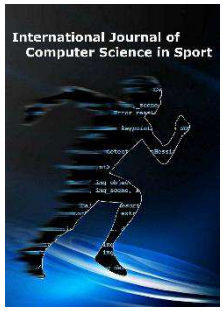
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Data-Driven Scouting in Football: A Multiple Case Study

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Abstract

Data analysis is reshaping football scouting, but its impact on decision-making remains a subject of debate. This study investigates how Data-Driven Decision Support Systems (DDDSS) influence scouting practices, using a qualitative multiple-case design based on semi-structured interviews with five professionals in various competitive contexts. The findings show that DDDSS constitute an essential infrastructure, enabling the systematic evaluation of large groups of players beyond manual capacity. However, their effectiveness depends on human expertise for contextual interpretation, tactical assessment, and behavioral evaluation, indicating limited autonomy. The study identifies key implementation challenges, including cultural resistance, limited analytical capacity, and uneven data availability across leagues. Although advanced metrics improve technical analysis and support the internal justification of recruitment decisions, they have a limited direct impact on market evaluation, which remains largely driven by traditional performance indicators. Fundamentally, competitive advantage does not stem from access to data, but from the ability to interpret and apply it effectively. These conclusions position modern scouting as a hybrid decision-making process, in which future progress lies in integrating predictive analysis with human judgment, rather than in the pursuit of total automation.

KEYWORDS: FOOTBALL ANALYTICS, TALENT IDENTIFICATION, PERFORMANCE ANALYSIS, DATA-DRIVEN SCOUTING, SPORTS TECHNOLOGY

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Introduction

Contemporary football is experiencing a deep digital transformation, as advances in technology and the widespread availability of performance and tracking data have reshaped how clubs design and use Information Systems (IS) to support core sporting and managerial processes (Monsees, 2025). Performance analysis, tactical planning, and especially player recruitment are now increasingly mediated by sophisticated video, tracking, and database platforms that enable systematic collection, processing, and visualization of large volumes of performance indicators (Frost et al., 2025). This shift underpins a strategic move away from purely subjective assessments grounded in the intuition and experiential knowledge of scouts toward more standardized, transparent, and data-informed evaluation practices enabled by data-driven decision support systems (Singh & Suguna, 2023). Within this context, understanding how IS and data analytics tools influence decision-making processes in scouting and talent identification emerges as a central challenge for contemporary sports management, with direct implications for competitive advantage and organizational learning in professional football (Monsees, 2025).

Despite the proliferation of analytical tools, the scientific literature reveals a significant gap regarding their practical impact (Dubois & Walzak, 2025; Gamble et al., 2020; Monsees, 2025). Empirical evidence on the adoption of advanced technologies in recruitment remains limited, and there is a shortage of qualitative studies exploring the perspectives of professionals who interact directly with these tools. There is a need to understand how data are, in practice, interpreted and integrated with scouts' subjective judgement, and what benefits, limitations, and challenges emerge from this interaction (Dubois & Walzak, 2025; Gamble et al., 2020; Monsees, 2025). This gap justifies the need for research centered on the experience of direct users, exploring the nuances of their application in the field. The present study aims to address this gap by seeking to understand how data analytics and associated information systems, particularly Data-Driven Decision Support Systems (DDDSS), influence decision-making in the context of scouting. To this end, the research is guided by the following central question: What is the impact of data analytics and DDDSS on decision-making in scouting? To answer this question, the paper is structured as follows: the next section presents the theoretical framework and literature review, which contextualizes the evolution of scouting and the role of data. Subsequently, the methodology chapter details the multiple case study approach and the data collection and analysis procedures. The analysis and discussion of results section presents the key findings obtained from interviews with professionals. Finally, the conclusions chapter synthesizes the findings, discusses their theoretical and practical implications, acknowledges the study's limitations, and suggests directions for future research.

Theorical Background

The analysis of the impact of data on scouting requires a framework that recognizes the historical and procedural evolution of this activity. The shift from traditional methods, based on observation and intuition, to data-driven approaches represents a fundamental paradigm shift in sports management. This section synthesizes this transition, explores the transformative role of DDDSS, and identifies the challenges emerging from the literature, establishing the theoretical basis for subsequent empirical analysis.

Evolution and processes of scouting

Historically, scouting has been an "imperfect science" dominated by the subjective assessments of specialists (scouts) through the so-called "eye test" (Dubois & Walzak, 2025). Although valuable due to accumulated experience, this method was vulnerable to biases and stereotypes, often compromising objectivity. The technological revolution and the growing availability of

structured data initiated a transition toward more holistic, evidence-based recruitment models (Singh & Suguna, 2023). According to Frost et al. (2025), the modern scouting process integrates multiple phases. It begins with the use of video analysis and databases to generate watchlists. This is followed by data-driven performance identification, where quantitative metrics and Machine Learning techniques support objective evaluation. The next stage, performance profiling, deepens the understanding of players by comparing them against market benchmarks. Finally, the due-diligence stage examines non-technical factors such as personality, behavior, and cultural fit with the club, reinforcing the need for a comprehensive view that extends beyond statistics. The integration of data and DDDSS into scouting enables more accurate and comprehensive player assessments. In the context of decision-making, the literature advocates for a data-informed approach (Gamble et al., 2020), where data does not replace but rather complements and enhances human judgment (Rinaldi et al., 2024). This synergy arises from combining quantitative and qualitative approaches. Quantitative data from descriptive statistics (goals, assists) to advanced metrics such as Expected Goals (xG) and GPS-based tracking supports objective performance analysis (Cortez et al., 2021, 2022). Qualitative factors, including game intelligence and psychosocial characteristics, still depend heavily on expert observation and judgment. Although a player's career history provides an objective baseline, it must be contextualized to avoid simplistic interpretations. DDDSS reshape decision-making by promoting greater objectivity and mitigating emotional or cognitive biases. This shift requires closer collaboration between traditional scouts and data analysts, aiming to reinforce rather than replace human expertise (Dubois & Walzak, 2025).

