

# Emotional Analysis in Designing Tourism Experiences Through Neuromarketing Methods: The Role of Uncontrollable Variables and Atmosphere: A Preliminary Study

Luca Giraldi<sup>1</sup>, Andrea Sestino<sup>2</sup> & Elena Cedrola<sup>1</sup>

<sup>1</sup> Department of Economics and Law, University of Macerata, Macerata, Italy

<sup>2</sup> Ionian Department of Law, Economics, Environment, University of Bari Aldo Moro, Bari, Italy

Correspondence: Luca Giraldi, Department of Economics and Law, University of Macerata, Macerata, Italy.

Received: November 18, 2021

Accepted: March 8, 2022

Online Published: April 18, 2022

doi:10.5539/ijms.v14n1p114

URL: <https://doi.org/10.5539/ijms.v14n1p114>

## Abstract

The role of emotions in the tourist experience is becoming increasingly important in designing experiences to guarantee maximum involvement and satisfaction for tourists/customers. Previous literature has shown how atmosphere (e.g., visual, auditory, olfactory, tactile variables) may influence consumers' satisfaction toward the proposed tourist experience. However, in some offers (e.g., theatrical performances, theme parks, outdoor experiences), such a relationship may be influenced by the role of "uncontrollable" variables, as for those variables related to the weather condition. Though an experimental research design based on a neuromarketing tool (face-coding), this paper is aimed to shed light on those variables in influencing consumers' emotions, and thus their satisfaction regarding their experience. More specifically, the study has been conducted by testing a non-invasive emotional analysis tool able to associate in real-time the facial expressions of the participants with the emotions captured during the performance (e.g., as for disgust, fright, anger, boredom, neutral, surprise, happiness), as well as the emotional valence such as positivity or negativity of the emotion experienced. Results enlighten the role of tourism atmosphere in positively influencing consumers' emotions, and thus their satisfaction also explaining the role of uncontrollable variable in magnifying such effect. Essential insights for marketers and managers in designing tourism experiences are discussed.

**Keywords:** tourism experience, emotions, atmosphere, uncontrollables, neuromarketing, face coding

## 1. Introduction

Achieving maximum customer satisfaction through an enhanced *Customer Experience* (hereafter, CX) is one of the objectives to be pursued by marketing managers in all sectors, whether they are inspired by the production of products or the proposition of services. Specifically, the development of the tourism sector generates new challenges and interesting research perspectives for marketers and researchers. The numbers of the tourism sector are constantly growing (even considering the temporary setback due to the Covid-19 pandemic), and studies confirm this trend (UNWTO, 2021). In the tourism sector, the enrichment of the tourist experience has become fundamental to propose highly customizable offers and services, able to impact the final users' perception positively. In this context, the lived experience has acquired over time a central role (Zomerdijk & Voss, 2010) both on the client-side (who benefits from it) and on the company side (which designs and delivers it). Consistently, the literature has shown how, whatever service or product the consumer is buying or using, this is associated with a broader feeling, an experience, whether positive or negative (Carbone & Haeckel, 1994).

It is now widely accepted that customer experience and satisfaction are influenced by the emotions felt in response to a provided stimulus (Barsky & Nash, 2002; Oliver, 1997; Desmet, 2003). The thinking developed by more recent sociological studies is also in line with the above: emotions are defined as "responses that link to bodily manifestations" (Lively & Heise, 2014, p. 68). If, for example, affective involvement with an object or decision is high, consumers may experience strong emotional reactions to a stimulus that can then affect their entire experience. In this case, the consumer's emotional feelings can turn into a relevant source of information susceptible to evaluation (Martin et al., 2003). In the field of hospitality and cultural events, the literature has explained the role of atmospheric variables (lights, audio, smells) in influencing tourists' emotions and consequently their experience (Mazaheri et al., 2014; Heide & Gronhaug, 2006; Slatten et al., 2009, 2011), also

focus the role of “uncontrollables” in terms of exogenous variables that could not be controlled, such as those referring to causes of force majeure, e.g., as for changes in the weather (Bujisic et al., 2019).

Moreover, from methodological analysis, the literature shows a lack of reliable and effective emotional analysis tools, as problems of intrusiveness and cognitive bias condition them. By considering these premises, through an exploratory research design conducted during the Macerata Opera Film Festival, the present study aims to analyze the role of participants’ emotional reactions towards an event proposed within the offer of a tourist destination and the possible impact on the experience as a whole. For this purpose, we used a neuromarketing tool capable of recognizing and associating in real-time the facial expressions of participants captured during the performance to emotions (disgust, fear, anger, boredom, neutrality, surprise, happiness), thus intercepting the emotional values in terms of positivity or negativity of the emotion experienced (Generosi, 2020). Findings shed light on the role of participants’ reactions, suggesting relevant variables to be considered in experience design as they can influence participants’ emotions and satisfaction and perceived quality, also in order to understand the real impact of the designed experience and direct future planning choices of marketers and managers.

## 2. Overview of the Study

### 2.1 *The Role of Experience in Tourism*

The creation of CX able to stimulate memorable experiences is one of the primary goals of tourism marketing (Pizam, 2010). In this sense, tourism marketers and managers should create the most appropriate conditions for tourists to have extraordinarily positive experiences. The size and prominence of customer involvement in tourism destinations and during tourism experiences are becoming increasingly relevant. The literature has tried to systematise the analyses regarding tourism experience by considering: consumer experience, consumer experience formation, consumer psychology in experience creation and consumption and the derived effects (see Adhikari & Bhattacharya, 2015 for a review). In this scenario, tourists play a central role in co-creating experiences that constitute a use-value through the input of resources in their experiences in tourist destinations (Prebensen et al., 2014). Experience is defined as a wide range of sensory elements involving the five senses to provide sensory sensations to consumers (Gilmore & Pine, 2002). Therefore, according to this meaning, a tourist who buys an experience and experiences moments that can involve him/her perceives his/her satisfaction for extended periods, thus making that experience “memorable” (Pine et al., 1999; Slatten et al., 2011). Leisure and tourism experience has been defined as a mental state experienced by participants during an event (Otto & Ritchiem, 1996; Price et al., 1995). This mental state is ‘triggered’ by an impulse, while the experience itself can be defined as a reaction to the impulse (Mehrabian & Russell, 1974; Donovan & Rossiter, 1982). These impulses can be categorised into internal and external and can create and influence consumption experiences (Walls et al., 2011).

