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How Portuguese Sports Clubs Promote Environmental Sustainability and Influence Fans' Pro-Environmental Behavioral Intentions

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Master in Management

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Universitário de Lisboa

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Department of Marketing, Operations and General Management

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Resumo

Esta dissertação explora o papel dos clubes desportivos portugueses na promoção da sustentabilidade ambiental e examina como essas iniciativas influenciam as intenções comportamentais pró-ambientais dos adeptos. Utilizando uma abordagem de métodos mistos, esta investigação combina dados quantitativos de 203 adeptos desportivos com entrevistas qualitativas de cinco representantes de clubes, proporcionando uma análise abrangente.

Os resultados indicam que as perceções dos adeptos sobre a credibilidade e visibilidade dos esforços de sustentabilidade podem ajudar significativamente a prever a sua intenção de adotar comportamentos sustentáveis durante eventos desportivos e na vida quotidiana. Estes resultados apoiam a Teoria do Comportamento Planeado, destacando a importância da atitude e da qualidade percebida da iniciativa na determinação dos resultados comportamentais. Contrariamente às expectativas baseadas na Teoria da Identidade Social, a identificação com a equipa não moderou significativamente estas relações.

A análise qualitativa revelou que os clubes maiores normalmente implementam estratégias de sustentabilidade estruturadas de acordo com os quadros regulamentares, enquanto os clubes menores dependem frequentemente de ações simbólicas e orientadas para a comunidade. As estratégias de comunicação — especialmente aquelas consideradas autênticas, emocionalmente apelativas e transparentes — são cruciais para construir confiança e prevenir o greenwashing.

Este estudo contribui para a literatura ao fazer a ponte entre a gestão desportiva, a comunicação da sustentabilidade e as ciências comportamentais. Ele fornece insights acionáveis para clubes que desejam se tornar agentes de mudança ambiental e enfatiza a importância de alinhar iniciativas estratégicas com comunicação credível e envolvimento da base. Os clubes desportivos têm um potencial significativo para promover comportamentos sustentáveis quando suas ações são percebidas como autênticas, significativas e contextualmente relevantes.

Palavras-chave: Clubes desportivos, Sustentabilidade ambiental, Comportamento dos torcedores, Estratégias de comunicação, Identidade social.

JEL: M14, Z20

Abstract

This dissertation explores the role of Portuguese sports clubs in promoting environmental sustainability and examines how these initiatives influence fans' pro-environmental behavioral intentions. Using a mixed-methods approach, this research combines quantitative data from 203 sports fans with qualitative interviews from five club representatives, providing a comprehensive analysis.

The findings indicate that fans' perceptions of the credibility and visibility of sustainability efforts can significantly help predict their intention to adopt sustainable behaviors during sport events and daily life. These results support the Theory of Planned Behavior, highlighting the importance of attitude and perceived initiative quality in determining behavioral outcomes. Contrary to expectations based on Social Identity Theory, team identification did not significantly moderate these relationships.

The qualitative analysis revealed that larger clubs typically implement structured sustainability strategies in accordance with regulatory frameworks, whereas smaller clubs often depend on symbolic and community-oriented actions. Communication strategies—especially those considered authentic, emotionally appealing, and transparent—are crucial for building trust and preventing greenwashing.

This study contributes to the literature by bridging sports management, sustainability communication, and behavioral sciences. It provides actionable insights for clubs that aim to become environmental change agents and emphasizes the importance of aligning strategic initiatives with credible communication and grassroots involvement.

Sports clubs have significant potential to promote sustainable behaviors when their actions are perceived as authentic, meaningful, and contextually relevant.

Keywords: Sports Clubs, Environmental sustainability, Fan behavior, Communication strategies, Social identity.

JEL: M14, Z20

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Glossary

SDGs – Sustainable Development Goals

CSR – Corporate Social Responsibility

RQ – Research Question

UNFCCC - United Nations Framework Convention on Climate Change

FIFA – International Federation of Association Football

CO₂ – Carbon Dioxide

IOC – International Olympic Committee

UEFA – Union of European Football Association

FC Porto – Futebol Clube Porto

SC Braga – Sporting Clube de Braga

Sporting CP – Sporting Clube de Portugal

SL Benfica – Sport Lisboa Benfca

EV – Electric Vehicles

TPL – Triple Bottom Line

AC –Awareness of Consequences

AR – Ascription of Responsibility

VR – Virtual Reality

USA – United States of America

LEED – Leadership in Energy and Environmental Design

COP29 – Conference of the Parties of the UNFCC

UEFA – Union of European Football Association

AI – Artificial Intelligence

p-PESIS – Fan’s Perception of Pro-Environmental Sustainability Initiatives in Sports

IV – Independent Variable

DV – Dependent Variable

H1, H2, H3 and H4 – Hypothesis 1, ...

KPIs – Key Performance Indicators

ID – Identification

SPSS – Statistical Package for the Social Sciences

PSI – Perceptions of Sustainability

TI – Team Identification

BISE – Behavioral Intention at Sport Events

EBI – Everyday Behavioral Intentions

SD – Standard Deviation

Min – Minimum

Max – Maximum

M – Mean

Skew – Skewness

SE – Standard Error

Kurt – Kurtosis

VIF – Variance Inflation Factor

B – Beta

CSRD – Corporate Sustainability Reporting Directive

ESG – Environmental, Social, and Governance

LED – Light Emitting Diode

1. Introduction

Environmental sustainability has become a growing concern in various industries, including the sports sector (McCullough et al., 2022). Due to its global reach and cultural significance, the sports industry has a unique ability to shape societal attitudes and promote sustainable behaviors among fans (McCullough, Kellison, et al., 2022). Sports clubs, in particular, can play a vital role in raising awareness and encouraging environmentally responsible actions, as their influence extends beyond the playing field into the everyday lives of their supporters (Innoue & Kent, 2012).

As concerns grow about the environmental impact of sports events, such as carbon emissions, waste generation, and resource consumption, integrating sustainability into the strategic operations of sports organizations has become essential for long-term viability. In addition to being a matter of corporate social responsibility, understanding how sports clubs implement and communicate their sustainability initiatives and how fans perceive and respond to these efforts is a crucial responsibility (J. Casper & Pfahl, 2015). This understanding is key to maximizing the effectiveness of these initiatives and promoting broader pro-environmental engagement.

1.1. Context and Problem Definition

The sports industry has a significant environmental impact due to carbon emissions, waste production, and resource consumption, which is evident not only during large-scale events but also in the daily operations of sports clubs (Cerezo-Estevé et al., 2022; Collins et al., 2009).

Research indicates that fans' perceptions of these initiatives play a crucial role in determining their engagement in pro-environmental behavior (Innoue & Kent, 2012). Furthermore, team identification may impact on how closely fans align with their club's sustainability efforts. Individuals who have a strong emotional connection to their club are more likely to embrace the values it promotes (Tajfel & Turner, 1979).

Another crucial factor is communication, as well-structured messaging can improve transparency and enhance fan engagement in sustainability initiatives (Walker & Kent, 2009). However, the extent to which clubs communicate their environmental strategies and encourage behavioral change remains underexplored.

Given these gaps, this study explores fan perceptions of sustainability initiatives, investigates how team identification influences their behavioral responses, and examines how effective communication strategies can enhance engagement. This contributes to a

better understanding of how sports clubs can promote pro-environmental behavior.

1.2. Research Relevance

The integration of sustainability into sports clubs' strategies presents a significant opportunity. Clubs can reduce their ecological footprint while leveraging their influence to promote sustainable consumer behavior. The growing global commitment to the United Nations' Sustainable Development Goals (SDGs) has increased pressure on the sports industry to adopt sustainability frameworks and initiatives (McCullough, Kellison, et al., 2022).

Although the literature on sustainability in sports has grown in recent years, there is still a lack of understanding regarding how fans perceive these initiatives and how they influence behavioral intentions. Most existing research has concentrated on corporate social responsibility (CSR) at the organizational level. However, fewer studies have investigated the psychological mechanisms that drive fan engagement in sustainability, particularly regarding the roles of perceived initiatives and team identification (Cayolla et al., 2023; Trendafilova et al., 2013).

This dissertation aims to fill a research gap by examining how Portuguese sports clubs promote environmental sustainability. It focuses mainly on fans' perceptions of these initiatives and their subsequent behavioral intentions during sporting events and daily lives. Additionally, the study investigates how emotional identification with the club influences this relationship, providing a deeper understanding of how sports organizations can serve as catalysts for broader societal change.

1.3. Research Questions

To address these issues, this study is guided by the following research questions:

- RQ1: What strategies are Portuguese sports clubs using to promote environmental sustainability strategies and raise awareness among fans?
- RQ2: How do fans perceive these initiatives?
- RQ3: What is the role of communication, particularly through media and in-stadium campaigns, in promoting pro-environmental behavior among fans?
- RQ4: How does team identification influence the relationship between perceptions of sustainability initiatives and fans' behavioral intentions?
- RQ5: How does the perception of sustainable practices of sports clubs influence

fans' willingness to engage in pro-environmental actions?

These questions aim to provide a comprehensive understanding of how sports clubs can act as a platform to promote sustainable behavior through direct actions and by shaping fans' values, perceptions, and psychological engagement.

1.4. Methodological Overview

This study employs a mixed-methods approach, combining quantitative and qualitative data collection techniques to ensure a comprehensive topic analysis.

The quantitative phase includes a survey targeting 203 Portuguese sports fans. This phase addresses research questions RQ2, RQ4, and RQ5 by measuring fans' perceptions of sustainability initiatives, their level of identification with their team, and their behavioral intentions, both at sports events and in their daily lives. The data collected will facilitate statistical analysis of the relationships among these key variables.

The qualitative phase involves semi-structured interviews with 5 key stakeholders from Portuguese sports clubs, including executives, sustainability managers, and communication professionals. This phase aims to explore Research Questions 1 and 3 (RQ1 and RQ3). It focuses on the strategies clubs adopt to promote environmental sustainability, the role of communication in engaging fans, and the challenges they face in implementing these practices.

By integrating these two complementary approaches, this study comprehensively analyzes how sports clubs develop and communicate their sustainability initiatives and how fans perceive and internalize them.

1.5. Dissertation Structure

This dissertation is organized into six main sections:

- *Introduction* – This chapter establishes the context for the research problem, highlighting the growing importance of environmental sustainability in the sports industry. It outlines the study's objectives, research questions, and methodological approach, highlighting both its academic and practical contributions
- *Literature Review* – This section examines the evolution of sustainability and the key global frameworks that support it. It analyzes the environmental impact of the sports industry and highlights sustainability initiatives by sports organizations at both international and national (Portuguese) levels. The review examines fans'

perceptions of these efforts, the impact of sports clubs on pro-environmental behavior, and the emotional connections between fans and their clubs. It also discusses effective communication strategies, including digital engagement, and addresses challenges like greenwashing and the role of innovation and technology in enhancing sustainability in sports.

- *Conceptual Model and Investigation Hypothesis* – This chapter outlines the conceptual framework that guides the study, highlighting the relationships between key variables and developing research hypotheses based on existing literature. It also explains the theoretical foundations that support the proposed model and justifies the inclusion of each construct.
- *Methodology* – This chapter explains the mixed-methods approach used in the research, which combines quantitative and qualitative data collection techniques. It describes a survey conducted for 203 Portuguese sports fans and includes semi-structured interviews with key stakeholders, such as club executives, sustainability officers, and communication specialists. Additionally, the chapter explains the data analysis methods applied to explore the relationships proposed in the conceptual model.
- *Results and Discussion* – This section presents the key findings from the data analysis, linking them to existing literature and highlighting their theoretical and practical implications.
- *Conclusions and Recommendations* – The final chapter summarizes the study's key contributions, emphasizing its important theoretical and managerial implications. It thoughtfully addresses the limitations encountered during the research and highlights promising directions for future exploration. Additionally, it provides valuable recommendations for sports clubs to enhance their sustainability strategies and strengthen their engagement with fans, fostering a more responsible and connected sporting environment.

2. Literature Review

2.1. Sustainability

2.1.1. Evolution of the Concept of Sustainability

The concept of sustainability has undergone significant evolution in recent decades, encompassing environmental, social, and economic dimensions. The universally accepted definition comes from the Brundtland Report (1987), which describes sustainable development as “the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987, p.43). This definition laid the groundwork for international debates on sustainable development, emphasizing the balance between human progress and environmental preservation.

As sustainability gained prominence, international organizations and governments began to establish structured frameworks to guide sustainable development efforts, leading to the development of global agreements and policies.

Over the years, global agreements and frameworks have emerged to guide sustainability efforts. The 1992 United Nations Conference on Environment and Development (Rio Earth Summit) led to the creation of Agenda 21, a comprehensive action plan promoting sustainable practices worldwide (United Nations, 1992). The Kyoto Protocol (1997) and the Paris Agreement (2015) further emphasized the need for international cooperation to tackle climate change and reduce carbon emissions (UNFCCC, 2016). Recently, the United Nations Sustainable Development Goals (SDGs), adopted in 2015, defined 17 interconnected goals ranging from poverty eradication to climate action, reflecting the multifaceted nature of sustainability (United Nations, 2015).

2.1.2. The Environmental Impact of the Sports Industry

Environmental sustainability has become an increasingly important concern across various industries, including sports, which have a significant ecological footprint (McCullough, Kellison, et al., 2022). Sporting events and clubs contribute to environmental degradation through excessive energy consumption, carbon emissions, and waste generation (Collins et al., 2009). In addition, sports organizations possess global influence, enhancing their sustainability efforts' impact and potential (McCullough, Kellison, et al., 2022).

