

Stanley D. Brunn
Donna Gilbreath *Editors*

COVID-19 and a World of Ad Hoc Geographies

 Springer

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Stanley D. Brunn • Donna Gilbreath
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*For all victims of COVID-19
who left Planet Earth far too early*

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The Role of User-Generated Content Data for Collaborative Learning: Identifying Tourism Hot Topics During the Pandemic



Nuria Recuero-Virto

Introduction

COVID-19 imposed international, regional and local restrictions are having a direct effect on all economies and tourism systems (transportation, guided tours, hospitality services, restaurants, events, etc.) since its appearance in March 2019. The fact is, however, that despite the pandemic, tourism remains a trendy topic for worldwide society (Fig. 1). Although the general belief is that tourism will rebound like it has in previous crises, it is a fact that it will likely be in a different scenario.

Figure 1 pinpoints the relevance of tourism as the average number of searches conducted in Google Trends. Between March 2016 and March 2021 the number was 79. The value 100 designates the highest popularity of a term, whereas 50 specifies that a term is half as popular relative to the highest value, and 0 specifies that data for the term was scarce. Fig. 1 also reveals the interesting insight that during March 2020 the searches related to tourism dropped to approximately 50, which coincides with most significant worldwide lockdowns due to the pandemic. This unprecedented situation is changing the goals for the tourism industry to ensure its sustainability (Fig. 2). Before the coronavirus pandemic one of the biggest challenges the sector had to face was overtourism, whereas the current concern is trying to boost safe tourism initiatives in the most demanded locations that are actually empty of tourists (Gössling et al., 2021).

Scholars are analyzing this tourism crisis by fundamentally measuring and predicting the impacts it will have on economies as well as proposing frameworks on how to deal with the crisis recovery and build resilience to address future crises (Gössling et al., 2021). In this regard, Sigala (2020) recently has analyzed how this disruptive crisis can foster innovative transformation. This research mainly indicates

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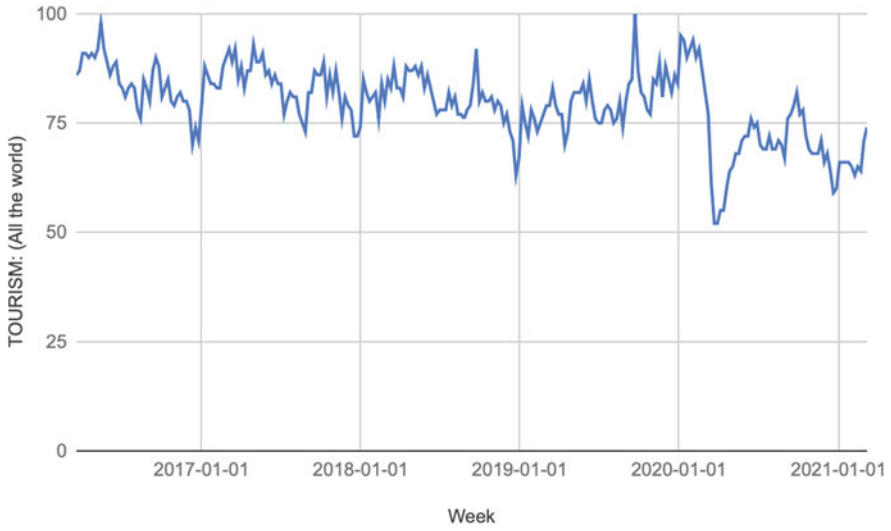


Fig. 1 Search trends on “tourism” in Google Trends report (2016–2021)



Fig. 2 Sustainable development goals for the tourism sector

that the pandemic can provide the basis for new research agendas by avoiding the old ‘publish or perish’ mantra, and instead trying to focus more on crisis management and taking the opportunity to reformulate the standards and metrics of tourism research as they offer useful insights to the industry. It also reveals the significance of reinforcing technology innovation, acknowledging the impacts among stakeholders involved in the industry and analyzing the effects related to tourism social ventures.

