

Article

How Nudging Inspires Sustainable Behavior among Event Attendees: A Qualitative Analysis of Selected Music Festivals

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Abstract: This research answers the question of which nudges can be created to subtly influence event attendees in such a way that they contribute to the implementation of a green event. Using the qualitative content analysis according to Mayring, three music festivals were analyzed in detail with regard to their measures for ecological sustainability. All available online resources—in particular, the websites of the music festivals, blog entries, online newspaper articles and, also, observations during several personal visits—were used as sources of the qualitative data. A key result was the development of a model for nudges that can generally be used and implemented for events. The goals, the nudges developed and the possible measures with regard to ecological sustainability are defined in the areas of transport, garbage, electricity, gastronomy, sanitation and compensation of emissions. The more music festival participants already behave in an ecologically sustainable manner, the more others will join them. This can be exploited by using social nudges that consciously inspire group social dynamics. In order to be able to use nudging sensibly, organizers have to internalize that they act as decision-makers, which entails a great ethical and moral responsibility. Even inconspicuous nudges can be very effective.

Keywords: nudging; event; music festivals; sustainable behavior; ecological sustainability; green event; emissions; compensation



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1. Introduction

In the course of a profound change in social values, ecological sustainability has become extremely relevant and is the subject of intense discussion. That is why it has almost become an obligation for event organizers and managers to take them into account when planning and realizing events [1]. The term “Green Event” is now firmly established. For this reason, event research has dealt intensively in recent years with the development of criteria that apply and can be used for the sustainable design and implementation of events. However, the investigations and considerations have concentrated almost exclusively on the resulting requirements for event organizers. The actions and decisions of the event participants have, so far, been much less of a focus in relation to the implementation of green events. Efforts to positively influence their behavior at events, however, appear particularly worthwhile. So far, however, there have hardly been any scientific studies devoted to the question of how event attendees can be guided in their actions through subtle hints in such a way that they make their contribution to the implementation of a green event.

In most situations in life—including at events—people basically have a variety of alternative courses of action to choose from, which are associated with different consequences. The more information is available to them or made available to them, the sooner

or more precisely they are, in principle, able to assess the consequences of their actions. The problem associated with decision-making is that there is rarely a clearly best alternative that proves to be superior with regards to all the relevant criteria. Instead, individuals are confronted with the need to weigh the advantages and disadvantages of the various options and, in the spirit of a trade-off, decide which positive aspects of a chosen alternative are particularly important to them and which disadvantages they willingly accept to take on. To make matters worse, an alternative that is promising in the long term is often associated with higher expenditure in the short term, which is sometimes avoided in order to gain an immediate advantage—for example, short-term time savings. In most cases, a large number of factors are relevant to the decision, which increases the complexity of the decision, since not all criteria can be assessed equally competently. Therefore, in order to reduce complexity, individuals are looking for ways to simplify their decision-making processes.

Event attendees also face this challenge. Statutory regulations, prohibitions and commandments represent the simplest but also the strictest variants of influencing, because they do not give individuals any leeway to make decisions. Instead, the approach of nudging presented here aims to support people in their decision-making in a more indirect, subtle way. The conception is based on subtle, nonobvious indications with which individuals are influenced and guided to the choice of sustainable alternatives without excluding other options from the outset or setting monetary incentives. These indirect, subtle cues are known as nudges.

So far, there has been no research into how nudges can influence the behaviors of event attendees. The authors examine how the nudging approach can be applied in the event context, i.e., which nudges can be given to participants before, during and after an event in order to influence their decisions in the desired form. The participants in the events should not be restricted in their freedom of choice and should be able to choose between various alternatives. In order to develop a model for possible nudges, which can generally be used and implemented for music festivals, the goals to be striven for with regards to ecological sustainability are defined in the six areas of transport, garbage, electricity, gastronomy, sanitation and compensation of emissions. In particular, the question of which nudges can be meaningfully developed for the respective categories is investigated. The music festivals *Melt!*, *Haldern Pop* and *Wilde Möhre* serve as objects of investigation. Using the qualitative content analysis according to Mayring [2,3], these festivals are analyzed in detail with regards to their measures for ecological sustainability. For the measures that have already been established, it will be examined to what extent they could be implemented in connection with a nudge at other open-air festivals. A catalog of criteria is created that shows the areas in which, with the help of visitors, ecological sustainability can be implemented before, during and after music festivals. Concrete measures emerge from this that are, in principle, suitable for every major festival by means of a nudge and without a monetary incentive.

The following main research question should be answered:

How can music festival participants be subtly influenced in their decisions by using nudging without monetary incentives so that they behave in an ecologically sustainable manner?

2. The Theoretical Basis of Nudging

2.1. The Term Nudge and the Idea of Nudging

The word “nudge” is of English origin and means “push” or “light push”. Nudging is about drawing someone’s attention to something with a gentle nudge, reminding them of something or warning of a danger. Thaler and Sunstein [4] (p. 6) define nudge as: “... any aspect of the choice architecture that alters people’s behavior in a predictable way without forbidding any options or significantly changing their economic incentives”. Nudges can thus be any aspect of the selection architecture that influences people’s behavior in a predictable way without prohibiting them from choosing other options or significantly altering their economic incentives. Nudges are private or public initiatives that try to

steer people in certain directions but which also enable them to go their own way [4]. The nudging ideas should be related to the actual way people think and behave.

The concept of the selection architecture is decisive for this. If decision-making or election architects succeed in building up a decision-making system skillfully, they can move people in directions that will improve their lives. People or institutions that have the opportunity to organize the environment in which people make decisions create a selection or decision architecture and are therefore referred to as decision architects [4].

As nudges, reminders, warnings or recommendations that preserve the freedom of choice come into consideration. In order to be considered a nudge, an initiative must not provide any material incentives. Therefore, subsidies, taxes and the (threat of) fines or prison sentences are to be excluded. If an intervention causes significant material costs for selection, it may well be justified, but it is not considered a nudge. Some nudges work because they let people know or because they make certain decisions easier. Others take advantage of the human tendency toward indolence and procrastination [5] (p. 61). Nudging thus moves, for example, between the active self-selection of decision alternatives, based on background knowledge and expertise, and compliance with laws and rules without any scope for decision-making. Sometimes, people simply cannot vote because they lack specialist knowledge, or they do not want to vote [6]. Then, they see standard rules as a blessing. One reason is that people only have limited time and attention [6,7]. Just as individual freedom of choice is to be respected, rules are also to be recognized [8].

Nudging makes use of the basic values of libertarian paternalism. It should be legitimate, on the one hand, to guarantee freedom of choice and, on the other hand, to influence people's behavior in such a way that they can make better decisions for themselves in order to live longer, healthier and better lives [4,9]. If several options are offered, one of them must not be presented so unattractively that it is no longer an option.

2.2. Status Quo Bias, Endowment Effect and Loss Aversion

The status quo bias describes the human phenomenon of indolence. People sometimes prefer to leave things as they are by doing nothing or sticking to a decision they made beforehand. In doing so, they maintain the status quo [10]. The endowment effect and loss aversion are related to the inertia phenomenon [11]. In economics, the expected utility theory developed by Neumann and Morgenstern [12] dominates. It assumes that humans, as *homo oeconomicus*, make rational decisions and, according to the principle of utility maximization [13], select the option that promises them the greatest utility. This would allow human decisions to be predicted by calculating the expected utility of various alternatives. The ordinal utility theory postulates an irreversible order of preferences [14]. However, Knetsch [15] was able to refute this hypothesis in an experiment. First, he gave a group of 76 students coffee cups worth USD 4.95 and gave all participants the chance to exchange the cups for a bar of chocolate (400 g) worth USD 6.00. A majority of the students (89%) refused to do so, although the test subjects were familiar with the prices of the goods. The 87 students in the control group, on the other hand, received the bar of chocolate as a gift and the opportunity to exchange it for a coffee mug. Ninety percent of the test persons refused. [15] (p. 1278). Such a result would not be possible if people actually acted rationally and in a way that maximizes utility. Instead, the endowment effect is revealed [16]: people weigh goods already in their possession—even if only hypothetically—significantly higher than goods that do not yet belong to them. This apparently irrational behavior is attributed to loss aversion: the loss of a good is subjectively valued significantly higher than the gain of the same good [17]. Several other experiments—including Kahneman et al. 1990 [18]—confirmed the results. Kahneman et al. [11] were able to show that the willingness to pay for the first purchase of a good was significantly lower than the monetary claim when selling the same good. The endowment effect is a phenomenon that is explained by the prospect theory [13] and, in particular, by the loss aversion that has arisen.

