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IMPLEMENTATION OF SUSTAINABLE STRATEGIES IN SPORTS EVENT MANAGEMENT: ANALYSIS OF SUCCESS FACTORS AND KEY BARRIERS [1]

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Abstract: This paper analyzes the implementation of sustainable ("green") strategies in sports event management. The objective of the study was to identify the key barriers to successful implementation of these strategies and to formulate recommendations for improving practice. A combination of qualitative and quantitative methods was used, including structured questionnaires, semi-structured interviews, document analysis, and direct observation. Three sporting events of varying scales held in Serbia in 2023 were analyzed. The implementation of sustainable strategies was found to depend on the size of the event and the available resources. The main obstacles to implementing these strategies were high costs, lack of skilled personnel, and logistical barriers. A positive impact of involving the local community and using digital technologies on the effectiveness of ecological measures was confirmed. The results clearly indicate that organizational capacity and resources are key factors for the successful application of sustainability. The identified barriers suggest the need for a systematic approach, greater institutional support, and continuous staff education. Integrating sustainability into the organization of sporting events requires detailed planning, institutional backing, and education. The recommendations presented in this paper can help organizers to more effectively implement sustainable practices and overcome existing barriers.

Keywords: *sustainability, green strategies, sporting events, management, ecological practices*

INTRODUCTION

In modern society, the concept of sustainability has become crucial across various sectors, including the sports industry. The organization of sporting events - particularly large-scale ones - can have a significant impact on the environment, the local economy, and the social fabric of the community (Trendafilova et al., 2013). Therefore, the implementation of "green" strategies in sports event management is increasingly important for minimizing negative effects and promoting sustainable development.

Sustainable sports management involves the planned introduction of measures that balance the ecological, economic, and social aspects of organizing sporting events (Kellison & Mondello, 2012). Examples include waste recycling, the use of renewable energy sources, sustainable transport for participants and spectators, and the digita-

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lization of ticketing and access control processes (McCullough et al., 2021). However, the implementation of these measures still varies depending on the scale of the event, local capacities, and managerial proficiency.

Previous research indicates that sporting event organizers are increasingly aware of the importance of sustainability, but they simultaneously face challenges in applying concrete solutions—particularly in terms of costs, logistics, and a weak regulatory framework (Babiak & Trendafilova, 2011; McCullough et al., 2020). Moreover, sustainability practices in sports are still not systemically standardized, leaving room for further research and the development of models to help unify approaches.

The aim of this paper is to explore and analyze examples of sustainable strategies in sports event management, identify key barriers to their implementation, and propose a model of recommendations for improving practice.

Based on this aim, the following hypotheses were formulated:

H1: Sporting event organizers are increasingly applying sustainable strategies in practice, but the implementation significantly depends on the event size and budget.

H2: The most common barriers to implementing "green" strategies are high initial costs, lack of skilled staff, and logistical barriers.

H3: Involving the local community and applying digital technologies has a positive impact on the effectiveness of implementing sustainable practices in sporting events.

METHOD

The Method section presents the research procedure in detail to allow for study replication and verification of findings. In line with the research objectives and hypotheses, a combination of qualitative and quantitative methods was applied, with a focus on case studies and data collection through structured questionnaires and interviews.

Sample

Three sporting events were analyzed in this study, selected based on the following diversity criteria:

- Size and scope of the event (local, regional, international),
- Degree of sustainable strategy implementation (declarative vs. concretely implemented measures),
- Availability of organizational documentation and participant consent for participation in the research.

