

Article

Environmental Sustainability as Factor for Mega Sport Event Support—Empirical Evidence Regarding the Olympic Games and the Football World Cup

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Abstract: Environmental sustainability (ES) has generally become an important topic in recent years. In this context, interest in the environmental impact of sport events has also considerably grown. However, not much is known about how people currently perceive ES in mega sport events (MSEs) and if this influences their support to stage a MSE in their home country. To shed light on this question, a survey was conducted in Germany, which resulted in a sample of 917 respondents. The data show that about one-third of them think that ES is adequately implemented in the Olympic Games and the Football World Cup. Around half of the respondents state they are in favour of hosting these events in Germany in the future and multinomial logistic regressions reveal that positive and negative perceptions of the ES of the events are important predictors of support and opposition. The same is true for the perception of the overall brand image of the event. The findings have important implications for future bidding processes because they show that the further development of ES in MSEs might have an influence on the support for hosting these events in Germany and potentially other Western democracies.

Keywords: perceived environmental impact; sport ecology; event management; resident support; public referendum; social exchange theory



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1. Introduction

Since 1990, more than 850 mega sport events (MSEs) like the Olympic Games, World Cups, the Tour de France or the Commonwealth Games have been organised [1]. When such events are staged, they typically generate short- and long-term impacts [2]. One of the impacts that is highly discussed in the literature is the increase in tourist arrivals and the related economic benefits [3–5]. While scholars argue that this effect is often overestimated [5], the recent study of Fourie and Santana-Gallego [3] concluded that events like the Olympic Games still yield a large tourism increase with an interesting economic return for the host nation. Apart from the economic return, also less obvious positive impacts are often pursued by the host nation. Examples are urban renewal and development [6,7], the improvement of a city's or country's image [8,9], social cohesion among residents [10] or an increase in intellectual property which may lead to innovations [7]. While many positive aspects can be listed, the organisation of a MSE also causes negative effects [11]. A major negative effect is the environmental impact due to the consumption of natural resources, the generation of waste, the deterioration of the natural environment, the emission of greenhouse gasses or extensive noise emissions [12,13].

Because the negative and positive impacts of an event directly affect the hosting community, referenda have become common in Western democracies to examine the public support primarily for staging the Olympic Games [14–17]. In recent years, many of these

referenda have been negative [16–18]. In Germany, for example, two unsuccessful referenda were staged shortly after one another, the first in Munich regarding the 2022 Winter Olympic Games [15,19] and the second in Hamburg regarding the Games in 2024 [17,20].

According to Waitt [21], the support for an event heavily depends on whether the public perceive that its positive outcomes outweigh the negative ones. To understand the support for an event, it is, therefore, important to examine the perception of the public rather than the event's actual impact. Thus far, studies have focused on how a combination of possible event impacts are perceived by the hosting community and how this affects their support for an event [22–27]. Other studies focused on the perception of specific factors like the social, economic or urban impact of an event [28–30]. However, to the best of the authors' knowledge, only one study specifically looked into how people's perception of the environmental sustainability (ES) of a MSE could affect their support for staging the event [31]. Particularly because of the considerable social relevance which ES has gained in recent years [32], it is worthwhile to further investigate if ES is a relevant factor in residents' support for hosting a MSEs.

As such, the aim of this paper is to better understand how the perception of ES affects public support for staging the two most important MSEs of our time: the Olympic Games and the Football World Cup. For this analysis, social exchange theory (SET) is used as a theoretical guide. The theory has been indicated as a helpful tool to analyse the relationship between people's perceptions and support for an event [21,33]. The study will be of academic value, since it focuses on an under-researched topic that deserves more academic scrutiny due to its relevance within and outside of the sport world. The study is also of high practical relevance since the data for the study were collected using an online survey questioning German inhabitants. Germany was chosen deliberately to hypothetically host these events, because it generally has the capacity to host mega events and has done so in the past (e.g., Olympic Games in Munich in 1972, Football World Cup in 2006). Furthermore, the above-mentioned negative referenda in Munich and Hamburg and the currently ongoing discussion about initiating a new bid [34], as well as the activities of an initiative in the German Rhine-Ruhr Region that is promoting a bid with a particular focus on sustainability [35], underscore the relevance of the topic. Regarding the recent German referenda, the research of Könecke et al. [15] and Scheu and Preuss [33] indicated that potentially negative environmental impacts could have influenced the residents' opposition. However, since ES was not a major focus of their research and because it is also a quickly evolving topic, more focused and current research is called for.

