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Decentralised Governance in Football: Feasibility of DAO Implementation

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Abstract

Football clubs' increasing commercialisation and privatisation have created a significant gap between clubs and supporters, necessitating innovative solutions to reconnect clubs with their fans. Thus, this article examines the feasibility and implications of implementing Decentralised Autonomous Organisations (DAOs) in the governance of football clubs. Utilising blockchain technology, DAOs offer a novel governance model that enhances transparency, accountability, and fan engagement. Through a qualitative research design, this study explores the potential benefits and challenges of DAO adoption in football clubs. Key findings highlight the potential for increased financial resources through decentralised fundraising, democratised decision-making, and improved operational efficiency via automated smart contracts. However, significant challenges remain, including legal uncertainties, technical vulnerabilities, financial risks, and governance complexities. To address these challenges, we suggest hybrid governance models that integrate traditional structures with DAO elements, phased implementation through pilot projects, and robust stakeholder engagement strategies. The findings provide valuable implications for football clubs and other organisations contemplating the adoption of decentralised governance models.

Keywords: *Decentralised Autonomous Organisations, DAO, Governance, Football, Soccer*

JEL Classifications: *G34, L83, O33, Z28*

1. Introduction

Blockchain technology has shifted paradigms in numerous domains, fundamentally transforming our conceptualisation of data security, transparency, and decentralised operations [1–3]. One particularly intriguing application is the concept of Decentralised Autonomous Organisations (DAOs). DAOs employ blockchain technology to facilitate decentralised decision-making processes, thereby introducing a novel paradigm for organisational governance [4–6].

But what exactly are DAOs, and where can they be applied? A DAO is an organisation governed by a blockchain-based smart contract, enabling stakeholders to participate in decision-making processes without needing a centralised authority [5, 7]. Such organisations may be applied in various sectors, including finance and supply chain management, as well as in community-driven initiatives.

This article examines the potential applications of DAOs in the governance of football clubs. This is particularly relevant given that football, often referred to as the "people's game," has increasingly distanced itself from its supporters as a result of commercialisation and privatisation [8–10]. Implementing DAOs in football clubs may facilitate a reconnection between fans and their teams, promoting transparency, accountability, and greater fan engagement. To analyse this potential, we employ a qualitative research approach, conducting semi-structured interviews with DAO experts and industry professionals. This methodology allows us to gather in-depth insights into the feasibility and practical implications of DAO governance in football clubs, focusing on the benefits and challenges associated with such a transformation.

The findings of this study indicate the existence of several potential avenues for improvement, including the possibility of fostering more active engagement among fans, the generation of new sources of revenue, and the enhancement of transparency and accountability. However, challenges include inefficient decision-making processes, legal uncertainties, and the volatility of cryptocurrency markets. These insights provide a nuanced understanding of the potential for DAOs in football governance and identify areas that require careful consideration.

In conclusion, while DAOs present promising opportunities for democratising football governance and reconnecting with supporters, it is imperative to address significant challenges to ensure successful implementation. Further research should concentrate on creating hybrid models that integrate traditional governance structures with DAO characteristics. Additionally, investigating potential regulatory frameworks to facilitate DAO implementation would be beneficial.

This study significantly contributes to the literature on decentralised governance and sports management. It bridges the gap between blockchain technology and sports governance by exploring the novel application of DAOs in football clubs. This research provides a comprehensive analysis of the potential benefits, such as enhanced fan engagement, increased transparency, and new financial resources, offering a new perspective on democratising club management. By identifying the challenges and proposing hybrid governance models, this article highlights the practical implications of DAO adoption and offers actionable solutions to mitigate associated risks. Thus, our findings have implications that extend beyond football, providing valuable insights for other industries contemplating the adoption of decentralised governance models.

2. Context

The ownership structures of football clubs have evolved significantly over the years, leading to varying degrees of commercialisation and privatisation. This evolution has had profound implications for the relationship between clubs and their supporters, often resulting in a growing disconnect [8–10]. Blockchain technology, through the implementation of DAOs, offers a potential solution to these governance challenges.

Ownership Structures of Football Clubs

Football clubs across the globe operate under various ownership structures, each with unique characteristics and implications for governance, financial performance, and supporter engagement. Over the years, these structures have evolved from a predominantly dispersed ownership to one of private ownership, profoundly impacting the relationship between clubs and their supporters. The primary models of ownership structures in football are privately owned entities, publicly listed companies, and mutually owned clubs, usually known as "members' associations" [11].