Inspired by the current situation, this chapter aims to respond to the recent call for improving the understanding of tourists’ needs, expectations, behaviors and attitudes regarding tourism services by exploring the topics and the associated sentiments expressed on user-generated content in the microblog platform Twitter. Also, it will enrich the industry’s sentimental analysis area of study by offering insights concerning its usefulness for sanitary crisis management related to collaborative learning.

Literature Framework

Social Media Role in the Tourism Sector

Current society has embraced social media as a means of communication and a way of feeling free to express opinions and emotions (Ainin et al., 2020). Although social platforms and networks have been criticized for innumerable trivial messages, they are expanding the number of users and consolidating information for a wide variety of users. The credibility of the user-generated content data gathered also is increasing among users (Jin & Phua, 2014). These developments are having a direct impact on how users socially interact and share information, posing the challenge for embracing technologies that improve social media intelligence (Barbagallo et al., 2012).

Twitter is one of the most popular worldwide social networks. It was launched in 2009 and has already demonstrated its usefulness for boosting marketing strategies in all industries (Middleton et al., 2009). The management of these networks has become one of the greatest challenges that tourism destinations, businesses and organizations have to deal with, as tourists and potential tourists exchange views and experiences in an unrestricted environment-community (Sotiriadis & van Zyl, 2013). Users collaborate in the generation of information about suppliers and destinations, becoming co-creators in all the stages of the customer journey map and having an important implication on the trust created among these organizations. In this light, Twitter has become a significant marketing tool for monitoring tourists’ needs, expectations, attitudes and behaviors, all which have an effect on the design of the marketing actions to develop and ensure tourist satisfaction and loyalty.

The Use of Social Media Under Crisis Circumstances

There is a growing body of knowledge concerning crisis management and social networks, as social networks are considered a form of electronic word-of-mouth and they allow real-time communication (Sigala, 2011). Since they enable location-based knowledge, microblogs such as Twitter have been widely used to improve natural disaster and terrorism awareness (De Albuquerque et al., 2015; Yin et al., 2012); other types of incidents (i.e., electricity blackout or collapse of buildings) have not been so widely mentioned (Su et al., 2019). Twitter has been shown to play a meaningful role in the tourism management crisis (Liu & Pennington-Gray, 2015; Paris & Rubin, 2013; Pennington- Gray et al., 2011).

Tracking social networks offers interesting insights into how to resolve a crisis and engage with the public (Jeong & Lee, 2017; Su et al., 2019). The exchange of information that takes place in these networks increases the spread of information, as well as misinformation, at a very rapid rate (Coombs, 2014). These networks are consolidating as new sources of information and are perceived as such among users. They are considered one of the first communication channels used when seeking information related to a crisis (Westerman et al., 2014). Thus, social media can be used to reduce uncertainty by providing up-to-date educational content in the midst of a crisis (Barbe & Pennington-Gray, 2020).

User Generated Content and Sentimental Analysis in Crisis Management

Based on the previous research, it can be affirmed that social media has transformed how individuals, organizations, companies, and policymakers address crisis management decisions. Social networks have empowered stakeholders and users by offering the option to promote synergies and outline coordinated actions (Sigala, 2011). As social media turns out to be a tool that boosts marketing plans to ensure machine learning, other techniques have appeared to easily enable more specific information regarding users' attitudes and behaviors, which yields vast volumes of big data for research (Lu & Stepchenkova, 2014).

Because user-generated content is based on opinions, feelings, beliefs and judgments, it can be useful when trying to understand tourist behavior. In this context, sentimental analysis has become very popular as it allows, for instance, exploring tourists' reviews of hotels, sentiments of destinations or even for their perceptions of the recent COVID-19 crisis (Lu & Zheng, 2020). Moreover, all of the feedback user-generated content creates can improve the marketing mix design for tourism services as well as gaining favorable word of mouth recommendations thereby enhancing tourist loyalty (Thelwall, 2019) as it simplifies marketing intelligence and knowledge.