The next section of this paper will elaborate on the relevant literature and will define the exact research question. Thereafter, the methodology section will explain the data collection and analyses, which will be followed by the results section. The discussion will describe the main findings of the study and position the results in the context of previously published literature. At the end of the discussion section the limitations of the study and recommendations for future research are outlined. The paper closes with a summary of the main findings and a general conclusion.

2. Literature Review and Theoretical Background

2.1. Environmental Sustainability in Mega Sport Events

In 1991, the International Olympic Committee (IOC) wanted to stress the importance of ES in sport events by adding “environmental protection” alongside “sport” and “culture” as a third pillar of Olympism [36]. As a result, the Olympic Charter was amended to state that “the Olympic Games are held in conditions which demonstrate a responsible concern for environmental issues [...] and educates all those connected with the Olympic Movement as to the importance of sustainable development” [37] (p. 11). This effort shaped the mission and goals of future Olympic Games, starting with the Winter Olympics organised in Lillehammer in 1994 [38]. The Games in Lillehammer incorporated the first comprehensive environmental programme and were, therefore, considered to be “green

Games” [39]. Salt Lake City 2002, Athens 2004 and London 2012 were also deemed a success from an environmental perspective [39]. Unfortunately, the positive flow did not last because the Winter Games organised in Sochi 2014 and the Summer Games in Rio 2016 were considered a setback due to a lack of environmental prioritisation [40,41]. However, Tokyo 2020 was able to step up again by claiming to have been the first carbon-neutral Olympics [42].

The first time that the Fédération Internationale de Football Association (FIFA) specifically addressed ES was when the Football World Cup was organised in Germany in 2006 [43,44]. From then on, more attention was paid to the incorporation of strategies to offset the carbon emission during the World Cups. Until the 2018 World Cup in Russia, these strategies mostly focussed on reducing the emissions directly caused by the organisation of the event and the corresponding energy use [45]. Later, FIFA also aimed to tackle emissions that are not under the direct control of the host nation [46]. These new standards resulted in the ambitious goal to make the Football World Cup in Qatar 2022 the most environmentally friendly MSE of all time [46–48].

Despite the efforts to create green sport events, authors argue that MSEs continue to cause significant environmental pressure [12,39,41]. Preuss [11] reasoned that this is caused by the gap between the initial environmental pledges during the bidding process and the eventual implementation of the initiatives. Researchers like, for example, Collins and Roberts [49], Ventura et al. [50], De La Cruz et al. [51] and Andersson et al. [52] extensively examined MSEs to quantify their actual impacts and to suggest improvements for future events. These findings were assembled in the recent systematic review of Cerezo-Estevé and colleagues [13]. In general, it can be concluded that MSEs cause a high number of negative impacts like the degradation of natural areas, air pollution, excessive use of energy and water, waste generation, etc., despite protective agreements made during the bidding procedures for the events.

2.2. Public Support for Mega Sport Events

Hiller and Wanner [53] described how the decision to host the Olympic Games has evolved over the years from a top-down announcement to a decision that largely reflects the opinion of the public. One of the changes is that the result of a public opinion poll, carried out by a reputable polling firm, needs to be provided to proceed in the bidding process [53,54]. The fact that formal referenda to organise the Games are held in the potential hosting regions has also become rather common in many Western democracies [14,16,17,24]. In the FIFA bidding procedure, no reference to a public opinion poll can be found [55]. Nonetheless, they recognise that obtaining the support of the host population is important and, therefore, they advise maintaining clear communications and creating campaigns to include the local residents in the organisation of the event. In short, this means that the public does not have an unimportant role in whether or not an event will be hosted in their country. Since the rejection results of previous referenda held in Germany were rather close, Feilhauer et al. [24] also hypothesised that only minor changes in residents’ expectations of the Olympic Games might already increase their support for the event. For example, the rejection rate of the 2024 Hamburg Summer Olympics was 51.6%. As such, it is worthwhile for the organising cities and committees to have detailed knowledge about factors that might influence public support for a MSE.