People are lazy to the point that they are reluctant to give up property and do not easily get used to new situations. A nudge that makes use of these peculiarities would

be to offer a desirable alternative as a standard option. There is a good chance that this alternative will be preferred by the majority of event participants [4].

2.3. Framing, Mere Measurement and Mapping

Framing is understood to mean that decisions are influenced by the way in which the information is presented and the way in which the alternatives are presented, as well as the personal environment [19]. The way a question is phrased or different decision options are presented can act as a powerful nudge. For this reason, however, framing should be carried out carefully [4].

If people make resolutions, the likelihood that they will actually put them into practice is significantly higher if you have asked about them in advance and have spoken openly about them at least once. This phenomenon is called the “mere measurement effect” [20] (p. 137) and can also be used as a nudge. It has a more binding effect when you have publicly commented on a project [4]. In a specific case, the effect of a nudge is increased the more detailed the inquiries are about the (ecologically sustainable) behavior.

A multitude of decision options is of little help if their consequences cannot be predicted. A nudge can then be a welcome support [4]. In particular, in connection with global environmental issues, the effects are usually not immediately recognizable, even if the awareness of them increases [21]. If the decision and the resulting consequences can be linked directly, this is referred to as mapping. This makes the decision-making process much easier [4,22].

2.4. Impression Management, Psychology of the Crowd and Spotlight Effect

Erving Goffman [23] took the view that people in interactions are always careful to convey a certain image of themselves, because they are aware or they assume that they are being observed. Goffman used the theater as a model for the social world and concluded that, in principle, all people always act in theater. He coined the term impression management to ensure that people constantly deliver a performance and create a facade for themselves. Goffman concluded that there are facades for established social roles. The expectations and stigmatizations that apply to the respective roles are reflected in the facades [23].

This was followed by Richard Sennett’s theory of public expression, which is based on the public of the Ancien Régime. People act as actors and are therefore essentially performers of emotions [24]. It can be deduced that event participants also play roles, which, however, differ from those they embody in everyday life. At a music festival, they become part of an (organized) crowd that guarantees them anonymity.

Gustave Le Bon [25] recognized that, in certain situations and under certain conditions, a large crowd behaves differently than the individuals that make up this community. The thoughts and feelings of the individuals become unified—a phenomenon that is characterized by the terms organized and psychological mass. The psychology of the crowd is different from that of the individual. The organized/psychological mass merges into a spiritual unit. Their emergence is promoted by the overwhelming crowd and the sinking of the individual into anonymity. This results in a decreasing sense of personal responsibility, a spiritual transmission of feelings and actions and the ability to be influenced [25]. Le Bon identified influenceability, instinctiveness, excitability and mobility but also gullibility, exuberance and one-sidedness of feelings as characteristics of organized/psychological masses [25].

However, a large gathering of people in one place is not enough for a psychological mass to develop; specific stimuli have to be set.

Thus, nudges should be created that signal to the festival attendees the behavior they want so that they can meet these role expectations. It is helpful to gain role models or influencers as multipliers and role models, because people can easily be influenced in their social behaviors by the words and deeds of other people. This can be exploited through social nudges. Thaler and Sunstein defined two possibilities for social influence: Since

information is obtained socially, the thinking and acting of many people can lead to others adopting or imitating these thoughts or actions. For this, role models in the environment are sought and imitated. In order to suggest certain behaviors to people, they can be told as a social nudge what others are doing in comparable situations. The second possibility is peer pressure, which many people succumb to. Especially when our decisions and our behavior are publicly perceptible to others, we are inclined to adapt to others [4]. According to Gilovich, this phenomenon is called the “spotlight effect” [26] (p. 212).

2.5. Social Contagion

Several studies have shown that states of mind, attitudes, convictions and behavior can spread in societies as if they were contagious [27]. In order to illustrate the phenomenon of social contagions, references are often made to the numerous suicides and suicide attempts that occurred in 18th century Europe after the publication of Johann Wolfgang Goethe’s novel *The Sorrows of Young Werther* in 1774 [28]. Many people who committed suicide had direct or indirect contact with this book in which the protagonist took his own life [29]. In psychology, this is therefore also referred to as the “Werther effect”. Sociocultural phenomena evidently spread more epidemically than rationally based. Even if these processes seem difficult to plan and control, one can make use of the social contagion.

Jonah Berger defines in his book *Contagious—Why things catch on* [30] six criteria for successful social contagions under the acronym STEPPS:

1. Social Currency;
2. Triggers;
3. Emotion (Feeling);
4. Public;
5. Practical Value;
6. Stories (Storytelling).

For the successful dissemination of an idea, as many of these six criteria as possible should be met. Music festivals are mostly attended by young people who are still influenced and directed by other people. This explains the success of influencer marketing, especially with the young target group. The typical coexistence of open-air festivals in a relatively small space encourages attendees to perceive and imitate the behaviors of other festival participants. If multipliers or a critical crowd show the desired behavior, there is a good chance that the others will adopt it.

2.6. Broken Windows Theory

The “Broken Windows” theory states that a broken pane of glass in a (abandoned) house should be repaired as soon as possible in order to prevent further destruction [31]. Similarly, for waste management at festivals, one can conclude that garbage lying around should be cleared away immediately to prevent further rubbish from being carelessly thrown around.

The “Social Influence Conception of Deterrence” also has its origin in crime psychology. Harcourt [31] identified three essential aspects:

1. Social Meaning

Proponents of social norms suggest that social meanings be constructed for order and cleanliness. Social meanings are the framework conditions of understanding in which individuals live [31].

2. Social Influence

Social meanings can have a social impact. In connection with the Broken Windows theory, this means that unpunished misconduct regularly leads to an increase in this misconduct, because no consequences are feared [31]. In an environment in which rule-compliant behavior is the standard, according to this theory, people who would most likely commit crimes in a “socially hot spot” also adapt.

3. Social Norms/Regulatory Norms

Social influence can induce people to obey the norms of order. The norms are associated with social meanings. The social influence affects the social norms and influences the actions of the people. In this way, adjusting a social meaning can change the social norms.

Therefore, if order and cleanliness acquire social significance, the community behaves properly and pays attention to cleanliness. Due to the social influence of the community, rule-compliant people see their behaviors confirmed, while other people refrain from breaking rules under the social pressure of the majority. Order and cleanliness become social norms [31].

Even if this society is only formed and lived for a few days during a music festival, it still has to be perceived as a group whose members influence each other.

3. Research Design

3.1. *The Music Festival as the Subject of the Investigation*

3.1.1. The Development of the Concept of the Festival

Festivals are to be understood as performances of a special quality. The choice of the event location and the award of commissioned compositions can be highlighted as special features compared to other events. After the term was already used at the Niederrheinische Musikfest in 1817, it was also used at the Beethoven festivals in Bonn staged by Franz Liszt in 1845. Officially, however, the term “festival” was introduced by Richard Wagner for the Bayreuth Festival in 1876 [32] (p. 3).

Festivals arose between the 17th and 19th centuries from festivities at court, anniversary celebrations and music festivals. In the course of the increased importance of musical life after the Second World War, the concept of the festival was developed. In the etymology, the Latin “festivus” and the English “festival” indicate the way something should happen. However, Willnauer is of the opinion that the term festival in the age of event culture is now used for almost all public, time-limited events that are present on the market and in the media [33]. In doing so, it is based on the minimalist formula of [34] (p. 54): “A festival is a public, themed celebration”.

According to Elfert, a festival is characterized by (1) performances and (2) a temporal and spatial reference, as well as (3) audience and interactive program items [35]. For Willnauer, the exemplary nature of what is offered and its specific character are essential. Festivals are therefore shaped by an idea that is implemented by the festival operator. The theme or the art genre (e.g., “Haldern Pop Festival” and “Klangvokal Musikfestival Dortmund”) of the festival could be of central importance. However, the venue, such as a racetrack (“Rock am Ring”), a former open-cast mining site (e.g., “Melt!”) or an outstanding natural backdrop (“Rocken am Brocken”), is often the reason for the uniqueness. This special character is emphasized by the event or festival brand with the brand name and the brand logo [36]. They therefore differ from other events in their special artistic program content and the organization of the production. Since they are held once a year, festivals have the character of a singular event and also address other target groups than operas and concert halls that are operated all year round.

A unique selling point of a festival is the diversity of the program, as there are numerous artists and bands on offer in a limited time. From an organizational point of view, the regularly recurring period; the strong media impact and short-term employment relationships for artists, technicians and administrative staff under special working conditions are typical [32].

