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## Article

# Sport and sustainability reporting: Assessing the readiness of sports clubs in the Balkans

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**SPORT AND SUSTAINABILITY REPORTING: ASSESSING THE READINESS  
OF SPORTS CLUBS IN THE BALKANS**

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**Abstract**

This study investigated the readiness of non-football sports clubs in the Balkans to adopt sustainability reporting under the Corporate Sustainability Reporting Directive (CSRD), addressing a gap in a sector with limited regulatory alignment. Unlike previous corporate-focused CSR research, it assessed how financial capacity, digitalisation, managerial education and experience, administrative complexity, and external collaborations influenced adoption. An Ordered Logit Model was applied to data from 163 sports clubs across eight Balkan countries. Results showed that financial resources, digitalisation, and external partnerships supported CSRD compliance, while administrative complexity had no significant effect. Professional clubs showed greater CSRD awareness, but club type did not affect resource levels or training. The findings emphasised the need for sector-specific regulation and identified funding, digital tools, and collaboration as key drivers of sustainability adoption, offering practical guidance for policymakers and sports organisations.

**Keywords:** Sustainability reporting; CSRD compliance; sports clubs; Ordered Logit Model

**JEL Classification:** C25, M14, L83

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## **Introduction**

Sustainability reporting has become a critical tool for organisations to disclose their environmental, social, and governance (ESG) practices, responding to increasing regulatory requirements and stakeholder expectations. The Corporate Sustainability Reporting Directive (CSRD) introduced by the European Union significantly expands these obligations, aiming to enhance transparency and comparability across industries. With approximately 50,000 companies expected to comply with CSRD by 2026 (KPMG, 2022), sustainability reporting has changed from a voluntary initiative to a legal mandate. Prior literature (Dienes, Sassen and Fischer, 2016; Hahn and Kühnen, 2013) highlights the growing strategic relevance of sustainability disclosure, linking it to organisational performance, legitimacy, and stakeholder trust. Although corporate compliance with CSRD has been widely analysed, the sports sector remains largely unexplored, particularly non-football sports clubs that operate under financial and administrative constraints (Gherman et al., 2025; Petracovschi and Gomboş, 2022). Studies such as Babiak and Trendafilova (2011) and Trendafilova, Babiak and Heinze (2013) emphasise that while professional sports organisations engage in CSR for reputational benefits, their alignment with formal reporting standards remains underdeveloped. Unlike corporate entities, sports clubs often lack standardised reporting mechanisms, financial resources, and sustainability expertise, which can significantly hinder their ability to meet CSRD requirements. Additionally, their heterogeneous governance structures – ranging from federations and private clubs to municipally funded organisations – create diverse sustainability approaches, necessitating a sector-specific analysis.

A significant shortcoming in existing research is the superficial understanding of the structural and organisational factors that shape the ability of sports clubs to adopt sustainability reporting in line with CSRD requirements. Most academic work to date has centred on financial capacity and general stakeholder engagement, offering a narrow lens that overlooks the operational realities of clubs with diverse institutional profiles. Crucial dimensions such as the level of digitalisation, the educational background and experience of club managers, the complexity of internal governance, and the extent of partnerships with external actors have received limited analytical attention, despite their clear potential to influence reporting readiness. Moreover, current literature predominantly targets elite and professional sports organisations, whose visibility and access to resources enable partial alignment with CSR expectations, leaving out amateur and mid-level clubs that often operate with limited budgets, informal procedures, and minimal exposure to regulatory developments. In the absence of nuanced, sector-specific studies, policy recommendations remain overly broad and risk being ineffective, as they fail to reflect the fragmented administrative frameworks, inconsistent data practices, and infrastructural disparities that characterise the wider landscape of non-football sports clubs.

This study fills this research gap by evaluating the factors influencing CSRD adoption in non-football sports clubs across the Balkans, a region characterised by diverse financial structures, institutional models, and inconsistent regulatory enforcement. The Balkan sports sector comprises state-funded, university-affiliated, and private clubs, each exhibiting different levels of sustainability awareness and reporting capabilities. These variations create a unique setting for examining sustainability reporting readiness in a non-corporate environment.

The objective of this study is to assess the determinants of sustainability reporting readiness by analysing how financial capacity, digitalisation, managerial characteristics, administrative complexity, and external collaborations impact the likelihood of CSRD adoption. By applying an Ordered Logit Model (OLM) to a dataset of 163 sports clubs, this research provides empirical evidence on both the barriers and enablers of sustainability reporting in this sector. The findings contribute to both theoretical and practical discussions, offering insights for academics and policymakers, while also providing actionable recommendations for sports organisations and governing bodies seeking to enhance sustainability disclosure frameworks in alignment with EU regulations.

The remainder of this article is structured as follows: Section 1 reviews the literature on sustainability reporting in sports, focusing on regulatory challenges, stakeholder engagement, and financial constraints. Section 2 outlines the research methodology, detailing data collection, variable definitions, and the OLM used for analysis. Section 3 presents empirical results, discusses the statistical significance of key determinants influencing sustainability reporting readiness, interprets the findings, compares them with existing literature, and outlines implications for policymakers and sports administrators. Finally, the Conclusions section wraps up the study by summarising key contributions, providing policy recommendations, and outlining directions for future research.