Some of the factors that have been investigated as possible determinants of support for MSEs are age, gender, income, education level and brand image [15,33,56]. However, not much uniformity between the outcomes of the different studies can be noticed. Some studies, for example, found that younger people were less likely to be supportive [57], while others found the contrary [33,56,58]. The same ambiguity can be observed for gender [33,56]. Regarding the relevance of the image of the organisations owning the rights to the events, i.e., international sport organisations like the IOC and FIFA, studies have presented different outcomes. Könecke and colleagues’ [15] study, for instance, supports the notion that the organisation’s image influences event support in Germany. This finding

is supported by the research of Feilhauer and colleagues [24], while the research of Scheu and Preuss [33] did not find evidence to support this claim.

Studies with a particular focus on the relevance of ES for the support for MSEs in a (potential) host community or country are very scarce. The research of Jin et al. [31] examined a sample of 298 Beijing residents and found that environmental perception factors had no direct significant effect on supporting behaviour towards the hosting of future mega events. Other authors looked into all three dimensions of sustainability, i.e., economic, social and environmental. Prayag et al. [25] studied the perception of sustainability in the 2012 Olympic Games and Zhang et al. [26] in the Nanjing youth Olympic Games of 2014. Besides a significant relationship between perceived positive socio-cultural impacts, both studies also found a significant relationship between positive environmental impacts and supportive behaviour. No significant connection could be found between negative impacts and unsupportive behaviour [25,26]. Al-Emadi et al. [27] performed similar research focusing on the Qatar Football World Cup in 2022 and their results did not show a significant relationship between environmental impact and support. However, all these data collections stem from before 2018 and research indicates that public interest in ES has considerably increased in recent years [32]. Accordingly, scholars should keep looking into this connection. The research of Feilhauer and colleagues [24], for example, hints that if the expected environmental damage of the Olympic Games can be reduced it can hypothetically result in a positive vote among German residents to host future Games.

2.3. Social Exchange Theory

In this study, SET is used as a basis to understand public support to potentially host a MSE. Homans and Merton [59] defined social exchange as “the exchange of activity, tangible or intangible, and more or less rewarding or costly, between at least two parties” (p. 13). They build their research on the previous findings of Burrhus F. Skinner and explained that relationships are formed by payoffs that can be provided by humans or nonhumans and can lead to failure or reinforcement of someone else’s behaviour [60]. Following this reasoning, it can be stated that positive behaviour is stimulated when one actor has influencing resources that another actor needs and values. Accordingly, negative behaviour can occur when actors perceive little gain from the exchange [61]. Wait [21] used the theory in an event context and he deducted that host communities might assess events as either positive or negative based on the expected benefits or costs that the event might supply. In other words, people will show support when they find that the negative consequences do not exceed the positive consequences of an event and the other way around. Previous authors have used SET to study the support for events focusing on different factors that might influence the perception of their stakeholders [22,23,33,62,63]. The same logic is applied in this study, and it is posited that primarily the perception of a MSE’s ES will have an influence on the support for staging such an event in Germany in the future.

2.4. Research Question

The current study aims to advance the understanding of the public’s perception of the relevance of ES in MSEs and to obtain an insight into how this might influence support for or opposition to staging such an event. To reach this goal, a sample of the German population was questioned about how they experience ES in the Olympic Games and in the Football World Cup. Specifically, the study is guided by the following research question: Can ES and/or other relevant factors explain the attitude towards staging the Olympic Games/the Football World Cup in Germany?

3. Materials and Methods

3.1. Data Collection

The data for this study were collected in June 2021 by means of a web-based survey. The survey was distributed by the panel provider “Responding AG”. They emailed the

survey to their panel members considering representativeness for the German population in terms of age, gender and geographical location in the 16 German states. Also, only people who were at least 18 years old were invited to participate. Before participants could start filling in the survey, they had to read and accept an informed consent statement and they were informed about the scientific nature of the study. A total of 1357 people opened and started the survey. Eventually, a sample of 917 cases was considered for the analyses presented in this paper because of the quotas for representativeness and because they filled in all relevant questions.

3.2. Survey and Variables

In total, eleven of the questions that were asked in the survey formed the basis for the analysis in this study. At the beginning of the survey, the respondents had to answer questions that related to the quotas for representativeness in terms of gender, age and place of residence in the sixteen German states. Thereafter, participants had to rate to what extent they perceived the Olympic Games to be environmentally sustainable. The respondents had to provide their answer using a five-point Likert scale ranging from “I fully agree” to “I fully disagree” with the additional option “No statement possible”. The same question was asked for the Football World Cup. Moreover, participants had to rate the overall image of the Olympic Games and the Football World Cup on a five-point Likert scale ranging from “Very bad” to “Very good” with “Neutral” as middle option. This question was inspired by the work of Scheu and Preuss [33], who also used a Likert scale to assess the image of the IOC. In separate questions, the respondents were asked if they supported staging the Olympic Games and the Football World Cup in Germany in the future. Besides “Yes” or “No”, the answer “Undecided” could be given for each of the events. Further socio-demographic questions were asked at the end of the survey. These related to level of education (eight options) and net household income (thirteen options).