3.1.2. The Popularity and Relevance of Music Festivals

The number of music festivals has been increasing steadily since the early 1990s. The German Music Information Center (Deutsches Musikinformationszentrum—MIZ) in Bonn counted 136 festivals or festivals across Germany in 1993/1994 but 203 festivals in 1999/2000. In 2003/2004, this number rose to 270 festivals and, in 2007/2008, to more than 360 festivals [32] (p. 8). The MIZ currently registers 628 festivals and festivals in

Germany [37]. Festivals are obviously very attractive and very popular. This can also be seen in their economic success. In 2017, music events accounted for 72% of sales in the entire German music market. The sales achieved with live music amounted to EUR 3.655 billion. In 2013, it was still EUR 2.70 billion, which was 67%. The share of music festivals rose significantly in 2017 to EUR 401.5 million, with an average ticket price of EUR 77.28, compared to EUR 336.7 million in 2013 [38] (p. 10 ff.). This shows that festivals have become much more attractive. Visitors want to see and hear their favorite artists live and can experience several musical acts in one place at festivals. For artists and bands, after the collapse of the recording business, live performances and sales of merchandising items at concerts are the most important sources of income. They also meet a larger audience at festivals and can win new fans. This shows that festivals are highly relevant as an object of investigation, as they tend to be attended by younger people, and trends in ecological sustainability can be set and identified at these events.

3.1.3. Characteristics of the Music Festivals Selected for the Investigation

For the comparative qualitative content analysis, three music festivals that take place regularly in Germany were selected. These were the *Melt! Festival*, the *Haldern Pop Festival* and the *Wilde Möhre Festival*.

1. Melt! Festival

The *Melt! Festival* took place for the first time in 1997 and has always served different music genres, from electro, indie and pop to hip-hop. According to the organizers, the festival has been attracting 20,000 attendees for about ten years [39].

It has been located in the “City of Iron”—Ferropolis near Graefenhainichen—for 20 years now. The decommissioned bucket wheel excavators and other abandoned machines from the open-cast lignite mine represent a unique, imposing backdrop.

2. Haldern Pop Festival

The *Haldern Pop Festival* has existed since 1984 and is therefore the longest-running of the selected festivals. It takes place annually on a riding meadow in Haldern, North Rhine-Westphalia.

Due to the limited size of the event venue, the capacity is limited to 7000 attendees [40]. In contrast to the other two music festivals, it has a strong musical focus on live music by rock and pop bands in the indie, singer-songwriter and folk-pop sectors.

3. Wilde Möhre Festival

The *Wilde Möhre Festival* (in English: Wild Carrot Festival) has been held since 2013 [41] and is therefore the youngest of the selected music festivals. It is held in the small town of Drebkau in Brandenburg. In the past summer of the festival, more than 5000 visitors were recorded for the first time [42].

Similar to the *Melt! Festival*, genres in the field of electronic music are provided at the *Wilde Möhre Festival*, but indie bands are also offered a stage. In addition to the musical line-up, the organizers attach great importance to a wide range of workshops.

3.2. Derivation of the Sub-Questions and Development of the Hypotheses

The central research question, “How can music festival attendees be subtly influenced in their decisions by using nudging without monetary incentives so that they behave in an ecologically sustainable manner?”, is aimed at how the music festival attendees can be subtly influenced by the use of nudging without monetary incentives. Their decisions should be gently guided in such a way that they behave in an ecologically sustainable manner.

Three sub-questions were derived from this central research question, each relating to different aspects of the decision-making structures and behavioral patterns of festival attendees. Corresponding hypotheses were developed from the three sub-questions. These sub-questions and hypotheses are explained below.

The first sub-question takes up the point “Public” from the STEPPS model by Berger [30], which states that people allow themselves to be influenced by the behaviors of other people if this is publicly perceptible. It should be investigated whether this also applies to music festivals.

Sub-Question 1: *Do music festival participants influence each other’s behavior with regard to ecological sustainability?*

With regard to social contagion, the following Hypothesis 1 can be derived:

Hypothesis 1: *The more music festival participants already behave in an ecologically sustainable manner, the more will join them.*

It can be assumed that music festival participants who already behave in an ecologically sustainable manner will have a positive influence on other participants. The effect is stronger when the ecologically sustainable oriented participants are in the majority.

The second sub-question addresses the importance of the (communicative) relationship between event organizers and attendees.

Sub-Question 2: *Does a personal connection/communication between organizers and music festivals participants influence their decisions with regard to ecological sustainability?*

From this, a second hypothesis can be developed that regards such personal relationships as desirable and positive in the context of appreciation and the implementation of the desired behavior.

Hypothesis 2: *The more personal the event organizers communicate with the music festival participants, the more likely the event organizers’ concerns will be considered and implemented.*

If the communication relationship between event organizers and participants has a significant influence on the behavior of the music festival participants, this would be an important finding for organizers of ecologically sustainable events, since nudges would have a better chance of success if addressed personally.

The third sub-question relates to the number of event attendees.

Sub-Question 3: *Is ecological sustainability increasingly difficult to implement with the increasing number of event attendees?*

The following Hypothesis 3 was derived from this.

Hypothesis 3: *The higher the number of event attendees, the less influence can be exerted on the consistent implementation of ecologically sustainable behavior.*

It can be assumed that, with an increasing number of participants in events, there is also a greater anonymity in the group, and the possibility of influencing their behaviors decreases. In a larger crowd, people feel less responsible for their own actions or obliged to behave in accordance with the rules.

3.3. Methodology: Qualitative Content Analysis According to Mayring

Qualitative research has the advantage of being open to the research area, which closes the gaps in the knowledge and enables new knowledge to be gained. The qualitative content analysis according to Philipp Mayring is a structured and rule-based evaluation method. The data are processed step-by-step in a systematically and methodically controlled manner [2]. The method is based on a theory-based category system, which is gradually created in the context of a feedback process and on the basis of which the available data is evaluated. The data is systematically analyzed and transferred to the category system [3]. The investigation is based on manifest communication content—in the specific case, explicit publications by festival operators on their websites and content on other

websites that are related to music festivals. The method uses a quantitative content analysis as a basis and adds qualitative–interpretative components as an extension [2].

In order to be able to carry out the qualitative content analysis for the three festivals, all online sources that communicate ecologically sustainable aspects of the events were evaluated separately from one another. These are mainly the festival’s own websites, online (newspaper) articles and blog entries.

Sources for the *Melt! Festival* are primarily the festival’s own website [39] but also blog entries and online articles about the festival [43–49]. The analysis included the development from the first festival in 1997 to the last physical event in 2019 before the pandemic years.

To analyze the *Haldern Pop Festival*, the festival’s own website [40] and two other online newspaper articles [50,51] about the festival were also evaluated. The period from its founding in 1984 to the last time the festival was held physically in 2019 (before the pandemic) was examined.

Ecologically sustainable aspects of the *Wilde Möhre Festival* can only be found on the festival’s own website [41]. As part of the qualitative content analysis, the period from the first festival in 2013 to the last physical event held in 2019 was considered.

For all three festivals, published data up to 10 November 2019, could be included in the analysis. In addition, observations made during several personal visits to the festivals until 2019 were included in the study.

Thus, at all three festivals, the analytical focus was primarily on the status of 2019.

The evaluation of the generated data takes place with the aim of exploring the intentions behind the objectively accessible content and their interpretations. The research questions are thus quasi-answered by the researchers by analyzing and interpreting the collected data.

The formation of the category system is the core of the process. The categories can be defined deductively, i.e., in advance on a theoretical basis, or inductively from the material. The assignment of the categories to the text is determined by content analysis rules [2].

In the course of the present study of the three selected music festivals, five main categories were initially deductively defined on a theoretical basis. Another main category was added inductively during the course of the data analysis. Since the assignment of text passages to the categories is rule-based but also interpretative, it is a qualitative act [3].

Three basic forms of interpretation can be derived from this: summary, explication and structuring. In the context of the summary, the content should be retained as a result, but a manageable corpus should be created through abstraction. With regard to the explication, further explanations should be added to the text passages in question in order to make them easier to understand. In the course of the structuring, certain aspects are filtered out of the material in order to be able to form a cross-section. For this purpose, the online quotations of the three selected festivals are first divided into short sections. In a second step, the literal quote is converted into a corresponding quintessence. Finally, each paraphrase is assigned to one of the five criteria, or a new criterion is created if an assignment would not have been suitable up to now.