Large-scale events, such as the FIFA World Cup and the Olympic Games, exacerbate these effects through infrastructure development, resource consumption, and increased travel emissions (Cerezo-Estevé et al., 2022). The global sports industry produces

approximately 350 million tonnes of CO₂ each year, with football alone accounting for over 30 million tonnes, comparable to the total annual emissions of countries like Denmark (Forbes, 2025; Konyn, 2024; Sharma, 2023). This highlights the sports industry's significant role in climate change and emphasizes the urgent need for its shift towards sustainable practices (Sharma, 2023).

Mega-events like the Olympics highlight this issue, as the 2016 Rio de Janeiro Olympics generated approximately 4.5 million tonnes of CO₂, including emissions from construction, logistics, and spectator-related activities (IOC, 2016). The Olympic Winter Games had a carbon footprint of 714,000 tonnes compared to previous events, which was later reduced to 314,600 tonnes through offsetting strategies (IOC, 2023). The Beijing 2022 Post-Games Sustainability Report identified primary emission sources as infrastructure transportation (34.3%), venue construction (28.3%), support operations (11.1%), and daily office activities (7.2%) (IOC, 2023).

Furthermore, it is essential to consider the long-term environmental impacts of sports infrastructure. The construction of large venues frequently leads to underutilized or abandoned facilities after events end, resulting in material waste, excessive land use, and high embodied carbon due to the extraction, production, and transportation of construction materials (McCullough, Kellison, et al., 2022). The 2016 Rio Olympics are a notable example of how multiple venues were left abandoned, highlighting the failure of sustainable planning and legacy management (Guardian Sport, 2017; IOC, 2016).

Another significant challenge is waste management. These events produce vast quantities of waste, including single-use plastics, food scraps, and construction debris (McCullough, Kellison, et al., 2022). Effectively managing this waste is crucial, yet it remains one of the biggest hurdles to sustainability due to the large volume of materials and the complexity of disposal and recycling processes. Addressing these environmental challenges is critical for the sports sector's long-term sustainability (Su et al., 2024)

2.1.3. Environmental Sustainability Initiatives in Sports Organizations

In response to growing environmental concerns, sports organizations have begun implementing sustainability initiatives, including adopting renewable energy, enhanced waste management, and promoting green mobility solutions (Jensen, 2021; McCullough et al., 2016). UEFA launched the #EveryTrickCounts campaign in 2021 to raise awareness about environmental responsibility among fans through social media and stadium advertisements (UEFA, 2021). Clubs like Forest Green Rovers have fully

integrated sustainability into their operations and identity by using renewable energy, banning plastic, and serving plant-based food (FIFA, 2022; UNFCC, 2018).

Portuguese football clubs are also involved in sustainability initiatives. FC Porto launched the Climate Alliance, a collaborative initiative to unite football clubs in joint sustainability actions (FC Porto, 2023; Teresa Santos, 2024). The alliance aims to develop best practices in environmental responsibility, promote green investments, and raise awareness of climate change in sports organizations (UNFCC, 2024). Similarly, SC Braga has partnered with Greenvolt to create one of Portugal's largest renewable energy communities to provide clean energy to the club and local businesses (Ana Batalha Oliveira, 2024; SC Braga, 2023). The initiative aims to reduce dependence on fossil fuels and lower CO₂ emissions, although its long-term impact on sustainability requires further assessment.

On an operational level, Sporting CP and SL Benfica have integrated sustainability into their infrastructure and waste management systems. Sporting CP has installed electric vehicle (EV) charging stations at Estádio José Alvalade and integrated renewable energy sources into its operations (Sporting Clube de Portugal, 2021). However, the environmental benefits of EVs continue to be debated in the scientific literature. Several studies have shown that electric vehicles (EVs) produce lower greenhouse gas emissions compared to gasoline vehicles, mainly when fueled by renewable energy; however, their long-term sustainability depends on factors such as battery production and life-cycle emissions (Energy Agency, 2022). This fact underscores the importance of considering the full environmental impact of these initiatives. SL Benfica has implemented the ECO Benfica initiative, which includes waste management systems, energy efficiency programs, and incentives for sustainable transport (Sport Lisboa Benfica, 2020). The club has partnered with waste management companies to increase the efficiency of recycling at Estádio da Luz, although comprehensive data on its environmental impact remains limited (Sport Lisboa Benfica, 2020). Despite these efforts, the long-term effects of these initiatives on environmental sustainability remain uncertain and need further evaluation.

2.2. Fans' Perceptions of Pro-Environmental Sustainability Initiatives in Sports

Fans' perceptions play a crucial role in the success of sustainability initiatives in sports organizations (Cayolla et al., 2023). Research indicates that when fans perceive

sustainability initiatives as genuine, transparent, and impactful, they are more likely to support and engage with them (Walker & Kent, 2009). However, the effectiveness of these efforts depends not only on their implementation but also on how fans interpret and evaluate them (J. M. Casper et al., 2020; G. T. Trail & McCullough, 2020).

According to the Triple Bottom Line (TBL) approach, sustainability efforts create not only environmental benefits but also social and economic value (Cayolla et al., 2023). Socially, clubs that promote sustainability enhance fan loyalty by reinforcing shared values within the community. Environmentally, these initiatives help reduce the carbon footprint of the sports sector. Economically, clubs that show a strong commitment to sustainability may experience increased fan support, higher merchandise sales, and greater appeal to sponsors (Cayolla et al., 2023).

Fans' approval and adherence to a club's sustainability initiatives demonstrate their emotional connection and commitment to the team's environmental efforts (Cayolla et al., 2023). Research indicates that fans who view their club as environmentally responsible tend to develop a stronger sense of loyalty and identification with the team (Innoue & Kent, 2012). Clubs that incorporate sustainability into their organizational identity are more likely to foster greater engagement, as they reflect values that align with society's increasing emphasis on environmental responsibility (J. M. Casper et al., 2014).

Environmental initiatives' authenticity, visibility, and consistency influence fans' perceptions (J. M. Casper et al., 2020; Oh, 2022; Walker & Kent, 2009). Fans tend to respond more positively when the club's actions are perceived as genuine, well-communicated, and aligned with its organizational identity (Walker & Kent, 2009). In contrast, when actions are perceived as superficial, symbolic, or disconnected from core values, they can provoke skepticism or even backlash (Fialho & Marquesan, 2018). This emphasizes the importance of transparency in communication strategies. Fans are more likely to support sustainability initiatives when they trust the club's commitment to environmental responsibility. These insights are consistent with the findings of McCullough, Casper, et al. (2022), who discovered that fans' willingness to support environmental campaigns is influenced by their sense of responsibility and emotional attachment to the club. This connection significantly impacts their engagement with pro-environmental initiatives and their responses to sustainability efforts sponsored by the club.

Research on green consumer behavior supports this idea, suggesting that perceptions of environmental responsibility—often referred to as green corporate

image—directly impact customer satisfaction and loyalty (Chang & Fong, 2010). Consumers who perceive an organization aligning with sustainable societal values are more likely to express higher satisfaction, increased loyalty, and engagement (Chang & Fong, 2010). In the context of sports, this suggests that fans who view their clubs as environmentally committed may engage more actively and develop stronger emotional and behavioral loyalty (Casper et al., 2020).

It is essential to recognize that fans react differently to sustainability initiatives. Various factors, including environmental awareness, connection to the team, and personal values, influence how fans perceive and respond to a club's sustainability strategies (Konstantopoulos et al., 2024). Research indicates that different segments of fans show varying levels of engagement, with some groups being more willing to adopt pro-environmental behaviors than others (Cayolla et al., 2023). Understanding these diverse perceptions is essential, as they form the basis for behavioral responses—an aspect discussed further in the next section.

2.3. The Role of Sports Clubs in Driving Behavioral Change

2.3.1. The Influence of Sports Organizations on Behavioral Change

The influence of sustainable practice behaviors in sports goes beyond direct environmental benefits. It can influence fan attitudes, community engagement, and a long-term cultural shift towards sustainability. Sports organizations can play a significant role in promoting sustainability by incorporating it into event standards and enhancing fan experiences, thereby encouraging behavioral change (Innoue & Kent, 2012).

According to Social Identity Theory (Tajfel & Turner, 1979), individuals classify themselves into various social groups, which fosters a strong emotional connection with their in-group. In the context of sports, this identification can influence fans' attitudes and choices during events, encouraging behaviors that support the club's environmental messaging (Wann & James, 2018). Research indicates that these efforts are more successful when they go beyond individual environmental values and are reinforced by event norms and engagement strategies within the venues (J. M. Casper et al., 2020).

Additionally, the norm activation theory (Schwartz, 1977) argues that individuals are more likely to engage in sustainable behaviors when they recognize the environmental consequences of their actions (Awareness of Consequences - AC) and feel a moral obligation to act (Ascription of Responsibility - AR). This sense of internalized moral

responsibility is essential for driving pro-environmental behavior (Schwartz, 1977).

One of the most practical ways to encourage sustainable behavior is through direct fan participation in environmental initiatives. Recycling programs at stadiums, campaigns to reduce single-use plastics, and water conservation efforts have positively influenced fan behavior, leading to long-term, sustainable practices. Research suggests that fans who participate in green initiatives at sporting events are more likely to adopt similar behaviors in their daily lives, such as recycling at home and reducing energy consumption (McCullough, 2013; McCullough, Kellison, et al., 2022). A study by J. M. Casper, Pfahl, and McCullough (2017) found that community participation programs led by sports clubs increased the number of participants in environmental activities, highlighting the potential of sports to inspire and mobilize communities around sustainability goals.

2.4. The Role of Fans and Emotional Identification with Clubs

2.4.1. The Role of Social Identity Theory and Team Identification

The relationship between fans and sports clubs goes beyond simply attending matches or supporting victories, as it is indeed linked to a solid emotional identification and a sense of belonging (Heere & James, 2007). This phenomenon is well explained through the social identity theory, which emphasizes that individuals acquire part of their character through belonging to social groups, such as sports teams (Tajfel. H & Turner. J, 1979). In this context, team identification has emerged as a key concept to understanding the psychological processes, attitudes, and behaviors of sports consumers (Tsigilis et al., 2022). An accurate assessment of team identification is therefore essential for understanding how fans interact with their clubs and how they may respond to the values and initiatives promoted by these organizations.

This strong emotional connection between fans and their clubs creates the conditions for sports organizations to influence fan behavior, including encouraging sustainable practices (Lock et al., 2012). Fans who have a strong bond with their clubs are, on the one hand, more loyal and, on the other, more receptive to adopting the values promoted by the organization (Lock et al., 2012). This involvement can manifest in different ways, such as participating in the club's social initiatives, volunteering in environmental programs, and contributing to sustainability campaigns (Heere & James, 2007). However, research indicates that Fan participation in (CSR) initiatives varies

based on the level of effort required. Fans with a stronger emotional connection to their team are more inclined to engage in high-effort activities, such as volunteering or participating in sustainability campaigns. In contrast, fans with a lower sense of identification with the team tend to prefer low-effort engagement, such as interacting on social media or attending events (Oh, 2022).

2.5. Communication Strategies for Promoting Environmental Sustainability in Sports

2.5.1. Authenticity and Transparency in Sustainability Communication

Strategic and credible communication is crucial for the success of sustainability initiatives in sports. Research indicates that consistent, transparent, authentic, and well-designed messaging strengthens fan trust and engagement, reinforcing an organization's commitment to sustainability (Harrison et al., 2022). With increasing scrutiny over greenwashing, clear and measurable communication through stadium advertising, social media, and community outreach is essential for maintaining credibility (Oh, 2022).

Authenticity is key in sustainability communications. Integrating environmental initiatives into a club's core identity fosters greater fan participation and long-term support (Walker & Kent, 2009). Furthermore, real-time updates and interactive digital engagement enhance fan involvement, as supporters respond positively to measurable goals and observable sustainability efforts within stadiums (Konstantopoulos et al., 2024). The authors J. M. Casper, McCullough, and Pfahl (2020), found that sports events implementing visible sustainability measures, such as waste reduction and carbon offsetting, encourage fans to adopt similar eco-friendly behaviors. However, they also noted that the effectiveness of sustainability communication can vary across cultural contexts, highlighting the need for further research beyond Western sports markets.

Trail and McCullough (2018) emphasize the importance of consumer behavior models in developing effective sustainability campaigns. Their research indicates that addressing internal and external constraints, such as knowledge gaps and accessibility barriers, can significantly enhance the effectiveness of sustainability messaging. This ensures that communication strategies are well-targeted and impactful.

Moreover, research by Innoue and Kent (2012) shows that fans are more likely to participate in pro-environmental behaviors when they perceive their team's environmental initiatives as authentic and aligned with the team's values. The study indicates that

positive environmental actions taken by sports teams can lead to fans internalizing these values, which increases their willingness to support the team's environmental efforts and adopt sustainable behaviors in their everyday lives (Innoue & Kent, 2012). These findings emphasize that the effectiveness of sustainability communication relies not only on the content of the message but also on how fans perceive and integrate the promoted values.

Effective communication strategies must prioritize authenticity, transparency, and long-term commitment to significantly impact sports sustainability initiatives.

2.5.2. The Role of Digital Media in Fan Engagement

The development of digital technologies and social media platforms has transformed how sports organizations communicate their sustainability initiatives (Mehra et al., 2025). Social Media provides an interactive and cost-effective approach to expand the reach of sustainability messages, allowing stakeholders, such as athletes, sports organizations, and fans, to engage in discussions on sustainable practices (Mehra et al., 2025). The ability to create compelling digital networks makes social media a strategic and economically viable tool for promoting environmental initiatives on a global scale (Mehra et al., 2025).