Regarding external factors, Mehrabian and Russell’s (1974) model of environmental influence was adapted by Donovan and Rossiter (1982), who attempted to detect the contribution of environmental stimuli on emotional states. Other researchers have also taken up these studies, such as Wakefield and Blodgett (1994), who tested the impact of specific atmospheric cues on consumer behaviour. Individuals’ internal factor, on the other hand, is how the play is “staged”, how the service is presented: the setting, the acoustics, the stage effects are some of the attributes that the theatre company can manage and the technical staff, who must be able to deliver them interestingly and excitingly (Voelk & Ellis, 1998). All five senses should be involved, and the theatre manager should try to amaze the customers repeatedly (Pine & Gilmore, 1998). The product offered to the tourist is commonly referred to as an “extended product”, as it is the result of the combination of factors external to the essential product which, together with this and the internal supporting attributes (lighting, audio...), give a particular character to the offer (Ktler et al., 2014). Experiences are subjective, intangible and unique, with emotionally charged and highly unique phenomena with a high personal value that inspire people (Csikszentmihalyi & Csikszentmihalyi, 1990; Ullén et al., 2012). Consequently, one of the main problems in tourism marketing is to understand the drivers that can help tourism marketers to provide such experiences (Kim, 2012), thus satisfying tourists and positively influencing their attitudes and behaviours (Kozak, 2001; Lehto et al., 2004), syn also thoroughly investigate their reactions, including emotional ones, to certain stimuli arising from the enjoyment of a tourism experience.

### 2.2 *The Role of Emotions, Atmosphere and “Uncontrollables” in the Tourist Experience*

The role of emotional reactions in marketing, has catalysed the attention of both researchers and market operators on issues such as the impact of emotions on purchase recommendation intentions, satisfaction, credibility, loyalty (Guido et al., 2013), positive word-of-mouth (Amatulli et al., 2021), tourists’ participation—as in the case of religious events or rituals—even taking an active part as they are “influenced” by particular emotions (Sestino et al., 2021). Several studies have also shown that emotions positively influence behavioural responses (Prayag et al.,

2013; Tung & Ritchie, 2011).

In classifying emotions to measure them, Bourne and Russo (1998) suggest that emotions have at least two main dimensions. The first dimension is mainly qualitative and classifies the emotion according to the pleasantness experienced (unpleasant Vs pleasant). The second is quantitative and measures the intensity of the emotion felt (mild Vs extreme) and is referred to in this article as “valence”.

The importance of emotions in designing tourism experiences and shaping tourism experiences has recently been recognised and explored with theoretical studies, empirical applications and new methods (Cohen & Cohen, 2019; Hosany et al., 2020; Kim & Fesenmaier, 2015). Despite numerous studies on the subject, Richins argues that “questions about an appropriate method of emotion assessment remain very sparse and unresolved” (1997, p. 127).

As mentioned above, in the tourism sector, the extended product is an essential concept since services include a series of additional elements that can enhance the experience, especially in terms of atmosphere and consumer interaction with the service delivery system (be it a tourist facility, an event, a fair, a festival). It is precisely the atmosphere that plays a fundamental role in the design of the tourist experience. On these visual, auditory, olfactory and tactile aspects, tourist experiences must be designed to create involvement and ensure maximum satisfaction with the experience enjoyed (Heide & Gronhaug, 2006; Koetler, 2014). Indeed, sensory perceptions describe the atmosphere of a given environment and influence the emotions of those who enjoy it (Mazaheri et al., 2014; Slåtten et al., 2009). For example, previous studies conducted within festivals and theme parks (Slåtten et al., 2009) have shown that precisely the design and atmospheric components influence the experience of consumer tourists precisely because they can stimulate positive emotions and feelings such as joy and happiness. Both atmosphere and interaction are thus fundamental to successfully providing positive experiences to consumers. For example, in the context, of a theatrical performance, these are referred to by elements such as the musical orchestra, stage effects, plot twists (a murder, a betrayal) and everything that is part of the theatrical performance (Šimić & Pap, 2019). Other scholars, such as Milliman (1986) or Oakes (2000), have also confirmed the importance of music on consumers’ emotional state.

However, the literature shows that despite several positive elements of which the offer is composed, able to maximise the satisfaction of consumers, tourists and in the case of shows therefore of spectators bystanders, several additional antecedents may intervene in amplifying or decreasing this effect, both in terms of consumer-related variables (e.g., lifestyles, preferences and attitudes, Šimić et al., 2018), and in terms of variables defined as “uncontrollable” due to their unforeseeable nature (“uncontrollables”, Vojtko et al., 2020). These refer to endogenous factors that are not directly controllable by marketers and managers since they are related, for example, to unexpected weather aspects and can change the satisfaction of end consumers concerning the proposed offer (Vojtko et al., 2020). The weather significantly alters consumers’ moods, emotions and consequently their behaviour. More specifically, previous studies have demonstrated the mediating effects of such variables on mood and affective experience (Bujisic et al., 2019).

Therefore, concerning the few insights still available in the literature, the attempt is to enrich and contribute to the theory and managerial implications in the tourism sector, with specific reference to that of the design of cultural experiences, such as theatre, we would answer the following research questions:

**RQ1.** *How can the atmosphere influence consumers’ positive emotions and thus their satisfaction?*

**RQ2.** *What is the role of uncontrollable variables?*

### **3. Methodology**

#### *3.1 Face Coding Instrument*

Studies in the tourism literature have explored the influence of emotions in CX, although they have failed to “dig deep”, so much so that the reliability of the results found persists. To overcome these limitations, a new non-invasive neuromarketing tool has been developed to “observe” spectators’ interactions, experiences, and emotional reactions during theatrical performances.

Starting from the Face Coding manual study by Paul Ekman (1975), an emotional analysis system was developed that simply processes images captured by multimedia sensors and associates the detected facial expressions with Ekman’s seven emotions in real-time. The study reveals the human expressions of emotions in the 1970s and defined six basic emotions: happiness, sadness, disgust, fear, surprise and anger (Ekman, 1975). A person’s emotional state at a specific time results from a mix of these universal emotions. A change in a person’s emotional *trend* results in a change in somatic features/expressions (Lugli, 2010).

