gained automatic promotion. As illustrated Brentford target undervalued players for low fees, but how does that translate into performances on the pitch. To discover the extent of Brentford's promotion their statistics need to be compared to their counterparts to establish whether Brentford's model translates to success.

Performances Under Benham Versus Years before Model

As established Benham implemented his model in the 14/15 campaign, from the 14/15 to 20/21 seasons in the championship Brentford Rank first out of the forty-two teams that have played in league in accumulative points. The club have a total of 508 points from 322 matches played (46 games per season), with a points per-season of 72.57 and a points per game total at 1.57. The clubs goal difference (Goals scored subtracted by goals conceded) ranks first also, the club has a goal difference of +137. Their game winning percentage is 44.4% with both home and away fixtures, for the club's home only games they have a winning percentage of 50.1% and away 37.8% (Transfermarkt.co.uk, 2021). Their success in the championship illustrates that Benham's model can be successful, but how successful can their methodology be in the PL?

To fully comprehend if Benham's model is successful previous years not under his stewardship need to be examined to determine whether the model improved Brentford. A seven-year period will also be used to be able to analyse Brentford's performances to enable accurate comparisons. Seasons from 2006/07 to 2013/14 will be used as a comparison as it allows for a timeline of Brentford not under Benham's statistical based approach.

Championship:

From 2006/07 season Brentford were not in the championship and were playing in the league below (League 1) (SkySports, 2013). Illustrating that Brentford before Benham were not as capable when compared to stewardship under Benham's approach.

League One:

In league 1 Brentford played a total of 279 games from 2006/07 to 2013/14 with points total of 402, with a points per game total of 1.44 and a points per season total of 67.00. Brentford had a winning percentage of 37.9% in their time in League 1.

League Two:

In 2008/09 Brentford played in England's lowest Football league division League Two. In their League Two season Brentford had points total of eighty-five and a points per game total of 1.84 with a win percentage of 50%.

Statistics Before Benham 'Moneyball' model.

League	No. Seasons	Games Played	Total Points	Points Per Season	Points Per Game	Win Percentage
Championship	0	0	0	0	0	0
League 1	6	279	402	67.00	1.44	37.9%
League 2	1	46	85	85	1.84	50%
Total	7	325	487	76 μ	1.64 μ	43.95%

(Transfermarkt.co.uk, 2021)

Statistics After Benham 'Moneyball' model

League	No. Seasons	Games Played	Total Points	Points Per Season	Points Per Game	Win Percentage
Championship	7	322	510	72.57	1.57	44.4%
League 1	0	0	0	0	0	0
League 2	0	0	0	0	0	0
Total	7	322	510	72.57	1.57	44.4%

(Transfermarkt.co.uk, 2021)

First season back in the Premier League

The 21/22 represented a true test for Brentford as they were one of the lowest ranked teams in terms of player valuation. Sixteen teams had a higher squad valuation than Brentford's, the club managed to outperform four teams that had higher valuations than them. The average age of Brentford's team was also one of the lowest with an average age of 25.9, they ranked third out of twenty (Planet Football, 2021). The club's recruitment model of purchasing players from outside of the English game is also present when looking at the statistics as the club ranks first in foreign players with a total of 26 (Aditya Duse, 2021). The club has been able to recruit players from across Europe and allow them to develop in their unique B-team model. Illustrating the effectiveness of Brentford's recruitment model compared to more financially capable teams can be illustrated below.

Player Valuation Compared to League Final Position.

Rank*	Team*	Value £*	Final League Place**
1	Manchester City	892.89m	1
2	Chelsea	790.65m	3
3	Manchester United	778.73m	6
4	Liverpool	774.90m	2
5	Tottenham Hotspur	579.65m	4
6	Arsenal FC	491.40m	5
7	Leicester City	462.42m	8
8	Aston Villa	406.17m	14
9	Everton FC	363.38m	16
10	Wolves	329.94m	10
11	West Ham United	315.68m	7
12	Leeds United	238.50m	17
13	Newcastle United	226.66m	11
14	Southampton FC	222.08m	15
15	Brighton & Hove Albion	221.58m	9
16	Crystal Palace	215.58m	12
17	Brentford FC	191.03m	13
18	Norwich City	158.00m	20
19	Watford FC	133.74m	19
20	Burnley FC	112.50m	18