Perceptions of Data Use in Scouting

A consistent theme across the literature is the recognition that data enhances, but does not replace, the interpretative role of scouts. Historically, talent identification relied heavily on subjective judgement and experiential knowledge, often described as the "eye test", which, despite its value, is susceptible to biases and contextual limitations (Dubois & Walzak, 2025; Sarmento et al., 2018). The growing availability of structured performance data has introduced more objective evaluation criteria, supporting more systematic comparisons between players and reducing reliance on intuition alone (Singh & Suguna, 2023). Rather than advocating a purely data-driven model, scholars emphasise a data-informed approach, where quantitative insights complement qualitative expertise (Gamble et al., 2020; Rinaldi et al., 2024). This perspective reflects the understanding that football performance is multidimensional and context dependent, requiring both statistical evidence and situational interpretation. Quantitative indicators such as goals, assists, passing accuracy, and defensive actions provide measurable benchmarks (Ball et al., 2025), while advanced metrics including expected goals (xG), expected assists, and possession value offer more nuanced assessments of performance quality (Hassani et al., 2018; Ruiz-de-Alarcón-Quintero & De-la-Cruz-Torres, 2024). At the same time, qualitative dimensions such as decision-making, tactical intelligence, and psychological characteristics remain difficult to quantify and continue to depend on expert observation (Abate Daga et al., 2023). Research highlights that combining these dimensions leads to more accurate evaluations of player potential (Barraclough et al., 2025). Consequently, contemporary scouting is increasingly framed as an interdisciplinary practice integrating performance analysis, sports science, and data analytics (Pappalardo et al., 2019).

Implementation and Challenges of DDDSS

Despite the recognised benefits of data integration, the literature identifies significant barriers to the effective implementation of DDDSS within clubs. One of the most frequently cited challenges is resistance to change, particularly within environments where traditional expertise

and experiential knowledge remain dominant (Monsees, 2025). The transition towards data-supported decision-making requires cultural adaptation, organisational alignment, and greater collaboration between analysts and coaching staff. Another critical limitation concerns the difficulty of capturing behavioural and contextual factors through quantitative metrics. While data can provide objective insights into performance, certain aspects such as leadership, adaptability, and team dynamics remain inherently qualitative and difficult to model (Abate Daga et al., 2023). This limitation reinforces the need for hybrid evaluation frameworks that combine statistical analysis with human judgement. Technical and organisational constraints also play a significant role. The interpretation of complex datasets requires specialised analytical skills, and the absence of such competencies can limit the effective use of available tools (Monsees, 2025). Moreover, concerns related to data reliability, standardisation, and comparability across competitions persist, particularly in less monitored leagues. These challenges highlight the importance of developing organisational capabilities and fostering data literacy among practitioners to fully leverage analytical systems. The literature further warns against excessive reliance on quantitative models without contextual interpretation. While data can enhance objectivity, the interpretation of performance indicators may still vary among experts, reflecting the inherently interpretative nature of tactical analysis (Furley et al., 2025). As a result, the integration of DDDSS is increasingly viewed not as a technological substitution, but as an organisational transformation requiring new skills, structures, and collaborative practices.

Impact of DDDSS in Scouting

The introduction of DDDSS has significantly reshaped the scouting process by reconfiguring how information is collected, analysed, and applied in recruitment decisions. One of the most notable impacts is the increased use of objective performance indicators to support player evaluation, enabling clubs to make more structured and evidence-based decisions (Barron et al., 2018). Data analytics allows the identification of performance patterns that may not be visible through traditional observation, revealing players whose contributions extend beyond conventional statistics (Goes et al., 2019). At an operational level, data enhances efficiency by supporting automated filtering processes, enabling clubs to narrow large player pools and focus resources on profiles aligned with strategic needs (Wilson et al., 2021). The use of video analysis, tracking systems, and machine learning techniques facilitates the integration of large datasets, improving the precision and scalability of talent identification processes (Frost et al., 2025; Yunus & Aditya, 2024). Data also expands the geographical reach of scouting by enabling clubs to explore global talent markets more effectively. Analytical tools reduce reliance on traditional networks and allow organisations to identify players in emerging markets with greater autonomy (Velema et al., 2020). This increased reach contributes to the discovery of undervalued talent and supports more efficient resource allocation. From a strategic perspective, DDDSS influence decision-making by reducing cognitive biases and providing structured evidence to support recruitment strategies (Anzer et al., 2021). Predictive models and machine learning techniques have been used to estimate player performance trajectories and market value, demonstrating the growing analytical sophistication of modern recruitment practices (Datta & Rudra, 2022; Shen, 2025). Nevertheless, the literature suggests that data should be interpreted within its competitive context, as performance indicators may vary significantly across leagues and tactical environments (Ball et al., 2025).

