



What Makes a Striker Valuable? Strategic, Athletic, and Commercial Determinants in Modern Football

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Abstract. The financial valuation of professional football players is a critical component of the strategic and financial management of sports clubs. This paper focuses on strikers and attempts to provide a thorough review of the international literature on the factors affecting their transfer value. Strikers play a key role in achieving victory through their contribution to scoring, which makes their accurate valuation crucial. The study identifies and categorizes the factors of valuation into competitive, individual, and professional/commercial. Furthermore, it highlights the multi-factorial nature of value, as well as the dynamic influence of non-race factors such as popularity, commercial appeal, and social media presence. The finding that competitive performance, with an emphasis on goals, is the most important factor is supported by most research. However, there is an emerging shift towards more holistic models of valuation, where psychological, tactical, and extra-territorial dimensions are considered, demonstrating the need for multi-level approaches in modern football management.

Keywords: Financial valuation, Forwards, Players' market value, Soccer player performance, Sports economics, Sports management, Strikers.

1. INTRODUCTION

Properly assessing the financial value of each player is vital for a sports team for many reasons, affecting both short and long-term success (Cairns, Jennett & Sloane, 1986; Majewski & Rapacewicz, 2021). Of all the players, the leaders are the strikers, or wingers, or forwards or attacking players, due to their direct link between their position and scoring, their high market demand, and their significant economic and commercial value (Carmichael, Forrest & Simmons, 1999; He, Cachucho & Knobbe, 2015; Konopielko & Soltysiak, 2019; Thrane, 2024; Franceschi et al., 2024b). An accurate valuation of the financial value of each player allows the team to (a) make sound *Strategic Transfer Decisions*, (b) make proper salary management, (c) be sustainable by implementing sound financial plans, (d) grow by making realistic evaluations of player performance, and (e) conduct successful negotiations with sponsors and partners. Indicatively, we note that a proper evaluation of each player's market value helps to:

- *Buying Players:* Accurate valuation helps the team determine how much they are willing to pay for a player. Excessive payment can lead to financial pressure and limit future investments. Similarly, undervaluing a player can lead to losing him to competitors (Lev, 2004; Leifheit & Follert, 2021; Poli, Besson & Ravenel, 2022) – Strategic Transcription Decisions.
- *Selling Players:* Proper valuation ensures that the team receives the maximum financial return when selling a player, strengthening its finances and providing funds for future transfers or investments (Lev, 2004; Leifheit & Follert, 2021; Poli, Besson & Ravenel, 2022) – Strategic Transcription Decisions.
- *Lending Players:* Determines appropriate loan fees and purchase options (Lev, 2004; Leifheit & Follert, 2021; Poli, Besson & Ravenel, 2022; Al Hazmi, 2024) – Strategic Transcription Decisions.
- Knowing the value of each player helps to allocate the payroll in a way that reflects each player's contribution to the team. This can help to avoid discontent between players and maintain a sustainable economic model (Oprean & Oprisor, 2014; Leifheit & Follert, 2021) – Payroll Management.
- It allows the team to make informed decisions about contract renewals and salary increases (Morrow, 1997; Leifheit & Follert, 2021) – Payroll Management.
- Player valuation is an important part of the team's total assets. Proper valuation is essential for preparing accurate financial statements, attracting investors, and ensuring long-term financial sustainability (Oprean & Oprisor, 2014; Leifheit & Follert, 2021; Franceschi et al., 2024a; Yalçinkaya & Işık, 2024) – Financial Planning and Sustainability.
- It helps to evaluate the performance of investments in players and to make decisions about future investments (Gerrard, 2001; Lev, 2004; Herm, Callsen-Bracker & Kreis, 2014; He, Cachucho & Knobbe, 2015) – Economic Planning and Sustainability.
- Tracking the change in a player's value over time can provide insights into his performance, development, and the effectiveness of training programs (Rosen, 1981; Yalçinkaya & Işık, 2024) – Performance and Development Evaluation.
- It can help in identifying players with high potential and making decisions about their further development (Rosen, 1981), – Performance and Development Evaluation.

- The overall value of a team's roster, which is influenced by the value of its players, can affect its ability to negotiate advantageous sponsorship and partnership deals (Morrow, 1997; Gerrard, 2001; Lev, 2004; Herm, Callsen-Bracker & Kreis, 2014; He, Cachucho & Knobbe, 2015) – Negotiations with Sponsors and Partners

Strikers are considered the most “valuable” players in a football team for specific reasons, such as:

- *Direct Impact on the Result:* Strikers are the ones who score the goals, and goals are the deciding factor in winning a football match. Their ability to create and capitalize on goal-scoring opportunities has a direct impact on the team's performance and ranking (He, Cachucho & Knobbe, 2015; Liu, 2024).
- *High Demand and Limited Supply:* Talented strikers who score consistently are rare and are in high demand in the global transfer market. This means that properly valuing them is critical to maximizing their economic value (Carmichael, Forrest & Simmons, 1999).
- *Greater Transcript Values:* Because of their direct effect on scoring, strikers are usually worth more than players in other positions in transfers. Proper valuation helps the team to set a realistic sale price and avoid selling a valuable player at a low price (Konopielko & Soltysiak, 2019; Franceschi et al., 2024b).
- *Commercial Value and Marketing:* Strikers who are effective and spectacular often become the “stars” of the team, increasing its commercial value and attractiveness to fans and sponsors. Proper valuation takes this aspect into account (Carmichael, Forrest & Simmons, 1999).
- *Devaluation risk:* Underpricing a striker can lead to losing him at a low price, while overvaluation can deter potential buyers and prevent the team from recovering investment (Lev, 2004; Poli, Besson & Ravenel, 2022).

2. IMPORTANCE OF DETERMINING VALUATION FACTORS

Transfer fees for footballers are increasing rapidly every year. To prevent clubs from spending more than they earn, UEFA has introduced *Financial Fair Play* regulations, reducing the risk of financial problems that could threaten their long-term viability. Professional football organizations are required to maintain a balance between revenue and expenditure to ensure their financial stability (UEFA, 2024).

The pursuit of professional football organizations to maximize their competitive success leads them to the need to acquire the right players (Kedar-Levy & Bar-Eli, 2008), and consequently, the issue of the players' labor market is particularly important in the sport economics literature (Majewski, 2016). As the dominant source of revenue for football clubs comes from the ownership of players' rights, there is a strong emphasis on the selection of players with highly competitive performance. The player's rights refer to the so-called performance rights, which are related to his playing participation in the team. They are linked to the player's participation and contribution to match activities within the framework of the cooperation contract. In this way, the sports organization can increase its profit by exploiting its performance, its brand name, its image, and the reputation it enjoys. This is exactly what the financial term *market value* describes. The player plays for the team that pays him (Majewski, 2016; Franceschi et al., 2024a). The better players teams acquire, the greater the chances of achieving competitive success as well as financial health. From the players' perspective, their action is structured between two levels. On the one hand, in their orientation towards the benefit of the team, through their cooperation with their teammates and the coach, actively contributing to its success, and on the other hand, acting selfishly and competitively, as they are called upon to stand out from their teammates to distinguish themselves individually. This ‘selfish’ behavior seems logical, as it enhances the development of their performance (Richau et al., 2019). To acquire these players, money must be spent, and the decision to acquire them often involves risk for the owners of the sports organization. This risk arises from the fact that the acquisition of players is considered an investment that will yield uncertain results, whether they are referred to at the competitive level or financially. In professional sports, uncertainty and risk regarding the outcome of a result can be approached at three basic levels of analysis: the short-term, the medium-term, and the long-term (Sloane, 2006). In the short term, uncertainty concerns the outcome of a match, while in the medium term, it is related to the team's progress within the season, based on the number of teams vying for the title, or based on the duration of a team's participation in this claim. In the long term, uncertainty relates to the extent to which a league appears competitive. The phenomenon is also described as dynamic competitive equilibrium (Buzzacchi, Szymanski & Valletti, 2003). At the same time, uncertainty is made more pronounced by the fact that sporting careers are relatively short and characterized by high risk (Rosen & Sanderson, 2001). Teams are required to make strategic investments in human capital, mainly through player transfers, with the aim of future competitive and financial enhancement.

Professional sports organizations follow many different strategies. One of them is the recognition and development of the talent of young players. However, it is argued that investing in talent does not yield positive results when the primary goal of the club is to maximize profit (Rosen, 1981; Di Minin et al., 2014; Kessene, 2015; Gavião et al., 2020). Another strategy is to sign long-term contracts, which is considered beneficial for both the players and the sports organization. Long-term contracting allows, on the part of the organization to exploit the player, while increasing its revenues and reducing the risk of unsuccessful investment, and on the part of the player, encourages his efficiency (Feess, Frick & Muehlheusser, 2004; Buraimo et al, 2015). Another strategy is

the acquisition of high-profile players (superstars), a strategy that certainly benefits ticket revenues and commercial sales (Lucifora & Simmons, 2003). However, there are also cases of players who, despite their significant contribution to the playing field, do not enjoy the same recognition or the corresponding high earnings, so that they remain undervalued concerning their actual playing value (Tunaru & Viney, 2010).

To make the best possible decision, depending on the needs of each organization and its capabilities, it will be necessary to determine the value and performance of the players. This strengthens the negotiating power of the players themselves, the managers, and the teams, but also determines the future value and potential of the players. For this reason, it is necessary to identify and determine which factors contribute to the maximum technical, tactical, psychological, and competitive improvement of a player and, by extension, to the competitive success of the entire organization. Hughes et al. (2012) grouped the most important Key Performance Indicators (KPIs) for each position played by each player according to reports from experienced coaches. These indicators are listed in Table 1.

The breakdown of the KPIs highlights the varying demands of each position, underlining the importance of specialization and overall physical, technical, tactical, and psychological competence in the modern football environment. 7 sets of KPIs have been defined for each of the above positions, grouped into 5 categories: Physiological, Tactical, Technical-Defense, Technical-Attack, and Psychological. Excluding goalkeepers, the indicators for the other players who play were similar, with differences only in the order of priority. This allowed the identification of a 'generic' set of skills required for players in football (Hughes et al., 2012).