4. Results of Qualitative Content Analysis

4.1. The Music Festival as the Subject of the Investigation

Major events affect the region in which they take place in a variety of ways [52]. Thus, music festivals lasting several days have positive economic effects. Hotels benefit from the rush of visitors, with a large number of overnight stays and a high occupancy rate, and can increase prices due to the great demand for hotel beds. Gastronomy, retail and other service companies also report growths in sales. In addition, workers from the surrounding communities are often employed at the festivals. At the Wave-Gotik-Treffen (WGT), which takes place annually in Leipzig over Whitsun, the more than 20,000 guests from all over the world spend around EUR twelve million over the four days of the festival, and 90% of the city’s guest beds are used. In addition to the Book Fair and the Bach Festival, the WGT ensures the greatest tourist crowds. Due to its connection with the meeting of the black

scene, the city comes into the focus of the public interest and achieves a reach in social media like no other event [53].

On the other hand, major events affect the quality of life of the locals both positively and negatively. In addition, effects on the environment and emissions are inevitable. The emissions caused by a large music festival on a weekend can be compared with the CO₂ footprint that a small town leaves within a whole year. Some (42.6%) of the emissions come from the arrival and departure of guests, 26.7% from electricity, 22.8% from catering, 2% from the offices on the festival grounds and 5% from other demands [54].

Several music festivals are already actively promoting a sustainable concept. With green marketing, they hope for a positive image transfer. Green events are increasingly becoming the focus of interest [55,56]. In 2015, the Ministry for the Environment, Nature Conservation, Building and Nuclear Safety of the Federal Republic of Germany, together with the Federal Environment Agency, published guidelines for the sustainable organization of events. Ten areas (and the respective goals and measures) are listed [57] (p. 7 ff.): The (1) Mobility, (2) Venue and Accommodation of the Participants, (3) Energy and Climate, (4) Procurement of Products and Services, (5) Catering, (6) Waste Management, (7) Handling of Water, (8) Favors, (9) Communication and (10) Social aspects.

The areas of mobility, energy and climate, catering, waste management and handling of water are of particular importance for ecological sustainability. These were taken up in the deductive category formation for the qualitative content analysis and were included in the investigation as the five deductive categories of transport, electricity, gastronomy, garbage and sanitation. Any further analysis should provide information on how music festivals implement sustainability while using this concept on the one hand and how they sensitize event visitors to the topic on the other.

On the basis of the findings on the essential criteria of ecological sustainability, the five main categories: (1) Transport, (2) Gastronomy, (3) Electricity, (4) Garbage and (5) Sanitation are deductively defined; based on which, it should be possible to improve the ecological sustainability of music festivals in a structured manner.

1. Transportation

The biggest factor in terms of emissions at major events is transport [54]. This relates to the transport of employees and materials before and after the event, as well as to the arrival and departure of visitors. Conversely, this means that the transport factor also offers the greatest potential for savings. It is about motivating visitors to choose as low emission an option as possible. These include—in ascending order, measured by the emissions incurred—traveling on foot, by bike, in a carpool, in a fully booked coach, by train, alone in your own car or by plane [21].

2. Gastronomy

The type of foods and drinks offered at a festival also has a significant impact on the balance of emissions generated in the context of an event [58]. The required variety of dishes is reflected in the offered categories: vegan, vegetarian, regional, seasonal, etc. The event organizer decides which foods and drinks will be offered. However, event attendees decide on their purchase and consumption. Studies show that a vegan diet can cut the emissions that arise in the production of food in half [58]. The choice of regional and seasonal products also has a positive impact on the climate balance due to the reduced transport and storage costs.

3. Electricity

The electricity at music festivals is a special category, as the event organizer alone decides from which sources it is obtained. Visitors cannot choose between several alternatives. However, electricity plays a decisive role in reducing emissions [21]. Visitors can also be made aware of the effects in a playful way via nudging. It should go without saying that the electricity purchased is generated from renewable energy sources—wind power, solar energy and hydropower. In order to make an event as ecologically sustainable as

possible, fossil fuels should be avoided at all costs [21]. The generation of energy onsite—for example, through your own photovoltaic systems—can also be considered. Since large open-air events often take place in places that are otherwise not played at during the year, there are often no fixed power connections, which is why you have to use mobile (diesel) generators. However, it is the responsibility of the organizer to avoid them. Therefore, all measures that cannot be directly influenced by the visitor are excluded from the application of the catalog of criteria.

4. Garbage

The rubbish left behind on the festival site [59] includes food packaging, tents, mats, sleeping bags and decorations. Before developing possible nudges, one must determine the preferred and realistic nudging goals. Should the visitors be encouraged by means of zero waste management through nudges not to let any waste arise in the first place, or should it be achieved that the waste that arises is properly separated and disposed of or taken back with them?

5. Sanitation

The sanitation category [56] summarizes all aspects relating to showers, toilets and drinking water-filling stations. It is not just about the economical consumption of fresh water but also about the type and use of hygiene products. The event organizer is responsible for the basic selection or provision of chemical, compost, aviation or flushing water toilets, but which of the toilets are used is up to the visitors, if there are different ones to choose from.

On the basis of these five criteria, the three selected music festivals will now be examined with regards to their measures for ecological sustainability, with the developed nudges being the focus of interest.

A sixth main category: Compensation—compensation of carbon dioxide (CO₂) emissions—was added inductively during the course of the qualitative data analysis.

4.2. Results of the Qualitative Content Analysis

After all online sources that communicate the ecologically sustainable aspects of the events were evaluated separately, and the next step was to assign the quotes found to the categories created.

4.2.1. Transport

1. Melt! Festival

In addition to information about the possibility of traveling by bus, train and car-sharing opportunities, the festival entered into cooperation with Deutsche Bahn in order to be able to offer guests a discounted train ticket. Since the nationwide price was EUR 79, this monetary incentive was primarily tailored to long-distance travelers. A few years ago, the company “Deutsche Bus” also gave the opportunity to privately rent a coach, including a driver, with which larger groups could travel. Further passengers could be found on their own initiative—the more people involved, the cheaper the journey became for each person. Since the umbrella organizer “Deutsche Bus” no longer exists in this form, this model can no longer be offered by the festival organizer. In 2010, the *Melt! Festival* was awarded by the German Energy Agency (Deutsche Energieagentur—dena) for particularly innovative and progressive commitment in the area of emissions reduction. To this end, a mobility concept was developed in cooperation with the Green Music Initiative, which provided for renting a discarded train with sleeping wagons and letting it drive from Cologne to the festival in the first year and, later, also one from Munich. These trains were always booked up quickly. The journey was made attractive, with a built-in bar and a DJ who set the mood during the journey. A well-thought-out concept convinced many participants to use the festival train instead of their own vehicle, as many advantages of traveling by car were also offered. The hotel train offered both environmentally friendly travel and comfort and also served as a place to sleep—if necessary, even in a six-person compartment with friends.

As a further nudge toward this type of journey, the festival attendees were given a faster check-in at the festival location, as they could enter the area through a separate entrance and received their festival wristbands on the train.

The journey by bike was also incentivized. A guided bike tour was offered from Hamburg or Berlin. In cooperation with “Morgenwelt”, rental bicycles could even be used so that the travelers did not have to own their own bicycles. These bicycles were also used onsite for another activity: a separate stage on the *Melt! Festival*, the “bicycle disco”, was run solely by the energy generated by the festival attendees. They stepped onto the pedals on jacked-up and connected bicycles. The communication of the collective idea was an elementary part of the message, because the music only played if enough people were responsible for generating the energy; otherwise, it fell silent. The guided bike tour was not free, but all accommodations during the stopovers, food and exclusive unplugged concerts were included in the price.

2. Haldern Pop Festival

For the journey, the option by train is explained, but the journey by plane is also described, without giving a hint as to which would be the more climate-friendly method.

3. Wilde Möhre Festival

The event organizer set up a carpooling portal that festival attendees can use to offer free spaces in their vehicles or find in other cars. This considerably reduces the emissions that would otherwise be caused by individual traffic on arrival. The options for arriving by “Bassliner” (bus company that offers shuttle services from major German cities exclusively to music festivals) or by train are also explained. In addition, a guided bike tour including a luggage shuttle was offered in cooperation with a partner. Apart from the convenience of a luggage shuttle, there were no other incentives to take advantage of this offer. It is also possible to arrive by car; for reasons of climate protection, however, we ask you to switch to other alternatives. All participants who arrive with their own car and want to park it in the parking lot near the festival have to pay parking fees of EUR 30 for a car and EUR 60 for a mobile home.

This certainly also ensures that the train, the “Bassliner” or the bicycle are more often chosen for the journey, but since the incentive is also linked to monetary conditions, it is not considered as a nudge.

