
Events and Festivals in Times of Uncertainty

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Abstract:

Purpose: This study reflects on the impact of COVID-19 on the event industry. It aims to deepen our understanding about the importance of event industry from social and economic perspective and its fragile resilience to crisis such as global pandemic.

Design/methodology/approach: The paper builds upon a literature review and analysis of potential exogenous variables of various event activities constituting the basis for building a classic econometric model.

Findings: Based on the conducted research it is possible to indicate a need for further research in terms of more nuanced, perhaps case-study, country-specific elaboration, and implication of the model. Furthermore, the paper clearly shows that the event sector needs a significant reconfiguration to achieve better sustainability in terms of unpredictable events.

Practical implications: The study contributes to the literature by offering first of its kind analysis of potential losses due to coronavirus outbreak associated with events. The presented considerations go beyond the time and place of the event, putting a problem into a wider socio-economic perspective.

Originality value: The paper concludes by presentation of the resilience model for the event industry as well as a series of academic recommendations.

Keywords: Events, festivals, COVID-19, impact, resilience.

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1. Introduction

Hosting events such as music concerts, sports events, or food festivals is commonly perceived as an essential means of accelerating the current development either at the city, regional or nation level (Chalkley and Essex, 1999; Kavetsos and Szymanski, 2010; Kwiatkowski, 2016). There are many different dimensions in how a locality can benefit from staging an event (OECD LEED, 2010 for a detailed review), of which the most apparent pertain to increased spending (Kwiatkowski, 2016), tax revenues (Turco, 1995), investments in infrastructure (Baumann and Matheson, 2013). In recent years scholars also acknowledged other non-monetary benefits of hosting events, such as social cohesion (Richards, De Brito, and Wilks, 2013), marketing opportunities or empowerment of local communities (Kwiatkowski, 2018). Finally, past studies show that events can support local entrepreneurship and innovation (Hjalager and Kwiatkowski, 2018), contributing to the overall wellbeing of local communities. For this reason, events have become more commonplace than has been the case hitherto (Richards and Palmer, 2010).

However, in 2020 the world has been severely hit by a global COVID-19 pandemic. COVID-19 has led to a lockdown of local, regional and even national economies for months. Societies have faced new and severe social and economic challenges such as potential loss of industries like event, tourism and hospitality. Due to COVID-19 restrictions, numerous business and social activities have stopped completely or slowed down for several weeks and even months. Naturally, one of the worst affected by the pandemic is the events industry. 2020 saw the cancellation of many prominent festivals, sporting events, exhibitions, and concerts to slow the spread of the virus. The most notable examples include the 2020 Tokyo Olympics, Expo 2020, UEFA Euro 2020, and Copa América 2020 which have been postponed to 2021, and the Eurovision Song Contest 2020, which was cancelled entirely.

This paper aims to delve and systemize our understanding considering the impact of COVID-19 on the event industry and the resilience of the event industry to pandemic crisis. The paper aims to answer the following research questions: (a) What is the impact of COVID-19 on the event industry? (b) What are socio-economic consequences of events decline? (c) what is the resilience of the event sector to crisis such as global pandemic?

To answer this research questions, the paper has been divided into two parts. The first part provides information on the impact of COVID-19 on the event industry. This part aims to delve our understanding of what is the relevance of current event industry from economic and social perspective. The second part, in contrary, provide a model which explain the resilience of event industry in times of uncertainty.

The paper builds upon a literature review and analysis of potential exogenous variables of various event activities constituting the basis for building a classic econometric model. The study also considered the need to implement the time

variable in the set of explanatory variables, mainly due to emerging crisis situations. The analysis is based on the introduction of a temporal variable to the causal-descriptive model mainly due to the incompleteness of the set of variables that should describe the model. However, due to a number of factors, e.g. the lack of control over the research area, it seems justified to consider the principles of introducing the time index.

2. COVID-19 Impact on Event Industry

This section presents the importance of events in terms of the socio-economic development of the host areas, and also indicates the potential threats (losses) to which the development of the COVID-19 pandemic may lead. The considerations taken go beyond the sphere of the event organization itself, showing the broader meaning of events in the development of modern societies.