Looking at football positioning reveals several important findings about the multi-dimensional role that each player plays on the pitch. Psychological indicators such as Concentration, Motivation, Attitude, and Body language are common and important for all players, regardless of their position. This fact highlights the crucial role of psychological readiness in modern football and the importance of maintaining a positive and focused attitude during a match. We note that physiological factors such as speed and stamina are required by almost all football positions, testifying to the need to have a high level of fitness in the modern, demanding, and fast-paced game. In addition, in positions such as Wide Midfield (WM), Strikers and Attacking Midfield (AM), and Holding Midfield (HM), there is a strong requirement for power, strength, and agility elements that highlight and facilitate effective participation in both defensive and offensive actions. The Goalkeeper (GK) has specific requirements not found in the other positions. The emphasis on indicators such as reaction time, coordination, shot-stopping ability, first pass, and foot and hand technique (Reaction Time, Coordination, Shot Stopping, Distribution) suggests the uniqueness of the goalkeeper role, which combines defensive readiness with phase initiation skills. From a tactical point of view, the concepts of Organization, Communication, and Vision of the game are recorded as common denominators for all positions. This observation confirms that tactical perception and teamwork are key pillars for the effective functioning of a team, regardless of the role. Finally, it is worth noting the multi-dimensional nature of the outfield positions, both full-backs and wingers. These players are called upon to perform tasks both offensively and defensively, such as centering, marking, pressing, running with the ball, and supporting the play. This observation captures the critical role of lateral players in linking defense and offense.

To make more correct and objective decisions to acquire players, their future performance must be considered with the risk, as mentioned, that the investment is uncertain, due to factors such as injuries, psychological factors, and their uncertain cohesion with the rest of the team. In many cases, players are either underestimated or overestimated (Kirschstein & Liebscher, 2018; Hill et al., 2020; Franceschi et al., 2024a; Follert & Gleißner, 2024). Illustrative cases are the effect of age at birth on over- or underestimation of talent and the reputation of the club, which can lead to unexplained overestimation of its players, who, despite their actual performance, are valued differently. Even the nationality of the owner of the club or the phenomenon of 'monopsony'. The case of the owner (Fort & Quirk, 2004; Smith & Stewart, 2010; Follert & Gleißner, 2024; Lipeles, 2024) refers to the fact that, in contrast to the traditional business orientation, where profitability dominates, many foreign investors entering the professional sports sector prioritize competitive success and distinction in domestic and international competitions. Winning titles and enhancing the competitiveness of the team are their main motives, even if this implies limited or even non-existent financial returns. As a result, they invest significant funds, mainly to attract high-level athletes by inflating their value on the market. The second case, the phenomenon of 'monopsony', is an issue related to the buying and selling of players or the professional relationship between players and clubs (Garcia-del-Barrio & Pujol, 2007). In particular, the major European clubs act as the only buyers of talent from developing countries, with the result that players belonging to them, despite their competitive contribution, have limited alternatives, which enhances the bargaining power of clubs and constitutes a monopsony situation. This phenomenon can lead to lower salaries for players, limited mobility, and an underestimation of their value.

Table 1: Key Performance Indicators for football players.

Indicators	Goalkeepers	Full Backs	Centre Backs	Holding Midfield	Attacking Midfield	Wide Midfield	Strikers
Physiological	<ol style="list-style-type: none"> 1. Height 2. Strength 3. Power 4. Agility 5. Coordination 6. Reaction Time 	<ol style="list-style-type: none"> 1. Speed 2. Power 3. Stamina 	<ol style="list-style-type: none"> 1. Height 2. Strength 3. Speed 4. Power 5. Stamina 	<ol style="list-style-type: none"> 1. Stamina 2. Speed 3. Power 4. Strength 	<ol style="list-style-type: none"> 1. Stamina 2. Speed 3. Power 4. Strength 	<ol style="list-style-type: none"> 1. Stamina 2. Speed 3. Power 4. Strength 	<ol style="list-style-type: none"> 1. Speed 2. Agility 3. Power 4. Strength 5. Stamina
Tactical	<ol style="list-style-type: none"> 1. Vision 2. Organisation 3. Communication 4. Distribution 	<ol style="list-style-type: none"> 1. Support play 2. When to cross 3. Passing 4. Running off the ball 5. Forcing offside 	<ol style="list-style-type: none"> 1. Vision 2. Organisation 3. Communication 4. Passing 	<ol style="list-style-type: none"> 1. Vision 2. Organisation 3. Communication 	<ol style="list-style-type: none"> 1. Vision 2. Organisation 3. Communication 	<ol style="list-style-type: none"> 1. Vision 2. Organisation 3. Communication 	<ol style="list-style-type: none"> 1. Vision-awareness of space 2. Anticipation 3. Organisation 4. Communication
Technical – Def	<ol style="list-style-type: none"> 1. Shot stopping 2. Coordination 3. Recovery speed 4. Save 5. Punch 	<ol style="list-style-type: none"> 1. Tackle 2. Pressing opposition 3. Interception-anticipation 4. Clearance 5. Defensive header 	<ol style="list-style-type: none"> 1. Tackle 2. Defensive header 3. Pressing opposition 4. Interception-anticipation 5. Clearance 	<ol style="list-style-type: none"> 1. Tackle 2. Pressing opposition 3. Interception-anticipation 4. Clearance 	<ol style="list-style-type: none"> 1. Tackle 2. Pressing opposition 3. Interception-anticipation 4. Clearance 	<ol style="list-style-type: none"> 1. Tackle 2. Pressing opposition 3. Cover full-back 4. Interception-anticipation 5. Heading 	<ol style="list-style-type: none"> 1. Tackle 2. Pressing opposition 3. Interception-anticipation 4. Clearance
Technical – Att	<ol style="list-style-type: none"> 1. Passing 2. Throw 3. Ball control with feet 4. Kick 5. Tackle 	<ol style="list-style-type: none"> 1. Tackle 2. Interception-anticipation 3. Dribbling 4. Running with the ball 5. Clearance 6. Defensive header 	<ol style="list-style-type: none"> 1. Passing 2. Heading 3. Running with the ball 4. Support play 5. Dribbling 6. Crossing 7. Shooting 	<ol style="list-style-type: none"> 1. Passing 2. Running with the ball 3. Dribbling 4. Support play 5. Crossing 6. Shooting 7. Heading 	<ol style="list-style-type: none"> 1. Passing 2. Running with the ball 3. Dribbling 4. Support play 5. Crossing 6. Shooting 7. Heading 	<ol style="list-style-type: none"> 1. Passing 2. Running with the ball 3. Dribbling 4. Support play 5. Crossing 6. Shooting 7. Heading 	<ol style="list-style-type: none"> 1. Shooting 2. Heading 3. Reception 4. Dribbling 5. Passing 6. Running with the ball 7. Support play 8. Crossing
Psychological	<ol style="list-style-type: none"> 1. Concentration 2. Motivation 3. Attitude 4. Body language 	<ol style="list-style-type: none"> 1. Concentration 2. Motivation 3. Attitude 4. Body language 	<ol style="list-style-type: none"> 1. Concentration 2. Motivation 3. Attitude 4. Body language 	<ol style="list-style-type: none"> 1. Concentration 2. Motivation 3. Attitude 4. Body language 	<ol style="list-style-type: none"> 1. Concentration 2. Motivation 3. Attitude 4. Body language 	<ol style="list-style-type: none"> 1. Concentration 2. Motivation 3. Attitude 4. Body language 	<ol style="list-style-type: none"> 1. Concentration 2. Motivation 3. Attitude 4. Body language

The importance and complexity of player evaluation is evident from the long-standing large number of studies that have studied/researched it, such as Rottenberg, 1956; Scully, 1974; Rosen, 1981; Cairns, Jenett & Sloane, 1986; Dobson & Gerrard, 1999; Rowbottom, 2002; Di Minin et al., 2014; Kesenne, 2015; Ruijg & van Ophem, 2015; Majewski, 2016; Müller, Simons & Weinmann, 2017; Nsolo, Lambrix, & Carlsson, 2019; Richau et al., 2019; Poza, 2020; Poli, Besson & Ravenel, 2022; Thrane, 2024; Franceschi et al., 2024a; Hill, Skinner & Grosman, 2025 et al.

3. VALUATION FACTORS

The concept of value is subjective, characterized by asymmetry and complexity, leading to different paths that lead to the same solution (Korzynski & Paniagua, 2016). Value is derived from the marginal utility that the subject expects from the product (Follert & Gleißner, 2024; Franceschi et al, 2024a). In the case of athletes, value can be determined by both competitive and psychological, as well as financial factors (Dobson, Gerrard & Howe, 2000; Harwood, Barker & Anderson, 2015). When financial factors are used, the value of the player is assessed through the time-based payment stream, taking into account elements such as the player's future contribution to competitive success, his potential for commercialization, sponsorships he may attract, ticket sales, salary costs, etc. Moreover, when a sports organization has competitive success, the player who contributes to it can increase both ticket sales and sales of the organization's merchandise (Speight & Thomas, 1997; Leifheit & Follert, 2021).

However, the financial factors associated with an organization can affect the amounts spent on a player, but cannot affect the player's value (Hill, Skinner & Grosman, 2025). Such factors can be an organization's revenue from ticket and merchandise sales, television rights, and expenses (costs) such as player salaries, depreciation of investments, etc. (Follert & Gleißner, 2024).

In terms of psychological factors, five skills or behaviors have been highlighted that need to be developed from an early age, and if a player possesses them, then they can affect his or her competitive performance. These are commitments, as they relate to the effort that must be put into meeting goals, and communication with the rest of the team, as it relates to accepting and sharing information. Concentration acts as a key factor so that the player, at the right time, can purposefully use his skills without being distracted. Control and confidence are two other important elements that differentiate the player. Control is the ability of the player to be able to have his thoughts in a logical continuum, and at the time of need, to be able to react, managing his behavior in the best possible way. Confidence is the element that arises automatically, developing all of the above, and offers the player the ability to take risks for new things (Harwood, Barker & Anderson, 2015).

A lot of research has focused on actions related to the game, such as the dynamics of the game, passing, shooting, the prediction of transfers, the assessment of the probability of scoring a goal based on the game situation, as well as the analysis of general strategies. At the same time, other studies focus on predicting the outcome of a match, either by estimating the probability of scoring for specific opportunities, by correlating the results with the characteristics of the players of the two teams, or by using team scoring systems. Fundamentally, performance studies use historical data to predict future performance (Richau et al., 2019). In the literature, a plethora of studies are documented that focus on the analysis and identification of relevant factors. In this context, some of the most important studies are presented for illustrative purposes (Carmichael & Thomas, 1993; Dobson & Gerrard, 1999; Garcia-del Barrio & Pujol, 2007; Frick, 2011; Preston, 2011; Wicker et al, 2013; Herm Callsen-Bracker & Kreis, 2014; Ruijg & van Ophem, 2015; Garcia-del Barrio & Pujol, 2016; Majewski, 2016; Korzynski & Paniagua, 2016; Müller, Simons & Weinmann, 2017; Velema, 2018; Nsolo, Lambrix, & Carlsson, 2019; Rodriguez, Hassan & Coad, 2019; Richau et al. . 2019; Felipe et al., 2020; Poza, 2020; Coates & Parshakov, 2021; Rubio Martín et al., 2021; Poli, Besson & Ravenel, 2022; McHale & Holmes, 2023; Gyimesi & Kehl, 2021; Franceschi et al. 2024a; Cai, 2024; Hill, Skinner & Grosman, 2025).