Future of Scouting

Looking ahead, the literature converges on the view that scouting will become increasingly data-intensive, predictive, and technologically integrated. Advances in artificial intelligence and

machine learning are expected to enhance the ability to analyse complex datasets, detect performance patterns, and generate more accurate forecasts of player potential (Hassani et al., 2018; Yunus & Aditya, 2024). Emerging models such as Dynamic Expected Threat illustrate the growing sophistication of performance evaluation frameworks and their capacity to capture contextual aspects of gameplay. Future scouting environments are also expected to integrate multiple data sources, including physiological metrics, tracking data, and psychosocial indicators, to create more comprehensive player profiles (Barraclough et al., 2025). This multidimensional approach reflects the increasing recognition that performance evaluation requires both quantitative precision and contextual understanding. At the professional level, the role of scouts is projected to evolve towards a more analytical and interdisciplinary profile. The growing importance of data literacy and technological competence suggests that scouts will increasingly operate as hybrid professionals capable of integrating statistical insights with tactical interpretation (Harkness-Armstrong et al., 2025). Collaboration between analysts, coaches, and technical staff is therefore expected to become more central to recruitment processes. Despite the increasing sophistication of analytical tools, the literature consistently emphasises that human judgement will remain indispensable. Factors such as personality, adaptability, and team fit continue to require experiential assessment, reinforcing the view that the future of scouting lies in the synergy between technology and expertise (Dubois & Walzak, 2025; Kelly et al., 2022). For clubs with limited financial resources, accessible analytical tools may also represent an opportunity to enhance decision-making and compete more effectively, provided they are used strategically (Yunus & Aditya, 2024).

Methods

This study adopts a qualitative multiple case study design with an interpretive and exploratory orientation (Rashid et al., 2019). The multiple case study approach is appropriate when the objective is to investigate a contemporary phenomenon within its real-world context and to explore complex processes through the perspectives of different actors (Stake, 2013; Yin, 2018). In this research, each participant represents an individual case, enabling cross-case comparison of professional perspectives regarding the role of data analytics and DDDSS in football scouting. By focusing on multiple professionals operating in distinct roles and organisational environments, the study enhances analytical robustness and enables a richer and more transferable understanding of the phenomenon (Eisenhardt, 1989; Tisdell et al., 2025). Grounded in an interpretive paradigm, the research assumes that reality is socially constructed and that understanding emerges from the meanings individuals attribute to their experiences, which is particularly appropriate given the focus on professionals' perceptions of technological adoption in scouting contexts. An abductive approach guided the study, allowing iterative movement between theoretical insights and empirical observations to develop contextually grounded interpretations (Timmermans & Tavory, 2012).

Case Selection

Purposive sampling was employed to select information-rich cases with direct experience in scouting, recruitment, performance analysis, and football decision-making processes. As noted by Creswell and Poth (2016), this sampling strategy is appropriate in qualitative research when participants are selected based on their ability to provide relevant and insightful information about the phenomenon under study. The sample consists of five professionals, each representing a distinct role within the player recruitment and decision-making chain, including technical-tactical, operational, analytical, and strategic profiles (see Table 1). This intentional heterogeneity enabled the capture of diverse perspectives on the impact, challenges, and future of DDDSS in scouting, thereby enhancing analytical depth rather than aiming for statistical

representativeness. By including complementary professional perspectives such as coaching, player representation, scouting analysis, and performance analysis the study provides a more comprehensive understanding of how data-driven technologies are interpreted and applied across different stages of talent identification and recruitment.

Table 1. Participants

Participant	Current Role	Experience	Organization	Country
P1	Assistant Coach	25 years	Professional club (1st division)	Morocco
P2	Sports Agent	6 years	Player representation agency	Spain
P3	Senior Scouting Analyst	7 years	Professional football club (1st division)	United States
P4	Scouting Analyst	6 years	Football data analysis company	Argentina
P5	Performance Analyst	4 years	Professional football club (3rd division)	Portugal

Although the sample size is relatively small, it is consistent with exploratory qualitative case study research, where depth of insight and contextual richness are prioritised over breadth (Yin, 2018). The findings are therefore intended to provide analytical rather than statistical generalisation. To address potential confounding between professional role and national context, geographic diversity is treated as contextual variation rather than an analytical variable. The analysis focuses on professional roles and experiences rather than country-level comparisons.

Data Collection

Data were collected through online semi-structured interviews, guided by a flexible protocol covering four central topics: perceptions and use of data, implementation and challenges, impact on scouting, and future perspectives. Semi-structured interviews are widely recognised as appropriate for exploring perceptions, experiences, and complex organisational phenomena, as they allow for consistency across interviews while providing flexibility to explore emerging themes in depth (Kvale & Brinkmann, 2009; Tisdell et al., 2025). The interview protocol was developed based on insights from a systematic literature review to ensure alignment with the research objectives, and the full interview guide is provided in Appendix A. All interviews were conducted via video conferencing by the researcher between March 2025 and May 2025. Each interview began with a brief introduction outlining the purpose of the study, ethical considerations, and confidentiality assurances. Participants were informed that the discussion would focus on their professional experiences with data use in scouting and that there were no right or wrong answers. Interviews lasted approximately 45 minutes. With participants' consent, all interviews were audio-recorded and transcribed verbatim. Field notes were taken during and immediately after each interview to capture contextual observations and preliminary reflections.