2.1 Pre-COVID Analysis of Socio-Economic Importance of Events

Considering events' social importance, past studies deliver clear-cut evidence that events can function as powerful societal change accelerators, particularly regarding social cohesion, integration, and place-based identity formation (Atkinson, Mourato, Szymanski, and Ozdemiroglu, 2008; Fisker, Kwiatkowski, and Hjalager, 2021). In this vein, Kwiatkowski, Oklevik, Hjalager, and Maristuen (2020) indicate that events can be seen as important peacemakers and bridge-builders, preservers of tradition as well as relevant providers of coherence, commitment and meaning for local community members and visitors alike. They can strengthen local identity and continuity by referring to *'shared histories, shared cultural practices and ideals'* (Quinn, 2005). This happens, according to Karlsen (2007), *'through storytelling, explaining who we are through the concerts and other events, and through the media, which retells those stories to others'*. Indeed, previous research has found that events can be signs of continuity to the past (McCabe, 2006) and can spark culture renewal into new formats and meanings (Gibson and Connell, 2012). Furthermore, they are a means of self-identification, self-realization and self-examination for the community (De Bres and Davis, 2001; Jaeger and Mykletun, 2013).

Events can also be a catalyst for economic development. It has been publicly recognized that events offer numerous tangible (e.g., direct economic impact, employment effects, tax revenues) and intangible (e.g., civic pride, community integration, feel-good factor) benefits to host destinations that together might be a potentially rich source of local wellbeing (Andersson, Armbrecht, and Lundberg, 2012; Atkinson, Mourato, Szymanski, and Ozdemiroglu, 2008; Kavetsos and Szymanski, 2010). Furthermore, since many events are embedded in the local ecosystems of sports, culture, business, and other types of associations, they frequently serve as a local platform of entrepreneurship and means of market access for local producers and 'gates' to a wider consumer basis. Events can be a source of

innovation for exhibitors and real-time platforms for consumer engagement in product creation, change and improvements. Finally, they can play a tremendous role in creating short supply chains between local producers and consumers.

2.2 The Nature of the Pandemic Damages

Bearing in mind an elevated socio-economic status it becomes clear that the global COVID-19 pandemic has had a significant impact on the functionalities of not only the event industry itself, but also other spheres of social and economic life connected with it.

According to European Festival Association Report (2020, p. 8) defaulted (missing, foregone) revenue occupies the first place in the components of the deficit caused by the coronavirus outbreak. The damage represents a broad scale. Beyond the missing income from tickets, subsidies, sponsorship and donations, the reports pointed at other types of lost revenue. Commercial deals about catering, revenues coming from advertisers, or in some cases fees expected from organizers and participants of workshops and master classes appeared in the sentences describing the impact of the pandemic.

The inability to organize events, in the short term, led to the loss of jobs by thousands of people involved in the organization and handling of events. In addition, from the point of view of event participants, coronavirus outbreak reduces the possibility of spending free time, and thus increases the level of stress and aggression. In the long term, the collapse of the event industry may result in the inability to cultivate local traditions, the development of crafts, a lower level of social integration and fragmentation of the social fabric, which until the pandemic period was integrated around common social, charity, sports or business events. This is a significant social problem that requires urgent intervention to restore social balance. This applies to almost every activity in life and every community, both those cumulated around typically cultural and sports activities (mainly communities related to the marginalization of amateur sport).

Failure to organize events may lead to socially negative phenomena consisting in marginalization, exclusion or lowering the role of certain traditions, customs and even entire groups in social life. It should be emphasized that some local traditions and customs are cultivated only for promotional purposes. On the other hand, some of the culinary, cultural and artistic events are the goal of the effort undertaken by many environments, and the created space is an element of presenting their achievements to a wider audience.

On the economic level, the limitation or even the inability to organize events results in an outflow of quite large capital. In the case of local governments, it will be an outflow of funds related to fees and taxes, but also will be related to the lack of tourists. Consequently, the essence of the so-called no influx of "fresh money" into

the host areas. At the same time, the inability to organize events does not release the organizers from the obligation to maintain the necessary infrastructure for their organization (white elephants). In the long run, such a situation may lead to an excessive burden on local budgets, which in turn will have an impact on other spheres of social and economic life.

In addition, the lack of organization of events limits the promotion and sale of local products. The closure of various industries, especially related to food, can lead to the economic stagnation of local business ecosystems, which benefited many from the pre-crash period. The events allowed the organizers to present their products, art in the full sense of the word, and developed services within certain alternatives to traditional forms of sale

3. Semantic Model of Event Resilience

When considering the development of the coronavirus in the world, descriptive econometrics can be used in almost every field of analysis. On the basis of its general assumptions, it is possible to refer to quantitative research, which is dominated by the relationships between various economic phenomena. As a consequence, it leads to a thesis that the process of getting to know reality by means of econometrics consists in building a model of the phenomenon under consideration, statistical estimation of this model based on the results of observation, and finally inferring based on the mechanisms of development over time.