The valuation of a player's value depends on several factors, which can be divided into quantitative and qualitative. These factors can be grouped into three main categories: the player's characteristics, his competitive performance, and the publicity he enjoys (Müller, Simons & Weinmann, 2017; Richau et al., 2019). In terms of individual characteristics, elements such as age, height, position on the pitch, preferred foot, and nationality are considered. The performance category includes individual skills, participation, and productivity statistics (e.g., playing time, goals, assists, fouls), physical fitness, psychological factors, injuries, and interaction with other players. Finally, in terms of publicity, press mentions and the player's online presence are examined (Tavana et al., 2013).

Particular importance is given to match performance, which is directly related to transfer fees. Productivity, such as the number of goals and assists, has been extensively researched (Majewski, 2016; Dobson & Gerrard, 1999; Richau et al., 2019; Poza, 2020; Franceschi et al., 2024a; Cai, 2024; Liu, 2024). Majewski, in particular, suggests categorizing these elements into three groups: human capital (age, participation, playing time, baseline time, substitutions), productivity (goals, assists, cards), and organizational factors (total playing time, team position, national ranking). The effect of each factor varies according to the position of the player. For example, goals and assists are crucial for strikers but are not evaluated in the same way for goalkeepers (He, Cachucho & Knobbe, 2015; Coluccia et al., 2018; Franceschi et al., 2024a). In addition, factors such as the ability to use both

feet (footedness) are positively evaluated as they are related to a player's flexibility and effectiveness on the field (Bryson, Frick & Simmons, 2013; Herm et al., 2014; Ruijg & van Ophem, 2015).

Physical fitness is another critical factor. Modern football requires a high level of aerobic and anaerobic fitness, speed, muscular strength, and endurance. Players with good physical fitness are more efficient and less prone to injuries, which enhances their transfer value (Reilly, Bangsbo & Franks, 2000).

The literature converges on the identification of common critical factors such as age, playing position, international experience, number of goals, media presence, and professional status (Carmichael, Forrest & Simmons, 1999; Dobson & Gerrard, 1999; Ruijg & van Ophem, 2015; Majewski, 2016; Garcia-del-Barrio & Pujol, 2021). Felipe et al. (2020) point out that highly ranked teams in the UEFA Champions League offer higher salaries and sign contracts with internationally renowned players. Conversely, a team's drop in FIFA ranking harms players' market value. Moreover, contract duration is an important factor as it reflects the stability and strategic investment of the club in the player (Buraimo et al., 2015; Poli, Besson & Ravenel, 2022). Poli, Besson & Ravenel (2022) propose an estimation model that takes into account factors related to the player (age, position, contract duration), the club (level of previous teams), and the transfer period.

Franceschi et al. (2024b) add even more dimensions, classifying the factors into six groups: club characteristics, financial data (such as revenues and profits), participation in competitions, performance (goals, assists, playing time, penalties), player characteristics (age, ethnicity, career), and popularity (social media and press presence). Age, participation, goals, assists, and national team presence are among the most frequently reported factors. Finally, research by Rodríguez, Hassan & Coad (2019) notes that participation in national teams, especially for under-21s, number of appearances in official matches, club performance, reputation, and international recognition are also among the most important value-enhancing factors.

The same researchers indicate that age positively influences value up to around 26 years, while later, the variable 'age squared' indicates a decline due to increased risks. Through age, not only is the experience and potential of the player determined, but also his physical condition, growth potential, and the length of time he is likely to play at a high level are assessed (Konopielko & Sołtysiak, 2019). In research on the effect of age on developmental categories, the difference and variation of value depending on the quarter of birth is emphasized. Players who are born in the 1st quarter of the year (January-March) show higher value in the U18 category, while their value decreases in the older age categories U21, U22, and U23. The opposite is true for players born in the 4th quarter of the year (October-December). Although they initially show a lower value, they tend to show an increasing trend over time, both in terms of performance and market value. That is, 1st quarter players have advantages of physical, cognitive development, and maturity in the early stages, which is balanced or reversed in favor of players who were born in the 4th quarter (Romann et al., 2021). This is confirmed by a more recent study (Gyimesi & Kehl, 2021), which suggests that players born early in the year (early) tend to have higher value in the market, especially at younger ages, and as they get older, the gap progressively narrows.

In a survey conducted in Poland's top football league, the "Ekstraklasa", it was concluded that most players requested as transfers in the major European competitions were aged 21-24, and most were strikers. However, the position of the players was not found to influence the valuation, as the destination team does not seem to have influenced the valuation (Carmichael & Thomas, 1993; Metelski, 2021).

Regarding player mobility between teams, it also appears to be an indicator of how these players were treated and valued by previous partnerships, which is closely observed by team managers. How, when, and the role a player acquires in his new team are elements that affect his value. However, attention must also be paid to the way a player leaves the team, especially if he moves to a lower level, as this is something that negatively affects both the players themselves and the departing team. This is because the constant departure of players of diminished value from the same team damages its reputation. So, in a general context, the more moves to higher-level teams increase value, while repeated moves to lower-level teams decrease value. Less harmful moves to a lower level are when the player takes on upgraded duties and roles in his new team, for example, when a young player moves to a lower-level team for some time to gain experience (Velema, 2018).

Another factor that is investigated is the "effort" that a player puts in and is examined from a different perspective. In their studies, Frick (2007), Bryson, Frick & Simmons (2013), and Müller, Simons & Weinmann (2017) do not directly refer to the effort factor, but it is reflected through measures of match performance, such as covering distances, realizing speed, and also the assessment of the commitment and hard work shown by the players. The greater the distances a player appears to cover and the more he can improve his speed ability, the more his effort emerges. In their study, Wicker et al. (2013) refer to the "effort factor" more directly and even state that less talented players, to fill the competitive gap that arises between them and a talented player, invest in this factor to improve their market value. However, the results showed that "effort" does not have a positive impact on market value. This is explained by the fact that increased effort does not improve performance. Effort does not replace talent (Wicker et al., 2013).

In terms of talent, Lazear & Shaw (2007) raised the concern of whether pay differs based on talent. Sports clubs often choose to invest in talented and high-performing players, offering them significantly higher fees to maintain a competitive advantage. However, an overemphasis on individual ability can lead to imbalances and reduce the climate of equality and cooperation within the team. In a team environment, however, such as football,

relative equality in pay can enhance a sense of fairness, cooperation, and ultimately, overall team performance. Therefore, the choice to determine the value and rewards of talented players or those who put in the effort depends on the philosophy of the team and the extent to which success depends on teamwork. They concluded that targeted effort could help improve player performance, which implies better performance and higher financial rewards. For their part, Bryson, Frick & Simmons (2013) state that the use of both feet is among the talents and indeed is something that coaches are looking for, particularly in attacking players. In addition, it has also been examined that the ability to use both feet is also associated with developed cognitive skills compared to players who use one foot. The latter are likely to be better able to read the game and the conditions that are created and are therefore recognized as a talent that offers stronger negotiation capabilities. Ruijg & van Ophem (2015), due to the small presence of this factor, did not find a positive correlation, and Franceschi et al. (2024b) found this factor important, in limited studies, but always having a positive influence on player merit.

Jordet, Bloomfield & Heijmerikx (2013) investigated the skill of “field vision”, i.e., the head and body movements that lead to better perception of game conditions. Although it is a skill that has not been given much attention, they found that the difference in performance between players who possess it or not is evident and improves their performance. Recent studies highlight the importance of match vision in improving players' performance and a better understanding of the pitch and their teammates (Knöllner et al., 2022; Aksum et al., 2021).

Another non-competitive factor, which was examined to determine whether it has a decisive effect on both the value of players and their selection by clubs, is the dynamics they display off the field of play, and especially in social networks. Through these, it is easier to capture the influence they have through their followers and the interaction they generate. Although there is no evidence that they directly influence player value (Konopielko & Soltysiak, 2019), they seem to have an impact, indirectly, on club revenues. Acquiring a player with a strong marketing profile can significantly boost ticket and merchandise sales and, more generally, improve the social presence of the club. A typical example is the transfer of Cristiano Ronaldo to Juventus in 2018. Within 24 hours of its announcement, the Italian club sold more than 500,000 jerseys with his name on them, while the club's social media accounts recorded a huge increase in followers (over 1.5 million) and interaction. Although his transfer cost around €100 million, the player's commercial appeal contributed significantly to the club's revenue growth on multiple levels (McCarthy, 2018).

In contrast, in similar studies, this dynamic is captured and shown to positively affect the economic value of a footballer and depends mainly on the “media power” (media power as mentioned), which is derived from his popularity and reputation. It is estimated that it accounts for around 70% of a player's transfer price. Popularity is determined by various factors, which also shape the player's brand image. Examples include his attractive or eccentric appearance, his media influence, and his temperament. Furthermore, it is also determined by the number of websites dedicated to the player, which is determined by the number of fans and his commercial appeal. Players with more followers in social networks can generate additional revenue through sales of merchandise and other commercial activities. Similarly, reputation can be determined by the amount of news about him in a certain period (Adler, 1985, 2006; Garcia-del-Barrio & Pujol, 2007; Herm, Callsen-Bracker & Kreis, 2014; Hofmann et al., 2021; Užík, Warias & Glova, 2022; García-del-Barrio & Pujol, 2022).

Popularity and reputation, therefore, include a variety of factors that influence the value of a player. One among them is the “wisdom of the crowd” (crowd contribution). This contribution comes from people who have expertise in football, who may be coaches, scouts, managers, journalists, etc., and evaluate players, creating a phenomenon called “crowdsourcing”. The most important example of “crowdsourcing” is the website “Transfermarkt”, which determines the market value of players, based on the evaluations of registered users, and appears as a reliable indicator, which is related to their performance in the game, but is also used as a good predictor of the actual value of players (Herm, Callsen-Bracker & Kreis, 2014). The growing research interest in the operation of online valuation platforms, such as Transfermarkt, suggests that the discussions around the market value of footballers may, to some extent, predict or reflect their true financial value. While these estimates can be useful and fairly accurate indicators, they cannot fully replace official contracts or actual transfer agreements, as they contain an inevitable margin of error. (Bryson et al., 2013; Herm, Callsen-Bracker & Kreis, 2014; Prockl & Frick, 2018; Detzen D. & Löhlein L., 2024). Although platform estimates are useful, they are biased and do not always accurately capture the actual post-market value of players. This needs to be taken into account in both academic research and contract negotiations (Felipe et al. 2020).