## **1. Review of the scientific literature**

The literature on sustainability reporting in sports mainly covers stakeholder engagement, strategic integration, and barriers to adopting frameworks such as CSRD. Although studies focus on environmental initiatives in professional sports, they often highlight voluntary CSR over formal compliance. This study stands out by examining sustainability reporting readiness in non-football sports clubs in the Balkans, emphasising financial, administrative, and regulatory challenges to CSRD adoption.

*Stakeholder engagement and materiality in sustainability reporting.* Stakeholder engagement and materiality have long been recognised as pillars of sustainability reporting. Stocker et al. (2020) proposed a classification model of stakeholder engagement – passive, adaptive, and deep – based on a content analysis of sustainability reports from 57 global corporations. The study identified passive engagement as the most prevalent, reflecting limited stakeholder influence on decision-making. Baumüller and Sopp (2021) outlined the regulatory transition toward double materiality within CSRD, using a longitudinal review of EU legal texts and position papers. However, their study lacked empirical testing across organisational types, limiting generalisability to sectors like sport. Jørgensen, Mjøs and Pedersen (2021) explored how diverging materiality definitions created confusion for practitioners. They conducted semistructured interviews with 20 sustainability managers from Scandinavian financial institutions. These findings align with our results, where Balkan sports clubs struggle to structure materiality assessments due to resource and knowledge gaps. Empirical models, including our OLM, confirm that weak stakeholder collaboration correlates with lower sustainability preparedness. This was evident particularly in the domains of strategic planning and data availability, where club-level institutional voids were most prominent. Abeysekera (2021) proposed an ethical rationale for sustainability grounded in Gaia Theory, yet his approach remains theoretical. Similarly, Adams and Frost (2008), through qualitative case studies of five UK and Australian

corporations, found that even among leaders in sustainability, the integration of KPIs into operations was fragmented. In a developing country context, Amran and Haniffa (2011) combined interviews with senior executives and regression analysis on 50 firms to demonstrate that institutional pressure drove CSR adoption more than stakeholder influence. Our analysis suggests similar institutional gaps in sports clubs, where governance structures are fragmented and stakeholder input is rarely formalised. In our interpretation, these limitations suggest that CSRD adoption in sports requires simplified, context-adapted tools and frameworks. Without such adaptations, stakeholder engagement and materiality will remain inconsistently applied across the sector.

*Strategic integration and performance impact of sustainability reporting.* The integration of sustainability reporting into strategic management remains uneven across sectors. Adams and Frost (2008) used qualitative interviews with corporate managers from leading UK and Australian firms to examine how sustainability KPIs are incorporated into business processes. Their findings revealed that while environmental and social indicators are increasingly used, they are often not fully embedded in strategic decision-making frameworks. Amran and Haniffa (2011) conducted a mixed-methods study in Malaysia using interviews and regression analysis, showing that institutional pressure outweighed strategic alignment as a driver of sustainability disclosure. This suggests that sustainability reporting may still be driven by compliance rather than strategic value. Al Hawaj and Buallay (2021), through a panel data econometric study of 3,000 firms globally, found mixed results regarding ESG disclosure's effect on financial performance, especially in resource-intensive sectors. These insights reinforce our view that the performance impact of sustainability reporting is highly context-dependent. In our analysis, clubs with structured sustainability planning and defined performance indicators showed greater alignment between sustainability goals and operational decisions. However, most non-football sports organisations lack both the strategic capacity and reporting culture to translate sustainability initiatives into measurable outcomes.

The conceptual model proposed by Abeysekera (2021), although lacking empirical validation, supports our emphasis on outcome-based reporting. Similarly, Dienes, Sassen and Fischer (2016), through a systematic review of 48 empirical studies, identified firm size, governance, and stakeholder visibility as key factors shaping reporting behaviour. Despite growing regulatory pressure, our findings indicate that without strong internal leadership and cross-functional integration, sustainability reports risk becoming symbolic rather than instrumental. This underscores our position that CSRD effectiveness depends on its operational embedment, not just compliance narratives.

*Challenges and gaps in sustainability reporting for sports organisations.* Despite increasing attention to sustainability, sports organisations face persistent challenges in aligning with reporting standards. Casper, Pfahl and McCullough (2017), using a cluster-based survey of 557 fans, found that green initiatives in collegiate athletics influenced perception but lacked measurable long-term impact. This illustrates the symbolic nature of many sport sustainability efforts. Trendafilova, Babiak and Heinze (2013) applied a qualitative content analysis of 122 websites, documents, and 56 media reports to examine institutional forces driving sustainability in North American professional sports. They identified regulatory, mimetic, and normative pressures, yet they noted inconsistent reporting and weak stakeholder accountability. Our findings align with these studies, indicating that non-football sports clubs in the Balkans often operate with minimal

regulatory oversight and limited capacity for data collection or strategic alignment. This structural informality reduces readiness for CSRD implementation. Babiak and Trendafilova (2011) conducted a mixed-methods study including surveys and 17 executive interviews, concluding that sustainability efforts are more reactive than strategic. This is particularly relevant to sports organisations lacking formal governance frameworks. In our analysis, most clubs struggled to distinguish between CSR and sustainability reporting. This conceptual confusion leads to fragmented disclosures focused on community outreach or event-based initiatives, rather than performance metrics.