Privately owned football clubs are typically controlled by wealthy individuals, families, or corporate conglomerates [11, 12]. This ownership model is prevalent in many top European leagues, such as the English Premier League and the French Ligue 1, where high-profile clubs like Chelsea FC, Manchester City FC, and Paris Saint-Germain are owned by billionaire investors or state-backed enterprises. The primary advantage of private ownership is the ability to inject significant financial resources into the club [11, 13]. This financial backing enables substantial investments in player acquisitions, infrastructure, and global marketing campaigns, enhancing the club's competitive edge and international brand.

However, private ownership often results in a disconnect between the club's management and its supporters. Decisions are typically made by a small group of owners or executives, with little to no input from fans [11, 14]. This can lead to decisions prioritising financial returns over sporting success or community values [12, 14]. For example, the proposed European Super League in 2021, which faced significant backlash from supporters, was driven by the financial interests of privately owned clubs seeking to maximise revenue streams. This emphasis on commercialisation and privatisation can sideline the voices and interests of supporters, reducing their role to that of mere consumers rather than stakeholders [8].

Publicly listed football clubs issue shares traded on stock exchanges, allowing fans and investors to buy and hold equity in the club [11]. Prominent examples include Manchester United FC, Juventus Turin FC, and AS Roma [15]. This model provides several advantages, including enhanced financial transparency, access to capital markets, and raising funds by selling shares. Publicly listed clubs are required to disclose detailed financial information, which can enhance accountability and investor confidence.

Despite these benefits, the focus on shareholder value can sometimes overshadow the sporting interests of the club [11]. Publicly traded clubs must balance shareholders' expectations, who may prioritise financial returns, with the need to invest in team performance and sporting success. This tension can lead to conflicts between financial performance and the club's on-field ambitions. Moreover, the dispersion of ownership among numerous small shareholders can dilute the influence of any single group, including supporters, in the club's decision-making processes [11]. The drive for commercial success, through investments in player transfers, marketing, and branding aimed at maximising profits and global reach, has brought financial success to many clubs but has also led to criticism regarding the erosion of traditional values and communal aspects of the sport [11].

Members' associations, also known as supporter-owned or community-owned clubs, are primarily found in Germany (e.g., FC Bayern Munich and BV Borussia Dortmund) and, to some extent, in Spain (e.g., Real Madrid CF and FC Barcelona) [16]. These clubs operate under models where the majority of voting rights are held by the club's members, who are typically fans [17]. The German "50+1 rule" is a notable example, requiring that member associations hold at least 51% of the voting rights in a club, ensuring that supporters retain control [16, 17]. Consequently, clubs operating under this model foster a strong connection with their local communities and fan bases.

This structure promotes the alignment of club and supporter interests, ensuring that clubs are seen as win-maximisers rather than profit-maximisers. This distinction is particularly appealing to sponsors, as it signals a commitment to the club's mission and values, much like the credibility the Red Cross maintains by not being a for-profit corporation. However, members' associations often face financial limitations due to restricted access to external capital. Reliance on member contributions and limited commercial revenue streams can constrain the club's ability to compete financially with privately owned or publicly listed clubs [9]. Additionally, the democratic decision-making process can sometimes lead to slower, more cumbersome governance, especially in response to rapidly changing market conditions [16].

The mutual ownership model emphasises democratic governance, with decisions made through member votes and elected representatives [16]. This structure promotes the alignment of club and supporter interests: Members do not have profit appropriation or disposal rights, which signals that these clubs are focused on win-maximisation rather than profit-maximisation [17]. This aspect is vital for sponsors, as it conveys a commitment to the club's mission and values. For example, one might question the credibility of supporting an organisation like the Red Cross if it were structured as a for-profit corporation. Nevertheless, members' associations often face other financial limitations due to restricted access to external capital. The reliance on member contributions and limited commercial revenue streams can constrain the club's ability to compete financially with privately owned or publicly listed clubs [11]. Additionally, the democratic decision-making process can sometimes lead to slower, more cumbersome governance, especially in response to rapidly changing market conditions [18].