*(Gowler, 2022), **(Premierleague.com, 2022)

Data analysing and the links to Literature Reviewed

Brentford utilized a statistical model to analyse and discover undervalued players, the use of such model can be seen with the process of scrapping their youth academy in favour of a B-Team model. The process of scrapping the youth academy is a process that clubs do not adopt, and this decision can be linked to the use of a statistical model as the club identified that the use of their academy was made redundant due to the costs associated and the lack of reward. Reinventing their policy to finding undervalued players links back to “Moneyball: The Art of Winning an Unfair game,” as in the literature the author discusses how the Oakland Athletics organisation moves away from recruiting at the high school level and focusing on college players. The process of finding undervalued players is a vital part of what the Moneyball model is and finding the processes in which both teams (Brentford and Oakland) use for their sport is key to understanding how the model can cross the barriers.

The crossing of barriers leads to the second piece of literature discussed in the literature review. Analysing aspects of Brentford’s use of a statistical model and understanding how the club uses it, allows for an understanding of how “Is the *Moneyball* Approach Transferable to Complex Invasion Team Sports?” is correct in stating the approach is more applicable to sports such as baseball. Due to the fluidity of football and the statistics associated with the game it can be hard to truly measure the success of Brentford’s use of the model as statistics of attack and defence can be hard to analyse. As both attack and defence can be measure if various aspects as attack in football can correlate to defensive statistics as well i.e., a team could be dispossessed of the ball attacking and their defence must deal with the problem of losing the ball. That is just one such way in which makes analyse of the model harder compared to sports of baseball and American football, as both attacking and defensive statistics can be measured independently, whereas football they can be measure independently and separately. In “Is the *Moneyball* Approach Transferable to Complex Invasion Team Sports?” it discusses how teams with greater resources can gain more competitive advantages through the acquirement of players, this links to the analysis of Premier League clubs and their squad valuations. Manchester city had the highest squad valuation and finished top of the leagues demonstrating that “Is the *Moneyball* Approach Transferable to Complex Invasion Team Sports?” is right in assuming clubs with better capital are in a better position to be competitive as opposed to clubs with less capital. Whereas the clubs with the three lowest valuations were all relegated to the championship providing further backing of the claim presented by Gerard, B (2007). The data analysis and

findings can link to previous literature and can provide further basis of a Moneyball model and the effects it can have on the game of Football and how Brentford's model has comparable properties compared to the original concept of Moneyball that Oakland implemented.

Findings Conclusion

Brentford's use of the Moneyball model illustrates that there is a significant value that can be achieved from the use of statistical analysis to discover and replace talent while also showing how a club can grow organically through the sale of these undervalued players. Brentford has achieved success through statistical analysis since Matthew Benham has taken over the club as they have transcended the English football leagues, gained promotion, and sustained their place in the world's best league.

Before Benham's Model Brentford spent a total of seven seasons outside of the championship with one season in England's lowest professional tier. After Benham's model Brentford went from strength to strength as they spent seven seasons in the championship and gained promotion in 2020/21 season. Under Benham's model Brentford had better statistics when compared to seasons not under the model. The teams winning percentage under the model in a higher quality league was greater than the winning percentage in lower quality leagues (44.4% > 43.95%). Total Points gained in the championship is also greater under Benham's model, although points per season and points per game are greater before Benham's model however, these points were accumulated in lesser divisions when compared to the championship. Based on the numbers provided it can be determined that Benham's Moneyball model was successful for Brentford in the clubs' seasons after its implementation.

Brentford's effectiveness under Benham and a Moneyball approach is a testament to why a statistical based approach to the activities involved with running a football club can be a feasible approach to success. For a club like Brentford who is surrounded by professional football clubs in London, the development of the club is an impressive accomplishment. Brentford being able to adopt the statistical model with success proves the question presented in this paper to be true. As Brentford were able to adopt a statistical based approach to the running of the football club and garner success in multiple factors as highlighted with their promotion and internal growth through player sales.