Virtual platforms help organizations publicize their sustainability commitments in clear and engaging ways. Live-streamed events, testimonial videos, and interactive graphic presentations are tools that contribute to greater fan engagement and enable a deeper understanding of sustainable objectives. Research also indicates that immersive digital media, including 360-degree videos and virtual reality (VR), can enhance fan engagement by fostering a stronger sense of presence and interactivity (Hebbel-Seeger, 2017)

According to Varriale et al. (2023), digital campaigns that involve interacting with the game and sharing stories have proven highly effective in engaging fans, particularly among European soccer clubs. A study in Italy's Serie A (2021/2022) explored how clubs applied digital technologies to support sustainability initiatives, including the digitalization of tickets to reduce paper waste, intelligent energy systems in stadiums, and digital fan engagement campaigns promoting eco-friendly behaviors (Varriale et al., 2023).

Digital marketing strategies focused on social media engagement have strengthened brand attachment by encouraging fan interaction and fostering emotional connections (Baena, 2016). In contrast, mobile marketing strategies, such as branded

mobile applications, do not consistently achieve the same level of engagement and may harm loyalty if they lack interactivity or personalization (Baena, 2016).

A clear example of digital sustainability communication is UEFA's #EveryTrickCounts campaign, launched in 2021 in partnership with the European Commission. The campaign used social media and televised broadcasts to encourage energy-saving habits, linking environmental actions to the universal appeal of football. Featuring renowned players such as Luís Figo, Gianluigi Buffon, and the Cascarino sisters, it promoted small changes, like turning off unused lights or using energy-efficient appliances, that contribute to sustainability. It was aired in 57 countries during UEFA Champions League matches and was displayed in stadiums, reinforcing the role of football in promoting environmental responsibility (UEFA, 2021).

2.5.3. Greenwashing in Sports

Greenwashing refers to corporate strategies that create a misleading perception of environmental responsibility despite the absence of substantial, sustainable practices. The term, first coined in the 1980s, describes how organizations use selective disclosure, exaggerated claims, and ambiguous language to enhance their public image without committing to meaningful ecological actions (Lyon & Montgomery, 2015). This misleading practice creates a disconnect between an organization's sustainability claims and its actual environmental impact, raising doubts about its credibility (Lyon & Montgomery, 2015).

The sports industry is increasingly criticized for greenwashing, as clubs, leagues, and significant events publicly commit to sustainability but often fail to fulfill these commitments (Miller, 2017). A prominent example is the 2022 FIFA World Cup held in Qatar, which was marketed as the first "carbon-neutral" World Cup. However, reports indicated that the carbon offset calculations were underestimated, leading to accusations of widespread greenwashing (MacInnes, 2022, 2023).

Research indicates that perceived greenwashing triggers negative emotional and cognitive responses, leading to skepticism toward the offending club and sustainability efforts in general (Fialho & Marquesan, 2018). As digital visibility and stakeholder awareness increase, fans become more adept at identifying inconsistencies in sustainability narratives (Martínez et al., 2020).

2.6. Innovation and Technology as Drivers for Sustainability

Innovation and technology play a crucial role in advancing sustainability within the sports industry (McCullough, Kellison, et al., 2022). Advancements such as smart stadiums, sustainable equipment, and digital engagement reduce the environmental impact of sporting activities. Smart stadiums incorporate technologies such as solar panels, water recycling systems, and advanced energy and climate control, enabling efficient resource management and supporting global sustainability goals (McCullough, Kellison, et al., 2022; Nidumolu et al., 2009).

A leading example of sustainable innovation is the Mercedes-Benz Stadium in Atlanta, USA, which has achieved LEED Platinum certification, the highest level of environmental performance recognition by the U.S. Environmental Protection Agency Green Building Council (Blank, 2017; Miriam Sitz, 2017; USGBC, 2020). LEED (Leadership in Energy and Environmental Design) is a globally recognized certification system that evaluates buildings based on energy efficiency, water conservation, materials used, and waste reduction (USGBC, 2020). The stadium integrates renewable energy sources, rainwater recovery systems, and water-efficient equipment, reducing its water consumption by 47% compared to reference standards (Miriam Sitz, 2017). Additionally, extensive recycling and composting programs divert over 90% of its waste from landfills (USGBC, 2020).

In Europe, the Johan Cruijff ArenA in Amsterdam features over 4,200 solar panels and an energy storage system using repurposed EV batteries, contributing to a reduction in CO₂ emissions by approximately 25% (Amsterdam Institute, 2022; Warmerdam et al., 2020). In addition to reducing its environmental impact, the stadium acts as a center for innovation through the Amsterdam Innovation Stadium initiative, serving as a platform for technological and environmental advancement (McCullough, Kellison, et al., 2022; Price, 2019).

Innovation is not only a tool but a key driver of sustainable development and organizational growth. Moreover, effectively communicating sustainable practices is essential for strengthening relationships with stakeholders (Singh et al., 2014). Continued investment in AI-driven resource management and renewable energy systems can position the sports sector as a leader in environmental responsibility (McCullough, Kellison, et al., 2022; Singh et al., 2014).

3. Conceptual Model and Research Hypothesis

3.1. Conceptual Model

This proposed conceptual model builds upon previous research that explores how sports organizations influence fan behavior (J. M. Casper et al., 2017; Innoue & Kent, 2012; McCullough et al., 2022). It examines how fans' perceptions of pro-environmental initiatives promoted by sports clubs influence their behavioral intentions in both the context of sporting events and everyday life.

The independent variable, Fans' Perceptions of Pro-Environmental Sustainability Initiatives in Sport (p-PESIS), is defined through two sub-dimensions based on the validated scale created by Cayolla et al. (2023): Fans' Approval of Club Pro-Environmental Initiatives and Adherence to Club Pro-Environmental Initiatives. These two dimensions reflect fans' cognitive evaluation and attitudinal alignment regarding their club's environmental actions.

The model consists of two dependent variables derived from the scale created by J. M. Casper et al. (2014): Sport Event Personal Behavior Intention, and Everyday Personal Behavior Intention. These variables measure the degree to which fans are inclined to adopt sustainable behaviors, both in the specific context of attending sporting events and in their daily lives.

Additionally, the model incorporates Team Identification as a moderating variable, utilizing the scale validated by Tsigilis et al. (2022). This scale measures the emotional and psychological bond between fans and their sports teams, using a Likert scale that ranges from 1 (not at all) to 7 (to a great extent). Grounded in Social Identity Theory (Tajfel & Turner, 1979), this variable enables the model to assess whether the strength of a fan's identification with their team influences how they translate their perceptions of the environment into behavioral intentions.

Appendix A details the validated scales used to measure all constructs: p-PESIS, Behavioral Intentions, and Team Identification.

In summary, the conceptual model is structured as follows:

- *Independent variable (IV):* Fans' Perception of Pro-Environmental Sustainability Initiatives in Sports (p-PESIS), which is operationalized through two sub-dimensions: *Fans' Approval of Club Pro-Environmental Initiatives* and *Fans' Adherence to Club Pro-Environmental Initiatives*
- *Moderators:* Team Identification

- *Dependent Variables (DV):*
 - Sport Event Personal Behavior Intention
 - Everyday Personal Behavior Intention

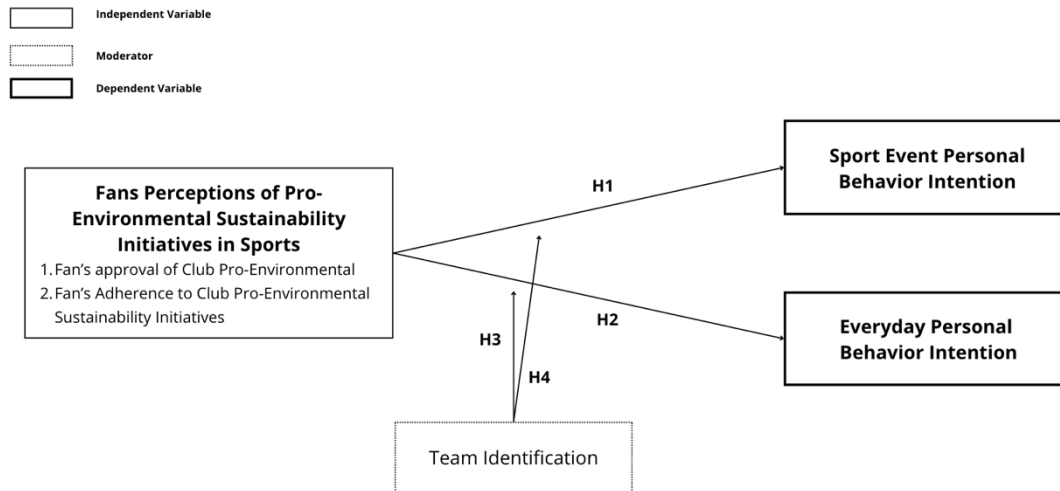


Figure 1. Conceptual Model
Source: Author's elaboration

3.2. Hypothesis in the Conceptual Model

Several studies suggest that fans who perceive their club as environmentally responsible are more likely to engage in eco-friendly behaviors during sporting events. These actions may include recycling, opting for sustainable transportation, and supporting green initiatives (J. M. Casper et al., 2014; McCullough, Kellison, et al., 2022). So, the following hypothesis is proposed:

H1. Fans' perceptions of pro-environmental sustainability initiatives in sports positively influence their personal behavior intentions at sports events.

Inoue and Kent (2012) proposed that the perceived environmental responsibility of sports organizations can influence fans' intentions beyond just the sport context. In this context, Fans who perceive their club as actively participating in pro-environmental initiatives are more likely to adopt sustainable behaviors in their daily lives (J. M. Casper et al., 2014). This phenomenon can be understood through the moral and social influence that sports organizations have on their followers, as they position themselves as role models and trusted sources of values (Inoue & Kent, 2012; Trendafilova et al., 2013). Therefore, the following hypothesis is suggested:

H2. Fans' perceptions of pro-environmental sustainability initiatives in sports positively influence their everyday personal behavior intentions.

According to Social Identity Theory (Tajfel & Turner, 1979), individuals who strongly identify with a group are more likely to internalize and act by that group's values. In sports, fans with a stronger emotional connection to their club are more likely to align their behaviors with the club's environmental values, especially during events where their affiliation is most prominent (Heere & James, 2007; Tsigilis et al., 2022). This is why team identification is expected to strengthen the effect of perceived sustainability efforts on behavior at sports events. In line with the literature discussed above, the hypothesis below is advanced:

H3. Team identification moderates the relationship between fans' perceptions of sustainability initiatives and their sport event personal behavior intentions, such that the relationship is stronger for highly identified fans.

In the same way that strong identification intensifies behavior at events, it can also impact day-to-day life. Fans who deeply connect with their team might be more inclined to adopt the club's environmental principles in their personal lives. Previous research shows that when fans view their club as an important part of their identity, they are more likely to consistently adopt values endorsed by the club, even beyond the sports context (Lock et al., 2012; G. T. Trail & McCullough, 2020). The influence of team identification is expected to impact fans' daily behavioral intentions. Therefore, it is hypothesized that:

H4. Team identification moderates the relationship between fans' perceptions of sustainability initiatives and their everyday personal behavior intentions, such as the relationship is stronger for highly identified fans

4. Methodology

This research employs a mixed-methods approach that combines quantitative and qualitative data to comprehensively explore how environmental sustainability initiatives by sports clubs influence fans' behavioral intentions. The mixed method is appropriate for obtaining both measurable patterns and contextual insights in a complex social context (Doyle et al., 2009). By combining the strengths of both quantitative and qualitative methodologies, this approach can help address the limitations of each (Tashakkori & Creswell, 2007).

This research follows a sequence of explanatory methods. Initially, a quantitative phase was conducted to test the relationships proposed in the conceptual model, particularly those related to fans' perceptions, team identification, and behavioral intentions. This phase directly addresses Research Questions 2, 4, and 5. Next, a qualitative phase involved interviews with key stakeholders from Portuguese sports clubs, aiming to explore the strategies used to promote sustainability and the impact of communication on shaping fan behavior, thereby addressing Research Questions 1 and 3.

This combined approach enables a more comprehensive and integrated analysis of how sustainability is promoted within the sports context and how it is perceived and internalized (Doyle et al., 2009).

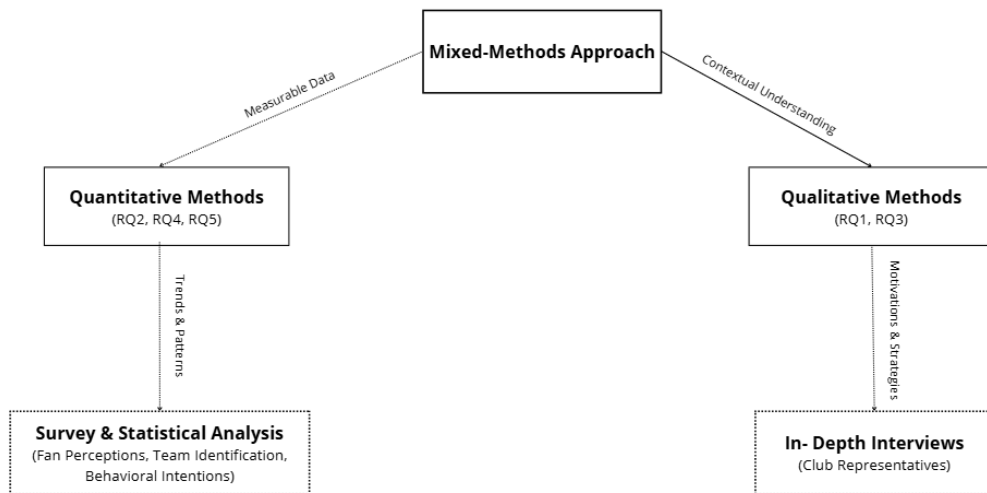


Figure 2. Research Methodology Framework
Source: Author's elaboration

4.1. Quantitative Research

The quantitative side of this study aims to test the relationships outlined in the conceptual model, with a specific focus on fans' perceptions of pro-environmental sustainability

initiatives, their identification with the club, and their behavioral intentions. Data were collected using a structured questionnaire based on validated scales distributed to sports fans in Portugal. This method facilitates statistical analysis of trends and correlations, directly addressing Research Questions 2, 4, and 5.