4.2.2. Gastronomy

1. Melt! Festival

In cooperation with Foodsharing and the local food bank, the opportunity is offered to donate food that has not been consumed—either to other festival participants or to those in need from the region. So far, a “meat-free Friday” has only been implemented for the artists in the backstage area. However, this does not have any points of contact with the guests and is also not prominently communicated to the outside in order to influence the thoughts and actions of the participants. When setting up the food stands for attendees, greater attention is paid to regional suppliers, and around half of the stands offer vegetarian dishes. However, no nudges are used here to motivate festival attendees to consume less meat.

2. Haldern Pop Festival

The gastronomic offer is not shown as regional or vegetarian/vegan.

3. Wild Carrot Festival

The *Wilde Möhre Festival* stands out in that it is completely vegetarian/vegan in terms of gastronomy. On the website, there are tips on where to get regional meat if you do not want to do without it during the festival weekend, but it is still a strong signal that authentically and consistently conveys an ecologically sustainable attitude.

4.2.3. Electricity

1. Melt! Festival

Onsite, the information about the energy generation of electricity and the electricity required for a festival was continued beyond the bike disco with some partners. For example, attendees to the “Electric Hotel” could also charge their cell phones by pedaling or using solar energy. A separate, approx. 3000-square-meter photovoltaic system was installed, which generates 170,000 kilowatts (KW) of energy throughout the year and, thus, even more than the festival needs (73,000 KW).

In addition, the system can supply a further 50 households with electricity. In the exemplary measure, however, the festival attendees cannot be actively involved, so they cannot develop nudges.

2. Haldern Pop Festival

There are educational offers about sustainable energy generation, but there are no incentives for festival attendees to actively participate.

3. Wild Carrot Festival

Ecologically sustainable energy generation is not communicated.

4.2.4. Garbage

1. Melt! Festival

The festival attendees are informed about the ambition of a garbage-free festival as early as possible before they arrive and asked to choose their luggage carefully to avoid the creation of garbage in preparation and to take everything back with them after the festival. Tents left behind and camping equipment left on the festival site will be discussed separately. Through the cooperation with an NGO and another company, participants should be given the opportunity to donate their tents to those in need after the event or have them refurbished so that they can be rented out as used camping equipment at other festivals and, thus, avoid that they have to be disposed.

In order to address environmentally conscious attendees more intensely and to offer them an environment in which they can implement ecological behaviors in a simplified manner, the *Melt! Festival* has a separate green camping area. There, it is also possible to dispose of rubbish in separate rubbish bins. A distinction is made between cardboard, plastic, metal, organic and residual waste. A garbage deposit has existed for a long time, which the attendees pays when they buy their tickets and which are refunded in cash at the end of the festival against a full garbage bag or, alternatively, receive a merchandise item. This measure is more likely to be assigned to waste management than to waste avoidance, since the waste that has already accumulated should be adequately disposed of here. In addition, this is only a monetary incentive, which is therefore not included in the consideration of possible nudges.

2. Haldern Pop Festival

In 2019, the *Haldern Pop Festival* received a lot of media attention in relation to its waste management strategy. The reason for this was a photo that was posted by the organizer in the social media channels after the event. On it was the immaculate, tidy festival meadow with the caption “You are not only the best, but also the cleanest audience.” [40] This remarkable result was achieved even though there is no garbage deposit at the *Haldern Pop Festival*. The organizer Stefan Reichmann sees the reasons for this in the particularly good relationship between the participants and the festival organizer. However, Reichmann also emphasizes that one should consider the size of the festival of 7000 attendees—such a relationship could not be extended to a festival with a size of, for example, 85,000 attendees. Furthermore, Reichmann points out that the motivation of the participants at *Haldern Pop* is fundamentally different from that of the participants at other festivals. The average age

is significantly higher than, for example, with *Melt!*, and environmental awareness is also fundamentally given.

However, 2019 was the first year in which waste management worked so well. In the years before, entire couches were left behind several times. To counteract this, the organizer published, similar to the *Melt! Festival*, in advance on the website an appeal to attendees to please leave unnecessary items at home and take everything back with you or dispose of what you have brought with you. In addition, garbage bags are provided on almost every corner and distributed during the festival. This constant availability of collection and disposal options is intended to keep the barriers of waste disposal as low as possible, with effect. Deposit items can also be donated to several places during the entire festival, or they can be collected by volunteers on forays across the site.

It can be stated that the *Haldern Pop Festival* has geared its measures toward waste disposal rather than waste avoidance. However, these are seldom linked to a nudge and often only show an effect through the bond between the organizer and the festival attendees. The successes can be traced back to the structure of the event participants.

3. Wilde Möhre Festival

In addition to the invitation to the guests to keep the amount of rubbish as low as possible during the festival—on a large scale by carefully handling tents or on a smaller scale by avoiding confetti and glitter—an appeal is made to close the area as much as possible after the festival has ended and leave it as it was found. Festival attendees are explicitly asked not to carelessly throw away bottles, cigarettes or other rubbish. To make this easier, the festival organizer provides rubbish bins around the entire site. In addition, garbage separation can not only be implemented on the garbage islands that are set up in public for the guests but also by means of three different garbage bags that are given out to the participants. This means that it can be separated into residual waste, recyclable material/plastic and glass. Any garbage bag that has not been properly separated must be opened again at the garbage disposal and sorted again. The fact that attendees are given a deposit back for each correctly sorted and handed in rubbish bag is an incentive. However, since this garbage deposit is monetary in both variants, it has no relevance as a nudge.

4.2.5. Sanitation

1. Melt! Festival

It is true that compost toilets are generally offered and thus represent a more environmentally friendly alternative to conventional chemical toilets that are normally used at large open-air events, but there are no special incentives for attendees to use them. On the contrary, while the chemical toilets can be used free of charge, attendees are charged EUR 1 per toilet for use of the composting toilets. The use of the showers was also chargeable—EUR 10 per visit. This may reduce water consumption, but it is a purely monetary incentive and is therefore of no importance for the development of possible nudges.

2. Haldern Pop Festival

Conventional toilets are offered, with no ecological alternatives.

3. Wild Carrot Festival

There is an incentive to use less water when showering. Cold showers are free at the festival, while hot showers cost EUR 2 per shower. In order to protect the ecosystem, it is explicitly pointed out that washing and bathing with soaps or similar is prohibited in the adjacent lake. So, if you want to save money, you will take a cold shower and understandably not take as much time as under a warm shower. Here, too, the incentive is monetary. It should be emphasized, however, that there are only compost toilets and no conventional chemical toilets on the entire site. The use of the ecologically sustainable toilets is even free of charge.

4.2.6. Compensation

Open-air music festivals lasting several days usually cause a high carbon footprint. On the one hand, this should be minimized from the outset and, on the other hand, compensated for after it occurs.

In the course of the qualitative content analysis of the available sources, it was determined that, with the compensation of carbon dioxide (CO₂) emissions, a further criterion should be inductively supplemented.

1. Melt! Festival

By purchasing a “Green Pass”, attendees can have their emissions that arise from participating in the festival offset on a voluntary basis. The money they pay is invested in climate protection projects on their behalf. Since carbon-connect AG supports every “Green Pass” purchased with an additional amount of 10% of the purchase price, individual festival visits could not only be made climate-neutral but even climate-positive. For this purpose, forest protection projects are supported in Central and South America in order to prevent deforestation there. With this measure, Melt! set a good example for other music festivals. In addition to a “good conscience” for the buyers, no further nudge is currently set to convince festival attendees to buy the “Green Pass”.

2. Haldern Pop Festival

The offsetting of CO₂ emissions is currently not an issue.

3. Wilde Möhre Festival

No clues could be found for offsetting CO₂ emissions.

5. The Development of Nudges for the Attendees of Music Festivals

In the following, goals, nudges and possible measures are defined for the six main categories: (1) Transport, (2) Gastronomy, (3) Electricity, (4) Garbage, (5) Sanitation and (6) Compensation. Of these, those will be highlighted that appear to be the most desirable. For this purpose, nudges must be developed that can help to achieve these goals. The “Feel Festival” serves as a direct practical application example. It is located at Bergheider See in the German state of Brandenburg and attracts around 20,000 attendees.

5.1. Transport

In the transport sector, most of the emissions arise when conducting music festivals. These do not only relate to the direct arrival and departure of the visitors but also to journeys that are necessary to transport material and employees, but the nudges are primarily intended to positively influence the decisions and actions of the potential guests.