Doherty, Millar and Misener (2022) emphasised the role of organisational culture in shaping sustainability practices, though their findings were based on case studies with limited generalisability. However, our interpretation supports their conclusion that leadership commitment is essential to effective reporting. In our view, the major gap remains the lack of sector-specific guidance tailored to the unique context of sports. Without clearer frameworks and training, clubs will continue to treat sustainability as peripheral rather than integral.

*Research hypotheses.* The literature highlights the uneven adoption of sustainability reporting in sports, driven by financial, administrative, and structural challenges, as well as the lack of standardised frameworks like CSRD. Based on this, our study proposes hypotheses to assess how organisational features, managerial capabilities, and external collaborations shape reporting readiness.

*H1: The diversity of sports disciplines offered by a club positively influences its ability to adopt sustainability reporting practices.* A wider range of sports disciplines often requires more complex governance structures and operational strategies, which, as noted by Jørgensen, Mjøs and Pedersen (2021), can both necessitate and facilitate more structured sustainability approaches.

*H2: The financial capacity of a sports club significantly enhances its readiness to comply with CSRD requirements.* Clubs with larger budgets have greater access to resources for sustainability initiatives, as supported by Dienes, Sassen and Fischer (2016), who emphasise the critical role of financial capital in driving sustainability compliance.

*H3: A higher level of digitalisation in a sports club improves the efficiency and accuracy of sustainability reporting.* Digital tools streamline data collection and processing, which Farkas and Matolay (2024) identify as essential for implementing effective sustainability practices under regulatory pressure.

*H4: The complexity of a club's administrative structure negatively impacts its ability to implement sustainability reporting frameworks.* Highly bureaucratic structures can hinder timely action and innovation, a challenge discussed in Adams and Frost (2008) in the context of sustainability reporting inertia within rigid governance models.

*H5: The educational level of club management is positively correlated with the integration of sustainability reporting into organisational strategy.* Amran and Haniffa (2011) and Gomboş et al. (2025) argue that education improves sustainability awareness, equipping managers with the knowledge needed to interpret and apply ESG frameworks.

*H6: Greater managerial experience in sports administration enhances a club's capacity to implement sustainability reporting.* Experience contributes to strategic insight and long-

term planning, a connection noted by Millington et al. (2021) in their examination of institutional maturity and CSR adoption in constrained sectors.

*H7: External collaborations and partnerships significantly contribute to the adoption of sustainability reporting in sports clubs.* Engagement with stakeholders provides access to know-how and resources, as emphasised by Babiak and Trendafilova (2011) in their study on stakeholder roles in sustainability integration in sports.

*H8: Professional sports clubs are more likely than amateur clubs to integrate sustainability reporting into their governance structures.* Higher visibility and public accountability in professional sports, as highlighted by Trendafilova, Babiak and Heinze (2013) and Milon et al. (2025), create stronger incentives for formalised sustainability reporting.

## 2. Research methodology

*Data collection.* The data were collected between March and June 2024 through a structured survey administered across eight Balkan countries: Albania, Bosnia and Herzegovina, Bulgaria, North Macedonia, Croatia, Greece, Romania, and Serbia. The target population included non-football sports clubs officially registered with national sports federations in each country. A stratified random sampling approach was used, first by country (proportional to the number of registered athletes), and then by sport type within each federation, ensuring representative coverage and minimising selection bias. Within each sports federation, clubs were randomly chosen to eliminate systematic bias. The survey was distributed to 300 clubs, yielding 163 valid responses (response rate: 54.3%), which is statistically acceptable for organisational research. Although the sample of 163 sports clubs may appear modest, it is methodologically adequate.

The study employs an OLM with six independent variables, yielding a subject-to-variable ratio of 27:1 – well above the 10-20 observations per variable typically recommended for logistic models. The sample spans eight Balkan countries and includes diverse club types, budget levels, and governance forms, supporting structural representativeness. Despite being non-probabilistic due to the lack of a centralised database, the sampling drew from national registries and public directories, ensuring sectoral heterogeneity. Country distributions aligned within  $\pm 10\%$  of available population data. As the goal is to identify structural predictors of CSRD readiness – not to estimate prevalence – the use of purposive, heterogeneous sampling is appropriate and consistent with established standards in exploratory policy research (Blasius and Brandt, 2010). The sample covers 62% amateur and 38% professional clubs, in various ownership types, operating a median of 5 sports (range: 1–21) with budgets between €66,000 and €1,260,000; by excluding high-budget football clubs, the study reflects typical Balkan sports organisations.

An OLM ensures robust estimation (6 predictors, no overfitting), while random selection, a strong response rate, and a presurvey briefing on CSRD enhance validity and reduce bias, with respondents (managers, financial and sustainability officers) directly responsible for compliance and strategy.

*Definition of variables.* The study examines factors influencing sustainability reporting readiness in sports clubs using dependent and explanatory variables. Table no. 1 provides a detailed overview of these variables and their descriptive statistics.