4.1.1. Questionnaire Structure and Measurement Scales

A structured questionnaire (**Appendix B**) was designed and distributed to several participants to answer the research questions in this study. Structured questionnaires are commonly used in quantitative research because they provide standardized data collection, enabling effective comparisons across populations and locations. They are also considered cost-effective tools for collecting large amounts of data from large populations in a short period (Doyle et al., 2009; Ranganathan & Caduff, 2023).

Developing a structured questionnaire involves several key steps, including clearly defining the required information, determining the content and sequencing of the questions, and ensuring their clarity and relevance. These steps contribute to the validity, reliability, and overall quality of the questionnaire (Chirk et al., 2006).

The survey comprises five sections, each designed to evaluate a specific aspect of the conceptual model. The first collects demographic data, such as participants' age, gender, match attendance frequency, and club affiliation, for contextual and subgroup analysis. The second section highlights Team Identification, using a validated scale adapted from Tsigilis et al. (2022). This scale comprises ten items, each rated on a 7-point Likert scale, where 1 indicates "Not at all" and 7 signifies "To a great extent." The items evaluate the emotional and psychological connection between respondents and their favorite sports club, a crucial moderating variable in the conceptual model.

The third section measures fans' perceptions of pro-environmental sustainability initiatives in sports via two sub-dimensions: Fans' Approval and Fans' Adherence. This assessment is based on the validated scale from Cayolla et al. (2023), also based on a 7-point Likert scale, where 1 represents "Strongly Disagree" and 7 signifies "Strongly Agree." This approach captures both cognitive evaluations and the alignment of fans' attitudes with the environmental actions taken by their clubs. The fourth evaluates Behavioral Intentions using a scale by J. M. Casper et al. (2014), comprising two dimensions: Sport Event Personal Behavior Intention and Everyday Personal Behavior Intention, both assessed on a 7-point Likert scale ranging from 1 ("Strongly Disagree") to 7 ("Strongly Agree"). These items measure fans' intentions to engage in pro-

environmental behaviors within the sports context and in their daily lives.

The final section includes Open-Ended Questions, which allow participants to share their opinions and suggestions freely. These qualitative data complement the quantitative findings by providing deeper insights into fans' attitudes and perceptions.

4.1.2. Sample Overview and Distribution

The questionnaire was developed using Google Forms to ensure ease of access and interaction with the user. It was distributed online via social media platforms to a diverse group of people, including supporters of sports clubs, professionals working in sports organizations, and individuals with a deep passion for sports. This approach ensured a broad and diverse sample, capturing various perspectives.

A pilot test was conducted with a small group of participants to ensure the questionnaire's clarity and reliability. Based on their feedback, minor adjustments were made to improve the wording of the questions and the overall structure, thereby enhancing the quality of the questionnaire.

4.2. Qualitative Research

This study included a qualitative component based on semi-structured interviews to complement the quantitative data and explore organizational perspectives. These interviews were conducted with key stakeholders from Portuguese sports clubs—specifically, sustainability managers, communication officers, and executives—who were chosen for their direct involvement in environmental initiatives. The purpose of this phase was to address RQ1 (strategies used to promote environmental sustainability) and RQ3 (the role of communication in promoting pro-environmental behavior among fans). The interviews provided context-specific insights into clubs' motivations, communication tools, and challenges when engaging fans in sustainability efforts.

4.2.1. Interview Guide

To enhance the quantitative phase of our research and address RQ's 1 and 3, a semi-structured interview guide was developed to explore how Portuguese sports clubs promote environmental sustainability and communicate these efforts to fans. The complete interview script (**Appendix C**) was organized into six thematic topics, each aimed at gathering in-depth insights from club executives, sustainability officers, and communication professionals:

The first section focused on the interviewee's professional background, clarifying their role within the organization and highlighting the significance of their perspective on the club's sustainability strategy. The second theme explored the origins and motivations for adopting environmental sustainability practices. Interviewees were asked to describe how and why their organization began investing in these practices, including any significant milestones or events that triggered this shift.

The third area examined the current sustainability strategies and practices, including the adoption of renewable energy, waste reduction efforts, green mobility initiatives, and environmental certifications. This section also assessed whether the club had set specific goals or key performance indicators (KPIs) to measure progress. The fourth theme focused on the perceived impact of these initiatives on fans. Interviewees were invited to share their thoughts on how supporters have responded to environmental efforts and whether these initiatives have influenced fan loyalty or behavior, providing examples of specific campaigns and interactive initiatives.

The fifth thematic block focused on communication strategies for sharing information about sustainability, examining the tools and channels deployed, such as social media, newsletters, and stadium screens. The discussion emphasized the importance of authenticity while addressing the risks associated with greenwashing. In the sixth area, participants were invited to discuss the barriers they encountered, prospects, and potential innovations. This segment facilitated a forward-looking reflection on the trajectory of environmental sustainability within the context of Portuguese sports.

4.2.2. Interviewee Profile

Five interviews were conducted with professionals from various sports sector backgrounds to understand how sustainability is promoted and communicated within Portuguese sports organizations. These included sustainability officers and executives from different football institutions. Their strategic roles and active involvement in designing and executing sustainability initiatives offered valuable insights aligned with the research objectives, specifically regarding RQ1 and RQ3.

The selection of participants used a purposive sampling strategy, focusing on individuals with professional roles in sustainability, communication, or institutional development. All participants were informed about the academic purpose of the research and agreed to participate voluntarily. Where applicable, interviews were recorded solely

for academic analysis and treated with strict confidentiality. Each interview lasted between 45 and 60 minutes and was conducted online or in person, based on availability.

The various institutions involved, from small to large football clubs to national organizations, facilitated a more comprehensive understanding of the strategies, challenges, and opportunities related to environmental sustainability in Portuguese football.

Due to confidentiality agreements and ethical considerations, the names of the interviewees have been made anonymous. Nevertheless, the following table includes the professional and institutional details relevant to the research context.

Table 4.2.2.1. Overview of Interviewees' Professional Roles and Club Affiliation

Interviewee ID	Club	Role	Interview Date
Interviewee 1	Estoril	Former Club Executive	06/03/2025
Interviewee 2	FC Porto	Head of Sustainability	10/03/2025
Interviewee 3	Rio Ave	President	13/02/2025
Interviewee 4	SL Benfica	Head of Sustainability	14/03/2025
Interviewee 5	Sporting CP	Head of Sustainability	13/04/2025

Source: Author's elaboration

5. Results & Discussion

This chapter presents the research results and findings, including an analysis of both quantitative and qualitative data, followed by a discussion of the main outcomes. The chapter also outlines the study's theoretical contributions and practical implications, effectively linking the empirical results with the research objectives.

5.1. Results

This section presents and interprets the results of the quantitative analysis conducted to test the hypotheses outlined in Chapter 3 and to address Research Questions 2, 4, and 5. The quantitative analysis explores how fans perceive the pro-environmental sustainability initiatives promoted by sports clubs (RQ2). It will also investigate whether team identification moderates this relationship (RQ4) and how fans' perceptions influence their behavioral intentions at sports events and in their daily lives (RQ5). The qualitative analysis examines the strategies employed by Portuguese sports clubs to promote and communicate environmental sustainability, with specific attention to institutional differences and the engagement of fans and communities (RQ1 and RQ3).

To ensure methodological robustness, the quantitative data were analyzed using IBM SPSS Statistics 28 and the PROCESS macro (Model 1) developed by Hayes 2017. The qualitative data were analyzed using a thematic analysis framework proposed by Braun and Clarke (2006).

5.1.1. Quantitative Results

Sample Characteristics

The questionnaire was completed by 203 participants, predominantly male (70%), with the largest group being over 55 years old (42%). Most respondents expressed high levels of engagement with their club, with 42% attending matches every week. The sample mainly consisted of supporters from Portugal's three major football clubs: SL Benfica (36%), Sporting CP (27%), and FC Porto (17%). This composition may affect both the degree of identification and attitudes toward sustainability initiatives led by the clubs. A comprehensive overview of the sample's sociodemographic characteristics is found in **Appendix D**.

Scale Reliability and Internal Consistency

Due to the complex nature of the conceptual model and the use of composite constructs, it was important to assess the internal consistency of each measurement scale used in the questionnaire. Two complementary indicators were employed to evaluate the reliability of the synthetic indices: Cronbach's Alpha and the inter-item correlation coefficient. Cronbach's Alpha measures internal consistency by estimating the degree to which a group of items is closely related. At the same time, the inter-item correlation coefficient provides additional insight into the homogeneity of item responses within each scale (Hair et al., 2014).

According to the criteria established by Pestana and Gageiro (2005), the report is the following Cronbach's Alpha values: values below 0.60 are considered unacceptable, between 0.60 and 0.70 are deemed weak, between 0.70 and 0.80 are acceptable, between 0.80 and 0.90 are classified as good, and values above 0.90 indicate very high internal consistency. Regarding inter-item correlations and following Pallant (2020), values below 0.30 are considered problematic, values between 0.30 and 0.70 are deemed acceptable, and values above 0.70 may indicate redundancy between items.

The results, summarized in Appendices E1 to E4, showed that all four constructs exhibited satisfactory internal consistency. The scale measuring Fans' Perceptions of Pro-Environmental Sustainability Initiatives in Sport (PSI) had a Cronbach's Alpha of 0.87 and a mean inter-item correlation of 0.52, indicating a high level of internal consistency without redundancy. This confirms the scale's ability to reliably capture respondents' perceptions regarding their club's environmental actions and engagement — a key variable in addressing both Research Question 2 and Research Question 5.

The Team Identification (TI) scale showed a very high level of internal consistency, with a Cronbach's Alpha of 0.96 and average inter-item correlations of 0.70, which approaches redundancy. The broad conceptual framework of this scale, along with its validation in previous studies (Tsigilis et al. (2022), indicates that this level of consistency is desirable. It reflects the intensity and multifaceted nature of fans' emotional attachment to their clubs, which is crucial for testing the moderating hypotheses related to Research Question 4.

For the behavioral intention constructs, the scale measuring Sport Event Personal Behavioral Intentions (BISE) had a Cronbach's Alpha of 0.83 and an inter-item correlation of 0.55, indicating good internal consistency. The scale measuring Everyday Personal Behavioral Intentions (EBI) exhibited a slightly lower, yet still acceptable,

Cronbach's Alpha of 0.79, with inter-item correlations averaging 0.51. These values confirm the reliability of the items used to measure fans' intentions to adopt pro-environmental behaviors, both in and beyond the context of sport—constructs that are essential for answering Research Question 5.

Descriptive Analysis of the Scales

After completing the reliability assessment, a detailed analysis was conducted on the four primary constructs under study: Perceptions of Sustainability Initiatives (PSI), Team Identification (TI), Behavioral Intentions at Sports Events (BISE), and Everyday Behavioral Intentions (EBI).

Table 5.1.1.1. Descriptive Statistics of Main Variables (PSI, TI, BISE, EBI)

Scale	# items	Min	Max	M	SD	Skew	SE	Kurt	SE
PSI	6	1	7	3.7	1.5	0.08	0.17	-0.64	0.34
TI	10	1	7	3.2	1.7	0.42	0.17	-0.94	0.34
BISE	4	1	7	5.1	1.6	-0.63	0.17	-0.43	0.34
EBI	4	1	7	5.4	1.3	-0.66	0.17	-0.13	0.34

PSI: Perceptions of sustainability initiatives; TI: Team identification; BISE: Behavioral intentions at sports events; EBI: Everyday behavioral intentions; Min: Minimum; Max: Maximum; M: Mean; SD: Standard Deviation; Skew: Skewness; Kurt: Kurtosis; SE: Standard Error. Likert scale ranging from 1 = not at all to 7 = fully applies.

Source: Author's elaboration

The results suggest that the mean score for the Perceptions of Sustainability Initiatives ($M = 3.7$; $SD = 1.5$) is near the theoretical midpoint of the scale, indicating a moderately positive perception of clubs' environmental efforts. This finding addresses Research Question 2, indicating a recognition of these initiatives, albeit with low intensity.

The mean score for Team Identification was 3.2, with a standard deviation of 1.7 below the midpoint. This indicates that respondents have a relatively low level of emotional attachment to the club. This finding is important when considering the absence of moderating effects explored in Research Question 4.

The scales used to measure Behavioral Intentions showed significantly higher means. Participants expressed a strong intention to engage in sustainable behaviors at

sports events ($M = 5.1$; $SD = 1.6$) and in their daily lives ($M = 5.4$; $SD = 1.3$). This provides initial empirical support for Research Question 5 and indicates a significant pro-environmental attitude within the sample.

All four constructs demonstrated skewness and kurtosis coefficients within the acceptable range of $|1|$. According to Pallant (2020), the sample size ($n > 200$) justifies using parametric statistical procedures in the subsequent analyses.

Correlation Analysis

A Pearson correlation analysis was performed with a significance level of $p < 0.05$ to analyze the bivariate relationships among the main variables studied. This statistical method assesses the direction and strength of linear associations between interval-level variables, especially in samples with normally distributed data and sufficient size (Pallant, 2020).

The interpretation of correlation coefficients follows the guidelines established by Pestana and Gageiro (2005). According to these guidelines, values below 0.20 are considered very weak, values between 0.21 and 0.39 are weak, values between 0.40 and 0.69 are moderate, values between 0.70 and 0.89 are high, and values above 0.90 are considered very high. The results are presented in a summary format in Table 5.1.1.2.