Discussion/Conclusion

Interpretations of results

Based on the findings throughout this study it can be determined that under the stewardship of Matthew Benham and his Moneyball philosophy Brentford have gained success in both the operations of the club and the playing side. Benham and his model have taken Brentford from League one to the top English division. Through the adaption of their player recruitment Brentford have been able to implement a B-Team which has allowed the club to transform how underage recruitment works for English Professional clubs. The club outperformed performances before Benham implemented his model. Correlations between Oakland and Brentford have emerged throughout this study as both organisations share similar characteristics. These such characteristics allow Brentford to be measured against Oakland even though they do not participate in the same sport.

Similarities to literature

The similarities with regards to the literature discussed demonstrate comparable results, that a statistical approach to the clubs' operations and playing aspects provide a benefit to organisations that do not possess the same financial strengths as their counterparts. As Demonstrated with the Oakland Athletics and the organisation outperforming bigger spenders in the MLB. Brentford display similar characteristics and when compared to their opposition in the Premier League they outperformed teams with higher squad valuations.

Prove hypothesis, right?

The hypothesis that the Moneyball model is a feasible approach to success is proven to be right based on the findings in this study. Throughout the studies coverage of Brentford's financial performance and playing their success after the implementation Benham's model can be seen when compared to previous years not under Benham. Benham's model helped grow the club in terms of valuation and player acquisitions as the club became more focused on analytics success became more frequent.

Unexpected outcomes

Unexpected outcomes of this study include the similarities that both Oakland and Brentford share. They both represent organisations that are punching above their weight financially as both have and are outperforming their counterparts in their respective leagues.

Implications in study

This study contributes to literature discussed as determined Brentford's model of a statistical approach has been successful. Brentford demonstrated that the model brings success to organisations that do not have the financial strengths as others. The Oakland Athletics presented a similar style to of organisation to Brentford as they both do not have vast amounts of capital at their disposal. Both adopted statistical based approaches and have gained success beyond their means and have outperformed organisations in better financial standing. Both Brentford and Oakland based off their analysis have overhauled their recruitment and scouting practices to become more effective and efficient as seen with Brentford scrapping their youth academy and Oakland focusing on college players.

Limitations in the analysis of Data

The simplicity of this analysis is a limitation as this studying focuses solely on Brentford's adoption of a statistical based approach which lends to skewed data. The simplicity of this study is due to the limitation of time to conduct the appropriate research due to the timeline of this study it was not possible to thoroughly analyse more data sources and a broader range of data. This time limitation hampered the studies ability to fully uncover the minute details that made Brentford's Moneyball successful. Lack of first-hand data is another limitation present in this study as any data related to Brentford first hand such as the exact details of their model resulted in a large data base of second-hand data to interpret and try and uncover the details of Brentford's model.

Recommendations for future studies

This Study focuses on the effects of a Moneyball model on Brentford football club. However, other clubs have adopted the model in the hopes of replicating the successes that the Oakland Athletics had. To further develop whether the model is successful, future studies must examine the effects that the model has had on clubs besides Brentford. This can then help establish more solid evidence if the model is successful or if Brentford are an outlier. As examined, the model can be hard to implement in football and more analysis on teams that have adopted it can determine if it truly is a feasible model for success.

Future studies should also consider a more in-depth analysis of Brentford football club as time limitations did not allow for highly detailed analysis of Brentford's model regarding player performances in the model itself. This analysis in future studies can help illustrate whether the players in the model truly are improved by the model. This study focused on the recruitment aspect of the players but analysis of these players in the system

can help present clearer data on whether the model is successful in terms of recruitment and how well unpractised players fit into the system.

To combat the lack of First-hand data, future studies should look at trying to establish communication with members of staff involved in the process. This can be done through multiple facades such as email communications or if possible, interviews. Communication with stakeholders in the model can help establish what the model truly consists of. Communication with stakeholders such as fans of Brentford Football club could also allow for a better understanding on whether the model is viewed as successful from the supporters who attend matches and hold Brentford to different standards that any data collected in this study can represent.