Concerning the proposed research questions, we investigate the role of uncontrollable variables as a variable able

to magnify the effect of the built atmosphere (e.g., additional elements accompanying the experience, such as the musical orchestra, the stage effects) on consumers' positive emotions and overall consumers' experience satisfaction. Indeed, we suggest that the uncontrollable variables may act as a moderator, in terms of a variable able explains the mechanism or process underlying the observed link between an independent variable and a dependent one.

For this purpose, a neuromarketing tool capable of associating expressions of human faces with specific emotions was used. Indeed, the literature presented so far highlights an inappropriate way of measuring emotions. Quantitative tools such as questionnaires, for example even based on psychometric techniques, may not provide totally truthful and reliable results on emotional tendency due to the influence of cognitive *biases* (Pino et al., 2019). Similarly, despite the goodness of qualitative methods such as participant observation and ethnographic research (Belk et al., 2013), these have weaknesses such as inaccessibility to deeper feelings, time spent by research workers, intrusiveness, distortion of results due to the subjective influence of the researchers involved, consistent problems effective observational skills by the researcher as some situations are made "inaccessible" by the users (e.g., Sestino et al., 2021).

The instrument proposed by the researchers was installed inside a camera in the Sferisterio Arena, fixed high up and in front of the position of the spectators selected for monitoring. The instrument used is able to monitor simultaneously and non-invasively up to fifteen people per camera. The selected tool (called "Emoj", www.emojlab.com) guarantees full respect for the user's privacy, as the images are deleted immediately, without allowing any association between the person's ID and their face.

Once the emotional model was defined based on Ekman's *Face Coding* manual, the researchers' work focused on training the underlying *machine learning* and artificial intelligence algorithm. These included the development of a neural network (to collect and metabolize the input images), the implementation of machine learning (to allow the system to self-adapt and self-learn), and the continuous learning of a large amount of available data.

The first module to be activated is that of identification: the system received as input each frame that makes up the video flow and, through a convolutional neural network, extrapolated the facial biometric data. From the intermediate result, the subsequent process of "detection of the emotional signals" and "recognition of the emotional states", allowed to associate the facial expressions to a specific emotional state, supplying in input those data useful to feed the systems of neural networks that self-learn and release results related to 1) recognition of age and gender, and 2) facial expressions and emotions: to a specific biometric data (intended as facial expression) is associated the % of each of the six emotions of Ekman and their intensity in terms of valence.

Thus, the final analysis tool allowed to analyze customer emotions and behaviors and *CX* satisfaction in a non-intrusive way. The big advantage that cannot be found in the previous studies and more generally in the other methods of *CX* satisfaction assessment is the real-time operation. In fact, the technology can detect in real time people's emotional reaction to a specific stimulus continuously, moment by moment, in order to map the emotional tendency from the beginning to the end of the event. The type and intensity, in terms of valence, i.e., the perceived positivity or negativity of an experienced emotion can thus be associated with something, with a concrete stimulus, identifiable concretely at that precise moment. Technology can therefore provide relevant information on the emotional impact of each choice made.

### 3.2 Application to the Research Setting: Opera Festival at the Arena Sferisterio of Macerata

In order to empirically test the proposed conceptual model, an experiment was conducted within the framework of the Opera Festival at the Arena Sferisterio in Macerata. Specifically, the experiments concerned three different performances proposed within the festival, such as "Carmen", "Macbeth", and "Rigoletto".

The setting was identified because nowadays theatre and tourism companies are called to sell unforgettable experiences through their services; to this end, it is necessary to fully understand which variables can influence and maximise consumers' *CX* satisfaction. Indeed, to measure customer satisfaction, it is essential to consider the factors concerning the psychological environment and how the emotional reactions and feelings experienced by consumers impact their final evaluation in terms of experience satisfaction (Homburg & Giering, 2001; Oliver, 2000).

The data were collected during the 11 opera performances (4 performances of Carmen, 3 performances of Macbeth, 4 performances of Rigoletto) held in the open-air neoclassic theatre Arena Sferisterio at Macerata (Italy) as shown in Figure 1, from July to August 2019. During each performance, 12 spectators were selected for the study and were monitored with the proposed system. An infrared camera was installed in front of them. At the end of the performance, spectators were asked to answer to a questionnaire by using a 1 – 5 Likert scale with verbal anchors.

All involved spectators (132 people) were involved voluntarily. Viewers identified for the experiment were informed about handling their data, ensuring that it would be treated for scientific purposes and at an aggregate level (Nemorin & Gandy, 2017; Podsakoff et al., 2003).

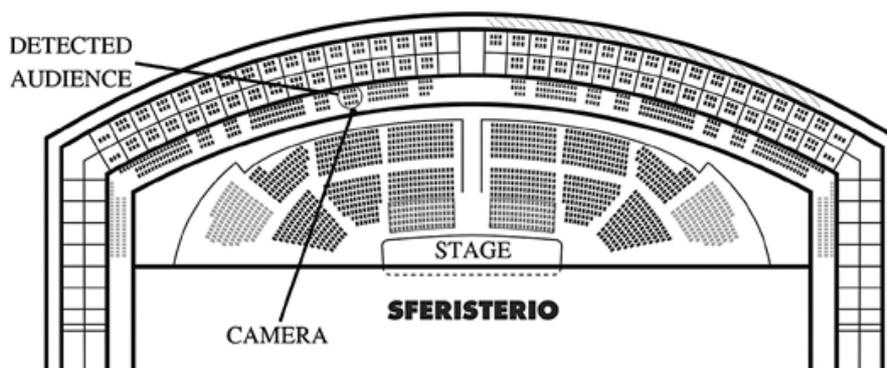


Figure 1. Map of the Sferisterio Arena and the area subject to monitoring

Specifically, the selection of the audience to be monitored was not randomized, but based on the selection of five buyer personas/target-type (selected by distinguishing six variables: gender, age, education level, income bracket, origin and health status) attending open-air theatres, found thanks to surveys carried out in the last two seasons of the Macerata Opera Festival and to market research on open-air theatres. The monitored data were thus mapped with the duration of each act of the opera. It was thus possible to understand the real impact of the choices made by the artistic director or conductor on the audience and the level of perceived quality. The data collected from the monitoring of the twelve people were aggregated for each opera and each type of performance (Macbeth, Carmen and Rigoletto).

Thanks to the moment-by-moment emotional analysis, it was possible to understand the specific critical issues of the event and what aspects of the performance to improve. Future research and ongoing improvements to this emotional tracking technology will benefit theatre companies in implementing better strategic planning for the future.