Continuing, the player's country of origin is an important factor, as when the team that acquires him comes from the same country, his transfer value tends to be lower. Interestingly, the teams from which the players come are also of interest, as big clubs pay higher prices for players they acquire from smaller clubs, while when they sell players to smaller clubs, the price is lower. In addition, the international ranking of the national team of the player's home country also plays an important role in determining the value of a player. In particular, players from countries with national teams that are distinguished and play in world competitions tend to be valued higher on the market, which suggests a correlation between international standing and market value. Finally, the period in which the transfer takes place is important, with prices in the winter transfer season usually being lower than in the summer season. Thus, we see that several studies highlight the importance of integrating both

commercial appeals, popularity, and reputation as well as competitive performance for a comprehensive and accurate valuation of the value of football players (Garcia-del-Barrio & Pujol, 2007, 2016; Užík, Warias & Glova, 2022; Cohen & Risk, 2025).

4. VALUATION FACTORS FOR STRIKERS

Although research approaches differ, there is a broad consensus that the valuation of a football player is based on both individual characteristics, such as age and height, and on indicators of match performance, such as goals and assists (Majewski 2016; Liu, 2024; Franceschi et al. 2024b). However, it has been found that the factors affecting a player's value are not uniform across positions but vary depending on the role played on the pitch. This is highlighted in several studies, where it is pointed out that the critical factors for strikers differ from those for defenders or goalkeepers (He, Cachucho & Knobbe, 2015; Coluccia et al., 2018; Richau et al., 2019).

Soccer is a low-scoring sport, which reinforces the importance of players who can score (Franceschi et al. 2024b). Strikers, due to their direct involvement in scoring goals, are more prominent and have an increased chance of transcription, especially when they combine this ability with experience (Carmichael, Forrest & Simmons, 1999). Their contribution to match results increases their reputation and market value, and as a result, they are generally considered more valuable, despite being numerically outnumbered by players in other positions (He, Cachucho & Knobbe, 2015).

The positional variation in valuation parameters is characterized by Richau et al. (2019) as "idiosyncrasy". For strikers, scoring remains the main criterion, while for other positions, such as defenders, age plays a primary role. The importance of this differentiation is confirmed by Bryson, Frick & Simmons (2013), who identify differentiated factors by position. The striker is the focal point of the game, as he is responsible for scoring and, consequently, for the success of the team. Therefore, strikers have, on average, a higher transfer value than players in other positions (Konopielko & Sołtysiak, 2019).

Over time, the demands on strikers have changed. Previously, their value was mainly based on their ability to score. Nowadays, they are also evaluated based on other skills, such as pressure on the opponent, ball handling, accuracy in passing, and ability to dribble (Poza, 2020). Thus, their assessment is derived from a broader set of factors, relating to both offensive and defensive tasks, and highlights the importance of tactical intelligence.

The strategic use of strikers by teams is also noteworthy. They are often called upon to change the outcome of a match in a short space of time, such as in the last 20 minutes. This critical involvement enhances their evaluation, as their positive contribution can directly influence the outcome (Richau et al. 2019). In contrast, defenders are evaluated more harshly, as a mistake can negatively affect the match, while strikers have a higher "tolerance" for mistakes.

Poza (2020) proposes three main categories of factors that influence the market value of strikers: competitive factors (such as goals, assists, passes, speed), individual skills (such as competitiveness, discipline, leadership), and professional or commercial factors (such as contract duration, the team buying/selling, and the player's publicity). Figures 1 to 5 provide a visual presentation of Poza's (2020) findings.

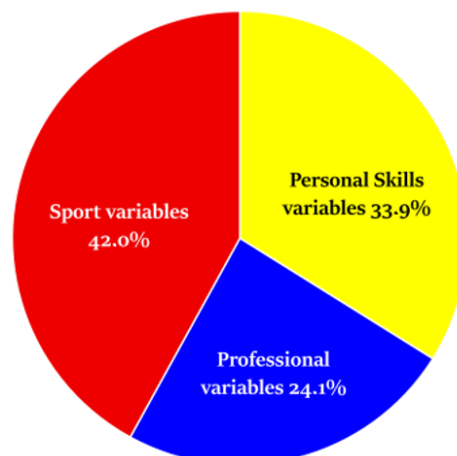


Figure 1: Key Categories.



Figure 2: Personal Skills Variables.

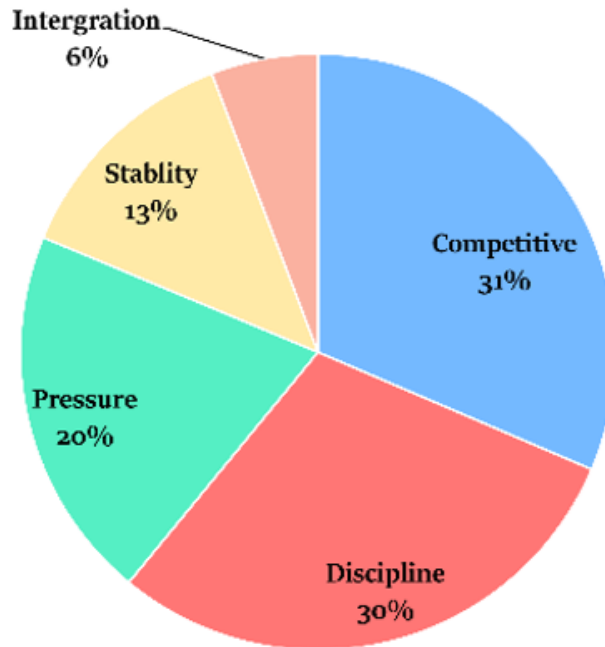


Figure 3: Professional Variables.

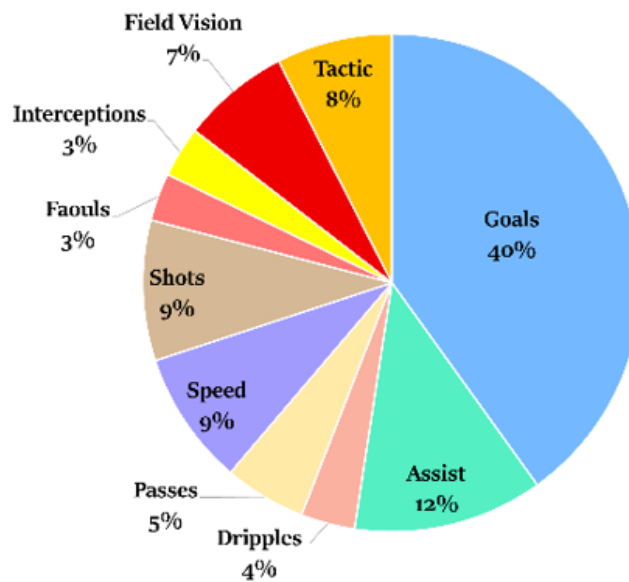


Figure 4: Sport Variables.

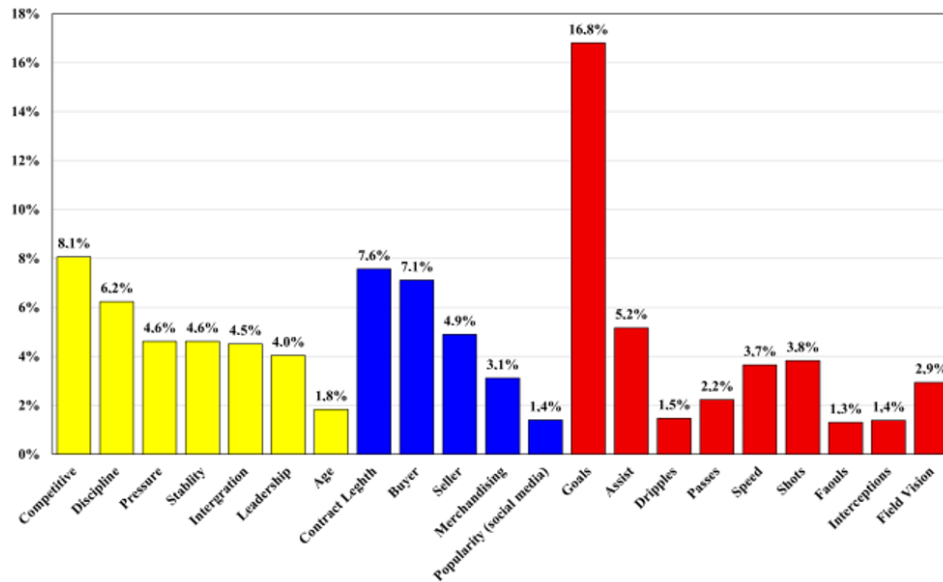


Figure 5: Contributing Variables.

In general, we observe that:

(a) Among the Competitive factors, the most important valuation factor is goal scoring. This is followed by assists, attempts on goal, and speed, with a large discrepancy between the first and the others. This confirms that scoring efficiency is irreplaceable for the valuation of strikers (Poza, 2020).

(b) In Individual skills, competitiveness and discipline dominate. Leadership, team integration, stability, field vision, and tactical thinking also contribute significantly. Age, in contrast, has limited weight in this category (Poza, 2020).

(c) In the Professional/Commercial factors, contract duration appears as the most determinant. The importance of the teams that buy and sell players is also highlighted, since it is linked to the bargaining power of clubs and strategic investments (Dobson & Gerrard, 1999). Publicity and commercial value contribute to a lesser extent.

(d) In terms of contribution distribution by category, competitive factors account for 42% of the total contribution, individual skills 34% and professional skills 24%. This distribution confirms that competitive performance is central but does not operate autonomously. The supporting factors shape the player’s completeness as an “investment”.

(e) In terms of Overall Valuation, goal scoring again emerges as the most decisive factor. However, the existence of supporting skills and external conditions, such as contract and reputation, allows for a comprehensive valuation of the player’s value (Franceschi et al. 2024b).