Table 5.1.1.2. Pearson Correlation Coefficients Among Main Variables (PSI, TI, BISE, and EBI)

	PSI	TI	BISE
Team identification	0.47**		
Behavioral intentions at sports events	0.67**	0.24**	
Everyday behavioral intentions	0.54**	0.01	0.72**
PSI: Perceptions of sustainability initiatives; TI: Team identification; BISE: Behavioral intentions at sports events; EBI: Everyday behavioral intentions. * $p < 0.05$; ** $p < 0.01$.			

Source: Author's elaboration

The analysis reveals several statistically significant and theoretically relevant associations.

First, the variable Perceptions of Sustainability Initiatives (PSI) showed a moderate positive correlation with both behavioral intention constructs: BISE ($r = 0.67$, $p < 0.01$) and EBI ($r = 0.54$, $p < 0.01$). These findings indicate that when fans hold a positive view of their club's environmental initiatives, they are more inclined to express

their intentions to participate in pro-environmental actions, both in sports and in their daily lives. This provides initial empirical support for Research Question 5 and Hypotheses 1 and 2, suggesting a positive relationship between PSI and behavioral intentions.

The variable Team Identification (TI) exhibited a moderate positive correlation with PSI ($r = 0.47$; $p < 0.01$) and a weak positive correlation with BISE ($r = 0.24$; $p < 0.01$). These associations suggest that fans with a stronger emotional attachment to their club tend to have more positive perceptions of its sustainability initiatives and are more likely to act sustainably at sports events. However, no significant correlation was found between TI and EBI ($r = 0.01$; $p > 0.05$), indicating that team identification does not appear to influence sustainable behaviors in daily life.

This finding is especially significant for Research Question 4, which examines the potential moderating effect of team identification. The lack of correlation between team identification (TI) and EBI raises initial doubts about whether team identification enhances the link between perceptions and overall behavioral intentions.

In summary, the correlation results highlight the key role of perceptions of sustainability initiatives as a driver of behavioral intention, while questioning the explanatory power of team identification to everyday sustainability behaviors.

Linear Regressions – Moderation Models

Two multiple linear regressions with moderation were conducted using the PROCESS macro (Model 1) developed by Hayes (2017) to test the four hypotheses derived from the conceptual model. The independent variable in both models was Perceptions of Sustainability Initiatives (PSI), while Team Identification (TI) was tested as a moderator. The dependent variables differed between the models: the first considered Behavioral Intentions at Sports Events (BISE), while the second examined Everyday Behavioral Intentions (EBI).

The analyses were conducted after thoroughly verifying the underlying assumptions. The normality of the residuals was evaluated by inspecting histograms. Given the sample size 203, the Central Limit Theorem supports parametric models. Homoscedasticity was confirmed using scatterplots of standardized residuals, and the absence of multicollinearity was validated through tolerance and variance inflation factor (VIF) statistics; all values fell within acceptable ranges (**Appendix F**).

Model 1: PSI and TI Predicting Behavioral Intentions at Sports Events (H1 and H3)

The first regression model assessed how perceptions of sustainability initiatives predict fans' behavioral intentions at sports events, and whether this effect is influenced by team identification. The model was statistically significant ($F(3.199) = 55.15$; $p < 0.001$) and accounted for 44% of the variance in the dependent variable (Adjusted $R^2 = 0.44$).

Table 5.1.1.3. Moderation Regression Results (Model 1: PSI and TI Predicting BISE)

	B	SE	<i>t</i>	<i>p</i>
Adjusted $R^2 = 0.44$; $F(55.15)$; $p = 0.00$.				
(Constant)	1.86	0.45	4.14	0.00
PSI	0.93	0.12	7.53	0.00
TI	0.09	0.14	0.73	0.47
PSI * TI	-0.05	0.03	-1.46	0.15
PSI: Perceptions of sustainability initiatives; TI: Team identification.				

Source: Author's elaboration

The data presented in Table 5.1.1.3 indicate a strong and statistically positive effect of PSI on BISE ($B = 0.93$; $p < 0.001$), suggesting that individuals who hold more favorable views of sustainability initiatives are more willing to engage in pro-environmental behaviors during sports events.

This finding confirms Hypothesis 1 (H1) and directly addresses RQ 5, indicating that perceptions are a key driver of behavioral intentions in sports.

In contrast, Team Identification did not have a statistically significant direct effect on BISE ($p = 0.467$), nor did it significantly moderate the relationship between PSI and BISE (interaction term: $B = -0.05$; $p = 0.150$).

This leads to the rejection of Hypothesis 3 (H3) and provides a negative response to RQ 4, indicating that fans' emotional attachment to their club neither enhances nor diminishes the impact of sustainability perceptions on their intentions to act sustainably during sporting events.

Model 2: PSI and TI Predicting Everyday Behavioral Intentions (H2 and H4)

The second regression model examined the same structure, using Everyday Behavioral Intentions (EBI) as the dependent variable. This model was statistically significant

($F(3.199) = 55.51$; $p < 0.001$), with an Adjusted R^2 of 0.36. This indicates that the independent variables explain 36% of the variance in everyday behavioral intentions

Table 5.1.1.4. Moderation Regression Results (Model 2: PSI and TI Predicting EBI)

	B	SE	<i>t</i>	<i>p</i>
Adjusted $R^2 = 0.36$; $F(55.51)$; $p = 0.00$				
(Constant)	4.22	0.4	10.51	0.00
PSI	0.50	0.11	4.6	0.00
TI	-0.37	0.12	-3.03	0.00
PSI * TI	0.03	0.03	1.19	0.24
PSI: Perceptions of sustainability initiatives; TI: Team identification.				

Source: Author's elaboration

The results demonstrate PSI's positive and statistically significant effect on EBI ($B = 0.50$; $p < 0.001$). This confirms that fans with more favorable perceptions of their club's sustainability efforts are more inclined to engage in sustainable behaviors in their daily lives.

This confirms H2 and provides a clear response to RQ 5, expanding the influence of perceptions beyond the stadium context.

Interestingly, the model indicates a significant negative direct effect of TI on EBI ($B = -0.37$; $p = 0.003$), suggesting that stronger identification with the club may be associated with lower levels of everyday sustainable behavior.

This unexpected finding implies a possible psychological substitution effect, where fans with strong identification may view environmental responsibility as resting more with the club than with themselves. The subsequent theoretical discussion should explore this phenomenon further.

Once again, the moderation effect was not statistically significant ($B = 0.03$; $p = 0.240$), indicating that team identification does not moderate the relationship between PSI and EBI. This resulted in rejecting Hypothesis 4 (H4), and RQ 4 was again answered negatively: team identification does not significantly affect the relationship between perceptions of sustainability and behavioral intentions in daily life.

5.1.2. Qualitative Results

To explore how Portuguese sports clubs promote environmental sustainability and communicate these efforts to their fans, this study employed a thematic analysis approach to the qualitative data collected through five semi-structured interviews. Thematic analysis, as defined by Braun and Clarke (2006), is a flexible method that allows researchers to identify, analyze, and interpret patterns of meaning - or 'themes' - within qualitative data. This approach was particularly suitable for this study, as it aimed to understand key stakeholders' perceptions, strategies, and challenges directly involved in sustainability practices.

All interviews were transcribed and then translated from Portuguese into English. The analysis followed Braun and Clarke's (2006) six-stage process: (1) familiarizing oneself with the data, (2) generating initial codes, (3) identifying themes, (4) reviewing and refining themes, (5) defining and naming themes, and (6) constructing a coherent narrative that links the findings to the research questions and relevant literature.

Stage 1 – Familiarization with the Data

The first stage involved thoroughly reviewing the interview transcripts to gain a deep understanding of both explicit content and underlying meanings, a process that Braun and Clarke (2006), describe as “immersion in the data”. It facilitated the capture of initial impressions, early patterns, and the emotional tone of participants' perspectives (Nowell et al., 2017). Special attention was given to discussing sustainability challenges, fan engagement, and communication strategies. Following the recommendation of Guest, MacQueen and Namey (2014), preliminary notes and analytic memos were written in the margins of the transcripts to document impressions and guide the subsequent coding process.

By the end of this phase, several recurring themes had emerged from the interviews. For instance, interviewees from major clubs, such as SL Benfica, FC Porto, and Sporting CP, highlighted the growing institutional pressure to align with international sustainability frameworks. In contrast, representatives from smaller clubs, including Estoril and Rio Ave, focused more on practical, local community-based actions. Additionally, common concerns, including barriers to fan engagement, the risks of greenwashing, and the influence of digital media, appeared across various clubs. These insights set the stage for more in-depth thematic analysis in the next phase.

Stage 2 – Generation of Initial Codes

Following Braun and Clark (2016) the second stage of thematic analysis involved generating initial codes from the transcripts of the interviews. This process entailed a systematic and detailed dataset analysis, focusing on identifying meaningful units of text pertinent to the research questions. Each segment was labeled with a brief code conveying its meaning or conceptual significance.

A hybrid coding approach was used, merging inductive and deductive logic. Inductive logic enabled themes to emerge organically from participants' responses, while the research questions and theoretical concepts from the literature guided deductive logic (Fereday et al., 2006). This provided both analytical flexibility and alignment with the study's objectives.

Initial codes were organized into broader thematic categories that captured patterns across the five clubs: SL Benfica, FC Porto, Sporting CP, Rio Ave, and Estoril Praia. Some codes were directly linked to the study's guiding questions, such as RQ1, which examines the environmental sustainability strategies implemented by clubs, and RQ3, which investigates communication and fan engagement. In contrast, others offered insights into the realities of clubs.

To enhance transparency and rigor in the coding process, a selection of coded excerpts is included in **Appendix G**, where each quote is presented with its corresponding code, club, and related research question (Guest et al., 2014; Nowell et al., 2017). This appendix demonstrates how raw data were converted into analytical units and provides evidence of consistent methodology throughout the dataset.

Stage 3 – Searching and Reviewing Themes

Following Braun and Clarke's (2006), the third phase of the thematic analysis framework involved identifying, reviewing, and organizing the initial codes into broader themes that reflected patterned meaning across the dataset. This process involved analyzing how codes related to each other, how they reflected the research questions, and whether they could be grouped meaningfully under broader categories.

In this phase, codes that share conceptual similarities were grouped and reassessed for internal consistency and distinctiveness from other themes, as Nowell et al. (2017) recommended. Some codes, such as "symbolic actions" and "emotional engagement," were integrated under "Community and Emotional Connection." Other codes were removed due to a lack of representativeness across the dataset.

This iterative process identified four main themes, each capturing a key aspect of how Portuguese football clubs view and implement environmental sustainability, particularly regarding institutional strategy and fan engagement. These themes demonstrate similarities and differences across clubs of various sizes and resource levels.

Appendix H summarizes the final themes, descriptions, and connections to the research questions. This overview provides a structured outline of the thematic framework developed during the analysis and serves as the basis for the interpretative discussion that follows

Stage 4 – Defining and Naming Themes

This stage involved a more in-depth analysis of the themes identified in the previous stage, enhancing their definitions, scope, and internal consistency. According to Braun and Clarke, (2006) this stage ensures that each theme tells a distinct part of the narrative while remaining coherent and relevant to the research questions. The themes' final names were chosen to reflect their analytical focus and empirical content.

Below, each theme is described, along with supporting quotations from the interviews and a theoretical connection to the study's objectives.

Theme 1: Strategic Integration and Governance

This theme examines how clubs structure and formalize their sustainability commitments into governance frameworks.

Clubs vary in the extent of their integration, often based on their size, resources, and institutional maturity. This theme captures practices such as establishing dedicated departments, aligning with regulatory frameworks (e.g., CSRD, ESG, SDGs), and formalizing sustainability objectives. It pertains to RQ1, which illustrates strategic decisions shaping each club's environmental agenda.

Theme 2: Operational and Symbolic Practices

This theme focuses on specific environmental actions undertaken by clubs, including initiatives aimed at energy efficiency, waste reduction, and symbolic efforts that hold emotional or educational value. While larger clubs often prioritize technical solutions and scalability, smaller clubs emphasize community-oriented and culturally embedded symbolic actions. This theme offers insight into the various strategies employed to address Research Question 1 (RQ1).

Theme 3: Communication and Visibility

This theme examines how clubs communicate their sustainability initiatives to fans and external stakeholders. It encompasses both the channels employed, such as social media, newsletters, signage, and matchday announcements, and the strategic choices behind communication, including emotional storytelling, transparency, and authenticity. The methods of communication differ in tone and intensity, yet they are vital for engaging fans and validating the clubs' initiatives. This theme addresses RQ3, highlighting the role of communication in influencing behavior and promoting transparency.

Theme 4: Fan Engagement and Cultural Impact

This theme examines the depth of fan engagement in sustainability and the emotional connections that fans form with environmentally responsible clubs. Engagement strategies vary widely, from symbolic gestures to interactive educational activities. The theme also demonstrates how cultural values and geographical proximity influence fans' reactions. It links to RQ1 and RQ3, as it illustrates how behavioral influence is mediated by emotional connection, community involvement, and symbolic practices aligning with the club's identity.

5.1.2.1. Contributions to RQ1 and RQ3

The first theme, “Strategic Integration and Governance”, enhances understanding of how Portuguese football clubs implement environmental sustainability initiatives (RQ1) and communicate these efforts to fans and stakeholders (RQ3). The findings indicate that, while methods differ by club size and resources, all organizations are increasingly concerned about integrating sustainability into their strategic and operational core.

Environmental Sustainability Strategies (RQ1)

Larger clubs, such as SL Benfica, FC Porto, and Sporting CP, have demonstrated a more advanced approach to sustainability, integrating it into governance, strategic planning, and compliance with international frameworks like the CSRD and the SDGs. This integration often arose from regulatory pressure, reputational concerns, and an evolving organizational mindset.