#### 4. Results and Discussion

The following Figures 4, 5, 6 and 7 represent the results of the emotional analysis obtained from the audience sample of the Opera Festival of Macerata for all the monitored performances. The pie chart on the left shows the prevalence of the emotions felt for the whole performance (Ekman's seven emotions: disgusted, frightened, angry, bored, neutral, surprised, happy). On the right, the other curve in the graph represents emotional valence. Valence is the positivity or negativity of the emotion felt. It can also be defined as a bipolarity scale that, in aggregate, defines a continuous dimension ranging from pleasantness (happy, pleased, hopeful) to the unpleasantness of the experience (unhappy, bored, exasperated) (Bradley & Lang, 2000). Values in the abscissa axis refer to monitoring times (e.g., once every two minutes). The values on the ordinate axis represent the levels of valence instead: the value zero corresponds to absolute neutrality when the person is in a state of relaxation and well-being; the value 100 corresponds to "happiness", the maximum level of satisfaction related to the experience; from the range 1 to 99 there are various positive emotions, and the value 50 corresponds to "surprise". Vice versa, from the value -1 to -99, there are all negative emotions; we go from the various levels of sadness, which correspond mainly to the feeling of boredom and disgust that occur in moments of low pleasantness of the experience, arriving at -100, which is equivalent to anger, the condition in which the person feels feelings of boredom and frustration resulting from a low interest or appreciation for the show. The valence value is given by the average of the emotions felt by all the people monitored. This means that a valence result of zero can have a twofold interpretation: either the moment of maximum general relaxation or the result of contrasting monitoring equivalent to a scene that elicits simultaneously positive emotions for one viewer and negative emotions for another. Similarly, the pie chart also represents an average value of the seven emotions felt by all the people monitored.

The researcher has developed 11 Valence charts, namely 4 for Carmen, 4 for Rigoletto and 3 for Macbeth. Figures 2, 3, 4 present an example. In contrast, Figure 5 compares the overall/average rating of the three operas, which allows the researchers to focus on how the audience experienced the experience and indicate which opera was most appreciated.

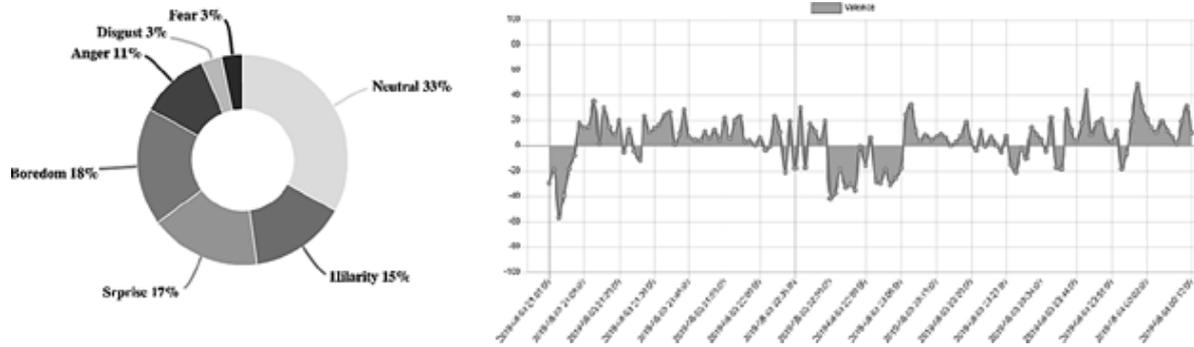


Figure 2. Pie chart of emotions and valence diagram for the show “Carmen”

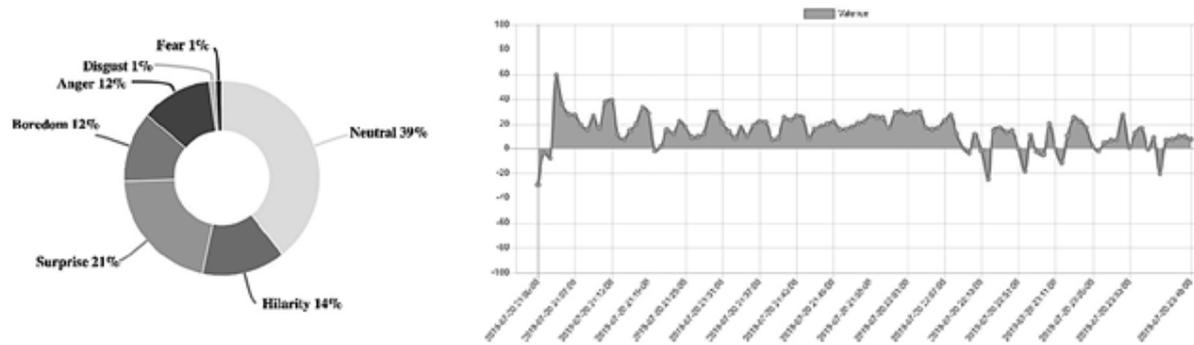


Figure 3. Emotion pie chart and valence diagram for the “Macbeth” show

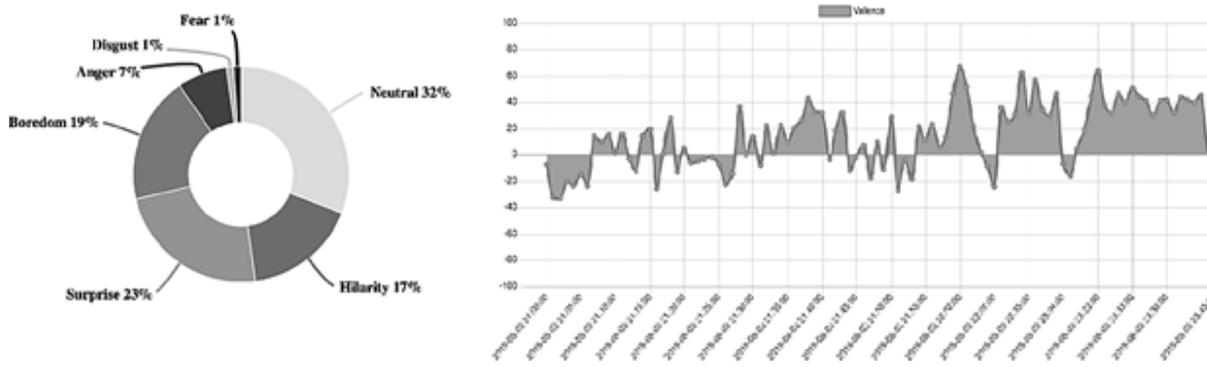


Figure 4. Pie chart of emotions and valence diagram for the show “Rigoletto”