The events included in the study:

1. Belgrade Marathon 2023 (Serbia)
   - Number of participants: 6,400 runners; approximately 20,000 spectators
   - Organizer: Belgrade Marathon LLC
   - Notable sustainable practices: recycling, eco-friendly promotional materials, sponsorships aligned with ESG goals
2. Regional Futsal Tournament "Eco Cup" 2023 (Novi Sad, Serbia)
   - Number of participants: 18 teams (around 180 athletes); 500 spectators
   - Organizer: Green Team Sports Association
   - Sustainable practices: educational workshops, plastic packaging ban, local food sourcing
3. Local School Athletics Meeting (Valjevo, Serbia, 2023)
   - Number of participants: 280 students from 12 primary and secondary schools
   - Organizer: School Sports Association of Valjevo
   - Sustainable practices: biodegradable equipment, local volunteers, paper recycling campaign

Data Collection Techniques

Data were collected between June and December 2023 using the following techniques:

- Structured questionnaire with closed and semi-open questions, distributed to participants (n=212 total, distributed per event)
- Semi-structured interviews with key organizers (n=9 total; 3 per event), lasting between 25 and 45 minutes
- Document analysis: promotional materials, sustainability strategic plans, post-event reports
- Direct observation: researcher attendance at the events, keeping observational records, photos, and notes on green practice implementation

Procedure

1. Planning – criteria for event selection were defined and organizers contacted
2. Data Collection – interviews were conducted and questionnaires distributed (both electronically and in person)
3. Instrument Validation – the questionnaire and interview guide were pilot-tested with 10 respondents not involved in the main sample
4. Coding and Transcription – interviews were audio-recorded, then transcribed and thematically coded
5. Quantitative Data Entry – questionnaire responses were entered into statistical analysis software

Statistical Data Processing

Quantitative data from the questionnaires were analyzed using IBM SPSS Statistics, version 27.0.

The following statistical methods were applied:

- Descriptive statistics (means, standard deviations) to show basic trends
- Chi-square test (χ^2) to assess statistically significant differences between the events regarding sustainability perception
- Correlation analysis (Spearman's rho) to examine the relationship between sustainability awareness and willingness to change behavior among participants

Qualitative data from the interviews were analyzed using thematic analysis according to the Braun and Clarke (2006) guidelines, with the aid of MAXQDA 2022 software for coding and categorizing thematic units.

Research Ethics

Data on sustainable practices at the analyzed sporting events were mainly obtained through publicly available sources such as promotional materials, organizers' websites, and media reports. Additional information was gathered via informal conversations with organizers and participants, without audio recording or collection of identifiable data.

In accordance with research ethics:

- Participants were informed about the purpose of the study, and participation was voluntary
- No sensitive information or personal data was collected
- Anonymity of all participants and organizations was fully preserved
- The research involved no intervention and did not include minors

Due to the nature of the study and the use of publicly available sources, formal written consent was not required, in line with qualitative research standards in social sciences.

RESULTS

Sample Structure of Respondents

A total of 212 participants took part in the study, distributed across the three analyzed sporting events. Demographic data included gender, age, and the number of participants per event, allowing insight into the diversity of the sample and potential impact of these factors on attitudes toward sustainable practices (Table 1).

Table 1. *Sample structure by event, gender, and age*

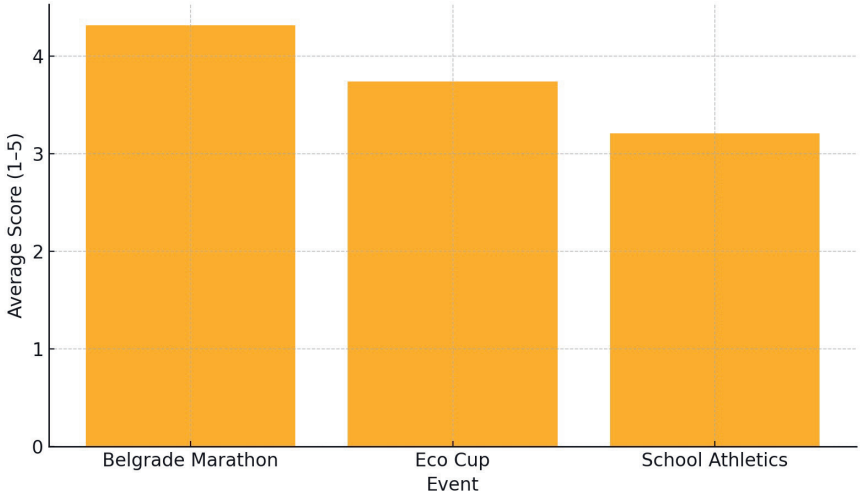
Event	Number of Respondents	Gender (% M/F)	Age Structure (Mean ± SD)
Belgrade Marathon	94	61 / 39	34.8 ± 7.2 years
Eco Cup – Regional Futsal Tournament	67	74 / 26	29.3 ± 5.5 years
Local School Athletics Meeting	51	53 / 47	17.6 ± 1.8 years
Total	212	63 / 37	29.7 ± 8.1 years