The recall of the econometric model to the above considerations results from the formal construction itself, which is based on the initiation of one or more equations essentially related to each other. The mutual relations between them reflect the relations taking place in the surrounding reality of the variables, which are usually complicated and multilateral. This is mainly due to the fact that a specific phenomenon is influenced by many other phenomena and factors of an economic and non-economic nature (Pawłowski, 1978). In many cases, including considering various types of events, it can be observed that the relevant relationships between variables do not usually appear in a pure, clear or verifiable form. It can be seen that there are many side factors, often accidental, which should not seem to affect the overall phenomenon. However, observing the pandemic year 2020, it can be seen many times that these random phenomena become key in terms of making decisions.

The specific nature of statistical data, which is shown in this way, specifying that each tested dependency should be in the form of step functions, should be subjected to data verification mechanisms. Which means in econometric terms that they should be examined and checked whether there is a possible phenomenon of discontinuity of functions at certain points or time moments (Welfe, 1998). Considering the fact that the sphere of socio-economic phenomena is extremely complex, it seems logical to cite the well-known INUS theory. It refers to the theory that a specific factor X may appear in relation to the effect Y as a necessary but insufficient component of

an insufficient condition (*insufficient, but not-redundant part of unnecessary but sufficient condition*) (Hozer, 1997).

The above can be applied to the current situation caused by the coronavirus, where the dynamics of events is, on the one hand, unpredictable and it is difficult to make a decision to build any model, on the other hand, quite well-established knowledge about the development of a pandemic allows such delegation to create a sensitivity model based on data from the past and positive role models.

Let's assume that it is necessary to build a model showing the dependence of event resistance to various types of external stimuli, e.g. related to a pandemic. The search should begin with the purposefulness of the study, the type of statistical regularity and the determination of endogenous and exogenous variables, and it would also be required to determine the time horizon and the cross-section of the study (Hozer, 1993). For this purpose, it is obvious to present general assumptions resulting from the adopted principles of descriptive econometrics, in which the variable defined as an endogenous variable is denoted by Y , which is also a function constituting the dependence of event resistance on certain exogenous (explanatory) X_1, X_2, \dots, X_k variables defined for a given area, e.g. an organizational unit (commune, region, voivodeship, state, or a limited number of people living in a specific area). In its general form, we will write such a model as follows:

$$Y = f(X_1, X_2, \dots, X_k) + U \quad (1)$$

where:

Y - event resistance function in the pandemic era;

X_i - an exogenous variable in the model;

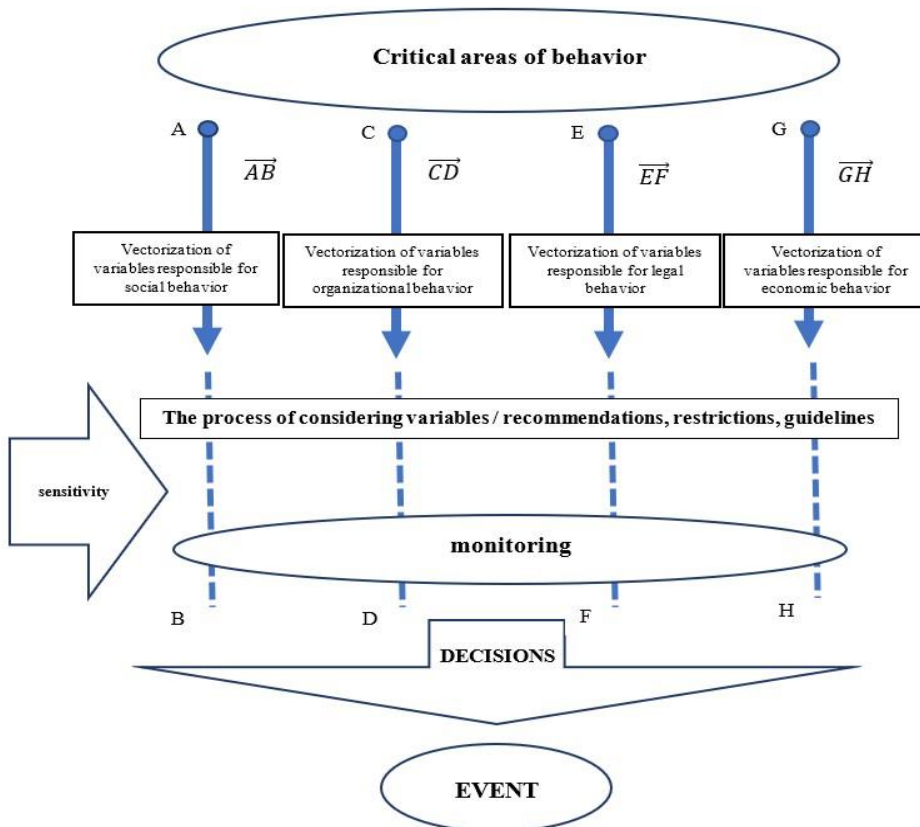
U - random variable of the model.