Table 1 Main previous studies on UGC and tourism

Authors	Description
Ainin et al. (2020)	This research explores halal tourism trends by examining halal by analyzing 85,259 posts on twitter, where 19 keywords were used. The results show the origins of tweets, the major populations involved in halal tourism tweets, the sentiment value, and the most popular destinations in tweets.
Jiang et al. (2021)	This paper details the sentimental analysis of 2284 online reviews from three tourism websites in mainland China.
Kim et al. (2017)	The study analyzes 19,835 pieces of online reviews of travelers’ of Paris, which were grouped into 14 categories; sentiment analysis was also conducted.
Luo et al. (2020)	This research explores 363,723 Chinese-text online reviews of economy hotel guests by applying a deep learning fine-grained sentiment analysis.
Marine-Roig and Clavé (2015)	This study examines online images of Barcelona using more than 100,000 relevant travel blogs and online travel reviews by tourists in the last 10 years.
Park et al. (2018)	This article presents a sentimental analysis based on the study of 105,126 customers of an online hotel reservation service; it compares one-time visitors and re-visitors.

Social media has been implemented very recently by tourism scholars who aim to gain academic and managerial understanding of different issues; the social platforms used include YouTube, Facebook, Twitter, TripAdvisor, Instagram, Booking and others (Kirilenko et al., 2017). Table 1 presents the most significant tourism research published concerning user-generated content.

Research Approach

This research adopted an approach based on four Research Questions (RQs), which are particularly interesting to boost collaborative learning and offer insights of how to deal with tourism management strategies under sanitary circumstances.

As shown in Table 1, the most popular and trendy topics can be identified by analyzing user-generated content on social media channels, which can be illustrated in different ways such as by Word Clouds (Ainin et al., 2020) or considering different categories by using the frequency of keywords in each category (Kim et al., 2017). Hence, the following RQs were proposed:

RQ_1: Can the most popular tourism topics be identified through analysis of user-generated content on Twitter?

The key player, the United Nations World Tourism Organization, is leading the call for the tourism industry to fulfill sustainable development goals. Although several studies have analyzed implementation of these goals in tourism planning and

management (Boluk et al., 2017; Hall, 2019), no research has been found that examines the impact of sustainable development goals on user-generated content or whether any of these goals are discussed in any social media channel.

RQ_2: Are the topics related to sustainable development goals in the tourism sector?

Sentimental analysis has been widely implemented to acknowledge the feelings expressed by potential tourists (Alaei et al., 2017; Fu et al., 2019; Kirilenko et al., 2017). These sentiments are associated with positive, neutral and negative feelings (Saura et al., 2020). Related to this discussion, the next question is:

RQ_3: Are the tourism topics identified in user-generated content on Twitter associated with different feelings?

It has been confirmed that the information we acknowledge by monitoring can be very useful for designing future management plans. All the insights that come from these analyses can offer significant evidence, for instance, to identify new market segments, reduce research costs and time by detecting negative issues that can be avoided during tourism planning or used to develop employee training programs (Ainin et al., 2020; Kim et al., 2017). Thus, the following question emerged:

RQ_4: Is it possible to boost collaborative learning of how to deal with future tourism crisis by grouping the tourism topics in relation to positive, neutral and negative feelings expressed on Twitter?

Research Methodology

This research followed Saura and Bennett's (2019) methodology based on a three-step approach for data text mining. In the initial stage the Latent Dirichlet Allocation (LDA) is developed employing Python to examine large datasets and identify datasets that are similar. This stage was used to identify from the 121,116 tweets we had already extracted and cleaned within the hashtags #tourism, #travel, #traveler, #traveling, #travelling, #trip, #turismo and #wanderlust. LDA is one technique for a topic model as it uses a sample for extracted data from user-generated content to divide it into different topics. Thus, it was employed to classify the tourism categories most discussed on Twitter in our dataset of Tweets (i.e. 121,116).