Comparing these three ownership structures reveals a trade-off between financial power and supporter engagement. Privately owned clubs benefit from substantial financial investment and rapid decision-making but often at the cost of reduced supporter influence and transparency. Publicly listed clubs offer financial transparency and broader ownership but must balance shareholder interests with sporting success. Mutually owned clubs prioritise community values and democratic governance but face challenges in accessing capital and maintaining competitive parity with wealthier clubs.

The evolving landscape of football governance underscores the need for innovative solutions that balance financial sustainability with supporter engagement. As clubs navigate the complexities of commercialisation and privatisation, the potential of emerging governance models, such as DAOs, becomes increasingly relevant. These models promise to enhance transparency, accountability, and fan participation, offering a potential path forward for addressing the governance challenges faced by football clubs today [6].

Decentralised Autonomous Organisations (DAOs)

A DAO is a digital organisation collectively owned and managed by its members, with governance rules embedded in smart contracts on a blockchain [5, 7]. Smart contracts facilitate and enforce the agreed-upon rules autonomously, executing transactions and decisions based on pre-defined criteria without human intervention [19]. The key features of DAOs include decentralisation, transparency, automated governance, and token-based membership [5, 6]. Decentralisation eliminates the need for a central governing body, distributing decision-making power among all members. Transparency is ensured as all activities, decisions, and financial transactions within a DAO are publicly recorded on the blockchain, accessible to all stakeholders. Automated governance through smart contracts reduces the need for intermediaries and administrative overhead, streamlining operations and reducing costs. Token-based membership often requires holding the organisation's tokens, which can represent voting rights, ownership stakes, or access to certain services.

DAO use cases have been explored across various sectors, showcasing their versatility and transformative potential [20]. In decentralised finance (DeFi), DAOs are integral to platforms such as MakerDAO and Uniswap, where they manage protocols for lending, borrowing, and trading without centralised intermediaries [21, 22]. This decentralised approach enhances security and efficiency in financial transactions. In social media and content creation, platforms like Steemit leverage DAOs to reward content creators based on community votes, fostering a decentralised content economy that empowers users [23]. Charitable organisations such as Big Green DAO utilise DAOs to ensure transparent and democratic allocation of funds, guaranteeing that contributors use donations as intended [24]. In art, DAOs like Artrade DAO are employed to collect, hold, manage, and trade artworks, particularly non-fungible tokens, revolutionising art ownership and commerce [25]. Additionally, DAOs such as VitaDAO are reforming scientific research by providing new funding sources, facilitating direct dissemination of knowledge, and redistributing value created to researchers, thus democratising scientific advancements [26].

The advantages of DAOs are manifold. One significant benefit is enhanced transparency [6]. The public nature of blockchain ensures that all transactions and decisions are visible to all stakeholders, thereby reducing the risk of corruption and fraud. This level of transparency is fundamental to building trust in decentralised systems. Furthermore, DAOs facilitate democratic participation and inclusivity by allowing token holders to vote on proposals, creating a fairer decision-making process [5]. This democratisation ensures that a broader spectrum of stakeholder interests is represented in governance decisions.

Moreover, DAOs enhance accountability, as every action the organisation takes is recorded and verifiable on the blockchain [7]. This ensures that members can hold each other accountable for their decisions and actions. Automating processes through smart contracts significantly reduces administrative overhead, increasing operational efficiency [5]. By eliminating intermediaries and streamlining operations, DAOs can operate swiftly and with fewer resources. Finally, DAOs can provide enhanced funding capabilities. Through token sales and decentralised fundraising mechanisms, DAOs can attract a wide range of investors globally, providing ample resources for various projects and initiatives [6].

However, adopting DAOs is not without significant challenges. Legal uncertainties present major hurdles, as the regulatory environment for DAOs remains unclear in many jurisdictions [27]. This ambiguity complicates compliance and legal recognition, potentially limiting their broader adoption. Moreover, the lack of clear reporting standards for governance tokens in DAO treasuries can lead to inaccurate financial disclosures and regulatory complications [3]. Technical vulnerabilities also pose substantial risks [7]. DAOs are susceptible to bugs in smart contracts and potential security breaches, which can lead to severe financial and operational repercussions. Ensuring the security and robustness of these contracts is crucial for maintaining trust and functionality within DAOs. Additionally, achieving consensus among a diverse and distributed group of stakeholders can be complex [28]. The decentralised nature of DAOs can lead to protracted and contentious decision-making processes, potentially resulting in paralysis or conflicts that hinder effective governance.