In conclusion, match performance, and in particular scoring ability, is the strongest factor in the valuation of strikers. Other playing skills, personal qualities, and professional circumstances complete the picture in a way that captures the multidimensional nature of a player’s value (Majewski, 2016; Poza, 2020). The player’s publicity, marketability, and personality contribute substantially to the creation of a strong brand, which further enhances the player’s financial valuation (Garcia-del-Barrio & Pujol, 2021). Also. Factors such as goals, contract duration, age, position, fitness, and international experience are recognized as common value indicators by numerous studies (Dobson & Gerrard, 1999; Poli, Besson & Ravenel, 2022; Rodríguez, Hassan & Coad, 2019; Liu, 2024). The personality of the player, particularly through factors such as leadership, stability, and team integration, is beginning to gain significant weight in the contemporary professional environment, confirming football’s shift towards a more holistic model of evaluation.

Table 2: Attacking Football Player Market Value Factors and Supporting Studies.

Performance	
Aerial duels	Gracia, López & González (2021); McHale & Holmes (2023); Muller, Simons, Weinmann (2017); Tavana et al. (2013); Yalçinkaya & Işık (2024)
Appearance, Match time	Al Hazmi (2024); Bryson, Frick & Simmons (2009); Cai (2024); Carmichael & Thomas (1993); Carmichael, Forrest & Simmons (1999); Coates & Parshakov (2021); Dobson & Gerrard (1999); Fees, Frick & Muehlheusser (2004); Franceschi et al. (2024b); Frick (2011); Frick & Lehmann (2001); Gracia, López & González (2021); Liu (2024); Lucifora & Simmons (2003); Majewski (2016); Muller, Simons, Weinmann (2017); Preston (2011); Reilly & Witt (1995); Richau et al. (2019); Rodríguez, Hassan & Coad (2019); Ruijg & Van Ophem (2015); Speight & Thomas (1997a); Speight & Thomas (1997b); Speight & Thomas (1997); Wicker et al. (2013)
Assists	Al Hazmi (2024); Cai (2024); Coates & Parshakov (2021); Franceschi et al. (2024b); Gracia, López & González (2021); Gavião et al. (2019); Hofmann et al. (2021); Korzynski & Paniagua (2016); Lucifora & Simmons (2003); Majewski (2016); Majewski & Rapacewicz (2021); Muller, Simons, Weinmann (2017); Poli, Besson & Ravenel (2022); Poza (2020); Richau et al. (2019); Rodríguez, Hassan & Coad (2019);

Velema (2018); Wicker et al. (2013); Yalçinkaya & Işık (2024)

Card	Al Hazmi (2024); Franceschi et al. (2024b); Gracia, López & González (2021); Gavião et al. (2019); Lucifora & Simmons (2003); Majewski & Rapacewicz (2021); Muller, Simons, Weinmann (2017); Preston (2011); Ruijg & Van Ophem (2015); Velema (2018); Yalçinkaya & Işık (2024)
Clearances	Gracia, López & González (2021); Gavião et al. (2019); Muller, Simons, Weinmann (2017); Richau et al. (2019); Yalçinkaya & Işık (2024)
Crossing	Gavião et al. (2019); Kirschstein & Liebscher (2018); Tavana et al. (2013); Yalçinkaya & Işık (2024)
Dripples	Gavião et al. (2019); Kirschstein & Liebscher (2018); Muller, Simons, Weinmann (2017); Poli, Besson & Ravenel (2022); Poza (2020); Tavana et al. (2013)
Foul that be done	Gracia, López & González (2021); Yalçinkaya & Işık (2024)
Fouls	Gracia, López & González (2021); Gavião et al. (2019); He, Cachucho & Knobbe (2015); Muller, Simons, Weinmann (2017); Poza (2020); Yalçinkaya & Işık (2024)
Goal	Al Hazmi (2024); Bryson, Frick & Simmons (2009); Cai (2024); Carmichael & Thomas (1993); Carmichael, Forrest & Simmons (1999); Coates & Parshakov (2021); Dobson, Gerrard & Howe (2000); Dobson & Gerrard (1999); Franceschi et al. (2024b); Frick (2011); Frick & Lehmann (2001); Gavião et al. (2019); He, Cachucho & Knobbe (2015); Herm, Callsen-Bracker & Kreis (2014); Hofmann et al. (2021); Konopielko & Sołtysiak (2019); Korzynski & Paniagua (2016); Liu (2024); Lucifora & Simmons (2003); Majewski (2016); Majewski & Rapacewicz (2021); McHale & Holmes (2023); Muller, Simons, Weinmann (2017); Poli, Besson & Ravenel (2022); Poza (2020); Preston (2011); Reilly & Witt (1995); Richau et al. (2019); Rodríguez, Hassan & Coad (2019); Ruijg & Van Ophem (2015); Speight & Thomas (1997b); Speight & Thomas (1997); Velema (2018); Wicker et al. (2013); Yalçinkaya & Işık (2024)
Goal attempts	Hofmann et al. (2021); Poza (2020); Tavana et al. (2013)
Interceptions	Gracia, López & González (2021); Gavião et al. (2019); Kirschstein & Liebscher (2018); Muller, Simons, Weinmann (2017); Richau et al. (2019); Yalçinkaya & Işık (2024)
Minutes play	Franceschi et al. (2024b); Rodríguez, Hassan & Coad (2019)
Own goals	Gracia, López & González (2021); Gavião et al. (2019); Yalçinkaya & Işık (2024)
Passes	Cai (2024); Gracia, López & González (2021); Gavião et al. (2019); He, Cachucho & Knobbe (2015); Kirschstein & Liebscher (2018); McHale & Holmes (2023); Muller, Simons, Weinmann (2017); Poli, Besson & Ravenel (2022); Poza (2020); Richau et al. (2019); Tavana et al. (2013); Yalçinkaya & Işık (2024)
Penalty	Kirschstein & Liebscher (2018); Ruijg & Van Ophem (2015)
Red card	Al Hazmi (2024); ; Yalçinkaya & Işık (2024)
Shot	Gavião et al. (2019); He, Cachucho & Knobbe (2015); Kirschstein & Liebscher (2018); Richau et al. (2019); Tavana et al. (2013)
Shot efficiency	He, Cachucho & Knobbe (2015); Richau et al. (2019)
Substitution	Gracia, López & González (2021); Majewski (2016); Rodríguez, Hassan & Coad (2019); Ruijg & Van Ophem (2015); Yalçinkaya & Işık (2024)
Successful Drripples	He, Cachucho & Knobbe (2015); Muller, Simons, Weinmann (2017)
Successful passes	Muller, Simons, Weinmann (2017); Yalçinkaya & Işık (2024)
Tackles	Gracia, López & González (2021); Gavião et al. (2019); Kirschstein & Liebscher (2018); McHale & Holmes (2023); Muller, Simons, Weinmann (2017); Richau et al. (2019); Tavana et al. (2013); Wicker et al. (2013); Yalçinkaya & Işık (2024)
Tactic	Hofmann et al. (2021); Poza (2020)
Other Performance	Cai (2024); Herm, Callsen-Bracker & Kreis (2014); Kirschstein & Liebscher (2018); Muller, Simons, Weinmann (2017); Poli, Besson & Ravenel (2022); Poza (2020); Richau et al. (2019); Rodríguez, Hassan & Coad (2019); Velema (2018); Wicker et al. (2013); Yalçinkaya & Işık (2024)
Personal	
Age	Bryson, Frick & Simmons (2009); Carmichael & Thomas (1993); Carmichael, Forrest & Simmons (1999); Coates & Parshakov (2021); Dobson, Gerrard & Howe (2000); Dobson & Gerrard (1999); Eschweiler & Vieth (2004); Fees, Frick & Muehlheusser (2004); Felipe et al. (2020); Franceschi et al. (2024b); Frick & Lehmann (2001); Garcia-del Barrio & Pujol (2007); Gracia, López & González (2021); Gyimesi & Kehl (2023); Herm, Callsen-Bracker & Kreis (2014); Kirschstein & Liebscher (2018); Konopielko & Sołtysiak (2019); Korzynski & Paniagua (2016); Liu (2024); Lucifora & Simmons (2003); Majewski (2016); McHale & Holmes (2023); Metelski (2021); Muller, Simons, Weinmann (2017); Poli, Besson & Ravenel (2022); Poza (2020); Prockl & Frick (2018); Reilly & Witt (1995); Richau et al. (2019); Rodríguez, Hassan & Coad (2019); Romann et al. (2021); Ruijg & Van Ophem (2015); Speight & Thomas (1997a); Speight & Thomas (1997b); Speight & Thomas (1997); Wicker et al. (2013); Yalçinkaya & Işık (2024)
Appearances in professional League	Bryson, Frick & Simmons (2009); Preston (2011)
Appearances UEFA champions	Bryson, Frick & Simmons (2009); ; Rodríguez, Hassan & Coad (2019)
Contract Time	Coates & Parshakov (2021); Fees, Frick & Muehlheusser (2004); Frick & Lehmann (2001); Garcia-del Barrio & Pujol (2016); Gracia, López & González (2021); Konopielko & Sołtysiak (2019); Poza (2020)
Competition	Hofmann et al. (2021); Poza (2020)
Defender	Carmichael, Forrest & Simmons (1999); Coates & Parshakov (2021); Eschweiler & Vieth (2004); Felipe et al. (2020); Frick (2011); Gracia, López & González (2021); Konopielko & Sołtysiak (2019); Lucifora & Simmons (2003); Poli, Besson & Ravenel (2022); Prockl & Frick (2018); Rodríguez, Hassan & Coad (2019); Ruijg & Van Ophem (2015); Yalçinkaya & Işık (2024)
East Europe	Bryson, Frick & Simmons (2009); Frick (2011)
End of contract day	Fees, Frick & Muehlheusser (2004); Garcia-del Barrio & Pujol (2016)