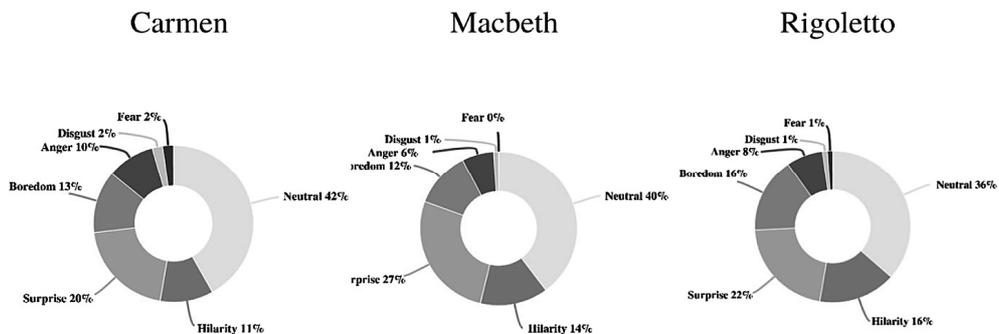


Figure 5. General analysis of the comparative experience for the three different shows: Carmen, Macbeth, Rigoletto

Comparing all the above graphs, the opera that achieved the highest valence value was Rigoletto, a fact also confirmed by the pie chart showing the lowest percentage value of the “neutral” emotional state (32% vs 39% of Macbeth vs 33% of Carmen). It is interesting to note that Carmen was the performance that registered a greater variation of emotions. Moreover, this is true due to the fact that Carmen is a kind of Opera covering wide range of emotions from Comedy to Tragedy as well. In this case, the actors and orchestra maintained a constant level of audience involvement in Act I, Act II, and Act IV. In the third act, however, the moderating variable (i.e., the unexpected rain in Macerata, as an uncontrollable due its nature) played a decisive role in negatively influencing the emotional curve. Ineed, the weather had not predicted rain, so the event was held regularly at the Arena, a completely open-air venue. The empirical analysis of the performance “Carmen” with reference to the proposed conceptual framework reveals that, for the same emotional values experienced in the first, second and fourth acts of Carmen, an entry of the predicted moderation variable (uncontrollable) in the third act resulted in an oscillation of the dependent variable DV (experienced emotions). Therefore, the researchers deduced that the “uncontrollables” factor, such as rain, had a stronger correlation than the “Atmosphere” factor. Indeed, other studies concerning telephone surveys on life satisfaction have confirmed the influence of weather conditions on the subject’s mood: on rainy days the called subject expressed low life satisfaction (Realo et al., 2011, Sun et al., 2019), while on sunny days he was definitely in a good mood. In the absence of the mediating variable (W) instead, the moderating variable (M) is able to influence the emotional curve (DV) on a highly significant level. In fact, it was found that there are other factors capable of influencing the emotional experience, in particular: the main scenes, such as a twist, a moving romantic scene, the moment of the murder, the scenic elements that change in the various performances or in general, in correlation with the realization of the work. Another emotional tendency detected by the researchers is a higher level of valence in sung rather than spoken parts: from this, we can deduce the fundamental influence of the orchestra on the level of audience involvement.

Thus, we confirm our prediction regarding how tourism experience atmosphere positively influence consumers’ positive emotions and their overall experience satisfaction. However, this effect influence may be positively or negatively amplified due to the effect of “uncontrollable” variables.

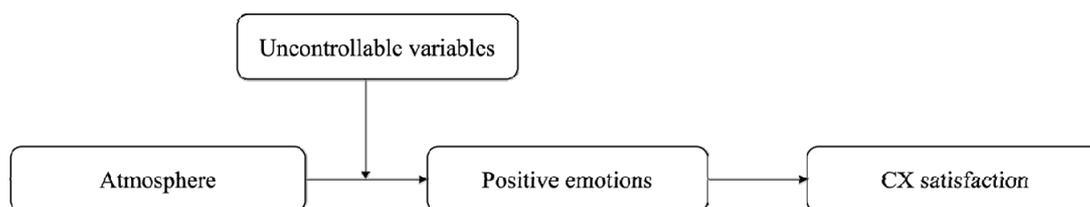


Figure 6. The emerging relationships

## 5. Conclusions

In this paper, the role of consumers’ emotions and their impact on *CX* evaluation and satisfaction was investigated, shedding light on the role of atmosphere that can activate different sensory perceptions (Mazaheri et al., 2014; Slåtten et al., 2009) and uncontrollable variables (Vojtko et al., 2020) in influencing such satisfaction. To this end, the level of emotions of the participants involved was measured using a camera-based emotion recognition system during a cultural tourism event, using the Macerata Opera Festival as the research setting. A convergence of opinions had emerged from the literature on the importance of understanding emotions in tourism marketing, as research has shown that affective reactions, including moods and emotions, guide human judgment and cognitive processing. Indeed, the results showed that the content of the tourist experience positively influences consumer satisfaction with the lived *CX through the* role of the components of which it is composed, such as atmospheric elements capable of enriching it in terms of visual (setting, scenery), audio (music, sounds), olfactory (smells) and tactile stimuli; however, the presence of uncontrollable elements such as intervening weather variations or sudden adverse events negatively influences final satisfaction regarding the lived experience.

The evaluation of the consumer experience is becoming very important also in tourism and culture, and understanding the elements that make up the tourism offer becomes extremely focal in these contexts. Monitoring people’s emotions and their impulsive reactions become an excellent opportunity that tourism marketers must manage.

The findings contribute to the literature and managerial practices in multiple ways. With these findings, we contribute to tourism marketing research by confirming the role of affective reactions in influencing satisfaction

with the tourism experience and, more relevantly, to understanding the relevance of elements related to the atmosphere of the experience (setting, sounds, colours) in positively influencing consumer *CX* satisfaction. Moreover, we contribute to this line of research by confirming recent insights about the role of uncontrollable variables in influencing the consumer experience, highlighting the challenge for marketers and managers to mitigate the influence of such variables' influence to maintain the degree of consumer satisfaction.