3.3. Data Analysis

Two multinomial logistic regressions were calculated in SPSS 28 to analyse the support for staging the MSEs in Germany. The dependent variables were the three possible answers (i.e., supportive, opposed and undecided) to the question whether or not the Olympic Games or the Football World Cup should be staged in Germany in the future. The independent variables included in the regression were the variables “Environmental perception” and “Brand image” for either the Olympic Games or the World Cup. The answering options for “Environmental perception”, were converted to a three-item scale. The new label “Positive perception” replaced “I fully agree” and “I agree”. The label “Negative perception” replaced “I fully disagree” and “I disagree”. The answer option “Neutral” was not adapted. Respondents who indicated “No statement possible”, were left out of the analysis. The variable “Brand image” was also converted to three answer categories (i.e., positive, neutral and negative). Moreover, the socio-demographic variables “Age”, “Gender”, “Education level” and “Income” were included since they are described as possible determinants of support for an event in the pertinent literature (e.g., [25,33,58]). The eight options of “Education level” and the thirteen “Income” options were converted to three categories as well. There was only a low chance of multicollinearity when the analyses were performed, since the correlation coefficients were far below 0.9 and the collinearity diagnostics like the Tolerance statistics and the Variance Inflation Factor were below their critical thresholds [64,65].

4. Results

4.1. Descriptive Statistics

The descriptive statistics in Table 1 show that the average age of the respondents was 43.8 years (SD = 14.4 years). A total of 51.5% of the participants were female and 48.5% were male. No one selected the option “Diverse”. The majority of the respondents indicated that they had a medium level of education (48.3%), followed by 29.8% with a

high level and 21.9% with a low level of education. With regards to net income, 34.3% of the respondents received less than 2001 EUR per month, 33.6% between 2001 EUR and 3500 EUR and 32.1% more than 3500 EUR. A total of 55.9% of the respondents perceived the image of the Olympic Games as positive, 32.3% as neutral and only 14.5% as negative. There were slightly less people perceiving a positive image of the Football World Cup (48.2%) with 29.8% indicating a neutral and 20.5% a negative image. The respondents tend to have a better perception of the ES of the Olympic Games (38.3%) if compared to the Football World Cup (32.9%). Lastly, the majority of the respondents are in favour of hosting the Olympic Games (53.2%) or the Football World Cup (60.5%) in Germany in the future, only 18.2% and 17.1% are opposed to this, while 28.6% and 22.4% are undecided.

Table 1. Sample characteristics.

	Variables	N (%)	M (SD)
Socio-demographic variables	Age	917	43.8 (14.4)
	Gender	917	
	Male	445 (48.5)	
	Female	472 (51.5)	
	Diverse	0 (0)	
	Level of education	917	
	Low level of education	201 (21.9)	
	Medium level of education	443 (48.3)	
	High level of education	273 (29.8)	
	Income	917	
Brand image variables	<2001 EUR	315 (34.3)	
	2001–3500 EUR	308 (33.6)	
	>3500 EUR	294 (32.1)	
	Olympic Games brand image	917	
	Positive	512 (55.9)	
	Neutral	272 (29.6)	
	Negative	133 (14.5)	
	Football World Cup brand image	917	
	Positive	442 (48.2)	
	Neutral	287 (31.3)	
Environmental sustainability variables	Negative	188 (20.5)	
	Environmental perception of Olympic Games	801	
	Positive	307 (38.3)	
	Neutral	259 (32.3)	
	Negative	235 (29.4)	
	Environmental perception of Football World Cup	826	
	Positive	272 (32.9)	
	Neutral	246 (29.8)	
	Negative	308 (37.3)	
Event support variables	Olympic Games support	917	
	Supportive	488 (53.2)	
	Undecided	262 (28.6)	
	Opposed	167 (18.2)	
	Football World Cup support	917	
	Supportive	555 (60.5)	
	Undecided	206 (22.4)	
	Opposed	156 (17.1)	

Note: M = Mean, SD = Standard Deviation.