Every car that travels to a music festival is currently occupied by an average of 2.3 people [60] (p. 25). The aim should be to increase the occupancy rate so that, on average, more people per car can drive in carpools, and the number of cars that are moved for the festival is reduced. One nudge that could be set here would be rewards for larger driving groups. However, the framework conditions to be met must be clearly defined in advance. A car with five seats would have to be occupied by at least three people in order to receive the reward. For a seven-seater vehicle, at least an occupancy of five people would have to be proven. A percentage of the vehicle’s minimum occupancy could be set, which, in a specific case, is rounded up to whole seats. The nonmonetary reward could be access to more attractive parking options directly on the festival site. In order to prevent cars from picking up passers-by only a few meters in front of the festival site in order to receive the reward without having to travel the entire distance as a carpool, the first checkpoints can be set up about one kilometer from the festival location and staffed with people who check the occupancy and confirm it with a stamp on the ticket or on the driver’s hand so that parking attendants can orientate themselves. The main reason why these better parking options are so attractive is because one of the main motivations for using the car is convenience. The convenience and the shortened or possibly completely eliminated way of carrying their

camping utensils will be a great incentive to form carpools. In order to exhaust this idea even further, the carpools in vehicles that are 100% full could be rewarded with a fully stocked beverage crate. This could be offered in cooperation with a sponsoring partner and as a limited special edition that cannot be freely sold, so as not to fall into the gray area of monetary incentives.

Another nudge involves relocating the parking spaces for cars. At many festivals, purchasing a car pass gives you authorization to park on the festival site. However, this limited number of parking spaces sells out quickly, so that all other car drivers only have the option of parking their vehicle in the free parking lot outside the festival area. At the Feel Festival, this parking lot is currently about one kilometer from the festival entrance. By relocating the entire parking area to an area at a significantly greater distance from the festival site and the intensive communication of this measure in advance, some attendees would probably be deterred and prepared to forego the journey with their own vehicle, as they would have to carry their luggage too far. Instead, they might switch to the “Bassliner” to get closer to the festival site (see Table 1).

Table 1. Main Category (1) Transport: Goals, Nudges and Possible Measures.

| Goals | Nudges | Possible Measures |
|--|--|---|
| Increase in the utilization of arriving cars | Rewards for larger carpools and high-capacity cars | Granting access to attractive parking facilities on the festival site |
| Reducing the number of arriving cars | | Allocation of a limited box with free drinks for carpools with cars that are 100% full |
| Promotion of travel with the “Bassliner” or with coaches | Relocation and installation of the free parking spaces relatively far from the festival site | Relocation of the entire parking area to an area at a significantly greater distance from the festival site and intensive communication of this measure in advance of the “Feel Festival” |
| | Bus stops very close to the festival site | Bus stop at the “Feel Festival” right in front of the entrance |
| | Offer of catalog ordering of groceries and camping equipment | Festival order supermarket for the “Höme” magazine at the “Rocken am Brocken” and “Fuchsbau” festivals |
| Increasing the attractiveness of traveling by bike | Offer of guided bike tours from the next major cities | Guided bike tours from Hamburg and Berlin, e.g., to the “Melt!” festival |
| | Offer of free luggage transport | Luggage shuttle for those arriving by “Bassliner” |
| | Reservation of an attractive campsite | Provision of a campsite with a view of the lake for bus travelers at the “Feel Festival” |
| | Weekend flat rate for the sanitary area of the festival | Weekend flat rate for the sanitary area with access to hot showers and ceramic toilets at the “Feel Festival” |

Depending on the location of the festival, guided bike tours can be offered from the next largest metropolis, which is expected to be home to many festival attendees. This could induce them to participate. The Melt! Festival and the Wilde Möhre Festival have already offered such tours but without using any nudges worth mentioning. In the case of the Feel Festival, this was already implemented in 2019. The nudges were set in the form of incentives that should make this type of journey more attractive. On the one hand, luggage transport was offered, and on the other hand, when the participants arrived at Berghelder See, the festival location, a reserved campsite with a view of the lake awaited them. In addition, the participants received a weekend flat rate for the sanitary facilities of the festival, including hot showers and ceramic toilets.

Another reason why many festival attendees consider it too inconvenient to travel by “Bassliner” or other coaches is that food and equipment can only be transported with a great deal of physical effort. That is why the magazine “Höme” launched the first festival order supermarket in cooperation with the *Rocken am Brocken Festival* and the *Fuchsbau Festival* in 2019 [61]. The idea for this nudge was to cooperate with the local supermarkets, so that festival attendees could order food and camping equipment from a catalog in advance and pick it up at any time after their arrival. Therefore, the motivation was greater to arrive with the “Bassliner” and to pick up the order directly at the festival site.

5.2. Gastronomy

In the catering sector, not using animal products has the greatest potential for avoiding emissions [58]. Many larger festivals, like the *Melt!* or the *Feel Festival*, fear a decline in sales if there is a complete switch to vegetarian dishes. At smaller festivals, such as the *Wilde Möhre Festival*, this seems to be less of a problem, since there you can better assess the wishes of the target group and assume a more homogeneous, vegetarian-oriented audience. On the other hand, the very large *Fusion Festival* with 70,000 attendees has always been completely vegetarian/vegan [62]. This example shows that there is hardly any loss of sales to be feared as long as one can assume a homogeneous target group. Expectations play an important role. If a festival has always had purely vegetarian offers, you as a guest can prepare for it more than if a festival where you have been able to consume meat dishes for years changes its offers. Such an adjustment does not necessarily take place within a festival season, which is why, in the worst case, ticket sales can collapse.

A nudge in this area should consider the freedom of choice of the target group, which can be achieved using a preselection concept. For example, when buying tickets (in the online shop), you could tell the festival participants that the culinary offerings are basically vegetarian, but a preference for meat products can be registered by email or using a form. This registration can be justified with the better predictability of the required quantities. Due to inertia, many people would probably shy away from this extra effort and, thus, eat a vegetarian/vegan diet at the food courts. In view of the status quo bias, the preselection usually remains the final selection.

A second nudge could be realized in connection with a symbolic contingent of CO₂ equivalents, which are used up depending on the food. For this, however, all snack stands would have to be equipped with scanners and all visitors with chips. This would mean a high one-time investment for the festival. However, since such chips also support the implementation of access authorization, payment systems and shower contingents, etc., this would still be worth considering (see Table 2).

Table 2. Main Category (2) Gastronomy: Goals, Nudges and Possible Measures.

| Goals | Nudges | Possible Measures |
|--|--|---|
| Avoidance of emissions by avoiding meat dishes | Introduction of a pre-selection concept | Justification of the need to register in advance by e-mail or using a form in the case of a preference for meat products Greater pollution of the quota of CO ₂ equivalents through meat food |
| | Symbolic contingent of CO ₂ equivalents | Equipping the snack bars with scanner systems and the event attendees with chips in wristbands |

5.3. Electricity

As Jacob Bilabel, founder of the Green Music Initiative, stated, the topic of electricity initially seems to be of secondary importance for festival attendees, as it is not immediately apparent to them from which sources it is obtained and in what quantities it is consumed [60]. One could consciously take advantage of this with a visual nudge [4], in which, similar to the *Melt! Festival*, selected stages operated by solar energy or with

muscle power. Singer–songwriter stages are particularly suitable for this, as the energy requirements there are usually not that high. One could also erect a large glass ball as part of an installation at the festival, which lights up green when enough electricity is generated during the day by solar radiation on photovoltaic systems or by currently operating a bicycle construction and again lights up red when more energy than is currently being drawn from the fixed electricity must be generated than was previously generated on that day. Visitors could see this as a collective incentive to always keep the lamp light green. In the implementation, this would also represent a social nudge, because in the sense of a community activity, there is a certain pressure to contribute something to the generation of electricity if it is to be used for listening to the music and looking at the lights (see Table 3).

Table 3. Main Category (3) Electricity: Goals, Nudges and Possible Measures.

| Goals | Nudges | Possible Measures |
|--|--|---|
| Promotion of ecologically sustainable electricity generation and limitation of electricity consumption | Introduction of a possibility of direct contribution to electricity generation | Power supply of selected stages by means of energy generated by muscle power while cycling |
| Strengthening the community spirit | Visualization of the amount of naturally generated electricity and electricity consumption | Installation of a display or traffic light construction that shows whether the amount of naturally generated electricity is sufficient (green lamp) or not (red lamp) |

5.4. Garbage

It is desirable for music festivals to produce as little waste as possible and to properly dispose of and separate the waste that is inevitable. Festival attendees should also be motivated not to leave any tents or other equipment behind.