Ethical principles were observed throughout the research process. Participants were informed about the purpose of the study and provided informed consent prior to participation. Confidentiality and anonymity were ensured by removing identifying information from transcripts and reporting findings using participant codes. Participation was voluntary, and participants were informed of their right to withdraw at any stage.

Results

Results are presented thematically, encompassing perceptions of the role of data, the practical challenges of implementation, their influence on strategic recruitment, and future perspectives on the profession. The discussion integrates the voices of the professionals interviewed while establishing a direct dialogue between theory and practice.

Perceptions of Data: Complement Rather Than Substitute

Across all interviews, participants expressed the consensus that data serve as an essential complement to the scout's intuition and experience, but never a replacement. Data are regarded as a powerful support tool for validating perceptions, optimizing workflows, and reducing uncertainty; however, human judgment remains central for interpretation and contextualization. This aligns with literature emphasizing that contextual knowledge, tacit expertise, and situational interpretation are indispensable in performance evaluation (Dubois & Walzak, 2025; Sarmento et al., 2018). Participants stressed the dangers of evaluating isolated metrics without considering situational nuances. As participants P1 and P4 said:

> *"It is important to highlight the influence of context in the interpretation of these data since scoring goals in an African league, for example, does not equate to the same performance in championships such as the Portuguese league or the English Premier League." (P1)*

> *"You can't rely solely on data or video; you need to cross-reference both." (P4)*

Data were also described as integral to the daily workflow, particularly for narrowing the scouting universe. Clubs often use analytics for preliminary filtering, thus enabling scouts to focus on profiles aligned with strategic needs. As one participant stated:

> *"After analyzing a player, I like to check the data to see whether what I felt is confirmed or not. Sometimes there are surprises, other times it reinforces what I already thought." (P3)*

The use of data as a tool for value creation is perceived differently by interviewees, although there are clear points of convergence. Overall, data is viewed primarily as a supporting and filtering tool that improves efficiency by reducing the pool of players to be analysed, while not replacing human judgement. P3, who works in Major League Soccer, explains that data is useful as an initial filter that allows professionals to focus on more relevant profiles but stresses the need for contextual interpretation:

> *"A data point can tell you a player is good, but if that performance comes from a less competitive league, you need to understand what it means" (P3)*

Similarly, P5 considers data as a starting point or reference that provides signals guiding qualitative analysis, which ultimately validates recruitment decisions. There is therefore a shared understanding that data optimises the talent screening process, which is particularly important given the limited resources available for live observation. The need to contextualise data is further emphasised by P5, who highlights a preference for percentage metrics over absolute values due to their ability to normalise data and enable quicker comparisons between players with different levels of involvement. However, percentage metrics have limitations, particularly their insensitivity to sample size. For example, a player completing all three passes attempted in a match would achieve 100% accuracy, which may appear to indicate optimal performance but loses meaning when considered alongside the low volume and quality of actions. As P5 notes,

> *"Some percentages can be misleading if not properly filtered, such as a high pass completion rate when the player only makes horizontal passes" (P5)*

, reinforcing the need to combine percentage and absolute measures when evaluating players. The use of data to identify specific and multidimensional tactical profiles demonstrates that data-driven scouting enables more segmented searches aligned with club needs and strategies, a capability that is particularly beneficial for clubs with limited budgets seeking to maximise the return on investment in talent identification. Additionally, according to P3, data allows subjective perceptions to be confronted with empirical evidence, increasing confidence in decision-making and reducing evaluation errors:

> *"After analysing a player, I like to check the data to see whether what I felt is confirmed or not. Sometimes there are surprises, other times it reinforces what I already thought" (P3)*

The transformative potential of DDDSS in scouting is increasingly recognised as central to the modernisation of football. Emerging technologies such as artificial intelligence and big data are viewed by interviewees as tools that can reduce biases associated with visual observation and support more informed and rational decision-making, as noted by (Dubois & Walzak, 2025). In this context, when properly trained and adapted to the competitive environment, AI is seen as essential for ensuring systematic and contextualised data analysis through its ability to detect performance patterns. P2 emphasised that

> *"The scout of the future will have more knowledge of data, software and interpretation" (P2)*

, reinforcing the idea that these technologies do not replace observers but rather transform their role. Interviewees also highlight the practical value of data in managing the vast volume of global football matches, with P1 noting that

> *"We cannot watch every game in the world, but data helps us filter better and focus on those that are really worth watching" (P1)*

The usefulness of these tools is further reflected in their ability to expand access to talent beyond traditional scouting circuits. P2 and P1 highlight how data broadens the geographical scope of talent identification:

> *"Nowadays, with platforms like Wyscout and more accessible databases, we can watch players from leagues where it was previously impossible to observe anyone" (P2)*

> *"Data helps us reach players in countries where in-person scouting cannot go, or where matches are not regularly broadcast" (P1)*