The symbol f denotes a specific analytical form of variable functions X_1, X_2, \dots, X_k , that can be treated as elements of potential types of threats that are defined at a given moment in time. On the other hand, the symbol U represents a specific random component of the model, which represents the total effect of the impact on the endogenous variable Y of all factors that have been explicitly included as explanatory variables in the model. The random element U is a measure of the deviations of the values of the empirical distribution from the theoretical distribution. In semantic terms, it is a real threat (appearing unexpectedly), which in a given situation and time affects the general form of the analyzed function.

Considering the above dependence, it seems that this problem is easy to solve on the basis of quantitative methods, when we know the strength of the influence of the dependent variables on the explanatory variable (of course, when defining most of the variables, they appear very often unexpectedly, and their consideration is hindered by archival data). When considering the functioning of any event, the

emphasized variables X_1, X_2, \dots, X_k should be considered as a certain set of behaviors: legal, organizational, social, economic, constituting specific critical success factors in an event project (Figure 1).

Figure 1. Critical success factors in an event project



Source: Own study.

In order to simplify the considerations, the above problem can be explained by chance of two elements influencing a specific event activity. For this purpose, you can use the well-known theory from the section of quantitative methods, dealing with the problem of measuring the impact of two (and more) explanatory variables on the total variability of the dependent variable, i.e. multiple variable regression (Jajuga, 1999).

The regression model for k -variables can be written using the following equation:

$$y_i = \alpha_0 + \sum_{i=1}^k \alpha_i X_i + U_i \quad (2)$$

where:

y_i - function of event activity in the age of a pandemic;

α_i - parameter of the determined explanatory variable of the model;

X_i - the number of explanatory variables (threats influencing the shape of the endogenous variable Y);

U_i - random variable of the model.

The regression model in the case of the presence of two or more explanatory variables can be presented in the following form:

$$y_i = \alpha_0 + \alpha_1 X_{1i} + \alpha_2 X_{2i} + \dots + \alpha_i X_{ji} + U_i \quad (3)$$

The number and quality of variables for each type of event may vary. It results from the applied restrictions and restrictions, which do not necessarily apply to every type of event. The differences also result mainly from a certain specificity that distinguishes the events.

Other variables will be used in business events in which the primary function is internal communication of the company (e.g. with employees, suppliers, distribution network, etc.) and external communication consisting in contacts with the press, consumers and public opinion creators. This category includes conventions, conferences, congresses, assemblies, holidays, trade fairs, etc.

In social events, in turn, other variables will be visible, related to events organized by, for example, public or party authorities in order to reach citizens, associations, organizations, elected representatives, party members and voters. Such events will be similar to conventions, conferences, scientific symposiums, celebrations or jubilees.

In the context of special events, in which the entertainment function is often exposed, potential variables will be related to a wide range of promotional events. These will be mainly cultural events, happenings, concerts or events with a sports color, in many cases sports and charity. On the other hand, in the context of incentive events, the variables will be related to incentive elements, which are mainly used by employers as an effective tool to motivate employees, dealers and wholesalers. Their main goal is to show the private label and emphasize the market position in relation to the competition (Iwan, 2012).

From the above analysis, it can be assumed that it is not easy to determine the appropriate number of variables, considering the quality attribute. The basic activity should be to define a specific group of events that are classified differently in the

literature (Bączek, 2011; Kurek, 2007; Ratkowska, 2017). The discrepancies mainly result from the adopted type of division criterion, which does not always apply to standard elements such as time, place or number of participants, but there are criteria related to specific recipients, participants or related to the purpose of the organization itself (Table 1).

Table 1. Classification of events

Criterion	Event
Location	stationary, touring
Place	outdoor, indoor
Time	one-day, several-day, staged
Repeatability	one-time, multi-cycle, cyclical
Recipients	closed, open
Character	charity, commercial, business, industry
Range	local, regional, global
Number of contestants	intimate, massive
Objective	integration, aid, promotional
Communication	real, on-line, hybrid
Interaction with participants	active, passive
Customer loyalty	permanent, occasional, accidental
Publicity	media, closed to the media
Budget	sponsored, project, with own participation
Type	musical, sports, culinary, artistic
Form	recreational, entertainment, picnic, multimedia

Source: Own study.