Due to these challenges, adopting fully operational DAOs in sports remains in the exploratory phase, with only a few initiatives currently in development. One notable project is RADA [29], which is pioneering the concept of governing football clubs through blockchain applications [30, 31]. RADA aims to purchase a lower-league football club in Europe via a token sale and implement a DAO governance system that allows direct engagement and control by token holders [30]. This initiative provides a unique level of transparency and accountability, as the allocation and utilisation of funds are open for community scrutiny, a level of oversight rarely seen in traditional football management [31]. The project faces challenges such as share price volatility and regulatory hurdles but is making progress through initiatives such as the RADA nurturing programme, partnerships with global ambassadors (i.e., David Villa), and a DAO-based fan service platform [29]. Although RADA is still in its infancy, it represents a significant step towards decentralised sports governance.

The only other comparable application in the sports industry is the use of fan tokens by clubs like FC Barcelona and Juventus Turin FC [32]. These tokens allow fans to influence minor club decisions, vote on various matters, and access unique content, thereby increasing fan involvement and fostering a sense of community [33]. While fan tokens do not entirely decentralise the governance of a club, they offer a glimpse into the potential benefits of incorporating more democratic and transparent governance models. These tokens can be seen as precursors to fully operational DAOs, highlighting the gradual shift towards greater fan engagement and accountability in sports governance.

As the technology and regulatory landscape evolve, the principles behind DAOs could increasingly shape the future of sports management, potentially leading to more robust and participatory governance structures.

3. Methodology

This study employs a qualitative research design to explore the feasibility and implications of implementing DAOs in the governance of football clubs. Given the nascent nature of DAOs and their emerging application in sports governance, a qualitative approach is appropriate for capturing nuanced insights and the subjective experiences of experts [34]. Data were collected through semi-structured interviews, particularly well-suited to exploratory research [34]. This approach allows for flexibility in questioning, enabling a more thorough examination of emerging themes while maintaining a consistent framework across interviews [35].

The participants were selected using purposive sampling to ensure they possessed substantial expertise and experience with DAOs and blockchain technology [36]. The sample consisted of industry professionals and blockchain developers, each with at least three years of involvement in DAO-related projects. This criterion elicited rich, informed perspectives on applying DAOs in football governance. The final sample consisted of six comprehensive and high-quality interviews conducted over three months from April to June 2024. Each interview lasted approximately 60–90 minutes and was conducted via video conferencing platforms to accommodate the geographic dispersion of the participants. With the participants' consent, interviews were recorded, and verbatim transcripts were generated to ensure data accuracy.

The interview protocol comprised seven sections, each addressing a specific area of inquiry. The seven categories were designed to encompass all essential elements pertinent to implementing DAOs in the context of football governance. The *Introductory questions* were designed to ascertain the participants' background and experience. *General perceptions* sought to ascertain the participants' initial thoughts on DAOs and football governance. *Governance* examined the operational implications of DAOs, while *Finance* explored the economic opportunities and challenges. *Legal* addressed the regulatory landscape, whereas *Technical* examined the technological feasibility and requirements. The *Concluding reflections* provided an opportunity for additional insights or concluding thoughts. This comprehensive structure ensured that the interviews yielded a comprehensive understanding of the subject matter.

The responses were then subjected to qualitative data analysis using MAXQDA. This tool facilitates the systematic coding and analysis of the interview transcripts, thereby enabling the identification of recurring themes and patterns [37]. The utilisation of MAXQDA guarantees a meticulous and transparent analysis procedure, thus enhancing the dependability and authenticity of the findings [37]. To minimise bias and ensure intercoder reliability, two researchers coded each transcript independently [38]. Any discrepancies in the coding were discussed and resolved through the intercoder agreement, further strengthening the analysis's robustness [38].

4. Findings

The qualitative interview data reveal diverse perspectives on the current state of football fan involvement and the potential impact of DAOs. Interviewees expressed concern over the growing commercialisation and privatisation of football clubs, which has led to a perceived disconnect between clubs and their supporters. Participants noted that fans often feel marginalised in decision-making processes, with their influence limited to passive consumption rather than active participation. This sentiment underscores the need for innovative governance models to bridge the gap between clubs and their supporters, making fan engagement more meaningful and impactful.