Europa League Team Experience	Felipe et al. (2020); Rodríguez, Hassan & Coad (2019) Garcia-del Barrio & Pujol (2016); Hofmann et al. (2021); Rodríguez, Hassan & Coad (2019)
Field vision	Jordet, Bloomfield & Heijmerikx (2013); Kirschstein & Liebscher (2018); Poza (2020); Rodríguez, Hassan & Coad (2019); Tavana et al. (2013)
Footdness	Bryson, Frick & Simmons (2009); Franceschi et al. (2024b); Gracia, López & González (2021); Prockl & Frick (2018); Rodríguez, Hassan & Coad (2019); Ruijg & Van Ophem (2015); Tavana et al. (2013)
Footdness-Left foot	Bryson, Frick & Simmons (2009); Gracia, López & González (2021); Prockl & Frick (2018); Ruijg & Van Ophem (2015)
Forward	Bryson, Frick & Simmons (2009); Eschweiler & Vieth (2004); Felipe et al. (2020); Frick (2011); Garcia-del Barrio & Pujol (2007); Gyimesi & Kehl (2023); Konopielko & Sołtysiak (2019); Lucifora & Simmons (2003); Poli, Besson & Ravenel (2022); Prockl & Frick (2018); Reilly & Witt (1995); Rodríguez, Hassan & Coad (2019); Ruijg & Van Ophem (2015); Yalçinkaya & Işık (2024)
Height	Gracia, López & González (2021); McHale & Holmes (2023); Muller, Simons, Weinmann (2017); Rodríguez, Hassan & Coad (2019); Ruijg & Van Ophem (2015); Tavana et al. (2013); Wicker et al. (2013)
International cups	Dobson & Gerrard (1999); Eschweiler & Vieth (2004); Fees, Frick & Muehlheusser (2004); Frick & Lehmann (2001); Speight & Thomas (1997b); Speight & Thomas (1997)
International players team	Preston (2011); Reilly & Witt (1995); Rodríguez, Hassan & Coad (2019)
Market value	Hofmann et al. (2021); Majewski & Rapacewicz (2021)
Midfield	Bryson, Frick & Simmons (2009); Carmichael, Forrest & Simmons (1999); Coates & Parshakov (2021); Eschweiler & Vieth (2004); Felipe et al. (2020); Frick (2011); Garcia-del Barrio & Pujol (2007); Gyimesi & Kehl (2023); Konopielko & Sołtysiak (2019); Lucifora & Simmons (2003); Poli, Besson & Ravenel (2022); Prockl & Frick (2018); Rodríguez, Hassan & Coad (2019); Ruijg & Van Ophem (2015); Yalçinkaya & Işık (2024)
Midfield Attacking	Felipe et al. (2020); Konopielko & Sołtysiak (2019)
Nationality	Prockl & Frick (2018); Wicker et al. (2013)
North America	Bryson, Frick & Simmons (2009); Frick (2011)
Origin from Europe, not the same with the team	Bryson, Frick & Simmons (2009); Garcia-del Barrio & Pujol (2007)
Origin not from Europe	Bryson, Frick & Simmons (2009); Garcia-del Barrio & Pujol (2007); Rodríguez, Hassan & Coad (2019)
Position	Garcia-del Barrio & Pujol (2007); Liu (2024); Metelski (2021); Wicker et al. (2013)
South America	Fees, Frick & Muehlheusser (2004); Frick (2011); Frick & Lehmann (2001)
Stamina	Kirschstein & Liebscher (2018); Tavana et al. (2013)
Speed	Poza (2020); Tavana et al. (2013)
Superstar 1	Hofmann et al. (2021); Lucifora & Simmons (2003)
Superstar 2	Lucifora & Simmons (2003); Rodríguez, Hassan & Coad (2019)
Transferred after the half season	Garcia-del Barrio & Pujol (2016); Wicker et al. (2013)
Under-21 Recognition	Lucifora & Simmons (2003); Rodríguez, Hassan & Coad (2019)
West Europe	Bryson, Frick & Simmons (2009); Frick (2011)
Other Personal	Felipe et al. (2020); Herm, Callsen-Bracker & Kreis (2014); Poza (2020); Rodríguez, Hassan & Coad (2019); Velema (2018)
External Team-Related Performance	
Asia/Australia	Frick (2011); Frick & Lehmann (2001)
Club management	Herm, Callsen-Bracker & Kreis (2014); Rodríguez, Hassan & Coad (2019)
Characteristics of the Buyer Team	Carmichael & Thomas (1993); Eschweiler & Vieth (2004); Garcia-del Barrio & Pujol (2016); Gracia, López & González (2021); Lucifora & Simmons (2003); Metelski (2021); Poli, Besson & Ravenel (2022); Poza (2020); Reilly & Witt (1995); Speight & Thomas (1997a); Speight & Thomas (1997b); Speight & Thomas (1997)
Characteristics of the Seller Team	Carmichael & Thomas (1993); Carmichael, Forrest & Simmons (1999); Eschweiler & Vieth (2004); Frick & Lehmann (2001); Gracia, López & González (2021); Konopielko & Sołtysiak (2019); Metelski (2021); Poza (2020); Reilly & Witt (1995); Speight & Thomas (1997a); Speight & Thomas (1997)
Champions League Qualified Team	Eschweiler & Vieth (2004); Fees, Frick & Muehlheusser (2004); Preston (2011)
First division	Dobson & Gerrard (1999); Frick (2011); Reilly & Witt (1995); Rodríguez, Hassan & Coad (2019); Speight & Thomas (1997a)
League (England)	Gyimesi & Kehl (2023)
League (France)	Gyimesi & Kehl (2023); Yalçinkaya & Işık (2024)
League (Germany)	Bryson, Frick & Simmons (2009); Gracia, López & González (2021); Gyimesi & Kehl (2023); Yalçinkaya & Işık (2024)
League (Italy)	Gyimesi & Kehl (2023); Yalçinkaya & Işık (2024)
League (Spain)	Gracia, López & González (2021); Yalçinkaya & Işık (2024)
League Team	Felipe et al. (2020); Garcia-del Barrio & Pujol (2016); Majewski (2016); Rodríguez, Hassan & Coad (2019)
National cups	Garcia-del Barrio & Pujol (2007); Gracia, López & González (2021); Rodríguez, Hassan & Coad (2019)
National Team	Coates & Parshakov (2021); Garcia-del Barrio & Pujol (2007); Lucifora & Simmons (2003); Poli, Besson & Ravenel (2022); Rodríguez, Hassan & Coad (2019); Wicker et al. (2013)
National Team Rank	Franceschi et al. (2024b); Majewski (2016); Wicker et al. (2013)
Second division	Carmichael, Forrest & Simmons (1999); Dobson & Gerrard (1999); Reilly & Witt (1995); Rodríguez, Hassan & Coad (2019); Speight & Thomas (1997a)
Sport agent	Herm, Callsen-Bracker & Kreis (2014); Rodríguez, Hassan & Coad (2019)
Team League Rank	Coates & Parshakov (2021); Konopielko & Sołtysiak (2019); Liu (2024); Rodríguez, Hassan & Coad (2019); Velema (2018)
Team tenure	Frick (2011); Velema (2018)

Team Transfer Fee	Coates & Parshakov (2021); ; Velema (2018)
UEFA super cup	Eschweiler & Vieth (2004); Rodríguez, Hassan & Coad (2019)
Other Personal	Dobson & Gerrard (1999); Felipe et al. (2020); Frick (2011); Gyimesi & Kehl (2023); Herm, Callsen-Bracker & Kreis (2014); Hofmann et al. (2021); Kirschstein & Liebscher (2018); Poza (2020); Preston (2011); Richau et al. (2019); Rodríguez, Hassan & Coad (2019); Romann et al. (2021); Tavana et al. (2013); Velema (2018); Wicker et al. (2013); Yalçinkaya & Işık (2024)
Commercial	
Brand Endorsement	Cai (2024); Hofmann et al. (2021); Prockl & Frick (2018)
Engagement Rate	Al Hazmi (2024); Cai (2024)
Google Trends search index	Garcia-del Barrio & Pujol (2007); Hofmann et al. (2021); Muller, Simons, Weinmann (2017)
Public attention, Popularity, Commercial appeal, Social Media	Al Hazmi (2024); Cai (2024); Gracia, López & González (2021); Herm, Callsen-Bracker & Kreis (2014); Hofmann et al. (2021); Korzynski & Paniagua (2016); Poza (2020); Rodríguez, Hassan & Coad (2019)
Publicity, Social Media	Al Hazmi (2024); Hofmann et al. (2021); Poza (2020); Prockl & Frick (2018)
Social media Followers	Cai (2024); Gracia, López & González (2021); Konopielko & Sołtysiak (2019); Korzynski & Paniagua (2016)
Wikipedia page views	Liu (2024); Muller, Simons, Weinmann (2017)
Other Commercial	Gyimesi & Kehl (2023); Herm, Callsen-Bracker & Kreis (2014); Hofmann et al. (2021); Konopielko & Sołtysiak (2019); Muller, Simons, Weinmann (2017); Richau et al. (2019); Romann et al. (2021)
Miscellaneous	
Attendance	Eschweiler & Vieth (2004)
Buyer's total goals scored minus the goals scored against	Carmichael & Thomas (1993)
Expected goals per match	McHale & Holmes (2023)
Index of National player	Velema (2018)
Inflat index	Poli, Besson & Ravenel (2022)
Injuries	Gracia, López & González (2021)
MERIT MV index	Garcia-del Barrio & Pujol (2016)
Overall rating	McHale & Holmes (2023)
Playing success for the selling club	Carmichael & Thomas (1993)
Potencial rating	McHale & Holmes (2023)
Power of negotiations	Garcia-del Barrio & Pujol (2007)
Puntos (index) Marca	Garcia-del Barrio & Pujol (2007)
Purchasing club median buying fee	McHale & Holmes (2023)
Real Transfermarkt estimate	Al Hazmi (2024); Coates & Parshakov (2021)
Share MV within team	Garcia-del Barrio & Pujol (2016)
Team Average rank	Richau et al. (2019)
Team-winner	Garcia-del Barrio & Pujol (2007)
Winner-all-10	Garcia-del Barrio & Pujol (2007)
Winner-all-20	Garcia-del Barrio & Pujol (2007)
Winner-all-5	Garcia-del Barrio & Pujol (2007)
Winter window	Garcia-del Barrio & Pujol (2016)
Other Miscellaneous	Gyimesi & Kehl (2023); Richau et al. (2019); Romann et al. (2021)

Table 2 summarizes almost all the factors that have been studied for their participation in determining the market value of strikers. For the convenience of the interested reader/researcher, all the studies that investigated each factor are also listed.

5. CONCLUSIONS

The valuation of the market value of attacking footballers is a complex and multi-factorial field in which competitive, psychological, commercial, and social elements converge. This literature review has shown that competitive performance - and more specifically, scoring efficiency - remains the strongest determinant of value. However, the picture is multifaceted: physical fitness, psychological resilience, tactical intelligence, and leadership are also identified as important elements that enhance the overall market value of the footballer.