“The creation of the department was driven by the growing demands of European legislation, in particular the CSRD.” (Interviewee 4, personal communication,

March 14, 2025)

“Sustainability is not charity. It is a strategic responsibility that can bring real and lasting benefits to the club.” (Interviewee 2, personal communication, March 13, 2025)

These clubs have implemented various initiatives to achieve their environmental sustainability goals, particularly in energy management, transportation, waste reduction, and community engagement. Energy-related actions involve installing solar panels, switching to LED lighting systems, and implementing centralized energy management platforms to monitor and optimize consumption. Sporting CP, SL Benfica, and FC Porto have all invested in measures across their stadiums and training facilities.

“We started using LED lighting and solar panels not just for cost savings, but to show we take this seriously.” (Interviewee 4, personal communication, March 14, 2025)

Sustainable mobility has also gained popularity, with charging stations for electric vehicles now installed at stadiums and training facilities.

“We installed EV chargers to reduce emissions, but also because we believe we have to lead by example.” (Interviewee 5, personal communication, April 13, 2025)

Clubs have tackled waste management initiatives by prohibiting single-use plastics and adopting reusable or recyclable cup systems.

“The introduction of a deposit system for reusable cups has been successful — fans are participating, and it has decreased litter around the stadium.” (Interviewee 4, personal communication, March 14, 2025)

In food sustainability, clubs have included optimized logistical operations and redistributed leftovers to families in need.

“On matchdays, any food that’s left is redirected to local support networks. We try to avoid all waste.” (Interviewee 2, personal communication, March 13, 2025)

These practices demonstrate that clubs are not just meeting external expectations but are also actively integrating sustainability into their operational logic and culture. Interviewees emphasized that successfully implementing sustainability requires a change in internal culture and collaboration across different departments.

“There is still a perception that sustainability is a side project internally. We are working to change that by demonstrating its impact on everything — operations, image, and future partnerships.” (Interviewee 2, personal communication, March 13, 2025)

These efforts align with Epstein and Buhovac's (2014) concept of strategic sustainability, where environmental practices are crafted to meet external standards and increase stakeholder value and operational effectiveness.

In contrast, smaller clubs like Estoril Praia and Rio Ave have also demonstrated strong environmental commitment through a focus on practical, symbolic, and community-oriented actions. These include educational initiatives, visual awareness materials, and daily practices integrated into the training and youth academies.

“Here, sustainability starts with people, a parent complaining about plastic, a coach deciding to bring a reusable bottle. That is how it starts.” (Interviewee 1, personal communication, March 6, 2025)

“The kids bring their bottles now, and they remind the adults when they forget. It becomes part of the culture.” (Interviewee 3, personal communication, February 13, 2025)

One notable example is Estoril Praia’s Planeta Mágico project, which originated from a parent's concern and evolved into an educational campaign targeting young athletes and their families.

“The Planeta Mágico project came from a parent’s complaint- We took that and turned it into an opportunity to involve families and educate our young players.”
(Interviewee 1, personal communication, March 6, 2025)

These initiatives exemplify what Trendafilova et al. (2013) refer to as "visible sustainability"—practices that may not be extensive but are highly effective in creating awareness and promoting behavioral change through direct engagement with stakeholders.

Communication Practices and Perceptions (RQ3)

The interviews showed that communication shapes how fans and stakeholders perceive sustainability initiatives. Although all clubs acknowledge the importance of communicating their efforts, their strategies differ significantly based on institutional size, resources, and target audience. The analysis aligned with RQ3, showing that communication is about visibility, credibility, emotional resonance, and alignment with the club's values.

Larger clubs employ more structured and professional communication strategies, including social media campaigns, newsletter updates, storytelling videos, stadium signage, and players' involvement as sustainability ambassadors.

“We are preparing storytelling videos that emotionally connect fans to our environmental mission.” (Interviewee 4, personal communication, March 14, 2025)

“Our sustainability messages are visible both digitally and in the stadium on matchdays.” (Interviewee 2, personal communication, March 10, 2025)

“Whenever possible, the players are involved in the campaigns. They are a reference point for the fans, and their participation has a deeper impact.”

(Interviewee 5, personal communication, April 13, 2025)

These statements highlight how clubs intentionally leverage emotional connections and social influence to enhance the effectiveness of their messages, particularly among younger fans. As Walker and Kent's (2009) argue that CSR communication is most effective when it is authentic, emotionally engaging, and integrated into the club's identity, rather than being perceived as superficial or opportunistic.

Even larger clubs recognize the risk of greenwashing—that is, overstating or

exaggerating sustainability efforts without enough substance behind them.

“We only communicate what we are actually doing. There is an internal concern about being perceived as greenwashing.” (Interviewee 5, personal communication, April 13, 2025)

In contrast, smaller clubs often rely on more direct, experience-based communication by leveraging their proximity and personal relationships with fans and local communities. Rather than sophisticated campaigns, they emphasize direct and personal communication, particularly through the influence of coaches, academy staff, and personal examples.

“For us, the most powerful communication is not an Instagram post, it's when a kid sees his coach picking up trash and copies that behaviour.” (Interviewee 1, personal communication, March 6, 2025)

“Some fans do not follow us online, but they see what we do at the academy, with their kids. That is where we make a difference.” (Interviewee 3, personal communication, February 13, 2025)

These findings indicate that authenticity is not limited to large clubs. In contrast, smaller institutions can create strong communication effects by leveraging proximity, consistency, and leadership through example. Although they may not have formal resources or marketing teams, their strength lies in their credibility and emotional immediacy.

Interviewees also highlighted the limitations of digital channels, especially for inducing behavioral change.

“Social Media is good for visibility, but for real change, we need to talk to people, in schools, in the stands, face-to-face.” (Interviewee 1, personal communication, March 6, 2025)

These reflections add depth to RQ3 by showing that communication in sustainability involves not just media presence but also message alignment, relational dynamics, and contextual relevance. Clubs that view sustainability communication as a

way to connect, rather than as a promotional tool, are more likely to encourage engagement, build trust, and ultimately inspire lasting changes in fan behavior.

5.1.2.2. Differences between Clubs

The thematic analysis revealed significant differences between large and small football clubs in planning, implementation, and communication of environmental sustainability. All clubs demonstrated a commitment to sustainability; however, their approaches were significantly influenced by their structural capacity, institutional visibility, and available resources.

Large clubs, such as SL Benfica, FC Porto, and Sporting CP, tend to operate within structured systems influenced by external regulations, stakeholder oversight, and the availability of technical and financial resources. These clubs incorporate sustainability into their formal planning tools, often guided by the Corporate Sustainability Reporting Directive (CSRD), Environmental, Social, and Governance (ESG) indicators, or the Sustainable Development Goals (SDGs). Their initiatives benefit from cross-functional teams and institutional reporting, enhancing scope and continuity of action.

“At this scale, sustainability has to be planned, audited, and reported. It is not optional anymore.” (Interviewee 4, personal communication, March 14, 2025)

These clubs simultaneously communicate their sustainability efforts through various channels, including social media, digital storytelling, and visibility within the stadium. Players are often engaged as campaign ambassadors to convey a consistent and credible sustainability message to the broader public.

“The media side helps. When a top player appears in a campaign, it gives the message more legitimacy; fans listen differently.” (Interviewee 2, personal communication, March 10, 2025)

In contrast, smaller clubs like Estoril Praia and Rio Ave face challenges in staffing, budget, and time management. Their sustainability efforts are often informal, driven by personal initiative and embedded within community dynamics rather than institutional systems.

“We do not have a department – we just do it because we care. It starts with someone deciding to act.” (Interviewee 1, personal communication, March 6, 2025)

Although these clubs have limited resources, they demonstrate a strong level of engagement at the grassroots level. Coaches, parents, and players actively collaborate to create sustainable practices that often develop organically through daily routines. This leads to a form of relational sustainability, where trust and closeness compensate for the absence of a formal structure.

“We do not have the budget or structure for big campaigns, but we can show kids how to respect the environment in small, constant ways. We do things that matter.” (Interviewee 3, personal communication, February 13, 2025).

Additionally, smaller clubs tend to be more agile in implementing low-cost solutions. Their size allows them to quickly adapt to community ideas, such as banning plastic bottles or reusing materials, without requiring extensive approval processes.

“Smaller clubs also have some advantages. They often have greater flexibility to test solutions without the bureaucracy of the big clubs and can count on a more involved and close-knit local community.” (Interviewee 1, personal communication, March 6, 2025)

At the same time, these clubs understand the limitations of achieving goals without broader structural support. A common theme was the lack of institutional incentives and insufficient coordinated support from governing bodies.

“We do what we can, but sometimes it feels like we're working alone. The incentives and aid are very low.” (Interviewee 3, personal communication, February 13, 2025).

These differences align with the argument made by Trendafilova et al. (2013), who emphasize that the institutional context influences sustainability strategies in sports. While larger clubs operate under greater external scrutiny and have a higher capacity to formalize and scale their efforts, smaller clubs tend to be more relational, flexible, and

attuned to their context.

Overall, the findings indicate that no single model exists for implementing sustainability in football. Different clubs employ specific strategies tailored to their goals and values. Both formal and informal models significantly contribute to promoting environmental awareness in sports. These results align with previous studies emphasizing the impact of credible environmental initiatives when promoted by prominent organizations, such as sports clubs

5.2. Discussion

5.2.1. Discussion of Quantitative Results

The quantitative results of this study provide a relevant contribution to understanding how fans of Portuguese sports clubs perceive and respond to sustainability initiatives. These findings are especially important for addressing Research Questions 2, 4, and 5 and testing Hypotheses 1 through 4.

The confirmation of Hypotheses 1 and 2 shows that perceptions of sustainability initiatives (PSI) significantly and positively influence pro-environmental behavioral intentions, both during sports events and in everyday life. These results align with previous studies emphasizing the impact of credible environmental initiatives when endorsed by prominent organizations, such as sports clubs (J. M. Casper et al., 2014; Innoue & Kent, 2012; McCullough, Kellison, et al., 2022; G. T. Trail & McCullough, 2020). These findings further support the Theory of Planned Behavior (Ajzen, 1991), suggesting that positive attitudes towards club-led sustainability actions can forecast fans' intentions to act.

Furthermore, the significant correlations and regression results demonstrate that clubs can act as environmental awareness agents, influencing event-specific behaviors and wider lifestyle choices. This distinction aligns with recent literature, that calls for research differentiating between situational and habitual pro-environmental behaviors (McCullough, Kellison, et al., 2022).

However, the rejection of Hypotheses 3 and 4 introduces a crucial nuance to this theoretical framework. Unexpectedly, team identification (TI) did not significantly moderate the relationship between PSI and behavioral intentions, contrary to expectations drawn from Social Identity Theory (Tajfel & Turner, 1979) and previous research (Heere & James, 2007; Innoue & Kent, 2012). In fact, Team Identification showed no influence on daily life behaviors and a weak, inconsistent connection with event-based intentions.

This suggests that emotional connection to a club, while relevant for other forms of loyalty and engagement, may not necessarily translate to sustainable behaviors without additional factors, such as internalized values or trustworthy messaging. This result corresponds with recent studies questioning the expected link between identification and social responsibility outcomes (McCullough, Kellison, et al., 2022; Yoshida et al., 2014).

Additionally, the unexpected negative direct effect of TI on everyday intentions may suggest a moral licensing effect, where strongly identified fans feel less personally responsible because they perceive the club as already "doing enough." This adds depth to the theoretical understanding of fan psychology, suggesting that identification alone is not sufficient to foster behavioral change.

In summary, the quantitative results highlight how fans perceive sustainability efforts, rather than their identification with the club, as more predictive of environmental behavioral intentions. This finding shifts the focus from identity to perception as the main psychological mechanism of influence.

5.2.2. Discussion of Qualitative Results

The qualitative findings of this study offer important insights into how Portuguese football clubs view, implement, and communicate their commitment to environmental sustainability. These findings are particularly relevant for addressing Research Questions 1 and 3, which pertain to the strategies adopted by clubs and their communication methods with fans.

The thematic analysis clearly distinguished how sustainability is integrated into governance, daily operations, and communication strategies for larger versus smaller clubs. Larger clubs like SL Benfica, FC Porto, and Sporting CP exhibited a more structured and formal approach, often influenced by regulatory frameworks such as the CSRD and guided by sustainability reporting practices. These findings align with Epstein and Buhovac's (2014) concept of *strategic sustainability*, which involves intentionally integrating environmental practices into the organizational core to meet external expectations and create long-term value.

In contrast, smaller clubs such as Rio Ave and Estoril Praia promoted sustainability through symbolic and community-oriented actions. Their methods were less formal, yet they were deeply integrated into club culture and daily habits. This aligns with the idea of *visible sustainability* articulated by Trendafilova et al. (2013), which underscores the importance of locally rooted, culturally relevant actions in fostering

awareness and driving change.

Club operational practices varied, including infrastructure upgrades, waste management, and grassroots education initiatives. While larger clubs emphasized scalable solutions with clear visibility, smaller clubs focused on accessible, low-cost actions that influence behavior through repeated, relational cues, particularly among young athletes and their families. These dynamics support research on behavioral nudging and community-based social marketing, indicating that small, consistent interventions can effectively encourage sustainable behavior (McKenzie-Mohr, 2000).

The communication strategies varied widely among the clubs. Larger clubs utilized digital media, storytelling campaigns, and prominent stadium visibility to engage with broader audiences. Their communication efforts were usually integrated into their brand and corporate social responsibility (CSR) strategies. In contrast, smaller clubs relied more on direct personal communication and role modeling within their communities. These findings support the work of Walker and Kent (2009), who assert that CSR communication in sports must be authentic, emotionally resonant, and integrated into the organization's identity to be truly effective.