**Table no 1: Dependent and explanatory variables with descriptive statistics**

Code	Description	Summary descriptive statistics
<b>Dependent variables</b>		
UNDERSTAND	How well does your club currently understand CSRD sustainability reporting requirements?	1 (Not prepared at all): 12.3% 2 (Slightly prepared): 27.8% 3 (Moderately prepared): 35.1% 4 (Prepared): 18.4% 5 (Fully prepared): 6.4%
RESOURCES	To what extent does your club have the resources (human, financial, technological) needed for sustainability reporting?	1 (Not available at all): 20.7% 2 (Slightly available): 33.2% 3 (Moderately available): 28.9% 4 (Available): 12.1% 5 (Fully available): 5.1%
STRATEGY	Does your club have a defined strategy or action plan for sustainability reporting?	1 (Not existing at all): 25.4% 2 (Slightly existing): 29.7% 3 (Moderately existing): 23.6% 4 (Existing): 14.5% 5 (Well-defined): 6.8%
TRAINING	How would you rate your staff's level of training on sustainability reporting requirements?	1 (Not trained at all): 22.1% 2 (Slightly trained): 30.9% 3 (Moderately trained): 26.4% 4 (Trained): 15.7% 5 (Fully trained): 4.9%
DATAAVAIL	How accessible and complete is the data your club needs for sustainability reporting?	1 (Not available at all): 18.6% 2 (Slightly available): 35.3% 3 (Moderately available): 29.8% 4 (Available): 12.4% 5 (Fully available): 3.9%
<b>Explanatory variables</b>		
NUMSPORTS	How many sports disciplines are currently practiced within your club?	Mean: 5.10 St.dev.: 3.39 Min: 1 Max: 21
ANNBUDGET	What is your club's annual operational budget (in thousands of euros)?	Mean: 208.1 St.dev.: 174.1 Min: 66 Max: 1257
DIGITLEVEL	What level of digitalisation does your club currently operate at?	1 (No digital tools): 3.7% 2 (Few digital tools): 26.4% 3 (Medium digitalisation): 39.9% 4 (High digitalisation): 23.3% 5 (Fully digitalised): 6.7%
ADMINCOMP	How would you describe the complexity of your club's administrative structure?	1 (Very simple structure): 34.4% 2 (Somewhat simple): 38.7% 3 (Moderately complex): 25.8% 4 (Complex): 1.2% 5 (Very complex): 0.0%
MGMTEU	What is the highest education level attained by the main manager or administrator of your club?	1 (Middle school education): 1.2% 2 (High school/ equivalent): 6.1% 3 (Bachelor's degree): 19.6% 4 (Master's degree): 39.3% 5 (PhD or equivalent): 33.7%

Code	Description	Summary descriptive statistics
MGMTEXP	How many years of experience does your club's manager have in sports administration?	Mean: 6.14 St.dev.: 2.92 Min: 1 Max: 17
COLLAB	To what extent does your club collaborate with external stakeholders (e.g., NGOs, sponsors, authorities)?	1 (No COLLAB): 6.7% 2 (Few COLLAB): 40.5% 3 (Some COLLAB): 36.8% 4 (Many COLLAB): 13.5% 5 (Strong COLLAB): 2.5%
CLUBTYPE	Is your club a professional or amateur organisation?	0 (Amateur): 62.0% 1 (Professional): 38.0%

Source: Authors' calculations in STATA 18.

*Statistical methodology.* The study uses an Ordered Logit Model (OLM) to examine factors influencing UNDERSTAND, RESOURCES, STRATEGY, TRAINING, and DATAAVAIL in sports clubs, given that the dependent variables are ordinal and measured on a 1–5 Likert scale. The OLM is appropriate because it accounts for the ordered nature of the responses without assuming equal intervals between categories. It allows for a meaningful interpretation of how predictors influence the likelihood of higher or lower response levels. However, the model assumes proportional odds, which may not always hold – this limitation was considered during model validation. Alternative approaches such as the generalised OLM or ordinal probit could also be used, especially if the proportional odds assumption is violated. Nonetheless, the OLM offers a good balance between interpretability and statistical rigor for the aims of this study. The model assumes the existence of an unobserved continuous latent variable  $Y_i^*$ , which determines the observed ordinal categories. The general equation of the OLM is as follows:

$$Y_i^* = \beta_0 + \sum_{j=1}^k \beta_j X_{ij} + \epsilon_i \quad (1)$$

$Y_i^*$  is the latent variable,

$X_{ij}$  are the explanatory variables (NUMSPORTS, ANNBUDGET, DIGITLEVEL, ADMINCOMP, MGMTEDU, MGMTEXP, COLLAB, CLUBTYPE),

$\beta_0$  is the intercept,

$\beta_j$  are the estimated coefficients,

$\epsilon_i$  follows a logistic distribution.