Finally, we contribute to the strand of research in terms of the methodology of analysing consumer emotions and neuromarketing, testing and proposing an innovative tool non-invasive able to shed light on the variables that influence consumers' emotions through facial analysis. The tool serves a dual function: it aims to capture everything inaccessible with invasive tools, such as unconscious emotions and all those events or environmental impulses that alter the emotional curve / a sudden change in an emotional state. Moreover, the advantage of providing precise indications of every emotion related to each moment of the performance allows in-depth and predictive analyses for the improvement of the spectator's *CX*.

This study demonstrates that psychological theories need to be incorporated into research on *CX* management and evaluation in cultural tourism. The literature has no convincing contribution on this topic, so the present work offers new insights into a still unexplored field. Moreover, such findings allowed us to detect the deepest emotions of the spectators and their intensity and, at the same time, highlight the importance of these results for the design of future strategies to maximise the usable experience by tourism or cultural companies. From a managerial perspective, our findings suggest to marketers and managers which aspects of intervening to strengthen and enrich the tourist experience proposed to consumers and the relevance of weather factors in enriching the *value proposition*. Marketing efforts should be directed in the communication aspects and the careful design of the spaces and the scenic content of the place where the tourist performance occurs.

Moreover, findings also suggest a renewed attention to uncontrollable factors that should be included in the analysis and design of tourism experiences in order to possibly take advantage of them rather than negatively affect consumer satisfaction: further studies could investigate how such "uncontrollable" variables can positively contribute to enriching the tourism experience and influence the positive affective emotions of consumers. Finally, marketers and managers could take advantage of study scenarios such as those outlined above by introducing real-time analysis of consumer emotions within their structures to monitor their moods continuously and simultaneously reprogramming their experiences to ensure that *CX can do so* satisfaction maximized in every case. Such tools, when integrated within the *CX*—and even more so when they are non-invasive and not perceived by consumers - could positively contribute to the construction of tourism experiences since they are solid from the point of view of the reliability of our findings, and able to monitor consumers and calibrate the experience in real-time based on the emotions and findings collected and analyzed, in order to strengthened the experience throughout its fruition process.

This study is not without limitations: first of all, the survey of an exploratory nature was conducted purely with a neuromarketing tool, which is reliable in terms of the goodness of analysis and non-invasiveness: however, although the tool was chosen to obviate the traditional qualitative techniques for the reasons set out in the Methodology section, data could be strengthened with quantitative research methodologies based on psychometric techniques to support the study further. Furthermore, the sample, although representative—given the study's exploratory nature—could be enlarged to facilitate replicability and scalability of the results, thus by testing the conceptual model exposed in the Figure 6.

Further studies could instead investigate the positive role of "uncontrollables" to take advantage of incumbencies such as those represented by said exogenous variables (e.g., as for weather conditions) to redesign the *CX* to ensure high-performance levels. Moreover, the model could be enriched by introducing either the study of sociodemographic variables able to affect experience satisfaction such as the age or gender of participants (Ma et al., 2018), or by focusing on promising and emerging consumer categories within tourism, such as elderly consumers (Guido et al., 2020; Le Serre & Chevalier, 2012), or Generation Z (Amatulli et al., 2021; Yanitsky et al., 2019). That is, more consumer-related variables could be considered, such as those related to *status-seeking*, in an attempt to show other individuals the belonging to a specific social group or the desire to be recognised in a certain way by the consumption of a specific lived experience or the consumption of the same (Phillips & Back, 2011), or even more relevantly the *psychological flow*, as a condition of transport and totalising involvement and complete "immersion" during tourist experiences able to abstract the consumer from reality and involve him to the maximum (Amatulli et al, 2021), which is increasingly fundamental in tourism research, as it can increase consumer satisfaction and positive word of mouth concerning the lived tourist experience.

## References

- Adhikari, A., & Bhattacharya, S. (2015). Appraisal of literature on customer experience in tourism sector: Review and framework. *Current Issues in Tourism*, 19(4), 1–26. <https://doi.org/10.1080/13683500.2015.1082538>
- Amatulli, C., Peluso, A. M., Sestino, A., & Guido, G. (2021). *New consumption orientations in the COVID-19 era: Preliminary findings from a qualitative investigation* (pp. 1–8). In Proceedings of the Marketing Trend Conference.
- Amatulli, C., Peluso, A. M., Sestino, A., Petruzzellis, L., & Guido, G. (2021). The role of psychological flow in adventure tourism: sociodemographic antecedents and consequences on word-of-mouth and life satisfaction. *Journal of Sport & Tourism*, 1–17. <https://doi.org/10.1080/14775085.2021.1994448>
- Barsky, J., & Nash, L. (2002). Evoking emotion: Affective keys to hotel loyalty. *Cornell Hotel and Restaurant Administration Quarterly*, 43(1), 39–46. [https://doi.org/10.1016/S0010-8804\(02\)80007-6](https://doi.org/10.1016/S0010-8804(02)80007-6)
- Belk, R. W., Fischer, E., & Kozinets, R. V. (2013). *Qualitative Consumer and Marketing Research*. Thousand Oaks, CA: Sage.
- Bourne, J. R., & Russo, N. F. (1998). *Psychology: Behavior in context*. American Psychological Association. W W Norton & Co.
- Brandley, M., & Lang, P. J. (2000). Measuring emotion: Behavior, feeling, and psychology. In R. D. Lane & L. Nadel (Eds.), *Cognitive neuroscience of emotion* (pp. 242–276). Oxford University Press.
- Bujisic, M., Bogicevic, V., Parsa, H. G., Jovanovic, V., & Sukhu, A. (2019). It's raining complaints! How weather factors drive consumer comments and word-of-mouth. *Journal of Hospitality & Tourism Research*, 43(5), 656–681. <https://doi.org/10.1177/1096348019835600>
- Carbone, L. P., & Haeckel, S. H. (1994). Engineering customer experience. *Marketing Management*, 3(3).
- Cohen, S., & Cohen, E. (2019). New Directions in the sociology of tourism. *Current Issues in Tourism*, 22(2), 153–172. <https://doi.org/10.1080/13683500.2017.1347151>
- Csikszentmihalyi, M. (1990). *Flow: The Psychology of Optimal Experience*. Publisher: Harper & Row.
- Desmet, P. (2003). Measuring emotion: development and application of an instrument to measure emotional responses to products. In M. A. Blythe, A. F. Monk, K. Overbeeke & P. C. Wright (Eds.), *Funology: from usability to enjoyment* (pp. 111–123) Dordrecht: Kluwer Academic Publishers. [https://doi.org/10.1007/1-4020-2967-5\\_12](https://doi.org/10.1007/1-4020-2967-5_12)
- Donovan, R. J., & Rossiter, J. R. (1982). Store atmosphere. An environmental psychology approach. *Journal of Retailing*, 58(1), 34–57.
- Ekman, P., & Friesen, W. V. (1975). *Unmasking the face: A guide to recognizing emotions from facial clues*. Prentice-Hall.
- Generosi, A., Ceccacci, S., Faggiano, S., Giraldi, L., & Mengoni, M. (2020). A toolkit for the automatic analysis of human behavior in HCI applications in the wild. *Advances in Science, Technology and Engineering Systems*, 5(6), 185–192. <https://doi.org/10.25046/aj050622>
- Gilmore, J. H., & Pine, J. (2002). Differentiating hospitality operations via experiences why selling services is not enough. *The Cornell Hotel and Restaurant Administration Quarterly*, 43(3), 87–96. [https://doi.org/10.1016/S0010-8804\(02\)80022-2](https://doi.org/10.1016/S0010-8804(02)80022-2)
- Guido, G., Mileti, A. N., & Prete, I. M. (2013). Brand emotional credibility: Effects of mixed emotions about branded products with varying credibility. *Psychological Reports*, 113(2), 404–419. <https://doi.org/10.2466/31.07.PR0.113x22z7>
- Heide, M., & Grønhaug, K. (2006). Atmosphere: Conceptual issues and implications for hospitality management. *Scandinavian Journal of Hospitality and Tourism*, 6(4), 271–286. <https://doi.org/10.1080/15022250600979515>
- Homburg, C., & Giering, A. (2001). Personal characteristics as moderators of the relationship between customer satisfaction and loyalty-an empirical analysis. *Psychology & Marketing*, 18(1), 43–66. [https://doi.org/10.1002/1520-6793\(200101\)18:1<43::AID-MAR3>3.0.CO;2-I](https://doi.org/10.1002/1520-6793(200101)18:1<43::AID-MAR3>3.0.CO;2-I)
- Hosany, S., Martin, D., & Woodside, A. G. (2020). Emotions in tourism: theoretical design, measurements, analytics, and interpretations. *Journal of Travel Research*, 60(7).