In the second step, the Support Vector Machine (SVM) type algorithm was used to perform sentiment analysis, which identified of the feelings of each topic as positive, negative or neutral. Lastly, Atlas.ti was used for text data mining within these results to classify them based on the weight of repetition of words and the metric known as weighted percentage. This metric distinguishes the words that are repeated the most and are organized by topic.

Data Sampling

Python software 3.9.2 for Mac OS X was used for data collection by connecting to the public Twitter Application Programming Interface (API). The collected tweets were in English and Spanish and contained as keyword related to any of the following hashtags: #tourism, #travel, #traveler, #traveling, #travelling, #trip, #turismo and #wanderlust (Fig. 3 and Table 2).

The large dataset was cleaned by eliminating repeated tweets, retweets and not readable tweets, which left a final sample of n = 121,116 tweets. The period of data collection was from 30 November 2020 to 25 January 2021; it included planning for the Christmas break period, the entire Christmas holidays, and the post-vacation phase. The tags #travel, #traveler, #traveling, #travelling, #trip, #turismo and

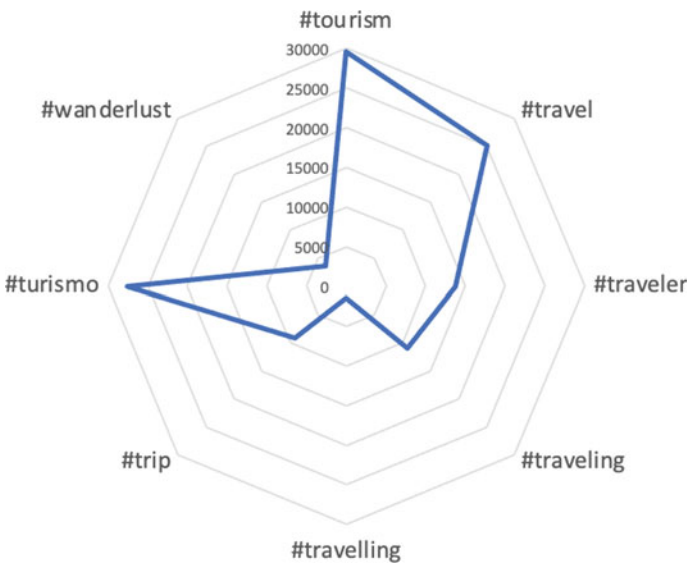


Fig. 3 Tweets collected in relation to the most popular hashtags used in Twitter

Table 2 Tweet collection concerning the hashtag employed

Tag	N° of tweets
#tourism	29,548
#travel	25,121
#traveler	13,711
#traveling	10,941
#travelling	1,385
#trip	9,184
#turismo	27,548
#wanderlust	3,622

#wanderlust in Twitter were selected as these are the most used hashtags for tourism related tweets.

Topic Recognition Using LDA

The LDA model employed in this study is based on Jia’s (2018) research. Hence, it is assumed on a mathematical and probabilistic basis there are two stages. The first phase recognizes the keywords within a database where each word is encrypted in an independent file. The second stage is where the topics are randomly recognized and the themes are identified (Eq. 1).

$$\begin{aligned}
 p(\beta_{1:k}, \theta_{1:D}, Z_{1:D}, \omega_{1:D}) &= \prod_{i=1}^K (\beta_i)(\beta_1) \times \prod_{d=1}^D \rho(\theta_d) \\
 &\times \sum_{n=1}^N \rho(Z_{d,n}|\theta_d) p(W_{d,n}|\beta_{1:k}, Z_{d,n})
 \end{aligned}
 \tag{1}$$

- β_i distribution of word in topic i, altogether K topics
- θ_d proportions of topics in document d, in all D documents
- Z_d topic assignment in document d
- $Z_{d, n}$ topic assignment for the nth word in document d, in all N words
- W_d observed words for document d
- $W_{d, n}$ the nth word for document d