4.2. Analytical Statistics

Multinomial logistic regressions for the Olympic Games (Table 2) and the Football World Cup (Table 3) were performed to address the research question. Both models, for the Olympic Games ($\chi^2(20) = 158.24$; $p < 0.001$) and for the Football World Cup ($\chi^2(20) = 159.78$; $p < 0.001$), have a significant overall chi-square statistic, indicating that they are a good fit for the data [66].

The model for the Olympic Games can explain 20.8% of the variance (Nagelkerke $R^2 = 0.208$), with brand image and environmental perception as the most influential predictors of support. Table 2 shows that for every one-unit increase in the positive perception of ES, the odds become 2.17 times higher that respondents support organising the Olympic Games in Germany if compared to people with a negative perception. The odds of being supportive of rather than opposed to the event also increase with a factor 3.94 for every one-unit increase in the perception of a positive overall image of the event. Table 2 also shows that a respondent who had a neutral perception of the event's brand image is considerably more likely to be supportive of the event than someone with a negative perception. Finally, age turns out to be a significant predictor for support or opposition. The older a person is, the less likely he or she is to be supportive of staging the event. No significant differences could be detected between the supportive and the opposing parts of the sample regarding gender, education level and income.

Table 2. Multinomial logistic regression of support for the Olympic Games (n = 801).

		Supportive vs. Opposed		Supportive vs. Undecided		Undecided vs. Opposed	
		β	Exp(β)	β	Exp(β)	β	Exp(β)
Socio-demographic variables	Intercept	0.81	/	−0.15	/	0.75	/
	Age	−0.02	0.98 *	0.01	1.01	−0.02	0.98 *
	Gender						
	Male	−0.37	0.69	0.744	2.09 ***	−1.10	0.33 ***
	Female (ref.)						
	Education level						
	Low level of education	0.21	1.23	−0.45	0.64	0.65	1.92
	Medium level of education	0.01	1.01	−0.49	0.62 *	0.50	1.65
	High level of education (ref.)						
Income	<2001 EUR	0.12	1.12	−0.06	0.94	0.18	1.20
	2001–3500 EUR	−0.13	0.88	−0.27	0.76	0.14	1.15
	>3500 EUR (ref.)						
BI variable	Olympic Games brand image						
	Positive	1.37	3.94 ***	1.36	3.91 ***	0.01	1.01
	Neutral	0.70	2.02 *	−0.07	0.93	0.77	2.17 *
ES variable	Negative (ref.)						
	Environmental perception of Olympic Games						
	Positive	0.78	2.17 **	0.20	1.22	0.58	1.78 *
	Neutral	0.62	1.86 *	0.04	1.04	0.59	1.79 *
	Negative (ref.)						
Nagelkerke R^2		20.8					
Model χ^2 (df)		158.24 (20) ***					

Notes: ES = environmental sustainability; BI = brand image; β = Standardised Beta Value; Exp(β) = Odds Ratio; * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$.

Table 3. Multinomial logistic regression of support for the Football World Cup (n = 826).

		Supportive vs. Opposed		Supportive vs. Undecided		Undecided vs. Opposed	
		β	Exp(β)	β	Exp(β)	β	Exp(β)
Socio-demographic variables	Intercept	−0.42	/	0.61	/	−1.03	
	Age	0.01	1.01	0.00	1.00	0.01	1.01
	Gender						
	Male	−0.31	0.74	0.60	1.82 **	−0.91	0.40 ***
	Female (ref.)						
	Education level						
	Low level of education	0.69	1.98 *	−0.20	0.82	0.089	2.43 *
	Medium level of education	0.25	1.29	−0.08	0.92	0.33	1.40
	High level of education (ref.)						
	Income						
BI variable	<2001 EUR	0.17	1.18	.12	1.13	0.05	1.05
	2001–3500 EUR	−0.21	0.81	−0.10	0.90	−0.10	0.90
	>3500 EUR (ref.)						
ES variable	Football World Cup brand image						
	Positive	1.47	4.34 ***	0.88	2.42 **	.59	1.80
	Neutral	0.83	2.30 **	−0.51	0.60	1.35	3.85 ***
	Negative (ref.)						
	Environmental perception of Football World Cup						
	Positive	1.07	2.90 ***	0.36	1.43	0.71	2.03 *
	Neutral	0.80	2.22 **	−0.25	0.78	1.05	2.84 ***
	Negative (ref.)						
Nagelkerke R ²		20.9					
Model χ^2 (df)		159.78 (20) ***					

Notes: ES = environmental sustainability; BI = brand image; β = Standardised Beta Value; Exp(β) = Odds Ratio; * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$.