Implementation and Challenges: Cultural and Technical Barriers

Despite the clearly positive impact of DDDSS on scouting, interviews show that their practical adoption and implementation face several challenges. Although there is a generally positive perception of their transformative potential, integration is often conditioned by the profile of technical staff and club management culture, which can resist adopting these technologies. As P5 notes,

> *"Acceptance of data analysis depends a lot on the coach. In younger technical teams or those with academic training, the use of technology is natural. But in others, there is still great resistance" (P5).*

This cultural resistance is also highlighted by P3, particularly among more experienced professionals who rely on intuition and prior experience:

> *"I am younger, but imagine a 60-year-old who has worked for 30 years at the same club… it is not easy for him to adapt" (P3).*

An example mentioned in the interviews describes a professional club in South America where around 60% of decisions are still driven by a mindset with limited openness to technological innovation, prioritising experience and networks over robust analysis.

A further barrier relates to the lack of specialised analytical training within technical teams, leading to the underutilisation of available tools:

> *"The lack of integration between data and tactical reading is what makes deeper use of tools difficult. Having the number is easy, knowing what it translates to in the game is another thing" (P5).*

> *"Even here in Spain, many clubs still do not have the structure to do this analysis internally. They end up hiring external companies to prepare reports, and this creates a distance — the data arrives ready, but decision-makers do not always understand the process or criteria used" (P2).*

Issues of data availability and reliability were also highlighted, particularly in less prominent competitions, with P1 stating:

> *"Where I work, data is still quite limited. What is available mainly relates to basic statistics such as playing time, number of goals, and often not even that is accessible in leagues in countries such as Nigeria, Cameroon or Ivory Coast. This type of data simply does not exist or is extremely scarce" (P1).*

Interviewees also reported cases of unvalidated technological tools, including AI systems returning non-existent players, reinforcing the need for human interpretation.

Another limitation concerns the current inability of data to capture behavioural and emotional characteristics, highlighting the continued importance of qualitative observation. As P1 states:

> *"There is a lot that data does not see: personality, attitude, how the player behaves in a group. I have had cases of athletes with excellent numbers who did not fully fit due to human factors" (P1).*

Interviewees emphasise that a holistic evaluation requires integrating non-quantifiable factors such as personality, attitude and leadership, which remain dependent on direct observation. P3 notes that

> *"You can look at social media, at the news. But there are factors that data does not give you" (P3).*

Observation is therefore necessary to verify whether statistical outputs correspond to the desired player profile, with the combination of quantitative and qualitative assessment seen as essential. As P2 explains,

> *"We have seen cases where players had very positive statistical data, for example a relevant number of goals, but when observed live they did not match the desired profile. At those moments, it becomes clear that data alone does not capture the full performance and potential of a player" (P2).*

Overall, the participants indicate that the main competitive advantage lies not merely in possessing data, but in the ability to translate it into effective action through skilled human capital.

The Impact of DDDSS on Scouting

The participants indicate a significant use of data in the identification, analysis and screening of talent, while also highlighting limitations in its ability to directly influence market value. Overall,

the impact of data is multifaceted: it improves processes and expands the reach of scouting, but does not always translate into objectively decisive market metrics. According to P4, one of the main benefits of data lies in enhancing talent discovery and analysis, enabling players outside major leagues and traditional visibility circuits to be identified based on their technical qualities. As P4 explains,

> *"There are teams that, thanks to the use of data, can buy players who are not on the radar, for example, an Argentine playing in the first, second or third division in Spain. In Argentina, we have Talleres as an example: through our tools, they managed to sign a Brazilian player who was playing in Bulgaria and found him thanks to the use of our tools" (P4).*

Interviewees highlight the importance of advanced metrics such as expected goals (xG), progressive passes, duels won and link-up play as essential analytical tools to understand performance and tactical roles according to position. As P4 notes,

> *"Metrics such as expected goals (xG), link-up, duels won and progressive passes play an essential role in the functional reading of players, and vary according to position. Each position has its main metrics" (P4).*

The use of these metrics allows scouts to detect players with decisive impact whose contributions may not be immediately visible through traditional statistics, including players with balancing or compensatory roles such as defensive midfielders, centre-backs with strong anticipation skills, or forwards who create space without necessarily scoring. Overall, interviewees indicate that advanced statistics broaden scouts' field of vision and enable the recognition of players whose influence on collective performance might otherwise go unnoticed.

However, there is general uncertainty regarding the influence of these metrics on a player's market value. While they play an important role in technical analysis, they are not seen as sufficient on their own to alter market dynamics, which continue to be driven largely by traditional indicators such as goals, assists and participation in prominent leagues. P5 emphasises that more concrete data have real impact and can function as a trigger for observation, while the information collected suggests that data primarily help legitimise and validate transfer decisions rather than determine value directly. As P2 states,

> *"For me, the number is very important. I use it a lot to sell. A player without numbers performances, matches played, goals, recoveries, depending on the position if I do not have that number, I cannot sell him" (P2).*

Overall, the participants show that the impact of data-driven systems in scouting is reflected mainly in improved efficiency in screening and observation, support for technical and tactical analysis, and stronger internal justification of decisions. At the same time, the direct influence of data on market value and final decision-making remains limited, as decisions continue to be strongly shaped by traditional factors, and the effective use of advanced metrics requires contextual understanding and internal analytical capability.