Advantages of Using DAOs

Addressing the issues highlighted by these general perceptions, DAOs offer several advantages that can potentially transform football club governance.

One of the most significant advantages of implementing DAOs in football club governance is the potential for enhanced financing and economic benefits. Participants highlighted that DAOs enable a diverse range of investors to contribute to ownership through token sales and decentralised fundraising mechanisms. This global pool of investors can provide ample financial resources for clubs to invest in player acquisitions, infrastructure, and community projects. Moreover, the transparency and accountability inherent in blockchain technology can enhance investor confidence, making it easier for clubs to secure funding.

Another major advantage of DAOs is their ability to empower fan participation in governance. Allowing token holders to vote on proposals, DAOs create a more inclusive and democratic decision-making process. This democratisation ensures that a broader spectrum of stakeholder interests, including those of fans, is represented in club decisions. Participants emphasised that this could lead to more equitable outcomes and strengthen the bond between clubs and their supporters. Additionally, the decentralised nature of DAOs means that decision-making power is distributed among all members, reducing the risk of centralised authority misuse. Moreover, DAOs can address issues of voter apathy by increasing voter engagement among clubs that are already mutually owned, providing a viable solution to enhance participation and involvement in the governance process.

The transparency provided by blockchain technology is another key benefit of DAOs. All transactions and decisions within a DAO are recorded on a public ledger, ensuring they are visible and verifiable by all stakeholders. This transparency significantly reduces the risk of corruption and fraud, fostering greater trust among fans, investors, and other stakeholders. Interviewees highlighted that this level of accountability could enhance the ethical conduct of club operations and ensure that resources are used efficiently and effectively. However, the treatment of native governance tokens in DAO treasuries may not always align with fair presentation standards, potentially resulting in misleading financial information for stakeholders and impacting trust [3]. Therefore, establishing clear and fair compensation models is essential for maintaining transparency and trust in financial governance within DAO-run organisations [4].

Finally, automating processes through smart contracts can significantly reduce administrative overhead. Participants noted that smart contracts eliminate the need for intermediaries, streamline operations, and allow clubs to function more swiftly with fewer resources. This increased efficiency can help football clubs allocate funds better and improve overall performance.

Disadvantages of Using DAOs

Despite their advantages, DAOs present several governance challenges. Achieving consensus among diverse stakeholders can be complex and time-consuming, potentially leading to decision-making paralysis or conflicts. The need for continuous engagement from many token holders poses practical challenges, as not all members may have the time or expertise to participate in every decision. To address these issues, clubs could implement hybrid governance models that combine traditional structures with DAO elements, allowing a gradual transition while maintaining stability and effective decision-making. Providing education and resources to stakeholders about the DAO model can also facilitate smoother participation and engagement. Monetary and non-monetary incentives, such as value-based vesting schedules, can help encourage active and sustained involvement, aligning the interests of participants with the long-term goals of the organisation [4].

Legal uncertainties are another significant challenge. The regulatory environment for DAOs is unclear in many jurisdictions, complicating compliance and legal recognition. Potential legal ramifications include liability, taxation, and jurisdiction issues, and the potential classification of tokens as securities and the associated compliance requirements, which deter potential investment. To navigate these complexities, clubs should engage with legal experts to ensure compliance with local laws and develop a clear legal framework for DAOs. This will facilitate smoother implementation and broader acceptance.

Financial risks associated with DAOs include market volatility and speculative investment, leading to unstable funding streams and financial unpredictability. The decentralised nature of fundraising through token sales complicates financial management and planning. Unregulated access to tokens can furthermore lead to hostile takeovers. To mitigate these risks, clubs should adopt prudent financial management practices and establish stable funding mechanisms. Diversifying funding sources and maintaining a portion of reserves in stable assets can help manage financial unpredictability. Ensuring that clubs are not exploited for short-term financial gain can be achieved by vetting token holders and overriding smart statutes that limit plutocratic control.

Technical vulnerabilities, such as bugs in smart contracts and potential security breaches, also pose significant concerns. Ensuring the security and robustness of these contracts is crucial for maintaining trust and functionality within DAOs. Clubs must invest in robust cybersecurity measures and conduct thorough audits of smart contracts to identify and fix potential vulnerabilities. Collaborating with blockchain experts can help mitigate these risks and ensure the technical soundness of the DAO infrastructure.