Bibliography

Introduction

- Barra, A. (2002). *Clearing the bases: the greatest baseball debates of the last century*. New York: T. Dunne Books/St. Martin's Press.
- Barra, A. (2011). *The Many Problems With 'Moneyball.'* [online] The Atlantic. Available at: <https://www.theatlantic.com/entertainment/archive/2011/09/the-many-problems-with-moneyball/245769/> [Accessed 2 Jun. 2022].
- Brentfordfc.com. (2021). *Official website of Brentford Football Club - Our History*. [online] Available at: <https://www.brentfordfc.com/fans-and-community/our-history/> [Accessed 9 Nov. 2021].
- Dixon, M.J. and Coles, S.G. (1997). Modelling Association Football Scores and Inefficiencies in the Football Betting Market. *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, [online] 46(2), pp.265–280. doi:10.1111/1467-9876.00065.
- Foster, R. (2021). *History is against Brentford as they return to topflight after 74-year wait*. [online] the Guardian. Available at: <https://www.theguardian.com/football/2021/aug/12/brentford-history-74-year-wait-top-flight> [Accessed 10 Dec. 2021].
- Gerrard, B. (2007). Is the Moneyball Approach Transferable to Complex Invasion Team Sports? *International Journal of Sport Finance*, (2), pp.214–230.
- Harris, R. (2022). *TV revenue: EPL earns more from overseas rights for first time*. [online] ABC News. Available at: <https://abcnews.go.com/Sports/wireStory/tv-revenue-epl-earns-overseas-rights-1st-time> [Accessed 7 Jul. 2022].
- Laramore, J. (2016). *Moneyball is dead. Long live Moneyball!* [online] TechCrunch. Available at: <https://techcrunch.com/2016/04/02/moneyball-is-dead-long-live-moneyball/> [Accessed 30 Jun. 2022].
- Lewis, M. (2003). *Moneyball: The Art of Winning an Unfair Game*. New York: W.W. Norton.

Literature Review

Rowan (2021). *Champion Bets*. [online] Champion Bets. Available at: <https://www.championbets.com.au/mega-punters/matthew-benham-master-sports-odds/> [Accessed 10 Dec. 2021].

Sharma, H. (2017). *The Beautiful Game - Has Football Lost Its Soul and Become Just a Business?* [online] 90min.com. Available at: <https://www.90min.com/in/posts/5115213-the-beautiful-game-has-football-lost-its-soul-and-become-just-a-business> [Accessed 30 Jun. 2022].

Tomlinson, H. (2021). *Albion's Tony Bloom second most popular Premier League owner*. [online] The Argus. Available at: <https://www.theargus.co.uk/sport/19613288.albions-tony-bloom-second-popular-Premier-league-owner> [Accessed 10 Dec. 2021].

Tradematesports.com. (2021). *Matthew Benham: Brentford FC & Matchbook Owner, A.K.A. Moneyball in Football | 10 People Who Got Rich from Sports Betting*. [online] Available at: <https://www.tradematesports.com/blog/matthew-benham-brentford-fc-moneyball-matchbook-professional-sports-bettor> [Accessed 10 Dec. 2021].

University of Wisconsin Data Science Degree. (2016). *The Story of Moneyball Proves Importance of Big Data and Big Ideas*. [online] Available at: <https://datasciencedegree.wisconsin.edu/blog/moneyball-proves-importance-big-data-big-ideas>. [Accessed 30 Jun. 2022].

Methodology

Kaiser, M. (2019). *Quantitative methods*. [online] The Norwegian National Research Committees. Available at: <https://www.forskningsetikk.no/en/resources/the-research-ethics-library/methods/quantitative-methods> [Accessed 3 Jul. 2022].

Price, J.H. and Murnan, J. (2004). Research Limitations and the Necessity of Reporting Them. *American Journal of Health Education*, 35(2), pp.66–67.
doi:10.1080/19325037.2004.10603611.

Analysis and Findings

League Overview

Ackerson, K. (2022). *Football League Rankings*. [online] Globalfootballrankings.com. Available at: <https://www.globalfootballrankings.com/> [Accessed 5 Jul. 2022].