Since  $Y_i^*$  is unobserved, the observed ordinal variable  $Y_i$  takes discrete values determined by threshold parameters  $\tau_m$ , such that:

$$Y_i = \begin{cases} 1, & \text{if } Y_i^* \leq \tau_1 \\ 2, & \text{if } \tau_1 < Y_i^* \leq \tau_2 \\ 3, & \text{if } \tau_2 < Y_i^* \leq \tau_3 \\ 4, & \text{if } \tau_3 < Y_i^* \leq \tau_4 \\ 5, & \text{if } Y_i^* > \tau_4 \end{cases} \quad (2)$$

The probability of an observation falling in category  $m$  is given by the logistic cumulative distribution function (CDF):

$$P(Y_i = m) = F(\tau_m - X_i\beta) - F(\tau_{m-1} - X_i\beta) \tag{3}$$

Thus, the probability of  $Y_i$  being in a given category is:

$$P(Y_i = m) = \frac{e^{(\tau_m - X_i\beta)}}{1 + e^{(\tau_m - X_i\beta)}} - \frac{e^{(\tau_{m-1} - X_i\beta)}}{1 + e^{(\tau_{m-1} - X_i\beta)}} \tag{4}$$

*Multicollinearity concerns.* Multicollinearity can affect coefficient estimates by inflating standard errors and reducing statistical significance. To test for multicollinearity, we calculate the Variance Inflation Factor (VIF):

$$VIF_j = \frac{1}{1 - R_j^2} \tag{5}$$

where  $R_j^2$  is the coefficient of determination from the regression of  $X_j$  on all other explanatory variables. A  $VIF > 5$  suggests high collinearity, while values below 3 are generally acceptable.

*Brant Test for Proportional Odds Assumption.* The Brant Test checks whether the effects of independent variables remain constant across all levels of the ordinal dependent variable in an OLM. This means that the coefficients for each predictor should not change across different thresholds. The null hypothesis ( $H_0$ ) states:

$$H_0 : \beta_1 = \beta_2 = \dots = \beta_M \tag{6}$$

where  $\beta_m$  represents the estimated coefficient for the independent variable at each threshold  $m$ . If rejected, the assumption is violated, meaning the effects of independent variables are not stable across categories. The test statistic follows a Chi-Square ( $\chi^2$ ) distribution:

$$\chi^2 = \sum_{j=1}^k \frac{(b_j^{olm} - b_j^{mlogit})^2}{\text{Var}(b_j^{olm})} \tag{7}$$

$b_j^{olm}$  are coefficients from the OLM,

$b_j^{mlogit}$  are coefficients from a Multinomial Logit Model (MLM),

$\text{Var}(b_j^{olm})$  is the variance of the OLM coefficients.

if  $p > 0.05$ , the assumption holds, and OLM is valid.

if  $p \leq 0.05$ , the assumption is violated, and a Generalised Ordered Logit Model (GOLM) may be more appropriate. If the Brant Test confirms the assumption, OLM remains a robust choice. Otherwise, alternative models should be considered for better accuracy.