<https://doi.org/10.1177/0047287520937079>

- Jennings, E. (2012). Organizational Culture and Effects of Performance Measurement. *Public Administration Review*, 72(1). <https://doi.org/10.1111/j.1540-6210.2012.02636.x>
- Kim, J., & Fesenmaier, D. R. (2014). Measuring emotions in real time: implications for tourism experience design. *Journal of Travel Research*, 54(4). <https://doi.org/10.1177/0047287514550100>
- Kim, S. (2012a). Audience involvement and film tourism experiences: Emotional places, emotional experiences. *Tourism Management*, 33(2), 387–396. <https://doi.org/10.1016/j.tourman.2011.04.008>
- Kim, S. (2012b). A cross-cultural study of on-site film-tourism experiences among Chinese, Japanese, Taiwanese and Thai visitors to the Daejanggeum Theme Park, South Korea. *Current Issues in Tourism*, 15(8), 759–776. <https://doi.org/10.1080/13683500.2011.640394>
- Kozak, M. (2001) Comparative assessment of tourist satisfaction with destinations across two nationalities. *Tourism Management*, 22(4), 391–401. [https://doi.org/10.1016/S0261-5177\(00\)00064-9](https://doi.org/10.1016/S0261-5177(00)00064-9)
- Le Serre, D., & Chevalier, C. (2012). Marketing travel services to senior consumers. *Journal of Consumer Marketing*, 29(4). <https://doi.org/10.1108/07363761211237335>
- Lehto, X. Y., O’Leary, J., & Morrison, M. A. (2004). The effect of prior experience on vacation behavior. *Annals of Tourism Research*, 31(4), 801–818. <https://doi.org/10.1016/j.annals.2004.02.006>
- Liljander, V., & Bergenwall, M. (2002). *Consumption based emotional responses related to satisfaction*. Occasional paper, Department of Marketing, Swedish School of Economics and Business Administration, Helsinki.
- Lively, K. J., & Heise, D. R. (2014). Emotions in affect control theory. *Handbook of the Sociology of Emotions*, 3, 51–75. [https://doi.org/10.1007/978-94-017-9130-4\\_4](https://doi.org/10.1007/978-94-017-9130-4_4)
- Lugli, G. (2010). *Emotions tracking: how we respond to marketing stimuli*. Maggioli Editori, Apogeo Education.
- Ma, A. T., Chow, A. S., Cheung, L. T., Lee, K. M., & Liu, S. (2018). Impacts of tourists’ sociodemographic characteristics on travel motivation and satisfaction: The case of protected areas in South China. *Sustainability*, 10(10), 3388. <https://doi.org/10.3390/su10103388>
- Martin, D. S., & O’Neill, A. M. (2003). The role of emotion in explaining consumer satisfaction and future behavioural intention. *Journal of Services Marketing*, 22(3), 224–236. <https://doi.org/10.1108/08876040810871183>
- Mazaheri, E., Richard, M. O., Laroche, M., & Ueltschy, L. C. (2014). The influence of culture, emotions, intangibility, and atmospheric cues on online behavior. *Journal of Business Research*, 67(3), 253–259. <https://doi.org/10.1016/j.jbusres.2013.05.011>
- Mehrabian, A., & Russell, J. A. (1974). *An Approach to Environmental Psychology*. Massachusetts Institute of Technology: Cambridge.
- Milliman, R. E. (1986). The influence of background music on the behaviour of restaurant patrons. *Journal of Consumer Research*, 13(September), 286–289. <https://doi.org/10.1086/209068>
- Nemorin, S., & Gandy Jr, O. H. (2017). Exploring neuromarketing and its reliance on remote sensing: Social and ethical concerns. *International Journal of Communication*, 11, 21.
- Oakes, S. (2000). The influence of the Musicscape within service environments. *Journal of Services Marketing*, 14(7), 539–556. <https://doi.org/10.1108/08876040010352673>
- Oliver, R. L. (1997). *Satisfaction: A behavioural perspective on the consumer*. Singapore: McGraw-Hill Companies.
- Oliver, R. L. (2000). Customer satisfaction with service. In *Handbook of services marketing and management* (pp. 247–254). <https://doi.org/10.4135/9781452231327.n17>
- Otto, J. E., & Ritchie, B. (1996). The service experience in tourism. *Tourism Management*, 17(3), 165–174. [https://doi.org/10.1016/0261-5177\(96\)00003-9](https://doi.org/10.1016/0261-5177(96)00003-9)
- Phillips, W. J., & Back, K. J. (2011). Conspicuous consumption applied to tourism destination. *Journal of Travel & Tourism Marketing*, 28(6), 583–597. <https://doi.org/10.1080/10548408.2011.603630>
- Pine, B. J., & Gilmore, J. H. (1999). *The Experience Economy*. Publisher: Harvard Business School Press, Boston, MA.