Table 2 also provides three significant results for the comparison between those who supported staging an Olympic Games in Germany and those who were undecided. First of all, men are more likely to be supportive of the event instead of being undecided compared to the female part of the sample. The same is true for people with a medium level of education if compared to those with a high level. Finally, having a positive brand image of the Olympic Games rather than a negative one made it 3.91 times more likely to be supportive than undecided. No significant differences were found between the supportive and the undecided group in terms of the perception of the Olympic Games' ES, the respondents' age and their income. Moreover, respondents were not more likely to support the event if they had a neutral perception of the event's image rather than a negative one.

Finally, Table 2 reveals significant differences between respondents who were undecided and against staging Olympic Games in Germany. Younger respondents tend to be undecided rather than opposed, while men are less likely to be undecided than women. Having a neutral image of the event makes a respondent more likely to be undecided than having a negative one. Regarding ES, it turned out that respondents with a neutral and a positive perception are significantly more likely to be undecided than opposed to staging the Games if compared to those with a negative perception. Level of education and income do not seem to be relevant in this regard.

The results of the regression for the support for staging the Football World Cup in Germany displayed in Table 3 are very similar to those for the Olympic Games, particularly regarding the perception of the events' ES and brand image. The included variables also explain almost 21% of the variance in the model (Nagelkerke R² = 0.209). Again, it seems

that a positive and a neutral environmental perception and brand image of the Football World Cup are strong predictors of support for staging the event if compared to a negative perception. The findings also indicated that people with a lower education level tend to be more supportive of the event compared to people with a higher level of education. No significant differences were found in this analysis for age, gender and income.

For the comparison between those who were supportive of staging the event in Germany and those who were undecided, Table 3 shows that males were more likely to be supportive. Moreover, having a positive brand image made it more likely that a respondent supported staging the event in Germany. Age, level of education, income and ES do not significantly clarify any differences.

The comparison between respondents who were undecided and opposed shows that males are also less likely to be undecided if compared to females. The opposite is true for people with a low level of education in comparison to those with a high level. Perceiving the event's brand image as neutral made it considerably more likely for a respondent to be undecided than opposed, which was also true for a positive and a neutral perception of the World Cup's ES. Table 3 indicated no significant results for age and income for this comparison.

5. Discussion

In recent years, an increased public concern for the changing climate and other environmental issues can be noticed [32]. It is, therefore, of interest to know to what extent this influences the expectations of the public regarding MSEs. As such, the objective of this research is to understand how the perception of their performance in terms of ES determines the support of the public for staging the Olympic Games and the Football World Cup in Germany.

When the data for the study were collected in June 2021, over half of the respondents indicated that they were generally in favour of hosting the Olympic Games (53.2%) or the Football World Cup (60.5%). Approximately one-third of the respondents also had a positive perception of the ES of the two events, with a higher outcome for the Olympic Games (38.3%) than for the World Cup (32.9%). Almost 56% of the sample considered the Olympic Games' brand image to be positive (only 14.5% to be negative), while 48.2% (and 20.5%) stated the same regarding the Football World Cup.

Multinomial logistic regressions showed that gender and age seem to have some influence on the respondents' support for staging the events. Male respondents were more likely to be supportive or opposed than undecided if compared to females regarding both events. Concerning the Olympic Games, older respondents were slightly more likely to be against staging the event in Germany than younger people, which was not observed for the Football World Cup. While these results clarify some of the ambiguity in the current literature, the effects that were found regarding ES and the image of the organising committee are of most relevance in academic and practical terms since they are very similar for both events. Not really surprisingly, having a positive perception of the events' brand image makes it considerably more likely for a respondent to support hosting the events (in comparison to being opposed or undecided). Moreover, a neutral perception of the brand image makes it more likely for a respondent to be supportive or undecided rather than opposed. These results generally are in line with the conclusions of Könecke et al. [15] and Feilhauer et al. [24] and it can, therefore, be stated that the IOC and FIFA should focus on building trust to increase residents' support.