The above classification confirms the above thesis about the lack of a general event classification. It is possible to use a different kind in each situation, for which the determinant will be an appropriate criterion. Failure to show a specific group of events undoubtedly influences the generation of appropriate variables, which would take the form of standard indicators of the success of the implementation.

However, bearing in mind the basic principles of organizing events, it can be concluded that the division into:

- sports events,
- culinary,
- cultural and artistic reflects contemporary, concise subject areas resulting from scientific research and expert classifications.

These basic principles will cumulate around:

- **plan - an event organization scenario** - which is one of the most important rules for organizing an event that should be successful, i.e., creating an action plan. A professional plan, from a formal point of view, should have a

key element, i.e., the goal of the event (depending on what the organizer currently cares about, e.g. community integration, celebrating some success or showing the plan for the next year combined with creative fun), setting the course of action in the context of, for example, the purposefulness, the number of participants, invited guests, as well as the number of people securing the event, etc.

- ***dates and places of the event*** - the selection of which is extremely important in the preparation of an interesting event, because choosing a date that takes into account such criteria as: no other events within the set date, such as church and state holidays, holiday period, or, for example, the end of the school year, etc. Risk of failure reduces. A good moment to plan an event, in view of the above, could be the end of the year, when we can first present our community plan, and also give the opportunity to plan, for example, free time for people involved in the event, or even volunteers. A date is a magic point that never goes to everyone, however, from the point of view of accepted standards, e.g. the end of summer or the beginning of autumn is a good time to organize a party, because everyone wants to either start celebrating their free time or are already refreshed after holidays and they go back to work, school in full strength. When thinking about the date, it is also worth considering organizing the party on Friday - the last day of the week, which can be shortened, and you do not have to come to work the next day. Or, for example, on Saturday, when the next day is free and you can rest after, for example, a longer feast. This choice is also related to the place of the event, which should be correlated with the number of participants or the budget. The considered criteria of searching for a place themselves should oscillate around quiet areas outside the city, places under the so-called "Cloud" or a location in the city center.
- ***the theme of the event, the keynote of the event*** - which are the leitmotif of the event, partly resulting from the assumed goal, and therefore determining the subject, which from the very beginning should be a specific story, like a fairy tale with a moral, which will be remembered by the participants. Of course, with the assumption that the most important thing is the idea, which is the element that distinguishes the event in terms of creativity.
- ***catering (refreshments)*** - which is one of the most important elements of a well-organized event. On the one hand, one should remember about the subject of the event, and on the other, through catering, one can show the appropriate atmosphere and style of the event, which is a determinant of a certain extraordinary activity, assuming, of course, the diversity and different tastes of the participants, who should be "satisfied".
- ***additional attractions of the event*** - without which the event would not fit into the appropriate level of organizational creativity. The idea of "something good for everyone" should be an element indicating to the organizers the directions of extending the event with additional elements.

When analyzing the adopted division into three types of events, it should be recognized that the importance of sports events has increased significantly in recent times. In terms of key success factors, these events are subject to rituals and specific rules defined for a given sport discipline. These events arouse fascination through their spectacularism, focused not only on sports competition, but also on show and entertainment. This results in high media interest in the form of sports coverage in the mass media, sponsors' interest, and high identification by "fans" of sports teams and individual athletes (Freyer, 1998).

A sports event is characterized by certain features, which undoubtedly include the number of participants (Zduniak, 2010). Events should be properly planned and properly organized. The participation itself by the participants stimulates the feeling of unity with the blurring of any differences between the competitors and the organizers. Events of this type are unique events, and those of high rank also have their resonance in the media. Contemporary sports events are an important element of the specific tourist product of cities, regions and countries. For many participants, participation in them is not only an element of sports competition, but also a motive that prompts them to visit the place. Thanks to them, localities stand out from the crowd, developing their competitive advantage, and their authorities create the image of an interesting place worth visiting (Piechota, 2014). For sports events, the spiritual character, uniqueness and authenticity are important, as a result of which, thanks to a unique experience, a sense of belonging to the place and the next event in this town is created.

The directivity of the development of explanatory variables will therefore be associated not only with the basic organizational and legal aspects, but will also result from behavioral (experience) elements, not excluding the basic ones related to the aforementioned number of people and the place of the competition (pitch, open ground, sports hall), and also with the use of catering. A detailed description of the key success factors is presented in the table below.