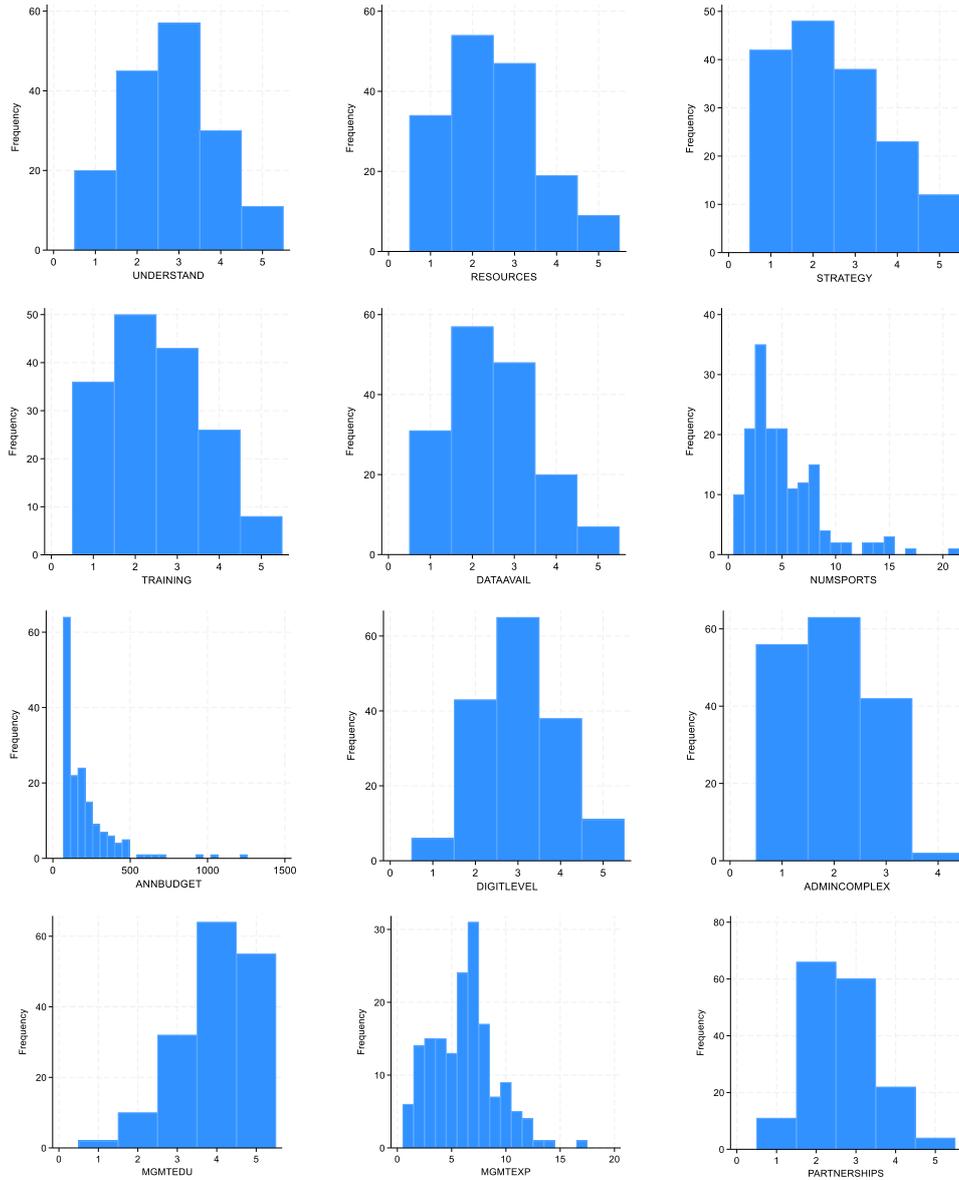
### 3. Results and discussion

#### 3.1. The results of descriptive statistics

Table no. 1 summarises sports clubs' sustainability readiness and resources, revealing significant disparities. Most clubs have moderate CSRD understanding (35.1% at level 3, only 6.4% fully prepared). Resources are limited, with 53.9% reporting low availability, suggesting financial and logistical constraints. Similarly, 55.1% lack a defined sustainability strategy, indicating CSRD's low priority. NUMSPORTS averages 5.1 disciplines per club, but varies up to 21, reflecting different scales. ANNBUDGET ranges from €66,000 to €1,260,000, showing major budget disparities. Digitalisation (DIGITLEVEL) is low to moderate in 66.3% of clubs, potentially hindering sustainability reporting. Management education (MGMTEDU) is high (73% hold a Master's/PhD), but its impact on sustainability is unclear. Managerial experience (MGMTEXP) averages 6.14 years, showing leadership variability. Collaborations (COLLAB) are limited, with 47.2% reporting few or no partnerships, restricting external sustainability resources. Amateur clubs comprise 62% of the sample, explaining some financial and strategic constraints.

The distributions in Figure 1 highlight variable variability, supporting regression analysis with various data points. NUMSPORTS and ANNBUDGET show strong positive skewness, with most clubs having fewer sports sections and limited budgets, while a few outliers report much higher values. This asymmetry justifies their logarithmic transformation to normalise distributions and enhance model accuracy, as  $\log(\text{NUMSPORTS})$  and  $\log(\text{ANNBUDGET})$  better correlate with UNDERSTAND, RESOURCES, STRATEGY, TRAINING, and DATAAVAIL. DIGITLEVEL, ADMINCOMP, and COLLAB ensure a meaningful dispersion. DIGITLEVEL clusters in middle categories, indicating moderate digitalisation. ADMINCOMP skews toward simpler structures, suggesting straightforward decision-making. COLLAB is mostly low, reflecting limited external partnerships. MGMTEDU skews higher, with most managers holding a master's or PhD, while MGMTEXP is more balanced but leans lower, indicating shorter sports administration tenures.

The correlations between variables reveal strong relationships aligned with expected dynamics in sports clubs. The highest correlation (Spearman's  $\rho = 0.539$ ,  $p < 0.001$ ) is between MGMTEDU and MGMTEXP, indicating that more educated managers tend to have longer careers, leading to greater experience. The second-highest correlation, between DIGITLEVEL and MGMTEXP (Spearman's  $\rho = 0.481$ ,  $p < 0.001$ ), suggests that clubs with more experienced managers are more digitally advanced, likely due to their exposure to modernisation trends. Similarly, DIGITLEVEL and COLLAB (Spearman's  $\rho = 0.476$ ,  $p < 0.001$ ) indicate that higher digital adoption facilitates external collaborations, as digital tools improve communication, reporting, and engagement. The highest value remains well below the 0.7 threshold, which is often considered concerning. Given the sample size of 163 observations, these correlation levels do not pose risks to estimation accuracy in the OLM. The relationships remain meaningful without introducing redundancy, ensuring that the model retains its predictive validity and can be reliably estimated.



**Figure no. 1. Distributions of variable values in the regressions**  
*Source: Authors' calculations in STATA 18.*

### 3.2. Regression results

The OLM results (Table no. 2) provide significant information on the determinants of sustainability reporting readiness in Balkan sports clubs. The findings confirm that explanatory variables influence different aspects of sustainability reporting to varying degrees, supporting several research hypotheses while challenging others.

Regression OLM1 (Dependent Variable: UNDERSTAND): The strongest predictor for understanding CSRD requirements is CLUBTYPE ( $p < 0.01$ ), indicating that professional clubs have significantly higher awareness than amateur clubs. This supports H8, which proposed that professional clubs, due to increased regulatory exposure and public scrutiny, would be more engaged in sustainability reporting. MGMTEDU ( $p < 0.05$ ) also plays a key role, supporting H5 by showing that better-educated managers are more likely to understand the CSRD standards. ANNBUDGET ( $p < 0.05$ ) further confirms H2, as clubs with greater financial resources are more able to allocate funding to sustainability training and compliance efforts. MGMTEXP is marginally significant ( $p = 0.063$ ), suggesting that managerial experience might contribute to sustainability knowledge, though the relationship requires further exploration. However, NUMSPORTS, DIGITLEVEL, ADMINCOMP, and COLLAB show no significant impact, indicating that neither organisational diversity nor digitalisation directly enhances sustainability knowledge.