Fan engagement has become a crucial element in the success of sustainability initiatives. While the emotional connection between fans and their clubs creates opportunities to influence behavior, this influence relies heavily on the credibility and visibility of the initiatives. When sustainability is perceived as genuine and aligns with the club's values, it fosters a stronger sense of identification and behavioral alignment among fans. This finding aligns with Social Identity Theory (Tajfel & Turner, 1979), which suggests that individuals often adopt behaviors reflecting the norms and values of the groups they identify with. However, the data also suggest that identification alone is insufficient; clubs must show coherence between discourse and practice to achieve genuine engagement.

In summary, the qualitative findings indicate that both top-down and bottom-up approaches can significantly advance sustainability in football, as long as they are contextually appropriate, culturally integrated, and strategically communicated. While larger clubs may lead due to their scale and visibility, smaller clubs can shine through authenticity, closeness, and trustworthiness. These approaches work together to provide complementary ways to integrate sustainability into the sports culture.

5.3. Theoretical Contribution

This research significantly contributes to the academic literature on sports sustainability, fan behavior, and social influence. Integrating quantitative and qualitative approaches provides a more thorough understanding of how sports clubs promote environmental sustainability and how these initiatives are perceived and potentially embraced by their fans.

From a quantitative perspective, the findings support and enhance the Theory of Planned Behavior (Ajzen, 1991) by showing that fans' perceptions of sustainability initiatives significantly predict their behavioral intentions during sporting events and in daily life. This reinforces the idea that attitudes towards environmental actions led by clubs can significantly predict individual behavior.

The study challenges common assumptions in Social Identity Theory (Tajfel & Turner, 1979) by demonstrating that team identification does not always enhance the relationship between PSI and behavior. This implies that perception may play a more critical role in influencing behavior than identification alone.

This nuance introduces a new dimension to existing models of fan engagement and corporate social responsibility (CSR) in sports. It suggests that while team identification is crucial for emotional loyalty, it does not necessarily lead to behavioral alignment on sustainability issues unless it is supported by credible and visible actions.

From a qualitative perspective, the study enhances understanding of how clubs implement sustainability in varying institutional contexts. It illustrates that formalized strategic sustainability (Epstein & Buhovac, 2014) is generally more common in larger clubs, whereas visible, symbolic sustainability (Trendafilova et al., 2013) is more important in smaller clubs with limited resources. These insights emphasize the importance of recognizing diverse approaches to sustainability in sports, which can vary based on context, scale, and internal culture.

Furthermore, the qualitative findings enhance theoretical discussions on CSR communication in sport by highlighting the importance of authenticity, proximity, and emotional resonance, in line with the frameworks proposed by Walker and Kent (2009). The data suggests that fans are more likely to trust and engage with sustainability initiatives when they are integrated into the club's identity and reinforced through credible actions. Finally, the study provides a significant contribution by connecting sport-based sustainability efforts with broader behavioral theories, such as nudging (Thaler & Sunstein, 2009) and community-based social marketing (McKenzie-Mohr,

2000). The success of symbolic, consistent, and repeated actions at the community level demonstrates how local sports clubs can influence behavior beyond traditional sports management theory.

In summary, this research expands theoretical perspectives on how sports clubs can act as agents of sustainable change, highlighting the influence of both perception and context on fans' behavioral intentions. It highlights the significance of aligning communication, identity, and action to foster environmental engagement. It also calls for more integrative frameworks that consider both institutional structures and social dynamics in sport sustainability research.

5.4. Practical Implications

The results of this study suggest several actionable implications for sports clubs, sustainability managers, and communication professionals looking to promote pro-environmental behavior through sports.

First, the quantitative results emphasize how fans perceive sustainability initiatives. Clubs should prioritize clear, credible, and consistent communication about their environmental initiatives, as positive perceptions significantly influence both event-specific and everyday sustainable behaviors. This calls for developing communication strategies beyond branding, focusing instead on transparency, measurable outcomes, and emotional connection. As the data showed, it is not the strength of team identification that drives sustainable behavior, but the belief in the genuineness and meaningfulness of the club's actions.

Secondly, clubs - especially larger ones- should integrate sustainability into governance and operations, viewing it as a strategic pillar rather than just a marketing initiative. Incorporating sustainability goals into planning, procurement, facility management, and staff training can help embed environmental responsibility and ensure long-term viability. Furthermore, establishing dedicated sustainability roles or departments, as demonstrated by some clubs, can enhance accountability and promote cross-functional collaboration.

The findings indicate that a lack of formal structures does not prevent impactful actions for smaller clubs. The closeness of a community and the presence of informal leaders are crucial in influencing behavior change. Grassroots engagement, educational initiatives, and symbolic practices—particularly those involving children and families—can be very effective. These clubs should continue to leverage their relational capital and

flexibility, reinforcing sustainable habits through daily interactions and culturally embedded practices.

From a communication standpoint, the study highlights the need for tailored messaging. Larger clubs can gain advantages by investing in digital storytelling, enhancing matchday visibility, and launching ambassador-based campaigns. However, to prevent the risk of greenwashing, efforts must align with actual practices and be backed by evidence. In contrast, smaller clubs should continue to utilize interpersonal communication and role modeling, which have proven to be especially influential at the local level.

Finally, given the influence of perceived credibility on fan behavior, clubs should invest in monitoring and evaluation systems to assess the effectiveness of their initiatives. Showing progress, even in small steps, fosters trust and strengthens the credibility of sustainability programs.

In sum, sports clubs have the potential to act as agents of cultural change when they combine credible actions with emotionally impactful communication. Aligning sustainability efforts with the values and experiences of the fan community is crucial, whether through formal strategies or symbolic engagement.

6. Conclusions and Recommendations

This dissertation examined the role of Portuguese sports clubs in promoting environmental sustainability and how these efforts affect fans' perceptions and intentions toward pro-environmental behavior. Using a mixed-methods approach that includes a survey of 203 sports fans and semi-structured interviews with key stakeholders from five football clubs, this study provides valuable insights into the relationship between institutional initiatives, fan psychology, and sustainable behavior.

The results indicate that fans' perceptions of the credibility and visibility of sustainability initiatives is crucial in influencing their behavioral intentions. Individuals who view their club's environmental efforts positively are more likely to express an intention to adopt pro-environmental behaviors, both at sporting events and in their daily lives. These findings provide empirical support for the Theory of Planned Behavior (Ajzen, 1991) and align with prior research emphasizing the influence of trusted institutions in promoting sustainability initiatives (J. M. Casper et al., 2014; Innoue & Kent, 2012).

In contrast, the expected moderating effect of team identification, a key construct within Social Identity Theory (Tajfel & Turner, 1979), was not supported. Even though highly identified fans may show strong emotional loyalty, this attachment does not automatically lead to increased environmental engagement. Interestingly, the unexpected negative relationship between team identification and everyday sustainable behavior suggests a potential moral licensing mechanism. This mechanism implies that the club's initiatives may unintentionally lessen fans' sense of personal responsibility. This emphasizes the importance of clubs to encourage both identification and personal accountability.

From a qualitative perspective, the study revealed significant differences in how clubs implement sustainability based on their size, resource availability, and organizational culture. Larger clubs adopted a more institutionalized approach by integrating environmental objectives into their governance frameworks and aligning with international standards. In contrast, smaller clubs relied on symbolic, relational, and community-oriented practices that, while less formal, were highly effective in engaging fans at a grassroots level. Both models demonstrate that environmental sustainability in sport can be effectively advanced through strategies that are appropriate for the context.

Based on these insights, several recommendations can be drawn for practitioners:

- Clubs should ensure transparency, consistency, and measurable impact in

their sustainability communications to strengthen credibility and avoid greenwashing perceptions.

- Environmental responsibility should be integrated at all club governance and operations levels, supported by dedicated personnel, cross-departmental collaboration, and formal monitoring systems.
- Communication strategies must be customized to fit institutional size: larger clubs may benefit from multimedia campaigns and player involvement, whereas smaller clubs can capitalize on proximity and authenticity through direct engagement.
- Visible and emotionally resonant symbolic actions, such as initiatives led by academies or family-oriented programs, can foster sustainable habits when integrated into local culture.
- Progress reporting must be prioritized, even if incremental, as it builds fan trust and enhances organizational legitimacy.

These measures position sports clubs as both sustainable implementers and cultural agents that can shape collective environmental awareness. When designed and communicated effectively, sustainability initiatives in sports can extend their influence beyond the stadium, contributing to broader societal transformation.

6.1. Limitations and Future Research Suggestions

Although this research has made valuable contributions, it is important to acknowledge several limitations.

Firstly, the quantitative component's sample composition was heavily biased towards fans of Portugal's three major football clubs. While this offers insights into clubs with more visibility and resources, it may not adequately capture fans' perspectives associated with smaller institutions or sports beyond football.

Secondly, the cross-sectional design limits our ability to identify causal relationships or track long-term changes in behavior. Longitudinal studies in the future would be valuable for assessing the evolution of fans' perceptions and behaviors over time, especially in response to repeated exposure to sustainability campaigns.

Thirdly, reliance on self-reported behavioral intention measures may lead to social desirability bias. While validated scales were used, future studies could enhance self-

reports with observational or behavioral tracking methods to evaluate actual engagement in sustainability practices.

Additionally, the study focused solely on Portuguese clubs, which, while contextually rich, limits the applicability of findings to broader geographical or cultural contexts. Cross-country and sports discipline comparative studies would help identify universal principles and context-specific patterns.

Finally, while analytically robust, the qualitative component was based on only five interviews. Including fans, sponsors, policy-makers, and community organizations in the stakeholder base could enrich the analysis, providing a more comprehensive understanding of the sustainability ecosystem in sports.

Considering these limitations, the following suggestions for future research are:

- Longitudinal designs to track changes in fan behavior and attitudes over time in response to specific club initiatives.
- Experimental studies to evaluate the effectiveness of different types of sustainability communication, such as emotional versus rational appeals and ambassador-led versus institution-led messaging.
- Cross-national comparative research to examine how cultural values affect the adoption and perception of sustainability in sports.
- Analysis of fan profiles segmented by psychological, sociodemographic, and behavioral traits that predict their responsiveness to environmental messaging.
- Examining the institutional drivers and barriers, such as leadership styles, stakeholder pressures, and incentive structures, that either facilitate or hinder the integration of sustainability within sports organizations.

By exploring these avenues, future research can deepen the understanding of how sports institutions can strategically contribute to sustainable development through operational changes and by influencing individual and collective behaviors.

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Appendixes

Appendix A. Validated Scales Used in the Conceptual Model

Construct	Author	Scale
Fans' Perceptions of Pro-Environmental Sustainability Initiatives in Sport		
Fans' Approval of Club Pro-Environmental		
My club's pro-environmental sustainability initiatives positively influence my support as a fan.	Cayolla et al. (2023)	1 = "Strongly Disagree" to 7 = "Strongly Agree"
I am prouder of a club that promotes pro-environmental sustainability initiatives.		
Because my club carries out pro-environmental sustainability initiatives, I am more loyal to the club.		
Fans' Adherence to Club Pro-Environmental Sustainability Initiatives		
I am aware of pro-environmental sustainability initiatives carried out by my club.		
I have an interest in pro-environmental sustainability initiatives promoted by my club.		
I will participate in pro-environmental sustainability initiatives promoted by my club.		
Sport Event Personal Behavior Intention		
Will be more active with recycling in my everyday life.	J. M. Casper et al. (2014)	1 = "Strongly Disagree" to 7 = "Strongly Agree"
Will bus or carpool more often in everyday life.		
Will pick up litter.		
Will conserve energy more		
Everyday Personal Behavior Intention		
Will be more active with recycling at sporting events.	J. M. Casper et al. (2014)	1 = "Strongly Disagree" to 7 = "Strongly Agree"
Will bus or carpool to sporting events.		
Will pick up litter at sport-related events.		
Will purchase reusable or biodegradable tailgating cups/plates/silverware.		
Team Identification		
My team is an important part of who I am	Tsigilis et al. (2022)	1 = "Not at all" to 7 = "To a Great Extent"
I put my team above everything else		
I am passionate about my team		
When my team loses, I feel terrible		
I am devoted to my team		
It is very important for me to support my team		
I talk about my team all the time		
At every opportunity, I show to others that I support my team		

I wear my team's insignia when I watch their games (e.g., either at the stadium
or a sports café or via TV, radio, or the Internet)
I often overreact when it comes to the performance of my team

Appendix B. Questionnaire (in Portuguese)

No âmbito da minha tese de Mestrado em Gestão no ISCTE Business School, solicito a sua colaboração no preenchimento deste questionário. As respostas serão totalmente anónimas, e contribuirão para o estudo sobre como os clubes desportivos podem promover práticas sustentáveis e influenciar o comportamento dos seus adeptos.

O que é a Sustentabilidade no Desporto? Sustentabilidade no desporto refere-se à adoção de práticas e iniciativas que minimizem o impacto ambiental, promovam a responsabilidade social e inspirem mudanças positivas na sociedade, através da influência única que os clubes desportivos possuem junto das suas comunidades.

Agradeço desde já pelo seu tempo e disponibilidade para responder a este questionário, cuja participação será crucial para o desenvolvimento deste estudo.

Dados Demográficos

- Qual a sua idade? (18-25, 26-35, 36-45, 46-55, Mais de 55)
- Qual o seu género? (Masculino, Feminino, Prefiro não dizer)
- Qual a frequência com que assiste a jogos do seu clube?
- Qual a frequência com que assiste a jogos/eventos desportivos mesmo de outros clubes que não o seu?
- Qual o seu clube de referência?

Identificação com o Clube (escala de 1 – De todo não se aplica a 7 – Aplica-se totalmente)

- O meu clube é uma parte importante de quem eu sou.
- Coloco a minha equipa acima de tudo.
- Sou apaixonado pela minha equipa.
- Quando a minha equipa perde, sinto-me mal.
- Sou dedicado à minha equipa.
- É muito importante para mim apoiar a minha equipa.
- Estou sempre a falar da minha equipa.
- Em todas as oportunidades, mostro aos outros que apoio a minha equipa.
- Uso a insígnia da minha equipa quando vejo os seus jogos (no estádio, café, televisão,

rádio ou Internet).