- Pino, G., Peluso, A. M., Del Vecchio, P., Ndou, V., Passiante, G., & Guido, G. (2019). A methodological framework to assess social media strategies of event and destination management organizations. *Journal of Hospitality Marketing & Management*, 28(2), 189–216. <https://doi.org/10.1080/19368623.2018.1516590>
- Pizam, A. (2010). Creating memorable experiences. *International Journal of Hospitality Management*, 29(3), 343. <https://doi.org/10.1016/j.ijhm.2010.04.003>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879. <https://doi.org/10.1037/0021-9010.88.5.879>
- Prayag, G., Hosany, S., Muskat, B., & Del Chiappa, G. (2017). Understanding the relationships between tourists emotional experiences, perceived overall image, satisfaction, and intention to recommend. *Journal of Travel Research*, 56(1). <https://doi.org/10.1177/0047287515620567>
- Prebensen, N. K., Woo, E., & Uysal, M. S. (2014). Experience value: Antecedents and consequences. *Current Issues in Tourism*, 17(10), 910–928. <https://doi.org/10.1080/13683500.2013.770451>
- Price, L. L., Arnould, E. J., & Deibler, S. L. (1995). Consumer' emotional responses to service encounters. *International Journal of Service Industry Management*, 6(3), 34–63. <https://doi.org/10.1108/09564239510091330>
- Realo, A., Koots, L., & Allik, J. (2011). The influence of the weather on affective experience. *Journal of Individual Differences*, 32(2). <https://doi.org/10.1027/1614-0001/a000037>
- Reisinger, Y., & Turner, L. (2002). The Determination of Shopping Satisfaction of Japanese Tourists Visiting Hawaii and the Gold Coast Compared. *Journal of Travel Research*, 41(2), 167–176. <https://doi.org/10.1177/004728702237417>
- Richins, L. M. (1997). Measuring emotions in the consumption experience. *Journal of Consumer Research*, 24(2), 127–146. <https://doi.org/10.1086/209499>
- Sestino, A., Pino, G., & Guido, G. (2021). The effect of fervid attachment to religious rites on tourism: evidence from the Holy Week in Southern Italy. *Journal of Cultural Heritage Management and Sustainable Development*. <https://doi.org/10.1108/JCHMSD-01-2021-0010>
- Šimić, M. L., & Pap, A. (2019). Theatre Marketing-Analysis of Customers' Satisfaction. *Marketing & Menedzsment*, 53(4), 39–51. <https://doi.org/10.15170/MM.2019.53.04.04>
- Šimić, M. L., Štimac, H., & Mikrut, M. (2018). Theatre marketing: young audience perceptions and behaviour. *Cultural Management*, 11. <https://doi.org/10.30819/cmse.2-1.02>
- Slåtten, T., Krogh, C., & Connolley, S. (2011). Making it memorable: customer experiences in winter amusement parks. *International Journal of Culture, Tourism and Hospitality Research*, 5(1), 80–91. <https://doi.org/10.1108/17506181111111780>
- Slåtten, T., Mehmetoglu, M., Svensson, G., & Sværi, S. (2009). Atmospheric experiences that emotionally touch customers: a case study from a winter park. *Managing Service Quality: An International Journal*, 19(6), 721–746. <https://doi.org/10.1108/09604520911005099>
- Sun, X., Yang, W., Sun, T., & Wang, Y. P. (2019). Negative emotion under haze: an investigation based on the microblog and weather records of Tianjin, China. *International Journal Res. Public Health*, 16(1). <https://doi.org/10.3390/ijerph16010086>
- Tung, V. W. S., & Ritchie, J. R. B. (2011). Exploring the essence of memorable tourism experiences. *Annals of Tourism Research*, 38(4), 1367–1386. <https://doi.org/10.1016/j.annals.2011.03.009>
- Ullén, F., de Manzano, O., Almeida, R., Magnusson, P. K. E., Pedersen, N. L., Nakamura, J., & Madison, G. (2012). Proneness for psychological flow in everyday life: Associations with personality and intelligence. *Personality and Individual Differences*, 52(2). <https://doi.org/10.1016/j.paid.2011.10.003>
- UNWTO. (2021). *Tourist arrivals down 87% in January 2021 as UNTWO calls for stronger coordination to restart tourism*. Retrieved from <https://www.unwto.org/news/tourist-arrivals-down-87-in-january-2021-as-unwto-calls-for-stronger-coordination-to-restart-tourism>
- Vojtko, V., Štumpf, P., Rašovská, I., McGrath, R., & Ryglová, K. (2020). Removing Uncontrollable Factors in Benchmarking Tourism Destination Satisfaction. *Journal of Travel Research*, 61(1), 136–149.

<https://doi.org/10.1177/0047287520971047>

- Walls, A. R., Okumus, F., Wang, Y. R., & Kwun, D. J. (2011). An epistemological view of consumer experiences. *International Journal of Hospitality Management*, 30(1), 10–21. <https://doi.org/10.1016/j.ijhm.2010.03.008>
- Wong, I. A. (2013). Exploring customer equity and the role of service experience in the casino service encounter. *International Journal of Hospitality Management*, 32, 91–101. <https://doi.org/10.1016/j.ijhm.2012.04.007>
- Yanitsky, M. S., Seryj, A. V., Braun, O. A., Pelekh, Y. V., Maslova, O. V., Sokolskaya, M. V., ... Kapustina, T. V. (2019). The value orientations system of Generation Z: Social, cultural and demographic determinants. *Siberian Journal of Psychology*, 72, 46–67. <https://doi.org/10.17223/17267080/72/3>
- Zomerdijk, L. G., & Voss, C. (2010). Service design for experience-centric services. *Journal of Service Research*, 13(1), 67–82. <https://doi.org/10.1177/1094670509351960>

### Copyrights

Copyright for this article is retained by the author, with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).