**Table no 2. OLM estimates of sustainability reporting determinants  
(coefficients & standard errors)**

	OLM1 Dep. var: UNDERSTAND	OLM2 Dep. var: RESOURCES	OLM3 Dep. var: STRATEGY	OLM4 Dep. var: TRAINING	OLM5 Dep. var: DATAAVAIL
NUMSPORTS	*0.113 (0.047)	*0.089 (0.049)	**0.102 (0.046)	**0.108 (0.047)	-0.007 (0.049)
ANNBUDGET	**0.003 (0.001)	***0.003 (0.001)	-0.000 (0.001)	-0.000 (0.001)	***0.003 (0.001)
DIGITLEVEL	0.102 (0.195)	**0.500 (0.206)	***0.520 (0.198)	0.068 (0.188)	***0.768 (0.201)
ADMINCOMP	0.152 (0.207)	-0.146 (0.207)	-0.053 (0.205)	-0.150 (0.203)	0.187 (0.212)
MGMTEDU	**0.516 (0.204)	*0.382 (0.191)	**0.451 (0.197)	*0.370 (0.188)	0.131 (0.191)
MGMTEXP	*0.142 (0.076)	-0.024 (0.074)	-0.032 (0.071)	-0.008 (0.069)	0.027 (0.072)
COLLAB	0.007 (0.198)	0.290 (0.204)	***0.604 (0.196)	**0.545 (0.189)	**0.484 (0.198)
CLUBTYPE	***1.276 (0.386)	-0.247 (0.362)	*0.661 (0.356)	0.163 (0.350)	*0.646 (0.362)

\*\*\*, \*\*, \* Significant at 1%, 5%, 10%

Source: Own calculations in STATA 18.

Regression OLM2 (Dependent Variable: RESOURCES). Financial capacity remains the most significant determinant of resource availability, as ANNBUDGET ( $p < 0.01$ ) is positively associated with access to sustainability-related personnel, infrastructure, and technology, reinforcing H2. DIGITLEVEL ( $p < 0.05$ ) is also significant, confirming H3, as clubs with higher digitalisation levels are better equipped to manage sustainability resources efficiently. MGMTEDU ( $p < 0.10$ ) has a weaker but still relevant relationship

with resource allocation. However, COLLAB, ADMINCOMP, MGMTEXP, and CLUBTYPE do not exhibit significant effects, suggesting that external collaborations and administrative complexity do not substantially influence the availability of sustainability resources, contrary to H4 and H7.

Regression OLM3 (Dependent Variable: STRATEGY). The most important factor driving structured sustainability strategies is COLLAB ( $p < 0.01$ ), confirming H7 – external partnerships significantly contribute to sustainability planning. DIGITLEVEL ( $p < 0.01$ ) also plays a crucial role, supporting H3, as digital tools facilitate structured sustainability decision-making. NUMSPORTS ( $p < 0.05$ ) suggests that clubs with greater diversity are more likely to integrate sustainability into management, validating H1. MGMTEDU ( $p < 0.05$ ) reinforces H5. However, ANNBUDGET, MGMTEXP, ADMINCOMP, and CLUBTYPE show no effect, suggesting financial and managerial experience alone do not guarantee strategic sustainability planning.

Regression OLM4 (Dependent Variable: TRAINING). Similar to strategy development, COLLAB ( $p < 0.05$ ) remains the strongest predictor of sustainability-related training programs, reinforcing H7. NUMSPORTS ( $p < 0.05$ ) also shows significance, indicating that clubs managing multiple sports sections tend to develop more training initiatives, supporting H1. MGMTEDU ( $p < 0.10$ ) has a moderate effect, showing that better-educated managers place greater emphasis on training, consistent with H5. However, DIGITLEVEL does not reach statistical significance, suggesting that digitalisation alone does not drive sustainability training. Similarly, ANNBUDGET, MGMTEXP, ADMINCOMP, and CLUBTYPE do not show significant effects, contradicting H2 and H8, which hypothesised that financial capacity and professionalisation would enhance training efforts.

Regression OLM5 (Dependent Variable: DATAAVAIL). The strongest predictor of data availability is DIGITLEVEL ( $p < 0.01$ ), confirming H3 – higher digitalisation significantly enhances data collection and management for sustainability reporting. ANNBUDGET ( $p < 0.01$ ) also plays a major role, reinforcing H2, as financial resources enable clubs to invest in better data management systems. COLLAB ( $p < 0.05$ ) highlights the role of external partnerships in sustainability data access, in line with H7. CLUBTYPE ( $p < 0.10$ ) is marginally significant, suggesting that professional clubs may have slightly better data availability, although the relationship is not strong enough to fully validate H8. Other variables, including NUMSPORTS, MGMTEDU, MGMTEXP, and ADMINCOMP, show no effect, indicating that organisational diversity and managerial characteristics do not significantly influence sustainability-related data access.