Systems that include a garbage deposit must by no means put festival guests at a disadvantage, who hardly produce any garbage themselves. When handing in a full garbage bag, it is more about a principle of solidarity, so that it is encouraged to also collect garbage that was not caused by oneself. In this way, you can contribute to clearing the rubbish from the site as soon as possible after the end of the festival. The experience of the event organizers shows that guests who practice almost zero waste management themselves can still hand in a filled garbage bag in order to get their garbage deposit back.

A study by the Green Music Initiative showed that it makes more sense to work with positive reinforcement than to employ detailed educational work, which is often less accepted by participants at a music festival due to its complexity [60]. Therefore, the information should be transmitted in advance if the visitors have enough time to process it and to draw their own knowledge from it, so that, in the best-case scenario, they can call up the knowledge they have learned at the festival and incorporate it into their actions and decisions. Using smileys or other symbols, an emotional nudge could be set that communicates the desirable garbage disposal.

Thaler and Sunstein (2008) [4] found that one must never underestimate the power of indolence. This power can also be used in a targeted manner. The garbage disposal stations at music festivals should also be positioned according to this principle in order to increase the recycling rate and reduce the effort involved in sorting garbage. At the Feel Festival, so far, guests can hand in a full rubbish bag when they leave the site. As long as this garbage bag is filled to a certain extent, you will get your garbage deposit refunded. Each individual sack is then opened again by employees and sorted according to plastic/recyclable materials, glass, organic waste, paper and residual waste. This is a lot of work that will take several weeks after the festival.

The proposed nudge provides for two separate garbage stations to be set up at different locations. A (green) garbage station should be located directly on the roadside of the flow of participants on the day of departure. There, you have the opportunity to separate your garbage yourself and then get your garbage deposit back. To get to the second (red)

garbage station, however, you have to take a detour of several hundred meters, but you can exchange the garbage bag there for your garbage deposit. This nudge idea is based on the laziness of the participants: people are reluctant to take additional trips and prefer the simple solution that appears comfortable. The waste separation process also creates additional expenditure of time, but superficially, the longer distance is perceived as more uncomfortable. However, since the “Green Station” is noticed by all festival attendees, there exists the phenomenon of social contagion and impression management work: as long as there is always a number of visitors who act as role models and separate their rubbish there, more will join them. Since the more prominently the options are set up and the more the public could perceive the decisions of the individual, the more likely the attendees will show behavior that they assume is desirable.

It is also important to set up enough rubbish bins and to empty and close them regularly to prevent them from overflowing and littering the floor. The broken windows theory states that even more rubbish will pile up as soon as the first rubbish islands form on the site outside of the designated rubbish bins. A team that regularly goes through the festival area and carries out cleaning operations prevents this chain reaction and, at the same time, serves as a good example, which could also inspire other festival attendees to bring their rubbish to the nearest rubbish bin and only dispose of it there (see Table 4).

Table 4. Main Category (4) Garbage: Goals, Nudges and Possible Measures.

| Goals | Nudges | Possible Measures |
|---|--|--|
| Waste prevention | Introduction of a garbage Deposit fee | Refund of the garbage deposit fee if a full garbage bag is handed in at the end of the festival |
| Ecologically sustainable waste separation | Establishment of two garbage stations at different distances | (Green) garbage station a short distance away with the obligation to separate your garbage yourself for the reimbursement of the garbage deposit fee—(red) garbage station a long way away with the option of exchanging the garbage bag for your garbage deposit fee without being separated. |
| Ecologically sustainable waste disposal | Regular emptying of the garbage cans and removal of garbage lying around | Deployment of a garbage disposal team that regularly cleans the festival area and thereby acts as a role model Use of smileys and other symbols to indicate the desired behavior |
| | Communication and promotion of the desired waste disposal | Use of smileys and other symbols to indicate the desired behavior |

5.5. Sanitation

As in the field of gastronomy, the event organizer, as the decision-making architect, can direct the participants’ choices in advance. It could be stipulated in the strategic festival planning that there should only be compost toilets, as already practiced at the *Wilde Möhre Festival*.

However, since there is currently no service provider in Germany who can, for example, fully equip a festival the size of the *Feel Festival* with 20,000 attendees with ecological toilets [63], chemical toilets would have to be used for the additional capacities required. In addition, nudging should not be about restricting the decision-making horizon from the outset by limiting options but offering festival attendees several options and subtly steering them in the desired direction. The question arises as to how the participants’ decisions can be guided by a nudge so that a large part of the guests use the compost toilets. On the one hand, this would be possible by positioning them at highly frequented locations on the site, as the shortest route to the toilet is usually chosen. However, access for the chemical toilets’ pumping vehicles must also be guaranteed.

Another nudge idea would be more convenience when using composting toilets. This includes equipping the composting toilets with wash basins, soap, disinfectants and towels; optimal nighttime interior lighting and pleasant lighting in the outside waiting area. The festival attendees still have a free choice, but because of the amenities, the composting toilets are probably preferred.

However, nudging should also be used in the shower area in order to promote ecologically sustainable behavior. In this case, it would be a rational water consumption. On the one hand, the duration of the water flow could be regulated by using timers. In order to extend the individual shower process after the water has dried up, the attendees would have to press the shower button again. Alternatively, or in addition, it would be conceivable to integrate hourglasses into the shower cubicles, which run through within two minutes. These can be used on a voluntary basis but convey a certain sense of time in a simple way and encourage you not to shower too long and, thus, pay attention to economical and responsible water consumption (see Table 5).

Table 5. Main Category (5) Sanitation: Goals, Nudges and Possible Measures.

| Goals | Nudges | Possible Measures |
|--|---|---|
| Promote the use of environmentally sustainable toilets | Different positioning of ecological and chemical toilets Convenience when using ecological toilets | Positioning of ecological composting toilets at highly frequented locations and of chemical toilets at greater distances Equipping the compost toilets with wash basins, soap, disinfectants and towels, optimal night-time interior lighting and pleasant lighting for the outside waiting area |
| Reducing water consumption or promoting efficient water consumption when showering | Use of hints to convey a sense of time and the duration of the water flow | Regulation of the duration of the water flow by time switches required repeated actuation of the shower button to extend the shower process Integration of hourglasses in the shower stalls, which run through within two minutes |

5.6. Compensation

The intention behind offsetting emissions is, in addition to offsetting the greenhouse gases that arise, to also show attendees the actual resource consumptions of a festival and their own lifestyles using figures. One nudge that could achieve such a result would be a climate account with a predetermined emissions budget for each festival attendee. In the run-up to the event, you could calculate how many CO₂ equivalents should be consumed and define this value as a quota. With the ticket purchase, every participant would receive this emissions budget and start using it as soon as they arrive. Depending on the type of arrival, the budget would be reduced by the corresponding CO₂ equivalents. The consumption for traveling with your own car would be much higher than for traveling by bike. Whether the journey was actually carried out in the specified manner can be determined by GPS and tracking of the travel speed, which can be measured via the festival app. The travelers' smartphone sends the route and the speed to a system, which can use the data to validate that the journey actually took place by train, bus, car, bicycle or on foot. For data protection reasons, this type of tracking is only possible if you have previously given your explicit consent to the use of the data in the app. The emissions budget is also used for every meal that is bought at the food court. Vegan meals have the most positive effects. The spectrum can be spanned from regional to seasonal and vegetarian dishes to meals that contain meat.

The effects on the environment and the carbon footprint can also be calculated for many other activities and decisions. The remaining emissions budget should be shown to the attendees graphically in a pie chart using the festival app. In order to also use the

mere measurement effect, app users can be given the option of defining a target for the remaining budget at the end of the event before the festival begins. As soon as this goal has been communicated and recorded in the app, it is more binding and is more likely to be achieved. However, it should not be about punishing those who use up their emissions budget completely. When determining the budget, it is essential to ensure that it would be sufficient even if a festival attendee always chooses the least ecologically sustainable option. Instead, those who used the quota very sparingly should be rewarded. The rewards should be nonmonetary in the form of attractive prizes, including, e.g., exclusive meet and greets with bands performing at the festival, backstage passes or limited merchandising packages.

In a second nudge approach, one can use the loss aversion of consumers [4,17]. All festival attendees are given the prospect of a worthwhile reward, which can be an original festival shirt or another limited merchandising item. Afterwards, the festival attendees can freely dispose of their emissions budget. In this case, however, the quota would be more limited, so that, if the non-ecologically sustainable options were permanently selected, they would be exhausted after a certain point. Falling below the lower limit would be sanctioned with the loss of the reward. It would be conceivable to add a social nudge to this system by publishing the emissions rankings of the participants on the festival app using user names, since social pressure and a competitive situation motivate many people more strongly (see Table 6).