The Future of Scouting: Automation, Democratization, and the Human Role

Driven by technological development, scouting is perceived by interviewees as being at a turning point, characterised by increasing volumes and complexity of information and a clear movement towards a more automated and predictive model that integrates quantitative and qualitative data. Across interviews, there is a shared view that systems will evolve towards a more interpretative rather than purely descriptive role. According to P5, the next phase of scouting will involve platforms that not only display data and video but also provide guidance on their practical application, enabling more informed decisions through tactical recommendations, player–

system compatibility analysis and simulations of potential impact P1 similarly highlights the need for systems that guide action, stating,

> *"What we need are systems that tell us that a player fits because he has the profile of actions our team needs. Today we can already see the actions, but we still have to interpret them manually" (P1).*

Regarding the impact of data-driven systems on competitive advantage, interviewees broadly agree that technology benefits those who use it. P5 considers data a source of competitive advantage but believes this advantage will be temporary as access becomes more widespread, noting,

> *"At the moment, those with more resources are ahead, of course. But I believe it will be like in other sectors: over time, everyone will have access to data and that will balance things out. The difference will be in who knows how to use it better" (P5).*

P4 views data as a tool that can help smaller clubs compensate for limited access to players through traditional networks, stating,

> *"Small clubs do not have access to the same players as big ones, nor the same contacts. But with data you can discover players that maybe no one is watching. That is where the value is" (P4).*

P3 also emphasises that accessible tools can improve processes even without large budgets:

> *"You do not need a 50-thousand-dollar platform. With something simple you can already improve many processes" (P3).*

At the same time, P4 notes that data alone does not constitute an advantage if it diverts excessive resources from squad building, emphasising that the key lies in using data effectively:

> *"If a club with little money spends everything on data and then does not have good players, it is useless. The important thing is knowing how to use data to make good decisions, not just having technology" (P4).*

P2 highlights that broadcasting matches from lower divisions can also create advantages in scouting, explaining,

> *"Clubs that invest in broadcasting their games, whether through platforms like YouTube or Twitch, are gaining competitive advantage. An essential measure to professionalise scouting in lower divisions would be precisely to ensure regular broadcasting" (P2).*

Overall, interviewees indicate that while the use of data will remain a differentiating factor, the increasing sophistication of systems does not eliminate uncertainty in football, preserving the relevance of human judgement.

Discussion

This study set out to examine how data analysis and DDDSS influence decision-making in football scouting by integrating practitioner perspectives with existing research. The findings reinforce the view that scouting is undergoing a structural transformation, yet they also reveal persistent tensions between analytical sophistication and practical implementation. Overall, the results suggest that while data has become indispensable in modern scouting workflows, its value lies primarily in supporting and structuring decision-making rather than replacing human judgement.

Data as Complementary Expertise Rather Than Replacement

A central finding of this study is the dual characterization of DDDSS as simultaneously indispensable and limited. Participants consistently described these systems as vital infrastructure without which modern scouting operations would be practically unviable, yet equally emphasized their current inability to function autonomously. This finding challenges simplistic narratives of either technological replacement or mere supplementation, revealing instead a dependency relationship where DDDSS enable operational capabilities that traditional methods cannot achieve, while remaining constrained by technological limitations that necessitate continuous human oversight (Gamble et al., 2020; Rinaldi et al., 2024). The participants reinforce the idea that performance evaluation in football is inherently contextual, echoing previous research highlighting the limitations of isolated metrics (Ball et al., 2025). Participants' concerns about interpreting performance across different competitive environments further support the argument that statistical outputs must be contextualised to avoid misleading conclusions. These findings therefore corroborate the literature emphasising the importance of combining quantitative indicators with tacit knowledge and situational awareness (Dubois & Walzak, 2025; Sarmento et al., 2018). At the same time, the results extend existing research by illustrating how practitioners operationalise this complementarity in daily workflows. Data is not only used to support final decisions but also to structure the scouting process itself, particularly through filtering mechanisms that enable more efficient allocation of observational resources. This highlights the practical role of analytics as a workflow optimisation tool, an aspect often discussed conceptually but less frequently documented empirically.

Persistent Implementation Gaps and Organisational Barriers

Despite widespread recognition of the benefits of DDDSS, the findings reveal significant barriers to their effective integration, particularly cultural resistance and limited analytical capabilities within organisations. These results strongly corroborate previous studies identifying organisational inertia and resistance to change as key obstacles to adopting data-driven approaches (Monsees, 2025). The persistence of intuition-driven decision cultures suggests that technological adoption in football remains uneven and dependent on organisational context. The participants also highlight a gap between access to data and the ability to interpret it, reinforcing the literature's emphasis on the need for data literacy and interdisciplinary collaboration (Harkness-Armstrong et al., 2025). The reliance on external analytical providers described by participants reflects structural limitations that can create distance between data production and decision-making, supporting concerns raised in prior research about the challenges of integrating analytics into existing organisational processes. Another important finding relates to data availability and reliability across competitions, particularly outside major leagues. This reinforces existing concerns regarding the uneven quality of datasets and their implications for comparative analysis. By documenting these practical limitations, the study adds empirical depth to the literature's recognition that analytical systems are constrained by the quality and standardisation of available data.