Culinary events differ significantly from sports events. Definitely under the culinary slogan, many tourists and local residents come to the place of the event, which affects the promotion of local products, towns and even the region (Plebańczyk, 2013). The so-called Culinary heritage is an important element of building a tourist brand not only of local products, but it is part of the culture of the country and the region, resulting from the tradition of e.g. making simple dishes consumed in taverns, inns and taverns or restaurants. Therefore, potential explanatory variables will focus on important culinary aspects woven into such events as: festivals, fairs, competitions, fairs or harvest festivals (Zieliński, 2012).

However, when considering the basic criterion for the success of culinary events, one should undoubtedly distinguish contact with food, where the sanitary aspects will be most important, their administration, the use of appropriate procedures related to the HCCP (Hazard Analysis and Critical Control Points) system, or in

finally, the location of the event itself. A detailed list of success factors in culinary events is presented in Table 3.

Table 2. Characteristics of the key success factors of sports events (X_{is}).

No.	A key success factors	Areas of behavior			
		S	L	O	E
1.	Marking the facility / route, attestation, facility quality certificate, mats			+	
2.	Preparation of the rules of the event			+	
3.	Access to catering and sanitary infrastructure				+
4.	Ensuring the safety of players, the safety of spectators		+		
5.	Fulfillment of legislative requirements, permits (local government, Police, landowners, facilities)		+		
6.	Cooperation with the media (radio, TV, social media)	+			
7.	Clearly defined tasks of the organizational team			+	
8.	Experience of the lecturer / speaker (English speaking, substantive versatility)			+	
9.	Cooperation with volunteers, knowledge of the principles of volunteering and the use of outsiders to organize the event.	+			
10.	Refined program of the event			+	
11.	Cooperation with the local government in the context of organizing and generating a tourist product.	+			
12.	Transport accessibility of the event venue				+
13.	Location attractiveness (closer and further surroundings)				+
14.	Application of innovative solutions			+	
15.	Organizational form of the event			+	
16.	Quality of provided services (essential, additional)			+	
17.	Smooth implementation of the event schedule			+	
18.	Adapting to the needs of the participants (dynamics of action, aspect of spiritual experience)	+			
19.	Insurance of the event (players, organizer, equipment)		+		
20.	Balanced budget			+	

Source: Own study.

The third type of event, which is a certain combination of culture and artistic activities, differs significantly from the above in terms of the main scenario and the important program, which often refers to theatrical art. Rather, the variables that can be observed will accumulate in terms of the number of participants and their safety. Although an important determinant will also be making key decisions in the organizational context, which will also be related to the place (cinema, theater, place in the open air). An appropriately "tailored script" of the event is a spectacle, a film that you want to watch in your free time. The element of relaxation will be crucial here, where laughter and joy should dominate, but also reflection and reflection. A

structured list of explanatory variables for cultural and artistic events is presented in Table 4.

Table 3. Characteristics of the key success factors of culinary events (X_{ik}).

No	A key success factors	Areas of behavior			
		S	L	O	E
1.	Preparation of professional culinary stands			+	
2.	Defining guidelines for the exhibitors of the event in terms of sanitation, ecology and culture			+	
3.	Access to sanitary infrastructure				+
4.	Ensuring the safety of participants		+		
5.	Fulfillment of formal and legal requirements resulting from restrictions, mainly Sanepid		+		
6.	Cooperation with the media (radio, TV, social media)	+			
7.	Clearly defined tasks of the organizational team, mainly in the context of the promotion of a culinary product			+	
8.	Experience of the event organizer			+	
9.	Collaboration with volunteers, law enforcement and patronage institutions.	+			
10.	A well-rounded program of a culinary event			+	
11.	Cooperation with the local government in the context of promoting a tourist product.	+			
12.	Transport accessibility of the event venue				+
13.	Attractiveness of the neighborhood				+
14.	Diversity of exhibitors (cross-section of exhibition industries)			+	
15.	Additional attractions (e.g. for children, seniors)			+	
16.	The quality of provided culinary services			+	
17.	Implementation of the event schedule			+	
18.	Adapting to the needs of the participants	+			
19.	Insurance of the event (exhibitors, organizer)		+		
20.	Balanced budget			+	

Source: Own study.

When analyzing the key success factors, identified on the basis of expert research (Turner, 2004), which are potential explanatory variables for industry models, i.e. culinary, sports and cultural-artistic models, their considerable diversity and similar characteristics deserve attention. However, this does not mean that the same applicability criteria and regulations will be met for each type of event. An example is the regulations, which for a sports event will be a kind of legal act, on the basis of which we will consider competing aspects, for culinary it will assume the role of certain guidelines for organizers - exhibitors, and for organizers of cultural events it will be a scenario created by the director.

Table 4. Characteristics of the key success factors of cultural and artistic events (X_{ika}).