In line with the growing importance of the matter, perceiving the events' ES as positive or neutral makes it significantly more likely that a respondent supports their being staged in Germany or that s/he is undecided if compared to opposing respondents. However, no statistically significant differences could be found between supportive and opposing respondents in this regard. Summing up, this means that having a negative perception of the ES of the Olympic Games or the Football World Cup seems to be a key differentiator between those respondents who are against staging the events in Germany and those

who have a different opinion. The insights, therefore, confirm the findings of Feilhauer et al. [24], but contradict Jin et al. [31] and Al-Emadi et al. [27]. This difference can possibly be explained by the considerable and rather recently increased concern for ES [32] or the different cultural settings.

When looking at the results through the lens of SET, it becomes apparent that the current perception (positive or negative) of the ES of a MSE and the event image could shift the balance between support for and opposition to hosting the event. As such, the results yield very relevant practical implications. This is particularly so because the sample used for this study was collected in Germany, where the two rather recent referenda on staging Olympic Games have been negative. Considering that it is currently being assessed whether another bid from Germany could be feasible, it is not unlikely that another referendum or comparable public vote could be held in the near future. The research presented in this paper underscores that the perception of the ES of a MSE seems to profoundly influence the support for or opposition to staging the event in Germany. This means that an organising committee would have to present, implement and successfully communicate an event concept that is credibly sustainable to increase the odds of a supportive public vote. As the results have shown, the same general assumption can be made regarding the event's image because a positive event image and a positive perception of ES both make a significant difference regarding the question of whether one opposes the event or not. The key difference, however, is that having a negative perception of ES seems to be a key factor for opposing the event, whereas the picture for the event image is more differentiated. This means that improving the perception of the event's ES should primarily prevent that people are against staging it, which would translate to opposing it in a referendum. On the other hand, this also means that groups opposed to staging the Olympic Games could opt to profoundly question or undermine the perception of the event's ES. This could make public opposition and a negative poll more likely. This effect could also be one possible explanation for the negative referendum in Hamburg in 2015 that contradicted previous market research [15].

Some limitations of this study should be kept in mind when interpreting the results, thinking about how they can inform managers and politicians and when considering avenues for further research. First of all, the survey was conducted in 2021 and the results could be different today. Specifically, the Winter Olympic Games in Beijing in early 2022 and the recent Football World Cup in Qatar in late 2022 could have had an effect, as particularly the latter was highly controversial in Germany. Moreover, to what extent ES was adequately implemented in the Olympic Games and Football World Cup was only examined by one question in this study. A more detailed assessment should be conducted in the future. It could, for example, be interesting to scrutinise how different positive or negative environmental consequences of hosting a MSE are perceived and evaluated. This way, event organisers would achieve a better understanding of which potentially negative consequences they should primarily focus on in order to improve the perception of the residents. Also, it has not been determined in how far the perceived ES of the events had an effect on the perceived brand image, which offers another interesting aspect for future studies as the perceived ES will have an influence on the overall image. A last remark is that SET offers one specific perspective on the results and other theoretical frameworks might also provide interesting avenues for interpretation and future research. The theory of reasoned action, for instance, might also offer interesting insights [67].

6. Conclusions

This paper analyses how the perception of ES and other factors influence the support for staging the Olympic Games and the Football World Cup in Germany. This was carried out using data collected in June 2021 that were representative of the population in terms of age, gender and geographical location. The analysis of the answers of 917 respondents showed that 53.2% are in favour of hosting the Olympic Games and 60.5% of hosting the Football World Cup in Germany in the future. For both events, around half of the

respondents ranked the brand image as positive and around one-third had a positive impression of the events' ES. Multinomial logistic regressions indicated that gender and age sometimes show a significant connection to the respondents' support for staging the events in Germany but perceived ES and image of the events appeared to be much more relevant. Very generally, it can be stated that the better the image and perceived ES, the higher the support for staging the event in Germany. Specifically, a better assessment of the events' ES turned out to be a key difference between those who were opposed to staging an event and those who had another opinion (i.e., were supportive or undecided).

Despite the limitations of the study, some interesting implications are discussed. In short, the results show practitioners that improving the perceived ES and brand image of a MSE will considerably increase the support for staging it. Looking at referenda for Olympic Games, it seems that particularly a credible, comprehensive and clearly communicated concept for conducting the event in an environmentally sustainable way should profoundly decrease the likelihood of a negative outcome. As such, this research is a valuable starting-point for future research to further broaden and deepen the insights presented in this paper.

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