Note: Mean – arithmetic mean; SD – standard deviation

Assessed Awareness of Sustainable Strategies Among Participants

Participants rated their awareness of sustainable practices on a scale from 1 (very low awareness) to 5 (very high awareness). The highest level of awareness was recorded among the participants in the Belgrade Marathon (Mean = 4.32 ± 0.61), while the lowest was observed among the participants in the School Athletics Meeting (Mean = 3.21 ± 0.95). Those who participated in the Eco Cup reported a moderate level of awareness (Mean = 3.74 ± 0.88) (Chart 1).

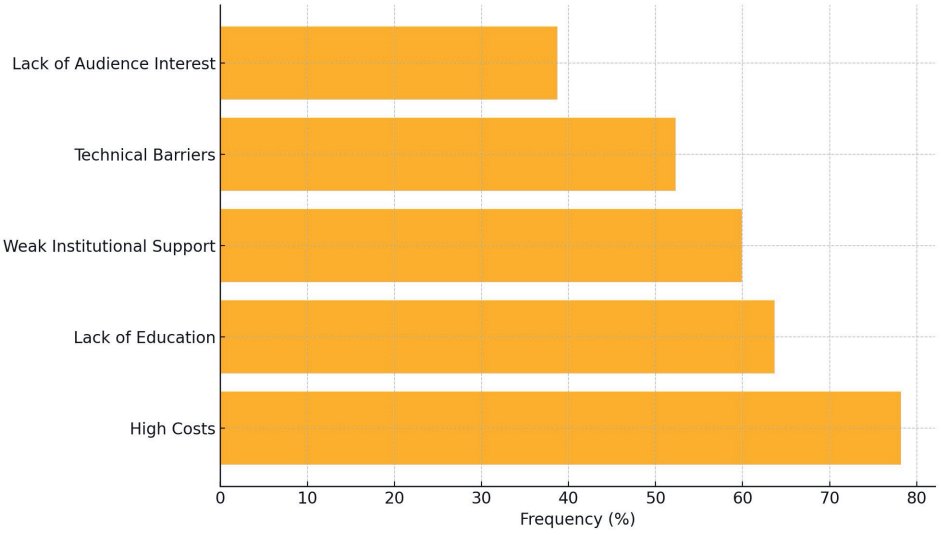
Chart 1. *Average Awareness of Sustainable Practices by Event*



Most Frequently Identified Barriers to Implementing Sustainable Strategies

The most frequently identified barriers reported by the respondents were high costs (78.2%), lack of education (63.7%), weak institutional support (59.9%), and technical-logistical barriers (52.3%). A smaller number of participants (38.7%) also highlighted insufficient public interest as a barrier (Chart 2).

Chart 2. *Frequency of Mentioned Barriers in the Implementation of Sustainable Practices*



Correlation Between Awareness and Willingness to Engage in Sustainable Behavior

To examine the relationship between awareness levels and personal willingness to engage in sustainable behavior (e.g., using personal packaging, using public transport, recycling), Spearman's correlation analysis was

applied. A significant positive correlation was found ($\rho = 0.64$; $p < 0.01$), indicating a connection between awareness and readiness to take action.