No	A key success factors	Areas of behavior Social / Legal Organizational / Economic			
		S	L	O	E
1.	Preparation of the event venue (open area, building infrastructure)			+	
2.	Preparation of the scenario of the event (theater, concert)			+	
3.	Access to catering and sanitary infrastructure (proximity to infrastructure, an integral part of the event facility)				+
4.	Ensuring safety (evacuation system, fire protection, cooperation with the Police, State Fire Service, etc.)		+		
5.	Compliance with formal and legal requirements		+		
6.	Cooperation with the media (radio, TV, social media)	+			
7.	Specified tasks of the organizational team			+	
8.	The experience of the announcer (conducting in a foreign language, creativity, tendency to unannounced changes)			+	
9.	Cooperation with volunteers, knowledge of the laws regarding Volunteering.	+			
10.	A well-developed program of the event, the tendency to change resulting from the dynamics and unusual situations			+	
11.	Cooperation with local / regional authorities	+			
12.	Transport accessibility of the event venue				+
13.	Attractiveness of the neighborhood				+
14.	The use of technical solutions (e.g. sound system, vision, acoustics, etc.)			+	
15.	Organizational form			+	
16.	The quality of the services provided			+	
17.	Implementation of the event schedule			+	
18.	Adapting to the needs of the participants	+			
19.	Insurance of the event (organizer, participants)		+		
20.	Balanced budget			+	

Source: Own study.

In each case of considering the unit variable, an expression can be used that will constitute a model with one explanatory variable:

$$y_i = \alpha_0 + \alpha_1^* X_{1t} + U_i \tag{4}$$

Unfortunately, estimating the parameters of this model is not a sufficient condition to find unknown parameters of the boot model (3). The time-consuming nature of the procedure in non-threatened conditions (i.e., lack of other variables, of a random type) is very high here, and with the additional initiation of a crisis situation, where

new, uncontrolled variables appear, the purposefulness of the study loses its sense. In such a situation, it is necessary to go back to the beginning again, verify the data, estimate the variables, with particular emphasis on the legitimacy of their reuse. As a consequence, it means that without additional information, it is not possible to capture the influence of individual variables on the total variability of the dependent variable. And although from a formal point of view we are dealing with one equation, in such a situation (dividing the model into partial ones, taking into account only one feature), econometric models most often do not allow for a satisfactory answer to the question about the strength of the influence of the explanatory variables on the explained variable.

4. Model of Event Activity in the Time of a Pandemic

Considering the above, with a more precise model than the above, it is possible to be used in determining event sensitivity in the time of a pandemic, assuming the impact of many variables on the explanatory variable at once, is the model with the time variable. This is due to the existing regularity of the continuous appearance of random factors, considering, for example, a pandemic situation. These are the factors that were explicitly not included in the model as explanatory variables. It may happen that an event occurs, the effect of some factor that strongly influences the endogenous variable of the model and is not considered due to the lack of appropriate numerical data. We deal with such a situation very often in the context of a crisis situation. Then the variables specified in the tables above constitute the basic element that must be met in the event of the organization of a specific event. On the other hand, the emerging additional variables, on the one hand, verify the merits of existing variables (an example of legal aspects), and on the other hand, they constitute a superior criterion that verifies other variables or replaces them with new ones. Often such variables, taking the form of random variables, constitute the main verification determinant of the model.

The above can be presented by introducing the time variable t to the dependence (1), which characterizes the moment of the crisis - in this case, a pandemic. Then we get a unit model of event activity in the age of a pandemic:

$$Y_{1t} = \alpha_{11}X_{1t} + \alpha_{12}X_{2t} + \dots + \alpha_{ij}X_{it} + U_{1t} \quad (5)$$

where:

Y_t - explained variable of time t ,

X_{it} - an exogenous variable defined in time t ,

α_{ij} - model structural parameter,

U_t - a random component reflecting a specific threat and state of imbalance.

By describing the equation considering the time delay resulting directly from the fact of late detection of the threat and reaction to action, the above dependence can be written as follows:

$$Y_t = \alpha_{11}X_{1t} + \alpha_{12}X_{2t-1} + U_{1t} \quad (6)$$

$$X_{2t-1} = \alpha_{21}X_{2t} + \alpha_{22}X_{3t-1} + U_{2t}$$

$$X_{3t-1} = \alpha_{31}X_{3t} + \alpha_{32}X_{4t-1} + U_{3t}$$

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$$X_{it-1} = \alpha_{ij}X_{it} + \alpha_{ij}X_{it-1} + U_{it}$$

where:

Y_t - dependent variable expressing the event sensitivity at the moment of a threat - it will change at a given moment, e.g. when a wave is introduced;

X_{it} - explanatory variable recorded at time t (time t is not necessarily the same for all variables);

X_{it-1} - explanatory variable with a time delay, which is influenced by the reaction time, resulting e.g. from the efficiency of decision support systems;

α_{ij} - structural parameter of the model;

U_{it} - random term.