Limits of Quantification and the Continued Centrality of Human Judgement

The findings strongly confirm that certain dimensions of player evaluation remain resistant to quantification. Participants consistently highlighted behavioural and psychological attributes such as personality, adaptability, and group dynamics as critical factors that cannot be fully captured through data. This supports prior research emphasising the limitations of quantitative metrics in assessing psychosocial dimensions of performance (Abate Daga et al., 2023; Kelly et al., 2022). Importantly, the results illustrate that practitioners do not perceive these limitations as weaknesses of analytics per se, but rather as a reminder of the need for holistic evaluation

frameworks. This reinforces the argument that hybrid approaches combining statistical analysis with direct observation are the most effective models for talent identification (Barraclough et al., 2025). By highlighting concrete examples where players with strong statistical profiles failed to meet expectations due to contextual or behavioural factors, the study provides practical evidence supporting theoretical claims about the multidimensional nature of performance evaluation.

Multifaceted Impact of DDDSS on Scouting Practices

The results demonstrate that the impact of DDDSS is primarily operational rather than determinative. Data enhances efficiency, expands scouting reach, and strengthens the analytical foundation of recruitment decisions, but it does not fundamentally replace traditional evaluation criteria. This finding aligns with research showing that analytics improves decision quality by introducing structured evidence while still requiring interpretative judgement (Anzer et al., 2021). Participants' emphasis on the ability of data to identify players outside traditional visibility circuits confirms prior research highlighting the role of analytics in expanding global talent discovery (Velema et al., 2020; Yunus & Aditya, 2024). The study therefore supports the view that data contributes to greater market exploration and resource optimisation, particularly for clubs seeking undervalued talent. However, the findings also reveal that advanced metrics have limited direct influence on market value, which continues to be shaped largely by traditional indicators such as goals, assists, and league visibility. This nuance adds important empirical insight to the literature by distinguishing between analytical relevance for evaluation and its actual influence on market dynamics. In this sense, data appears to function more as a legitimising mechanism for decisions than as a primary driver of valuation.

The Evolution Towards Hybrid and Predictive Scouting Models

The findings suggest that scouting is moving towards a more automated and predictive paradigm, with practitioners expecting analytical systems to evolve from descriptive tools to decision-support platforms capable of generating recommendations. This aligns with broader technological forecasts highlighting the increasing role of artificial intelligence and predictive modelling in performance analysis (Beiderbeck et al., 2023; Hassani et al., 2018). Nevertheless, interviewees consistently emphasised that human judgement will remain indispensable due to the inherent uncertainty and contextual complexity of football performance. This reinforces the literature's projection that the future of scouting lies in the synergy between technological capabilities and human expertise (Dubois & Walzak, 2025). The study also highlights the potential of data to reduce structural inequalities by enabling smaller clubs to identify talent more efficiently, supporting research suggesting that accessible analytical tools can enhance competitive balance when used strategically (Yunus & Aditya, 2024). At the same time, the findings caution that competitive advantage depends not on access to data alone, but on the organisational capacity to interpret and apply it effectively.

Theoretical and Practical Implications

This study contributes to sports analytics research by providing empirical support for scouting as a hybrid decision-making process where data functions as a filtering, validation, and structuring mechanism rather than a deterministic tool (Gamble et al., 2020). The findings provide empirical evidence that modern scouting operations are fundamentally dependent on DDDSS the scale and complexity of global talent markets render manual-only approaches practically impossible. However, significant limitations in contextual interpretation, tactical evaluation, and behavioral assessment prevent autonomous functioning. By documenting how practitioners integrate quantitative metrics with contextual judgment, the findings reinforce that performance evaluation is inherently multidimensional and cannot be fully captured through

analytical models alone (Abate Daga et al., 2023; Dubois & Walzak, 2025). This dual characterization, vital dependency combined with technological limitation, challenges technological determinism and refines theoretical understanding of data-driven decision-making in sports analytics (Monsees, 2025). The results distinguish between operational and market influence, revealing that while data enhances evaluation processes, its limited effect on market valuation positions analytics as a legitimizing tool rather than a primary driver of economic outcomes. The continued centrality of human judgment, even as DDDSS become vital infrastructure, suggests a trajectory toward sophisticated human-machine collaboration rather than full automation. For clubs, investment in DDDSS is no longer optional but necessary for competitive viability clubs without sophisticated data infrastructure face significant disadvantages in market awareness and talent identification. However, current DDDSS technologies cannot operate autonomously and require substantial human capital investment. Competitive advantage derives not from possessing DDDSS, which are increasingly accessible, but from organizational capacity to interpret data outputs and translate analytical insights into effective recruitment decisions. Organizations must develop hybrid professionals capable of bridging tactical knowledge and analytical interpretation while adopting holistic evaluation frameworks integrating quantitative metrics with behavioral and contextual assessment.

Conclusion

This study examined the role of DDDSS in football scouting through an exploratory qualitative multiple case study, focusing on how professionals interpret and integrate data within decision-making processes. Rather than merely documenting perceptions, the findings highlight the ongoing reconfiguration of scouting practices as organisations negotiate the balance between analytical rationality and experiential judgement. The study suggests that DDDSS should not be understood as purely technological tools but as socio-technical mechanisms whose impact depends on organisational capabilities, interpretive frameworks, and cultural readiness. While data are widely recognised as enhancing analytical rigour and expanding scouting reach, their value remains contingent upon human interpretation and contextualisation. This reinforces the view that technological adoption in scouting is less a process of substitution and more one of hybridisation, where expertise and analytics co-evolve.