The finding that goals, in addition to their direct impact on the match result, are the most critical indicator of a player's market value, underlines the inextricable link between goal productivity and the investment attractiveness of a footballer. Data analyses, based on indicators such as the number of goals scored per match or per season, systematically confirm that high scoring ability translates into significantly increased market value, directly influencing potential transfer fees, wages, and the player's marketability. This consistent correlation underlines the fundamental principle that, in the world of professional football, the value of a striker derives primarily from his ability to carry out the main purpose of the game: scoring goals.

At the same time, the research highlights the increasing importance of extra-general parameters such as social media presence, player branding, and reputation. These elements not only affect the player's attractiveness in the market but also the clubs' overall revenues through sponsorships and commercial deals.

At the same time, the importance of contract management (e.g., duration, remuneration, strategic role) and national or club origin, factors that indirectly shape transfer values by influencing negotiations, was highlighted.

Particular attention was also paid to socio-economic phenomena such as monopsony and overvaluation strategies by investors aiming at a competitive advantage.

In conclusion, the market value of a striker can no longer be approximated solely by match performance statistics. A holistic evaluation is required that incorporates quantitative and qualitative indicators, both on and off the field. The evolution of professional football makes it imperative to adopt complex valuation models that reflect the real and potential value of players in the modern sporting and commercial ecosystem.

REFERENCES

- Adler, M. (1985). Stardom and Talent, *The American Economic Review*, 75 (1), 208-212. <http://www.jstor.org/stable/1812714>.
- Adler, M. (2006). Stardom and Talent, in Ginsburgh, V. A., & Throsby, D. (eds) *Handbook of the Economics of Art and Culture* 1, Amsterdam: Elsevier, 895-906. DOI: 10.1371/journal.pone.0244118.
- Aksum, K. M., Brotangen, L., Bjørndal, C. T., Magnaguagno, L., & Jordet, G. (2022). Scanning activity of elite football players in 11 vs. 11 match play: An eye-tracking analysis on the duration and visual information of scanning, *PLoS One*, 17 (9), e0274328. DOI:10.1371/journal.pone.0274328.
- Al Hazmi, R. A. A. (2024). Factors affecting the market value of football players in the Indonesian League, *Jurnalku*, 4 (4), 459-470. DOI:10.54957/jurnalku.v4i4.1238.
- Bryson, A., Frick, B., & Simmons, R. (2013). The returns to scarce talent: Footedness and player remuneration in European soccer, *Journal of Sports Economics*, 14 (6), 606-628. DOI:10.1177/1527002511435118.
- Buraimo, B., Frick, B., Hickfang, M., & Simmons, R. (2015). The economics of long-term contracts in the footballers' labour market, *Scottish Journal of Political Economy*, 62 (1), 1-20. DOI:10.1111/sjpe.12064.
- Buzzacchi, L., Szymanski, S., & Valletti, T. M. (2003). Equality of opportunity and equality of outcome: Open leagues, closed leagues and competitive balance, *Journal of Industry, Competition and Trade*, 3 (3), 167-186. DOI:10.1023/A:1027455428034.
- Cai, J. (2024). Comprehensive Analysis of Football Player Market Valuation: Integrating Performance Metrics and Marketability Factors, *Transactions on Economics, Business and Management Research*, 10, 152-158. DOI:10.62051/2rybt79.
- Cairns, J., Jennett, N., & Sloane, P.J. (1986). The Economics of Professional Team Sports: A Survey of Theory and Evidence, *Journal of Economic Studies*, 13 (1), 3-80. DOI:10.1108/eb002618.
- Carmichael, F., & Thomas, D. (1993). Bargaining in the Transfer Market: theory and evidence, *Applied Economics*, 25 (12), 1467-1476. DOI:10.1080/00036849300000150.
- Carmichael, F., Forrest, D., & Simmons, R. (1999). The labour market in association football: who gets transferred and for how much? *Bulletin of Economic Research*, 51 (2), 125-149. DOI:10.1111/1467-8586.00075.
- Coates, D., & Parshakov, P. (2021). The wisdom of crowds and transfer market values, *SSRN Electronic Journal*. [Accessed on 18th July 2025].
- Cohen, A., & Risk, J. (2025). European football player valuation: integrating financial models and network theory, *Journal of Quantitative Analysis in Sports*, 21 (1), 3-22. DOI:10.1515/jqas-2024-0006.
- Coluccia, D., Fontana, S., & Solimene, S. (2018). An application of the option-pricing model to the valuation of a football player in the Serie A League, *International Journal of Sport Management and Marketing*, 18 (1/2), 155-174. DOI:10.1504/IJSM.2017.10012018.
- Detzen, D., & Löhlein, L. (2024). Valuing soccer players: On the valuation dynamics of an online user community. *Accounting, Auditing & Accountability Journal*, 37 (2), 608-626. DOI:10.1108/AAAJ-05-2022-5824.
- Di Minin, A., Frattini, F., Bianchi, M., Bortoluzzi, G., & Piccaluga, A. (2014). Udinese Calcio soccer club as a talents factory: strategic agility, diverging objectives, and resource constraints, *European Management Journal*, 32 (2), 319-336. DOI:10.1016/j.emj.2013.04.001.
- Dobson, S., & Gerrard, B. (1999). The determination of player transfer fees in English professional soccer, *Journal of Sport Management*, 13 (4), 259-279. DOI:10.1123/jsm.13.4.259.
- Dobson, S., Gerrard, B., & Howe, S. (2000). The determination of transfer fees in English non-league football, *Applied Economics*, 32 (9), 1145-1152. DOI:10.1080/000368400404281.
- Feess, E., Frick, B., & Muehlheusser, G. (2004). Legal restrictions on outside trade clauses - theory and evidence from German soccer, Discussion paper No. 1140, Institut Zukunft der Arbeit, Bonn.
- Felipe, J.L., Fernandez-Luna, A., Burillo, P., Eduardo de la Riva, L., Sanchez-Sanchez, J., & Garcia-Unanue, J. (2020). Money talks: team variables and player positions that most influence the market value of professional male footballers in Europe, *Sustainability*, 12 (9), 3709. DOI:10.3390/su12093709.
- Follert, F., & Gleißner, W. (2024). A decision model to value football player investments under uncertainty, *Management Decision*, 62 (13), 178-200. DOI:10.1108/MD-06-2023-0899.
- Fort, R., & Quirk, J. (2004). Owner objectives and competitive balance, *Journal of Sports Economics*, 5 (1), 20-32. DOI:10.1177/1527002503261275.
- Franceschi, M., Brocard, J.-F., Follert, F., & Gouguet, J.-J. (2024a). Football players in light of economic value theory: Critical review and conceptualization, *Managerial and Decision Economics*, 45 (2), 896-920. DOI:10.1002/mde.4039.
- Franceschi, M., Brocard, J.-F., Follert, F., & Gouguet, J.-J. (2024b). Determinants of football players' valuation: a systematic review, *Journal of Economic Surveys*, 38 (3), 577-600, DOI:10.1111/joes.12552.
- Frick, B. (2007). The football players' labour market: empirical evidence from the major European leagues. *Scottish Journal of Political Economy*, 54 (3), 422-446. DOI:10.1111/J.1467-9485.2007.00423.X.
- Frick, B. (2011). Performance, salaries, and contract length: empirical evidence from German soccer, *International Journal of Sport Finance*, 6 (2), 87-118.
- Garcia-del-Barrio, P., & Pujol, F. (2007). Hidden monopsony rents in winner-take-all markets: sport and economic contribution of Spanish soccer players, *Managerial and Decision Economics*, 28 (1), 57-70. DOI:10.1002/mde.1313.
- Garcia-del-Barrio, P., & Pujol, F. (2016). Economic evaluation of football players through media value, Working Paper, 9 (3), Birkbeck,

University of London.