Next, the recognition of the topics and words is organized following Eq. 2, by employing Gibbs sampling (Jia, 2018).

$$\rho(\beta_{1:k}, \theta_{1:D}, Z_{1:D} | \omega_{1:D}) = \frac{\rho(\beta_{1:k}, \theta_{1:D}, Z_{1:D}, \omega_{1:D})}{\rho(\omega_{1:D})}
 \tag{2}$$

Sentiment Analysis

Once the tourism topics most discussed in Twitter were identified, a Python algorithm based on machine learning was implemented. This stage included using the algorithm for text data mining so as to classify the feelings into positive, neutral and negative. Finally, Krippendorff’s Alpha Value (KAV) was used to measure the accuracy of sentiment analysis. The reliability of the results was established in the three sentiments, as it determines that when $\alpha \geq 0.800$ the reliability of the results is high, when $\alpha < 0.667$ the results are low and the threshold for tentative results is $\alpha \geq 0.667$ (Krippendorff, 2004).

Text Analysis

This stage was implemented using Atlas.ti software to conduct text data mining, which is categorized into the three sentiments (i.e., positive, neutral, negative). The dataset classified three procedures: (1) the frequency of repetition of the words in the dataset; (2) the keywords’ total weight measured as a weighted percentage (WP); and (3) filtering the words that are not useful for the research objectives (Newton-John, 2018). WP denotes the weight of the indicators assembled into nodes which is consistent with the number of times they are repeated (Newton-John, 2018). Figure 4 illustrates the three step-approach of the methodology employed in this research.

Results Analysis

The results of LDA estimation offered 13 tourism-related topics which are shown in Table 3. During this process, LDA categorizes the words into topics, that were exhaustively supervised and named after examining the group of words (Büschken & Allenby, 2016; Jia, 2018; Miller et al., 2017; Saura & Bennett, 2019). The name of the topic was given considering the 10 to 20 most repeated words, and the detailed descriptions of the topics were elaborated taking into account the content of the topics.

Sentiment analysis was performed following Saura et al.’s (2020) recommendations, where the tweets of each topic were separately analyzed. The sentiment analysis algorithm was trained so as to achieve the recommended probability of success (Saura et al., 2020). Hence, a sample of 730 posts was processed with data mining techniques to train the algorithm. Then, Krippendorff’s alpha values were estimated and the results are above the thresholds (KAV). Table 4 shows sentiment analysis reliability.