The estimation of the structural parameters appearing in the model equation, both the unit and the time delay, consists in giving them numerical values, at which the model is fitted with the empirical data with a certain probability. Parameters can be estimated using the least squares method, which consists in finding such estimates of structural parameters for which the sum of squared deviations of the actually recorded values of the endogenous variable Y from the value of this variable determined by the model is the smallest.

In individual cases, the values of this variable will deviate from the average value by the size of the random component U . However, the order of magnitude of these deviations will be found by calculating the variance of the expression:

$$D^2 \left[Y - f \left(X_{1t}, X_{2t}, \dots, X_{it} \right) \right] = D^2 (U_{1t}) \quad (7)$$

The above equation shows that the variance of the deviations of the endogenous variable Y from its mathematical hope is equal to the variance of the random term. Therefore, it should be stated that the square root of $D^2(U)$ plays a particularly

important role, i.e. the standard deviation of the random component (a real hazard that appears randomly and may weigh heavily on the analytical form of the model).

This parameter informs about how much the event activity function in the pandemic era deviates (*in plus* or *in minus*) from the function of explanatory variables present in the model, influencing the general analytical form of Y . Of course, the stronger the influence of factors not explicitly included in the model, the greater is $D^2(U)$. On the other hand, a small value of this parameter means that the effect of various random factors on the variable Y is negligible.

Considering the above, in particular the models (5) and (6) presented, it should be considered that they constitute only a theoretical approach to the description of phenomena having a direct impact on the model of conducting an event in the age of a threat - pandemic. However, due to the relatively poor progress in the field of algorithmizing of actions in the event of a crisis, there is a clear need to build a universal model on the basis of which it could be possible to answer the question: what influence does a specific threat have on the possibility of conducting an event in a safe way for the local community. It turns out that even the smallest stimulus can affect the behavior of a person or a decision-making group, which in turn will disturb a certain state of equilibrium. A pandemic example may be an expression of the above, where, in addition to the effects associated with excessive deaths, it influenced the decisions of crisis management teams. The observed data gaps and insufficient analytical meticulousness resulted in changes in the hierarchy of grouping variables. These, in turn, contributed to the methodological turmoil. Predictions based on the increase in infections, not matched by the number of tests, delegated the decision to introduce green, yellow and red zones.

The developed variables that were in force for some time, unfortunately, were rejected at the same time. And here, referring to the model with the time variable, the statistical and econometric inefficiency was shown. Since a random variable, i.e., an unexpected increase in infections, it is not known why it can disturb the entire plan, the apparently orderly pattern of operation. A random variable, which from the point of view of the representation itself (at the end, beyond the brackets and the range of explanatory variables) turns out to be the most important. It is even a necessary condition to generate changes and all decisions.

The statistical tools themselves, useful for building models, are only and exclusively an element of verification of the regularities of distribution, relationships in space, dynamics of fluctuations and relationships in time.

5. Conclusion

This article showed the importance which events industry played in the current social and economic development. It provided an overview of potential benefits considering hosting events and their potential loss due to coronavirus outbreak.

Furthermore, the paper offers a model of event industry resilience which, as it has been showed, is very fragile in terms of such quick, unpredictable crisis such as COVID-19 global pandemic.

Showing the model with a time variable indicates that all assumptions regarding the future of using the model should be related to a specific crisis situation, considering only those variables that can be verified. On the other hand, in the case of the appearance of at least one random variable that would weigh heavily on the dependent variable, the consideration of the INUS theory (insufficient, but not-redundant part of unnecessary but sufficient condition) should be of key importance.

Based on the conducted research it is possible to indicate a need for further research in terms of more nuanced, perhaps case-study, country-specific elaboration, and implication of the model. Furthermore, the paper clearly shows that the event sector needs a significant a reconfiguration to achieve better sustainability in terms of unpredictable events.

However, bearing in mind the assumptions of the functioning of today's communities, which are rather focused on expectations from the rulers of specific decisions in specific situations, an important recommendation turns out to be the development of a specific catalog of random events that affect the basic model of event sensitivity. The multicriteria distinguished in this way will allow you to plan all activities, from business to social activity. It will also inhibit the speculative theory about the crisis, developing in such situations, with particular emphasis on organizational chaos.

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