Operationalisation of DAOs

Operationalising DAOs in football club governance involves several key considerations. Clubs must ensure secure and robust blockchain platforms and smart contracts, collaborating with blockchain developers and cybersecurity experts for effective design and implementation. Legal compliance is also essential, requiring engagement with legal experts to navigate the complex regulatory landscape. Effective stakeholder engagement and participation strategies are vital. Educating fans and stakeholders about the DAO model and its benefits and providing clear participation mechanisms can enhance engagement. Combining traditional structures with DAO elements, hybrid governance models allow for a gradual transition to fully decentralised governance.

DAO as a Tool for Enhanced Fan Engagement

DAOs have significant potential to enhance fan engagement by democratising decision-making processes. By allowing fans to vote on various club matters, DAOs transform fans from passive supporters to active participants, fostering a sense of community and ownership. Already in use, fan tokens demonstrate the potential for increased fan involvement and community building. The transparency and accountability provided by DAOs build greater trust between the club and its supporters. Fans can be assured that their contributions and participation are valued and that club operations are conducted ethically and transparently. This trust is crucial for maintaining and growing the supporter base and ensuring long-term loyalty.

In conclusion, while adopting DAOs in football club governance presents challenges, the potential benefits make it a compelling option for the future. By addressing legal, technical, financial, and governance challenges, clubs can effectively implement DAOs and leverage their advantages to enhance transparency, accountability, and fan engagement. Gradual transitions through hybrid models and pilot projects will provide valuable insights and refine the DAO model, paving the way for more robust and participatory governance structures in sports.

5. Practical Implementation and Organisational Models

Despite varying views on running a football club as a DAO, this study proposes two organisational structures. A club can either be entirely run and owned by a DAO or use decentralised governance tools to engage supporters without granting ownership. Though not a true DAO, the latter involves a decentralised blockchain voting system. Integrating DAOs into legal entities like associations or limited liability corporations is recommended to mitigate legal and regulatory risks. These models blend traditional corporate governance with decentralised technology [39, 40].

Full Governance Control through Token Ownership

In this organisational model, the DAO fully decentralises club management, assets, and ownership (see Figure 1). The structure can include working groups or sub-DAOs to manage different tasks efficiently. All assets are on the decentralised ledger, and the governance token is securitised, giving token holders full residual claims. Supporters fully control all club aspects, including financial gains and operational details like team selection.

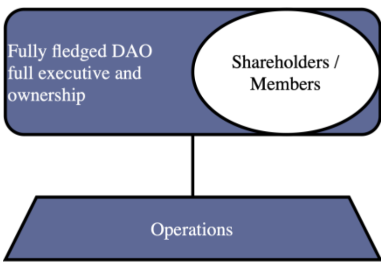

Figure 1: Fully fledged DAO

Hybrid Model: Off-Chain Management and On-Chain Voting

In this model, a DAO serves as a general assembly, similar to traditional organisations (see Figure 2). The DAO can follow a shareholder model, where voting rights are proportional to the number of tokens owned, or an association model, where all members have equal voting rights regardless of token quantity. Association wrappers may offer enhanced design flexibility [41]. The DAO could decide on significant matters, such as appointing the board of directors or management, and have veto rights or referendums. Alternatively, a two-board approach could separate supporter and investor objectives, encouraging investment without disenfranchising supporters [16].

Supporter DAO with Board Mandate

Governance tokens can be issued without equity rights, allowing fans a voice without full control over club assets. This model suits larger clubs seeking to involve supporters without requiring significant financial investment from them (see Figure 3) [10]. In the most engaging version, a supporter DAO has a seat on the board of directors, similar to some current supporter trust setups (e.g., Swansea City FC). Although the supporter DAO only has minority rights, its decisions are legitimate.

Supporter DAO with Contingent Agency

If club leadership hesitates about statutory integration, a legally binding mandate can be established for the DAO to decide on specific matters predetermined by management (see Figure 4). For example, the DAO might choose the away kit for the next season. This model gives fans some agency while retaining club owners' full control. A relevant example outside of sports is The LAO, a legally recognised company where only