Premierleague.com. (2022). *Premier League Table, Form Guide & Season Archives*. [online] Available at: <https://www.premierleague.com/tables?co=1&se=418&ha=-1> [Accessed 5 Jul. 2022].

Player Valuation

FBref.com. (2018). *Kristoffer Ajer*. [online] Available at: <https://fbref.com/en/players/a8c0acb7/Kristoffer-Ajer> [Accessed 30 Jun. 2022].

FBref.com. (2018). *Pontus Jansson*. [online] Available at: <https://fbref.com/en/players/172e52d8/Pontus-Jansson#coverage> [Accessed 30 Jun. 2022].

Transfermarkt.co.uk. (2019). *Pontus Jansson - Stats 21/22 (Detailed view)*. [online] Available at: <https://www.transfermarkt.co.uk/pontus-jansson/leistungsdaten/spieler/125314/saison/2021/plus/1> [Accessed 30 Jun. 2022].

Transfermarkt.co.uk. (2021). *Kristoffer Ajer - Player profile 21/22*. [online] Available at: <https://www.transfermarkt.co.uk/kristoffer-ajer/profil/spieler/328658> [Accessed 30 Jun. 2022].

Whoscored.com. (2022). *Ivan Toney Football Statistics / WhoScored.com*. [online] Available at: <https://www.whoscored.com/Players/134240/Show/Ivan-Toney> [Accessed 30 Jun. 2022].

Brentford Compared to other championship clubs

Whoscored.com. (2022). *Championship Playoff Team Statistics / WhoScored.com*. [online] Available at: <https://www.whoscored.com/Regions/252/Tournaments/7/Seasons/8304/Stages/19661/Team-Statistics/England-Championship-2020-2021> [Accessed 5 Jul. 2022].

Growth Financially

Fordham, J. (2021). *Richest Premier League owners: Newcastle in top spot after takeover is completed ahead of Man City*, [online] Talksport. Available at:

<https://talksport.com/football/695017/Premier-league-richest-owners-newcastle-glazers-manchester-united-chelsea-abramovich-kroenke-net-worth/> [Accessed 24 Mar. 2022].

Long, D. (2021). *Ivan Toney: How the Brentford striker broke the Championship scoring record*. [online] Sky Sports. Available at:

<https://www.skysports.com/football/news/11095/12263086/ivan-tony-how-the-brentford-striker-broke-the-championship-scoring-record> [Accessed 24 Mar. 2022].

Transfermarkt.co.uk. (2020). *Ollie Watkins - Player profile 21/22*. [online] Available at:

<https://www.transfermarkt.co.uk/ollie-watkins/profil/spieler/324358> [Accessed 24 Mar. 2022].

Transfermarkt.co.uk. (2021). *Ivan Toney - Player profile 21/22*. [online] Available at:

<https://www.transfermarkt.co.uk/ivan-tony/profil/spieler/251664> [Accessed 24 Mar. 2022].

Transfermarkt.co.uk. (2021). *Premier League 21/22*. [online] Available at:

<https://www.transfermarkt.co.uk/Premier-league/startseite/wettbewerb/GB1> [Accessed 24 Mar. 2022].

Transfermarkt.co.uk. (2022). *Brentford FC - Detailed squad 12/13*. [online] Available at:

https://www.transfermarkt.co.uk/brentford-fc/kader/verein/1148/plus/0/galerie/0?saison_id=2012 [Accessed 24 Mar. 2022].

Transfermarkt.co.uk. (2022). *Brentford FC - Transfers 21/22*. [online] Available at:

https://www.transfermarkt.co.uk/brentford-fc/transfers/verein/1148/plus/?saison_id=2021&pos=&detailpos=&w_s= [Accessed 7 Jul. 2022].

Recruitment model

Cunningham, S. (2022). *Ninety-seven percent of Premier League academy players never play a minute in topflight, new analysis reveals*. [online] inews.co.uk. Available at:

<https://inews.co.uk/sport/football/Premier-league-academy-players-figures-appearances-numbers-1387302> [Accessed 29 May 2022].