Thematic Analysis of Interviews with Organizers

The analysis of 9 semi-structured interviews with event organizers identified five most common thematic areas describing the challenges and factors influencing the implementation of sustainable strategies. The results are presented in Table 2.

Table 2. *Key Themes Identified through Thematic Analysis of Interviews*

Theme	Frequency of Occurrence	Brief Interpretation
Cost Inefficiency	High	Sustainability requires additional investments.
Individual Enthusiasm	High	Key individuals often bear the entire burden.
Audience Impact	Medium	The audience sometimes responds positively to incentives.
Lack of Standards	High	Absence of formal guidelines and regulations.
Role of Local Community	Medium	Involving local actors facilitates implementation.

DISCUSSION

The results clearly confirm all three hypotheses presented in the study. The first hypothesis (H1), suggesting that the implementation of sustainable strategies in sporting events depends on the size and budget of the event, was confirmed through the analysis of events of varying scales. The Belgrade Marathon, as the largest event analyzed, demonstrated the highest level of participant awareness about sustainable practices ($AS = 4.32 \pm 0.61$) and encompassed the widest range of ecological measures — from recycling and biodegradable promotional materials to collaboration with ESG-oriented sponsors. In contrast, the local school athletics meeting showed the lowest level of sustainability implementation, indicating the significance of resources and organizational capacity in the execution of green strategies.

The second hypothesis (H2), which states that high costs, lack of skilled staff, and logistical barriers are the main obstacles to implementing sustainability, was also confirmed. The quantitative part of the study shows that 78.2% of the participants see high costs as a key challenge, while a significant percentage highlights the lack of education and weak institutional support as hindering factors. These findings underscore the need for more structured support for organizers, particularly for smaller and mid-sized events.

The third hypothesis (H3), which assumes a positive impact of digital technologies and local communities on the effectiveness of implementation, was confirmed through the interview analysis. Organizers emphasized that digital tickets, online communication, and locally engaged volunteers contribute not only to operational sustainability but also to strengthening community support. The qualitative analysis revealed that individual enthusiasm and the involvement of local stakeholders can significantly alleviate limitations caused by financial and technical barriers.

Practical Implications

The research highlights the need for sustainability to become an integral part of sports event management strategies, regardless of the event size. It is crucial that organizers integrate ecological measures during the planning phase and clearly communicate their importance to all stakeholders — from the audience to partners. Actively involving the local community can contribute to operational efficiency, while digital solutions facilitate logistics optimization and reduce the negative environmental footprint. Furthermore, systematic monitoring and evaluation of the effects of sustainable measures are recommended, as well as the inclusion of sustainability goals in institutional and public policies in sport.

Recommendations

The following recommendations, based on the findings of this study, represent a contribution to improving practice in sports event management:

1. Organizers should define budget lines for ecological measures during the event planning phase.
2. It is essential to continuously educate organizational teams on the implementation of green strategies.
3. Sustainability procedures should be standardized through internal guides and guidelines.
4. The introduction of digital platforms for communication with the audience is recommended to increase awareness of sustainable practices.
5. Institutions should provide regulatory support to organizers implementing sustainable strategies.

CONCLUSION

The results of this research confirm that the integration of sustainable strategies in sports event management presents both a key challenge and an opportunity to improve ecological responsibility within the sports industry. It has been shown that successful implementation depends on available resources, organizational capacity, team education, and the involvement of the local community. While numerous barriers have been identified — from high costs to logistical obstacles — the findings suggest that there is a real opportunity to overcome these challenges through strategic planning and digital solutions.

The research has also contributed to identifying concrete recommendations that can serve as guidelines for sporting event organizers toward greater sustainability. Future research should focus on the long-term effects of the implemented measures and the potential for creating national standards for sustainable sports event management.

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