From a theoretical standpoint, the research contributes to the understanding of data-driven decision-making in complex professional settings by providing empirically grounded insights into how practitioners reconcile data with intuition. It highlights that the effectiveness of DDDSS is mediated by organisational learning processes and by the development of analytical literacy among decision-makers, extending current discussions that often treat data adoption as primarily technological rather than organisational. Practically, the findings underscore that competitive advantage does not arise from access to data alone but from the capacity to embed data within decision routines and interpretive practices. The study therefore points to the importance of investing not only in technological infrastructures but also in skills development and cultural alignment to fully leverage analytical capabilities.

However, the study also reveals important limitations that constrain the scope of its conclusions. The small sample size, while consistent with an exploratory qualitative design, limits the breadth of perspectives captured and restricts the ability to draw broader generalisations about the football industry. Additionally, the reliance on self-reported perceptions may reflect normative views about data use rather than actual organisational practices, highlighting the need for complementary empirical approaches. The cross-sectional nature of the research also prevents the observation of how perceptions evolve over time as technologies mature.

These limitations point to several directions for future research. Further studies should seek to

validate the conceptual insights generated here through larger and more diverse samples, enabling more robust analytical generalisation. The development and application of validated survey instruments would allow the systematic measurement of DDDSS adoption, perceived value, and organisational readiness across contexts. Quantitative and mixed-method designs could help test the relationships identified in this study and assess their explanatory power at scale. Future research could also benefit from longitudinal approaches to examine how organisations adapt to data-driven practices over time, as well as comparative studies exploring how differences in organisational resources, competitive environments, and institutional contexts shape the adoption and impact of DDDSS. Such research would contribute to a more nuanced understanding of how data-driven transformation unfolds within professional football.

In sum, this study highlights that the transformation of football scouting is not simply a technological shift but an organisational and cognitive one, requiring the integration of analytical tools with professional judgement. By foregrounding the socio-technical nature of DDDSS adoption, the research provides a foundation for future work aimed at developing more robust, validated, and generalisable knowledge about data-driven decision-making in complex organisational environments.

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Appendix A – Interview script

Due to space constraints, the full systematic literature review is not presented in this paper. However, the search strategy and eligibility criteria used to support the development of the study are briefly outlined below. The literature search was conducted in February 2025 using the Scopus database. The search string used was:

TITLE-ABS-KEY("data-driven" OR "data analytics" OR analy* OR "data analysis" OR "big data" OR "machine learning" OR "artificial intelligence") AND (football OR soccer) AND (scouting OR "talent identification" OR "player recruitment" OR "player evaluation" OR "player selection")).

The eligibility criteria were defined to ensure the inclusion of relevant and high-quality studies. Only peer-reviewed journal articles published between 2018 and 2025 and written in English were considered. The selected studies focused on the use of data analytics, information systems, and Data-Driven Decision Support Systems (DDDSS) within the context of football scouting and player recruitment.

Table 2. Semi-Structured Interview Guide

Topic	Question	References
Perceptions of Data Use in Scouting	How do you perceive the use of data in scouting? Do data complement scouts' intuition or replace experience in decision-making?	(Cameron et al., 2025; Frost et al., 2025)
	How can data and subjective judgement be combined in scouting? How can this integration create more value in decision-making?	(Furley et al., 2025; Monsees, 2025)
	How do you perceive the use of artificial intelligence and big data analytics in scouting? What is the potential of these technologies to support more informed decisions?	(Dubois & Walzak, 2025)
Implementation and Challenges of DDDSS	What challenges arise from implementing and integrating technologies such as AI into the scouting process?	(Dubois & Walzak, 2025)
	Considering limitations in resources and expertise in many contexts, how can data be managed to become a competitive advantage in scouting?	(Harkness-Armstrong et al., 2025)
	How can objective and subjective factors be integrated to create a more holistic evaluation of players in the scouting process?	(Singh & Suguna, 2023; Wieland et al., 2023)
Impact of DDDSS in Scouting	How do data analytics, AI, and advanced metrics influence decision-making in player recruitment and selection within your organisation?	(Barron et al., 2018)
	How do advanced data and rating systems contribute to a more comprehensive player evaluation? How are different data sources integrated to build more holistic and predictive profiles?	(Malikov & Kim, 2024)
	How can data help identify and quantify the value of players whose contributions are not reflected in traditional statistics?	(Goes et al., 2019)
	How does data analysis influence financial strategies and support strategic decisions to improve club performance and competitiveness?	(Ball et al., 2025; Cameron et al., 2025)
Future of Scouting	In the future, what will be the role of human scouts and coaches given increasing automation and intelligent data systems?	(Dubois & Walzak, 2025)
	How can scouting evolve to integrate subjective and non-quantifiable factors using technology to create more complete player profiles and minimise bias?	(Dubois & Walzak, 2025)
	Smaller organisations often struggle to keep pace with technological evolution. Could the use of these systems still provide a competitive advantage?	(Beiderbeck et al., 2023)