- Garcia-del-Barrio, P., & Pujol, F. (2021). Recruiting talent in a global sports market: appraisals of soccer players' transfer fees, *Managerial Finance*, 47 (6), 789-811. DOI:10.1108/MF-04-2020-0213.
- Gavião, L. O., Sant'Anna, A. P., Lima, G. B. A., & de Almada Garcia, P. A. (2020). Evaluation of soccer players under the Moneyball concept, *Journal of Sports Sciences*, 38 (11-12), 1221-1247. DOI:10.1080/02640414.2019.1702280
- Gerrard B. (2001). A new approach to measuring player and team quality in Professional team sports, *European Sport Management Quarterly*, 1 (3), 219-234, DOI:10.80/16184740108721898.
- Gyimesi, A., & Kehl, D. (2021). Relative age effect on the market value of elite European football players: a balanced sample approach, *European Sport Management Quarterly*, 23 (2), 544-560. DOI:10.1080/16184742.2021.18942.
- Harwood, C., Barker, J. B., & Anderson, R. J. (2015). Psychosocial development in youth soccer players: assessing the effectiveness of the 5C's intervention program, *Sport Psychologist*, 29 (4), 319-334. DOI:10.1123/tsp.2014-0161.
- He, M., Cachucho, R., & Knobbe, A. (2015) Football Player's Performance and Market Value, Proceedings of the 2nd Workshop of Sports Analytics, European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD). Porto, Portugal.
- Herm, S., Callsen-Bracker, H.-M., & Kreis, H. (2014). When the crowd evaluates soccer players' market values: Accuracy and evaluation attributes of an online community, *Sport Management Review*, 17 (4), 484-492. DOI:10.1016/j.smr.2013.12.006.
- Hill, D., Skinner, J., & Grosman, A. (2025). A review of football player metrics and valuation methods: a typological framework of football player valuations, *Managing Sport and Leisure*, pre-print, DOI:10.1080/23750472.2025.2459727.
- Hill, M., Scott S., Malina R.M., McGee D., & Cumming S.P. (2020). Relative age and maturation selection biases in academy football, *Journal of Sports Sciences*, 38 (11-12), 1359-1367. DOI:10.1080/02640414.2019.1649524.
- Hofmann, J., Schnittka, O., Johnen, M., & Kottemann, P. (2021). Talent or popularity: what drives market value and brand image for human brands?, *Journal of Business Research*, 136, 111-123. DOI:10.1016/j.jbusres.2019.03.045.
- Hughes, M., Caudrelier, T., James, N., Redwood-Brown, A., Donnelly, I., Kirkbride, A., & Duschesne, C. (2012). Moneyball and soccer - an analysis of the key performance indicators of elite male soccer players by position, *Journal of Human Sport and Exercise*, 7 (2), 402-412. DOI:10.4100/jhse.2012.72.06.
- Jordet, G., Bloomfield, J., & Heijmerikx, J. (2013). The hidden foundation of field vision in English Premier League (EPL) soccer players, MIT Sloan Sports Analytics Conference, Boston, USA.
- Kedar-Levy, H., & Bar-Eli, M. (2008). The valuation of athletes as risky investments: a theoretical model, *Journal of Sport Management*, 22, 50-81. DOI:10.1123/jsm.22.1.50.
- Kesenne, S. (2015). Revenue sharing and absolute league quality; talent investment and talent allocation, *Scandinavian Journal of Economics*, 62 (1), 1-17. DOI:10.1111/sjpe.12062.
- Kirschstein, T., & Liebscher, S. (2018). Assessing the market values of soccer players - a robust analysis of data from German 1. and 2. Bundesliga, *Journal of Applied Statistics*, 46 (7), 1-14. DOI:10.1080/02664763.2018.1540689.
- Knöllner, A., Memmert, D., von Lehe, M., Jungilligens, J., & Scharfen, H.-E. (2022). Specific relations of visual skills and executive functions in elite soccer players, *Frontiers in Psychology*, 13, 960092. DOI:10.3389/fpsyg.2022.960092.
- Konopielko, Ł., & Sołtysiak, J. (2019). Managing value: empirical research on footballers' value determinants on the European market, *SJ-Economics Scientific Journal*. 22 (3), 395-405. DOI:10.58246/sjeconomics.v22i3.305.
- Korzynski, P., & Paniagua, J. (2016). Score a tweet and post a goal: Social media recipes for sports stars, *Business Horizons*, 59 (2), 185-192. DOI:10.1016/j.bushor.2015.11.002.
- Lazear, E. P., & Shaw, K. L. (2007). Personnel economics: the economist's view of human resource, *Journal of Economic Perspectives*, 21 (4), 91-114. DOI:10.1257/jep.21.4.91
- Leifheit, N., & Föllert, F. (2021). financial player valuation from the perspective of the club: the case of football. *Managing Sport and Leisure*, 28(3), 1-20. DOI:10.1080/23750472.2021.1944821.
- Lev, B. (2004). Sharpening the Intangibles Edge, *Harvard Business Review*, 82 (6), 109-116.
- Lipeles, J. (2024). The Relationship Between Ownership and English Premier League Players' Salaries, *Economics Student Theses and Capstone Projects*, 162. https://creativematter.skidmore.edu/econ_studt_schol/162.
- Liu, W. (2024). Analysis of the market value of Premier League attacker, *Theoretical and Natural Science*, 51 (1), 8-12. DOI:10.54254/2753-8818/51/2024CH0108
- Lucifora, C., & Simmons, R. (2003). Superstar effects in sport, *Journal of Sports Economics*, 4 (1), 35-55. DOI:10.1177/1527002502239657.
- Majewski, S. (2016). Identification of factors determining market value of the most valuable football players, *Journal of Management and Business Administration - Central Europe*. 24 (3), 91-104. DOI:10.7206/jmba.ce.2450-7814.177.
- Majewski, S., & Rapacewicz, A. (2021). Estimation of football player performance rights using econometric models and product life cycle, *Journal of Physical Education and Sport*, 21 (3), 2129- 2135. DOI:10.7752/jpes.2021.s3271.
- McCarthy, N. (2018). Juventus have sold \$60 million of Ronaldo jerseys in 24 hours, *Forbes*, <https://www.forbes.com/sites/niallmccarthy/2018/07/20/juventus-have-sold-60-million-of-ronaldo-jerseys-in-24-hours-infographic/>. [Accessed on 19th July 2025]
- McHale, I. G., & Holmes, B. (2023). Estimating transfer fees of professional footballers using advanced performance metrics and machine learning. *European Journal of Operational Research*, 306 (1), 389-399. DOI:10.1016/j.ejor.2022.06.033.
- Metelski, A. (2021). Factors affecting the value of football players in the transfer market, *Journal of Physical Education and Sport*, 21 (2), 1150-1155.
- Morrow, S. H. (1997). Accounting for football players. Financial and accounting implications of 'Royal Club Leigois and others v Bosman for football in the United Kingdom, *Journal of Human Resource Costing and Accounting*, 2, 55-71
- Müller, O., Simons, A., & Weinmann, M. (2017). Beyond crowd judgments: data-driven estimation of market value in association football, *European Journal of Operational Research*, 263 (2), 611-624. DOI:10.1016/j.ejor.2017.05.005.
- Nsolo, E., Lambrix, P., & Carlsson, N. (2019). Player valuation in European football, in Brefeld, U., Davis, J., Van Haaren, J., &

- Zimmermann, A. (Eds.) *Machine Learning and Data Mining for Sports Analytics*, 5th International Workshop, MLSA 2018, LNAI 11330, Cham: Springer, 42-54. DOI:10.1007/978-3-030-17274-9_4.
- Oprean, V.-B., & Oprisor, T. (2014). Accounting for soccer players: capitalization paradigm vs. expenditure, *Finance and Business Local Organization*, 15, 1647-1654, DOI:10.1016/S2212-5671(14)00636-4.
- Poli R., Besson R., & Ravenel L. (2022). Econometric approach to assessing the transfer fees and values of professional football players, *Economies*, 10, 4. DOI:10.3390/economies10010004.
- Poza, C. (2020). A conceptual model to measure football player's market value: a proposal by means of an Analytic Hierarchy Process, *RICYDE. Revista Internacional de Ciencias del Deporte*, 16 (59), 24-42. DOI:10.5232/ricyde2020.05903.
- Preston, T. (2011). The determinants of football transfer market values: An age of financial restraint. University of Warwick. Available at: <https://warwick.ac.uk/fac/soc/economics/current/modules/ec331/raeprojects/0907288-ec331-a2.pdf> [Accessed on 19th July 2025].
- Prockl, F., & Frick, Bernd. (2018). Information precision in online communities: Player valuations on www.transfermarkt.de, *International Journal of Sport Finance*, 13 (4), 319-335.
- Reilly, T., Bangsbo, J., & Franks, A. (2000). Anthropometric and physiological predispositions for elite soccer, *Journal of Sports Sciences*, 18 (9), 669-683. DOI:10.1080/02640410050120050.
- Richau, L., Follert, F., Frenger, M., & Emrich, E. (2019). Performance indicators in football: the importance of actual performance for the market value of football players, *Sciamus - Sport und Management*. 10 (4), 41-67. DOI:10.24403/jp.1016448.
- Rodríguez, S. M., Hassan, R. A., & Coad, A. (2019). Uncovering Value Drivers of High-Performance Soccer Players, *Journal of Sports Economics*, 20 (6), 819-849. DOI:10.1177/1527002518808344.
- Romann, M., Javet, M., Cobley, S., & Born, D.-P. (2021). How Relative Age Effects Associate with Football Players' Market Values: Indicators of Losing Talent and Wasting Money, *Sports*, 9 (7). DOI:10.3390/sports909070099
- Rosen, S. (1981). The Economics of Superstars, *The American Economic Review*, 71 (5), 845-858. <https://www.jstor.org/stable/1803469>.
- Rosen, S., & Sanderson, A. (2001). Labor markets in professional sports, *The Economic Journal*, 111 (469), 47-68. DOI:10.1111/1468-0297.00598.
- Rottenberg, S. (1956). The Baseball Players' Labor Market, *Journal of Political Economy*, 64 (3), 242-258.
- Rowbottom, N. (2002). The application of Intangible asset accounting and discretionary policy choices in the UK football industry, *British Accounting Review*, 34, 335-355, DOI: 10.1006/S0890-8389(02)00097-5.
- Rubio Martín, G., García C. M. M., Rodríguez-López, A., & González Sánchez, F. J. (2021). Measuring football clubs' human capital: analytical and dynamic models based on footballers' life cycles, *Journal of Intellectual Capital*, 23 (5), 1107-1137. DOI:10.1108/JIC-06-2020-0211.
- Ruijg, J., & van Ophem, H. (2015). Determinants of football transfers, *Applied Economics Letters*, 22 (1), 12-19. DOI:10.1080/13504851.2014.892192.
- Scully, G. W., (1974). Pay and performance in Major League Baseball, *The American Economic Review*, 64 (6), 915-930.
- Sloane, P. J. (2006). Rottenberg and the economics of sport after 50 years: An evaluation, in P. Rodriguez, S. Késenne, J. Garcia, eds, *Sports Economics after Fifty Years: Essays in Honour of Simon Rottenberg*, Oviedo: Universidad de Oviedo, 211-226.
- Smith, A. C. T., & Stewart, B. (2010). The special features of sport: a critical revisit, *Sport Management Review*, 13 (1), 1-13. DOI:10.1016/j.smr.2009.07.002.
- Speight, A., & Thomas, D. (1997). Conventional arbitration in the professional footballers' labour market: an assessment of the FLAC experience, *Industrial Relations Journal*, 28 (3), 221-235. DOI:10.1111/1468-2338.00056.
- Tavana, M., Azizi, F., Azizi, F., & Behzadian, M. (2013). A fuzzy inference system with application to player selection and team formation in multi-player sports, *Sport Management Review*, 16 (1), 97-110. DOI:10.1016/j.smr.2012.06.001.
- Thrane, C. (2024). Using composite performance variables to explain football players' market values, *Managing Sport and Leisure*, pre-print, 1-14. DOI:10.1080/23750472.2024.2305902.
- Tunaru, R.S., & Viney, H.P. (2010). Valuations of Soccer Players from Statistical Performance Data, *Journal of Quantitative Analysis in Sports*, 6 (2), Article 10. DOI:10.2202/1559-0410.1238.
- UEFA (2024). UEFA Financial Fair Play Regulations: Protecting the Game, Club Licensing and Financial Fair Play, <https://documents.uefa.com/v/u/MFxeqLNkelkYyh5JSafuhg>. [Accessed on 18th July 2025]
- Užik, M., Warias, R., & Glova, J. (2022). Management of transfer prices in professional football as a function of fan numbers *Mathematics*, 10, 2982. DOI:10.3390/math10162982.
- Velema, T. A. (2018). Upward and downward job mobility and player market values in contemporary European professional football, *Sport Management Review*, 22 (2), 209-221. DOI:10.1016/j.smr.2018.02.004.
- Wicker, P., Prinz, J., Weimar, D., Deutscher, C., & Upman, T. (2013). No pain, no gain: effort and productivity in professional soccer, *International Journal of Sport Finance*, 8 (2), 124-139.
- Yalçinkaya, M. A., & Işık, M. (2024). The role of performance metrics in estimating market values of footballers in Europe's top five leagues, *Pamukkale Journal of Sport Sciences*, 15 (3), 455-485. DOI:10.54141/psbd.1489554.