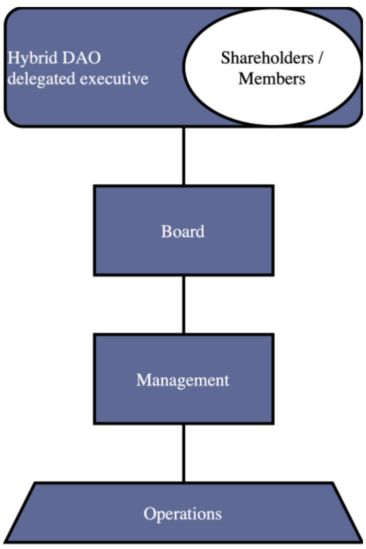

Figure 2: Hybrid DAO model

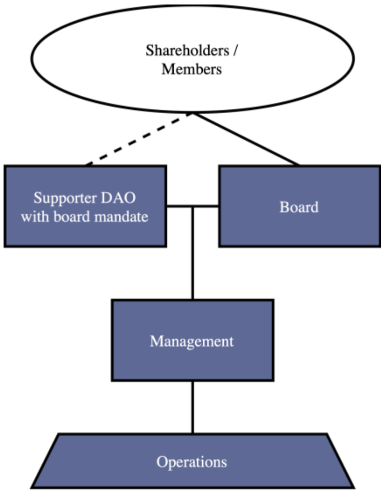

Figure 3: Supporter DAO with board mandate

accredited individuals can become members [42]. These members have the power to vote on proposals relating to the funding of start-ups and early-stage companies, but their decision-making is limited to specific areas defined by a legal wframework [42].

Supporter DAO for Opinion Gathering

In this model (see Figure 5), the supporter DAO gathers opinions securely without legal decision-making authority. Like Fulham's memorandum of understanding, the DAO's poll results help the club align with supporters' needs without relinquishing control [43]. This is particularly relevant for clubs focused on maintaining control or maximising profits [11].

Figure 6 summarises the five proposed models. The three "supporter-DAO" models do not involve legal ownership, limiting their agency compared to hybrid governance models. Token holders in a fully DAO-run club, however, have the most agency and full residual claims.