- Costumo exagerar quando se trata do desempenho da minha equipa.

Perceções dos adeptos sobre as Iniciativas de Sustentabilidade Pró-Ambiental no desporto (escala de 1 – Discordo totalmente a 7 – Concordo totalmente)

Aprovação Por Parte dos adeptos das iniciativas de sustentabilidade pró-ambiental do clube

- As iniciativas de sustentabilidade pró-ambiental do meu clube influenciam positivamente o meu apoio como adepto.
- Sinto-me mais orgulhoso de um clube que promove iniciativas de sustentabilidade pró-ambientais.
- O facto de o meu clube levar a cabo iniciativas de sustentabilidade em prol do ambiente faz com que eu seja mais fiel ao clube.

Adesão dos adeptos às Iniciativas de Sustentabilidade pró-ambiental dos clubes

- Estou informado sobre as iniciativas de sustentabilidade pró-ambiental realizadas pelo meu clube.
- Tenho interesse nas iniciativas de sustentabilidade pró-ambiental promovidas pelo meu clube.
- Participarei nas iniciativas de sustentabilidade pró-ambiental promovidas pelo meu clube.

Intenção de Adotar Comportamentos Sustentáveis em Eventos Desportivos (escala de 1 – Discordo totalmente a 7 – Concordo totalmente)

Intenção dos adeptos em adotar comportamentos sustentáveis

- Serei mais ativo na reciclagem em eventos desportivos.
- Irei de autocarro ou de carro partilhado para os eventos desportivos.
- Recolherei o lixo em eventos desportivos.
- Comprarei copos/pratos reutilizáveis ou biodegradáveis.

Intenção de Adotar Comportamentos Sustentáveis no Dia a Dia

- Serei mais ativo na reciclagem na minha vida quotidiana.
- Utilizarei mais frequentemente o autocarro ou o carro partilhado no dia a dia.
- Apanharei o lixo.

- Conservarei mais energia.

Feedback Aberto

- Quais as práticas sustentáveis promovidas pelo seu clube que você conhece?
- Que tipo de ações ambientais gostaria que o seu clube implementasse?
- Na sua opinião, qual a eficácia com que o clube comunica as suas iniciativas ambientais?

Appendix C. Interview Guide

This interview guide was developed to explore how Portuguese football clubs promote environmental sustainability and communicate these efforts to fans. The guide was structured into six main thematic areas:

1. Professional Background

- Could you please introduce yourself and describe your role in the club or organization?
- How long have you been working in this position or in the field of sustainability/communication?

2. Origins and Motivations for Sustainability

- When and how did your club/organization begin to invest in environmental sustainability?
- Was there a specific event or moment that triggered this commitment?
- What were the main motivations for adopting sustainable practices?

3. Sustainability Strategies and Practices

- Could you describe the main sustainability strategies currently implemented at the club?
- Are there specific environmental practices related to energy, water, waste, or mobility?
- Has the club set goals or KPIs to monitor progress in sustainability?
- Does the club follow any sustainability frameworks or certifications (e.g., ISO, SDGs)?

4. Fan Engagement and Behavioral Impact

- How do fans usually respond to the club's environmental initiatives?
- Can you provide examples of campaigns or actions that involved fans directly?
- Do you believe these initiatives can influence fans' behaviors outside the stadium?

5. Communication Strategies

- How are sustainability initiatives communicated to fans and stakeholders?
- Which channels are used (e.g., social media, stadium signage, press releases)?
- What is done to ensure the communication is authentic and avoids greenwashing?
- Have players or club ambassadors been involved in these campaigns?

6. Barriers, Opportunities, and Future Vision

- What are the main challenges the club faces in implementing or scaling sustainable practices?
- In your opinion, what are the opportunities for innovation in this area?
- What are the next steps or future goals regarding environmental sustainability in your club?
- How do you see the role of football clubs in promoting broader social and environmental change?

Appendix D. Table 1 - Sociodemographic Characteristics of the Sample

Frequencies		
	n=203	%
Age		
18-25	26	13
26-35	19	9
36-45	31	15
46-55	41	20
>55	86	42
Gender		
Male	141	70
Female	62	30
How often do you attend your club's matches?		
Never	18	9
Rarely	52	26
A few times a year	34	17
Once a month	13	6
Every week	86	42
How often do you attend matches of other clubs?		
Never	16	8
Rarely	63	31
A few times a year	41	20
Once a month	15	7
Every week	68	34
Which club do you support?		
Benfica	73	36
Sporting	55	27
FC Porto	34	17
Varzim	8	4
Others	33	16

Appendix E1. Internal Consistency of the Scale Fans' perceptions of pro-environmental sustainability initiatives in sport (n=203)

	Item-total Correlation	<i>Cronbach Alpha if item deleted</i>	Inter-Item Correlation	<i>Cronbach's Alpha</i>
Fans Perceptions of Pro-Environmental Sustainability Initiatives in Sport			0.52	0.87
Fans' Approval of Club ProEnvironmental Sustainability Initiatives				
As iniciativas de sustentabilidade pró-ambiental do meu clube influenciam positivamente o meu apoio como adepto.	0.69	0.84		
Sinto-me mais orgulhoso de um clube que promove iniciativas de sustentabilidade pró- ambientais.	0.61	0.86		
O facto de o meu clube levar a cabo iniciativas de sustentabilidade em prol do ambiente faz com que eu seja mais fiel ao clube.	0.71	0.84		
Fans' Adherence to Club Pro-Environmental Sustainability Initiatives				
Estou informado sobre as iniciativas de sustentabilidade pró-ambiental realizadas pelo meu clube.	0.54	0.87		
Tenho interesse nas iniciativas de sustentabilidade pró-ambiental promovidas pelo meu clube.	0.77	0.65		
Participarei nas iniciativas de sustentabilidade pró-ambiental promovidas pelo meu clube.	0.69	84		

Appendix E2. Internal Consistency of the Team Identification Scale (n=203)

	Item-total Correlation	<i>Cronbach Alpha</i> if item deleted	Inter-Item Correlation	<i>Cronbach's Alpha</i>
Team Identification			0.70	0.96
O meu clube é uma parte importante de quem eu sou.	0.85	0.85		
Coloco a minha equipa acima de tudo.	0.79	0.96		
Sou apaixonado pela minha equipa.	0.83	0.95		
Quando a minha equipa perde, sinto-me mal.	0.74	0.96		
Sou dedicado à minha equipa.	0.91	0.95		
É muito importante para mim apoiar a minha equipa.	0.88	0.95		
Estou sempre a falar da minha equipa.	0.85	0.95		
Em todas as oportunidades, mostro aos outros que apoio a minha equipa.	0.85	0.95		
Uso a insígnia da minha equipa quando vejo os seus jogos.	0.74	0.96		
Costumo exagerar quando se trata do desempenho da minha equipa.	0.75	0.96		

Appendix E3. Internal Consistency of the Sport Event Personal Behavior Intention (n=203)

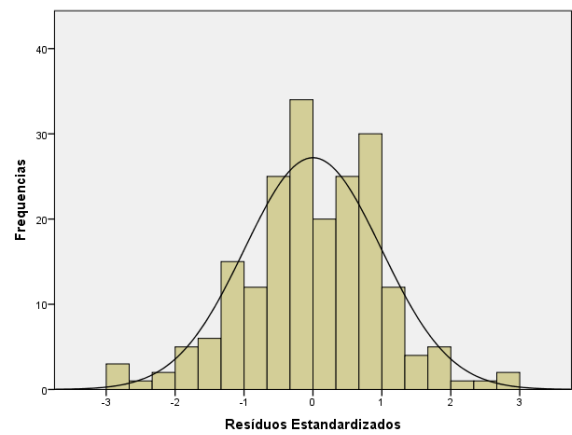
	Item-total Correlation	<i>Cronbach Alpha if item deleted</i>	Inter-Item Correlation	<i>Cronbach's Alpha</i>
Sport Event Personal Behavioral Intention			0.55	0.83
Serei mais ativo na reciclagem em eventos desportivos.	0.71	0.76		
Irei de autocarro ou de carro partilhado para os eventos desportivos.	0.63	0.79		
Recolherei o lixo em eventos desportivos.	0.59	0.81		
Comprarei copos/pratos reutilizáveis ou biodegradáveis.	0.69	0.77		

Appendix E4. Internal Consistency of the Everyday Personal Behavior Intention (n=203)

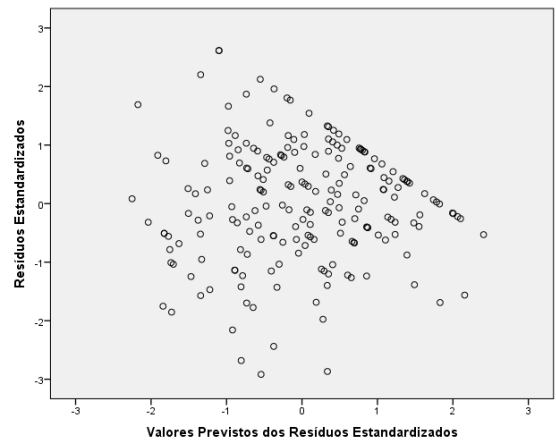
	Item-total Correlation	<i>Cronbach Alpha if item deleted</i>	Inter-Item Correlation	<i>Cronbach's Alpha</i>
Everyday Personal Behavioral Intentions			0.51	0.79
Serei mais ativo na reciclagem na minha vida quotidiana.	0.68	0.70		
Utilizarei mais frequentemente o autocarro ou o carro partilhado no dia a dia.	0.50	0.81		
Apanharei o lixo.	0.58	0.74		
Conservarei mais energia.	0.69	0.70		

Appendix F. Regression Assumptions Diagnostics for the Moderation Models

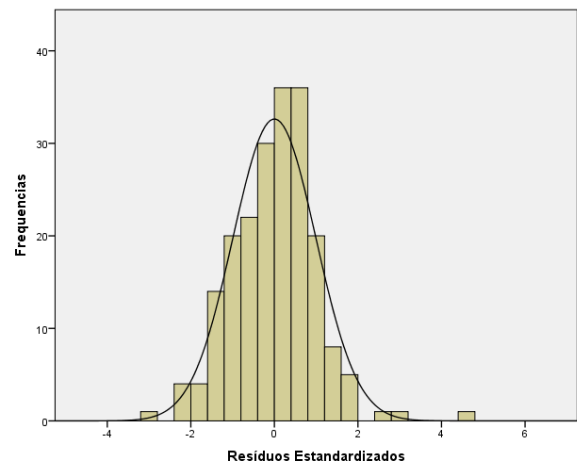
Standardized Residuals – Effects of Perceptions of Sustainability Initiatives and Team Identification on Behavioral Intentions at Sports Events..



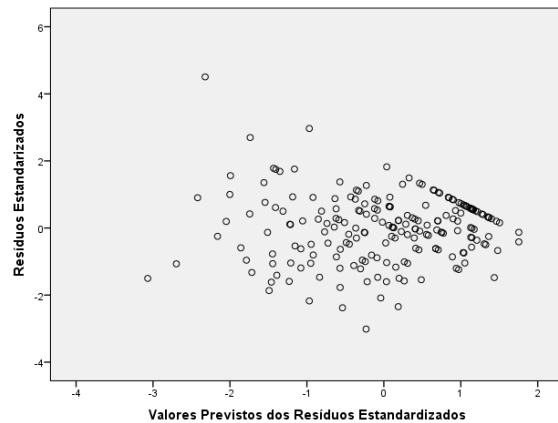
Homoscedasticity of Standardized Residuals – Effects of Perceptions of Sustainability Initiatives and Team Identification on Behavioral Intentions at Sports Events



Standardized Residuals – Effects of Perceptions of Sustainability Initiatives and Team Identification on Everyday Behavioral Intentions..



Homoscedasticity of Standardized Residuals – Effects of Perceptions of Sustainability Initiatives and Team Identification on Everyday Behavioral Intentions..



Appendix G. Stage 2: Generation of Initial Codes

Excerpt (translated)	Code	Club	RQ
“The department was created as a response to European legislation like the CSRD.”	Strategic Alignment with Regulation	SL Benfica	RQ1
“The Magic Planet project involves children and schools in the community.”	Grassroots Engagement	Estoril Praia	RQ3
“We replaced plastic bottles with water fountains and jars in the academy.”	Operational Efficiency	Sporting CP	RQ1
“Our sustainability messages are visible both digitally and in the stadium on matchdays.”	Multi-Channel Communication Strategy	FC Porto	RQ3
“Most fans walk to the stadium due to its central location.”	Urban Environmental Advantage	Rio Ave	RQ1

Appendix H. Stage 3: Searching and Reviewing Themes

Theme	Description	Related RQ
Strategic Integration and Governance	Clubs institutionalize sustainability through governance structures, planning tools, and legal compliance, such as the CSRD and ESG frameworks. Clubs like SL Benfica, Sporting CP, and FC Porto stood out in this area.	RQ1
Operational and Symbolical Practices	Specific environmental actions, such as the use of reusable cups and solar panels, along with symbolic gestures that align clubs with sustainability values, often reflect local contexts and resource limitations.	RQ1
Communication and Visibility	The strategies employed by clubs to enhance sustainability visibility include matchday signage, storytelling campaigns, and social media efforts, reflecting both proactive and reactive approaches.	RQ3
Fan Engagement and Cultural Impact	The extent to which clubs engage fans in sustainable practices and the resulting emotional or cultural connection are key factors. Clubs like Estoril Praia and FC Porto emphasized educational and emotional aspects.	RQ3