Gowler, M. (2022). *Every Premier League club's current squad value highlights some serious failings*. [online] Dailystar.co.uk. Available at: <https://www.dailystar.co.uk/sport/football/Premier-league-current-squad-value-25941174> [Accessed 30 May 2022].

Harris, J. (2021). *Inside Brentford's B team, five years on – a gamble that continues to pay off*. [online] The Athletic. Available at: <https://theathletic.com/2831704/2021/09/18/inside-brentfords-b-team-five-years-on-a-gamble-that-continues-to-pay-off/> [Accessed 29 May 2022].

O'Brien, S. (2020). *How Brentford flipped the script and staged a data revolution to become England's smartest club...* [online] Talksport. Available at: <https://talksport.com/football/fa-cup/659667/brentford-data-revolution-england-smartest-club-championship-leicester-fa-cup/> [Accessed 30 May 2022].

Owen, D. (2019). *West Brom must regret Marcus Forss snub as Premier League links begin*. [online] HITC. Available at: <https://www.hitc.com/en-gb/2019/10/28/west-brom-must-regret-marcus-forss-snob-as-premier-league-links/> [Accessed 29 May 2022].

Prabhu Ram, S. (2020). *Analysing Brentford's recruitment strategy*. [online] Total Football Analysis Magazine. Available at: <https://totalfootballanalysis.com/article/analysing-brentfords-recruitment-strategy> [Accessed 29 May 2022].

Premierleague.com. (2022). *Premier League Table, Form Guide & Season Archives*. [online] Available at: <https://www.Premierleague.com/tables> [Accessed 30 May 2022].

Smith, A. (2021). *Football clubs London*. [online] P1. Available at: <https://www.p1travel.com/blog/football-clubs-london/> [Accessed 29 May 2022].

Statista. (2022). *Net EPL football club transfer fee spending 2022 | Statista*. [online] Available at: <https://www.statista.com/statistics/1202362/net-transfer-fee-spending-of-premier-league-football-clubs/> [Accessed 30 May 2022].

TheStatsZone.com. (2022). *Promotion and Relegation in English Football - The Stats Zone*. [online] Available at: <https://www.thestatszone.com/archive/promotion-and-relegation-in-english-football> [Accessed 30 May 2022].

Transferleague.co.uk (2019). *Premier League Club Net spend 5 Season - Transfer League*. [online] Transferleague.co.uk. Available at: <https://www.transferleague.co.uk/Premier-league-last-five-seasons/transfer-league-tables/Premier-league-table-last-five-seasons> [Accessed 30 May 2022].

Transfermarkt.co.uk. (2020). *Championship 20/21*. [online] Available at: https://www.transfermarkt.co.uk/championship/startseite/wettbewerb/GB2/plus/?saison_id=2020 [Accessed 29 May 2022].

Transfermarkt.co.uk. (2021). *Championship - Eternal table (Detailed view)*. [online] Available at: https://www.transfermarkt.co.uk/championship/ewigeTabelle/wettbewerb/GB2/saison_id_von/2014/saison_id_bis/2020/tabllenart/alle/plus/1 [Accessed 30 May 2022].

Wigmore, T. (2017). *Brentford's Moneyball Way to Beat Football Teams with Huge Budgets*. [online] Bleacher Report. Available at: <https://bleacherreport.com/articles/2718752-brentfords-moneyball-way-to-beat-football-teams-with-huge-budgets> [Accessed 29 May 2022].

Planet Football (2021). *Ranking the 20 Premier League clubs by average age of their squads*. [online] Planet Football. Available at: <https://www.planetfootball.com/quick-reads/ranking-the-20-Premier-league-clubs-by-average-age-of-their-squads/> [Accessed 30 May 2022].

Aditya Duse (2021). *5 Premier League teams with the most foreign players now*. [online] Sportskeeda.com. Available at: <https://www.sportskeeda.com/football/5-Premier-league-teams-foreign-players-moment-chelsea-wolves> [Accessed 30 May 2022].

SkySports. (2013). *Championship (Sky Sports)*. [online] Available at: <https://www.skysports.com/championship-table/2013> [Accessed 31 May 2022].