### **3.3. Discussion of the main results**

Our findings align with previous studies that emphasise financial capacity (ANNBUDGET) and digitalisation (DIGITLEVEL) as key enablers of sustainability reporting (Al Hawaj and Buallay, 2021). However, unlike prior research, which suggests that stakeholder engagement is a primary driver of sustainability initiatives (Baumüller and Sopp, 2021), our results indicate that external collaborations (COLLAB) mainly influence sustainability strategy, training, and data management, rather than overall awareness or resource availability. Additionally, while Adams and Frost (2008) highlight the role of education in sustainability integration, our study shows that MGMTEDU is influential primarily in knowledge-related aspects (UNDERSTAND, STRATEGY, TRAINING) but less so in operational aspects (RESOURCES, DATAAVAIL). This suggests that better-educated

managers can shape sustainability initiatives but may lack the organisational authority or resources to implement them effectively. Our findings also contrast with Christensen, Hail and Leuz (2021), who argue that larger, bureaucratic structures facilitate sustainability adoption. Our results indicate that ADMINCOMP has no significant effect on any sustainability reporting component, suggesting that administrative complexity neither facilitates nor hinders sustainability integration. Regarding professionalisation, while H8 proposed that professional clubs would be more involved in sustainability reporting, our findings only partially support this claim. CLUBTYPE is significant for UNDERSTAND and marginally significant for DATAAVAIL, but does not influence RESOURCES, STRATEGY, or TRAINING. This suggests that professionalisation enhances awareness but does not necessarily translate into greater investment or strategic action.

The results provide strong support for H1, H2, H3, H5, and H7, confirming that operational diversity, financial resources, digitalisation, managerial education, and external collaborations significantly enhance sustainability reporting readiness. However, H4 (administrative complexity negatively impacts sustainability reporting) is not supported, as ADMINCOMP is insignificant across all models. Similarly, H6 (managerial experience enhances sustainability reporting) is not validated, as MGMTEXP is only marginally significant for UNDERSTAND and does not impact other dimensions. Overall, our study highlights that while financial and digital capacity remain critical enablers of sustainability reporting, external collaborations and managerial education play complementary roles in shaping strategic initiatives. The findings suggest that clubs should focus on enhancing digital infrastructure, leveraging external partnerships, and fostering education-driven sustainability strategies to improve their CSRD readiness.

#### 3.4. Robustness check

To validate our findings, we performed robustness checks addressing both multicollinearity and the proportional odds assumption of the OLM. Variance Inflation Factor (VIF) values for all independent variables were comfortably below the commonly accepted threshold of 5, with the highest at 3.8 (ANNBUDGET) and the lowest at 1.7 (NUMSPORTS), averaging 2.7. These results indicate no problematic multicollinearity, supporting the stability of coefficient estimates. The Brant test confirmed that the proportional odds assumption holds (global  $\chi^2 = 9.24$ ,  $p = 0.39$ ), with no significant violations observed for key predictors such as ANNBUDGET ( $p = 0.44$ ), DIGITLEVEL ( $p = 0.37$ ), ADMINCOMP ( $p = 0.51$ ), MGMTEDU ( $p = 0.36$ ), and COLLAB ( $p = 0.41$ ). Given this, the standard OLM is methodologically appropriate, and there is no need to resort to a generalised OLM. As an additional check, we estimated an ordinal probit model to test the robustness of the results. The significance and direction of the coefficients remained consistent, further confirming that the main conclusions are not sensitive to model specification. Together, these diagnostic tests reinforce the reliability and internal validity of our results in assessing sustainability reporting readiness in Balkan sports clubs.

#### Conclusions

This study delivers a distinct scholarly contribution by addressing the overlooked topic of sustainability reporting readiness in non-football sports clubs across the Balkans. It introduces a novel analytical perspective using the OLM, allowing for a structured

understanding of how financial, digital, and governance-related factors shape CSRD adoption. By focusing on a sector often excluded from mainstream sustainability debates, the research brings a fresh contextual lens that highlights institutional diversity and operational limitations. Its results also generate practical insights with strong policy relevance – such as emphasising digital infrastructure, financial incentives, and external partnerships to support reporting efforts. The work stands out through its fusion of empirical rigour and sector-specific relevance, advancing both academic theory and applied public policy.

Despite its contributions, the study has certain limitations. The research focuses exclusively on non-football sports clubs, which may not fully capture the sustainability reporting dynamics of other sports sectors. The sample size, while statistically relevant, may not generalise to clubs outside the Balkans, where financial and regulatory conditions differ. Furthermore, the study relies on self-reported data, which could introduce biases in the assessment of sustainability readiness.

Future research should explore sustainability reporting in a broader range of sports disciplines and geographic regions to enhance the generalisability of findings. Expanding the dataset to include longitudinal studies could provide deeper insights into the long-term impact of CSRD compliance on sports clubs. Additionally, further investigation into the role of digitalisation in sustainability reporting, particularly in relation to automation and AI-driven reporting tools, could offer innovative pathways for improving sustainability disclosures.

The study's findings have significant policy implications. Governments and regulatory bodies should consider financial incentives and subsidies to encourage sustainability reporting compliance among sports clubs. Policies should also promote digital transformation initiatives, ensuring that clubs have access to modern data management tools. Additionally, fostering partnerships between sports organisations and external stakeholders, such as NGOs and sponsors, can provide the necessary resources and expertise for effective sustainability integration. Ultimately, these measures will help align the sports industry with broader EU sustainability objectives while improving transparency and accountability.

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