Table 6. Main Category (6) Compensation: Goals, Nudges and Possible Measures.

| Goals | Nudges | Possible Measures |
|--|--|---|
| Promotion of ecologically sustainable resource consumption and reduction and compensation of carbon dioxide (CO ₂) emissions | Climate account with a predetermined emissions budget for each festival attendee | Definition of a maximum quota of CO ₂ equivalents as an emissions budget in the run-up to the festival |
| | Rewarding compliance with the emissions budget | Nonmonetary rewards in the form of exclusive meet and greets with bands performing at the festival, backstage passes or limited merchandising packages if the defined emissions budget is not reached |
| | Visualization of the individual emissions budget | Announcement of a reward in the form of the festival shirt or other limited merchandising items for all guests given if the emissions budget is adhered to Publication of the emissions ranking of the participants in the festival app using user names |

6. Discussion

Finally, the main research question, “How can music festival attendees be subtly influenced in their decisions by using nudging without monetary incentives so that they behave in an ecologically sustainable manner?”, should be answered, and a position on the sub-questions and hypotheses should be made, on the basis of the knowledge gained.

The analysis of the music festivals *Melt!*, *Haldern Pop* and *Wilde Möhre* showed that, primarily, monetary incentives are currently being set in order to positively influence the decisions of the festival attendees with regards to ecological sustainability. Our own catalog of measures was deliberately developed under the premise of creating attractive nudges that are not based on economic advantages. The suitability of these nudges for subtle guidance towards an ecologically sustainable behavior can only be proven through practical experiences.

Sub-Question 1: “Do music festival participants influence each other’s behavior with regard to ecological sustainability?” can be answered in the affirmative. This behavior can be clearly confirmed. It therefore makes sense to use influencers in a targeted manner in order to demonstrate desired behavior.

Hypothesis 1: *“The more music festival participants already behave in an ecologically sustainable manner, the more will join them.”* proved correct for the Haldern Pop Festival, as the analytical findings show. No general statements can be made for the other festivals. This phenomenon can be observed especially under the aspect of social contagion. You can take advantage of this by using social nudges, which consider social group dynamics.

Furthermore, role models that are consciously selected can be multipliers in influencing larger groups. It is important that the actions of the influencer can be publicly perceived if they are to trigger social contagion.

Sub-Question 2: *“Does a personal connection/communication between organizers and music festival participants influence their decisions with regard to ecological sustainability?”* can be answered positively. A personal bond between organizers and visitors has a great influence on the behavior of the visitors. On the other hand, an organizer who presents himself anonymously and is only perceived as a faceless company will not find much attention among the festival participants.

Hypothesis 2: *“The more personal the event organizers communicate with the music festival participants, the more likely the event organizers’ concerns will be considered and implemented.”* applies to the Wilde Möhre Festival. However, a generalization needs further investigation. If the organizers show themselves to be approachable people, their wishes are more likely to be implemented. This can be seen above all at the Wilde Möhre Festival, which makes his speech very personal and also explains why certain behaviors are (not) desired. Traceability and proximity ensure that festival attendees identify with the goals and are happy to implement them together with the organizers.

Sub-Question 3: *“Is ecological sustainability increasingly difficult to implement with the increasing number of event attendees?”* cannot be answered unequivocally, since higher numbers of participants also bring advantages. Some investments only become profitable from a certain number of festival participants. However, as the number of participants increases, so does the level of anonymity. This entices the participants to no longer behave in an ecologically sustainable manner.

Hypothesis 3: *“The higher the number of event attendees, the less influence can be exerted on the consistent implementation of ecologically sustainable behavior.”* This does not allow a clear result.

Based on the comparisons between the *Melt! Festival* and the *Haldern Pop Festival*, it can be concluded that a high number of participants can have both positive and negative effects. Even with high numbers of attendees, good results can be achieved in the area of ecological sustainability, because some investments are only worthwhile from a certain size.

On the other hand, it can be observed in the garbage category that, with increasing numbers of visitors, the anonymity of the masses tempts festival attendees not to act within the framework of the desired behavior and to carelessly leave garbage lying around or not to separate the garbage.

7. Conclusions

The authors examined for the first time how the nudging approach can be applied in an event context. Previously, it had not been explored how nudges can influence the behavior of event attendees to steer them in an ecologically sustainable direction.

Andersson and Getz [55] dealt more conceptually with the sustainability of festivals from the organizers’ perspectives. In particular, a survey of managers from 14 music festivals in Sweden shed light on how events organizations can become enduring institutions.

Laing and Frost [56] focused on the problems generally associated with the management and staging of green events. They examined the importance of engaging key stakeholders and looked at different options for events to make their operations more

environmentally friendly. They analyzed the challenges associated with integrating green messages into an event theme.

Previously, only Henderson and Musgrave [59] addressed the issue of how event attendee behaviors can be steered in a sustainable direction. However, they concentrated on the development of social marketing strategies. In order to achieve the desired behaviors within the target group, they suggested a consideration of downstream added-value strategies to detect offsite/onsite behavioral attitudes, engaging upstream advocacy and more attention to assess their success.

Previous studies have shown that the rates of littering vary widely across different areas and that the rate of littering for a given area correlates positively to the amount of litter already present. It has also been found that young people litter more than old ones [64,65]. After events, especially after music festivals, in which mainly young adults under the age of 30 take part, rubbish is often simply left at the spot for convenience, which is a great nuisance. The currently dominant antilittering strategy of appealing to potential polluters and threatening fines has little effect. Sanctions do not contribute significantly to the prevention of littering behavior [66]. In the short term, it is in one's own interests to violate the applicable rules, which benefit the community in the long term but not the polluter at the moment of littering.

This study chooses a more promising approach, since nudges can be given to event attendees before, during and after an event to subtly steer their choices in an environmentally sustainable direction. It has long been known that environmental stimuli can influence the amount of litter discarded [64]. Based on the findings on the essential criteria of ecological sustainability, (1) Transport, (2) Gastronomy, (3) Electricity, (4) Garbage and (5) Sanitation were deductively defined as the main categories. These play an important role in the structured improvement of the ecological sustainability of events, especially music festivals. A sixth main category, (6) Compensation, was identified inductively in the course of the qualitative content analysis of the data.

In this paper, ecologically sustainable environmental goals were defined for the six main categories. Concrete nudges and measures were developed that can help to achieve these goals. Most of them are immediately applicable. Thus, an advantage of the present study is its high practical relevance. The applicability and success of the developed nudges and measures can be determined immediately. The "Feel Festival" with 20,000 attendees, located at Bergheider See in the German state of Brandenburg, will serve as a practical application example.

In order to be able to use nudging sensibly, event organizers have to internalize that they act as decision-makers. This entails great ethical and moral responsibility, because even inconspicuous nudges can draw attention in a certain direction and be very effective.

Some of the proposed nudges would require a high financial investment, as well as major technological innovations in the festival structures, such as the reprogramming of the festival app, the introduction of RFID chips and the associated scanners. In addition, festival goers could quickly feel controlled if many of their actions were monitored. On the other hand, many young people are also willing to pass on personal data in everyday life. As long as there is trust in the organizers that the data will be treated anonymously, nothing should stand in the way of these technological innovations.

The challenge of taking ecological sustainability into account in all areas that include the planning and production of music festivals must be faced if one is to live up to their responsibility towards future generations. Events in the 21st century should only have a minimal impact on the environment. The knowledge and technologies for this already exist. Nudging can make an important contribution to the ecologically sustainable behaviors of event visitors through subtle, inconspicuous information and guidance.

Although the detailed analysis of the three selected music festivals offers a deeper insight into the still new and innovative topic, it is not possible to generalize from the relatively small number of case studies. The results of the study could have been influenced

and limited by the subjective selection of music festivals. The subjective nature of the observations made directly at the events could also have a limiting effect on the results.

It is therefore necessary to carry out follow-up studies and to include a larger number of music festivals. From a qualitative point of view, participating field observations on attendees' behaviors at the music festivals where the proposed nudges and measures are implemented can be particularly insightful. Likewise, focus group discussions with selected festival participants on their perceptions and the impacts of the nudges could provide valuable new insights.

Correspondingly, quantitative studies should be carried out in order to create a larger database. Surveys among the participants at larger music festivals should be preferred in this regard. Another interesting possibility is experimental research designs under laboratory conditions on the perceptions and effects of nudges for events.

In the future, it will be of great interest to what extent the increased environmental awareness of the young target group, which mainly takes part in music festivals, leads to better perceptions and effects from nudging and, ultimately, to less littering after events.

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