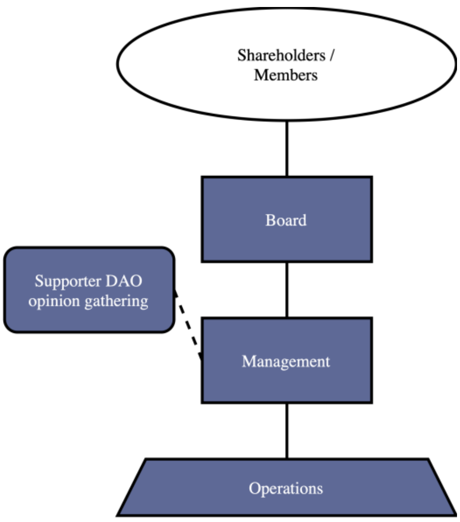

Figure 4: Supporter DAO with contingent agency

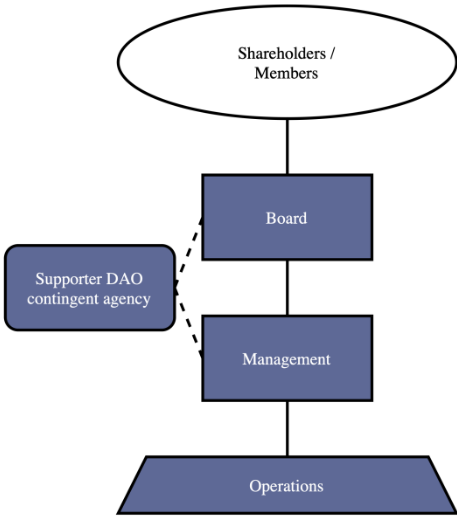

Figure 5: Supporter DAO for opinion gathering

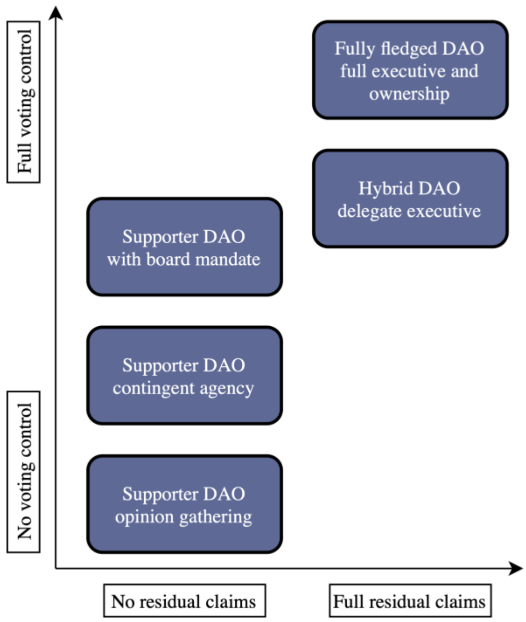

Figure 6: Overview of organisational models

6. **Conclusion**

This article explores the potential of DAOs to transform governance in football clubs, emphasising their ability to enhance transparency, accountability, and democratic participation. DAOs address the challenges of commercialisation and privatisation, reconnecting clubs with their supporters through a more inclusive and efficient governance model. However, significant challenges exist, including legal uncertainties, technical vulnerabilities, financial risks, and governance complexities. Successful adoption requires robust technical infrastructure, clear legal frameworks, and effective stakeholder engagement. Additionally, hybrid governance models and pilot projects are recommended to facilitate a gradual transition to decentralised governance.

It is important to note that this research focused primarily on the feasibility of DAOs from the perspective of blockchain industry professionals, who may have inherent biases. Future research should consider perspectives from football club management, regulators, and fans to gain a more holistic understanding. Many governance issues, such as voter apathy, poor judgement, inefficiency, and slow response times, may be systemic to democratic systems rather than specific to DAOs in football clubs. Additionally, the study acknowledges limitations such as the nascent stage of DAO technology, varying regulatory environments, and potential resistance from traditional governance structures. Future research should focus on longitudinal studies to assess the long-term impact of DAOs, explore the scalability of hybrid models, and investigate their broader applicability in other sports and industries to develop best practices and comprehensive frameworks for decentralised governance.

Competing interests:

None declared.

Ethical approval:

Not applicable.

Authors' contribution:

All authors participated in the design of the study. JMG conducted the literature review, collected the data, and performed the analysis under supervision. MHP wrote the manuscript. HD and MHP co-supervised the project and provided feedback.

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Appendix – Question Set

Introductory Questions

1. Can you briefly describe your current role and experience within the blockchain industry, specifically relating to DAOs?
2. What is your stance towards football? Do you watch/play football and support a football club?

3. Most football clubs are run as private companies, with fans having little to no say in the decision-making process. What are your thoughts on involving supporters in the decision-making process?

General Perceptions

4. In your opinion, do you believe DAOs are suitable for governing football clubs, and how feasible do you think it is to operate a club through a DAO with supporters as its token holders?
    a. What advantages or risks do you see for clubs and their supporters?
5. Let's assume a club wants to engage its supporters in the decision-making process. How would you implement a DAO in the organisational structure of a professional football club to achieve this aim?
    a. Are there different types of DAO governance models that could be used?
    b. What factors would influence the type of DAO model (e.g., geography, size of club)?
6. What role do you think DAOs should have in the decision-making process of a football club?
    a. Should all decisions be made by the fans using the DAO (i.e., all on-chain)?
    b. How can DAOs manage time-sensitive decisions?
    c. Is centralisation unavoidable?

Governance

7. How might DAOs address governance and voter participation issues in football clubs, such as low voter turnout and the need for more democratic management practices?
    a. What incentives could clubs use to promote active voting participation?
8. How can a DAO help with accountability and transparency in a football club?
    a. What level of transparency should be granted to token holders concerning sensitive information like player transactions?
9. How could a DAO align interests and resolve disputes, particularly when supporters tend to have a very emotional (at times irrational) connection to the club?

Financial

10. How can DAO-structured football clubs attract and maintain sustainable funding in order to overcome the financial challenges faced by many football clubs?
11. Are there any potential risks to granting ownership and control via tokens?

Legal

12. Considering DAOs are not legal entities in most jurisdictions, what are the main legal considerations for football clubs looking to adopt this governance structure?

Technical

13. What do you think are the main technical challenges or risks for implementing a DAO?
    a. What token design elements should be considered?
    b. Can risks of hacks be mitigated?
    c. How can DAOs mitigate the risk of exclusion due to technical illiteracy and ensure fans of all ages and backgrounds can participate?

Closing Reflection

14. After discussing various aspects of DAOs in the context of football clubs, do you believe DAOs represent a viable governance model for clubs?
15. Is there anything you would like to add? Maybe something we have not asked. A question? Is there something else you would like to contribute?