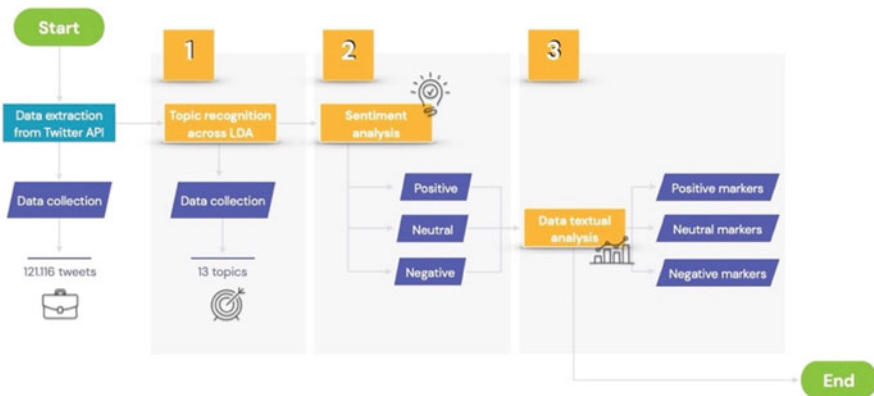


Fig. 4 Representation of the three-step approach in the research methodology

Table 3 Identified topics related to tourism in user-generated content

Topic name	Topic description	WP	Sentiment
Restrictions	Comments and opinions on the actual information concerning sanitary restrictions indications	8.44	Positive
Nature	Observations regarding nature-based tourism activities.	5.97	Positive
Moment	Mentions regarding the time period tourism activities are realized (i.e., Christmas, summer, etc.).	5.49	Positive
Home	References to the actual location of many potential tourists.	5.21	Neutral
Adventure	Remarks relative to tourists' willingness of exploration and adventure.	4.52	Positive
Photo	Mentions concerning photography.	4.36	Positive
Hotel	Annotations regarding hotels.	2.97	Neutral
COVID-19	Comments and opinions on the COVID-19 sanitary crisis.	2.68	Negative
Day	References to the importance of living life to the fullest.	2.55	Positive
Government	Discussion of the governmental decisions in relation to the tourism industry.	2.26	Negative
Train	Recognition of actual train sanitary problems.	2.25	Negative
New	Discussion of upcoming initiatives.	2.07	Positive
Culture	Mentions to cultural tourism activities.	1.96	Neutral

Table 4 Sentiment analysis conclusions' reliability (Krippendorff's alpha)

Conclusions reliability	Krippendorff's alpha value	Sentiment	Average KAV
High	$\alpha \geq 0.800$	Positive	0.825
Tentative	$\alpha \geq 0.667$	Negative	0.680
Low	$\alpha < 0.667$	Neutral	0.720

Finally, the results of the textual analysis phase are presented in Fig. 5 where the WP of each topic is identified in relation to the sentiment expressed (Krippendorff, 2004).

Discussion

The effects of communication on social media networks regarding tourism issues have been broadly studied (Blasco et al., 2019, Jin & Cheng, 2020; Lalicic et al., 2020). Despite this fact, little research has been found that deals with social media's impact during the COVID-19 pandemic. In this regard, Lu and Zheng (2020) pinpointed the most relevant factors that were discussed on Twitter during this health crisis concerning cruise tourism. A recent and related study identified the main topics (tourist risk perceptions, the impacts on travel, public health, media coverage and racial discrimination) after examining 10,132 comments related to coronavirus on Tripadvisor (Yu et al., 2020). Thus, the results of this research

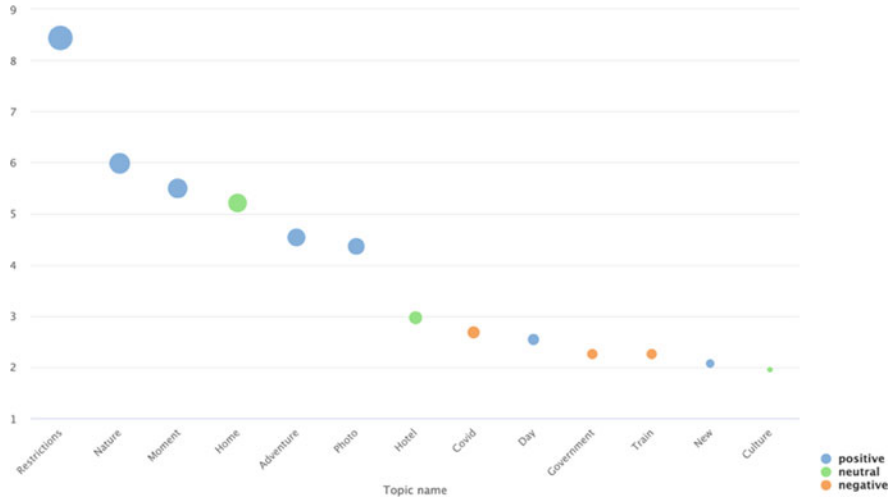


Fig. 5 Identified tourism topics in relation to the sentiment expressed and WP

demonstrate that it is possible to determine the most popular topics discussed during the coronavirus pandemic.

The findings determined that just 1 out of the 17 sustainable development goals was discussed, namely, good health and wellbeing. This goal is related to the user-generated content topics *restrictions* and *COVID-19*. This goal ensues that tourism development guarantees healthy lives and promotes well-being for all at different ages. Specifically, it outlines the importance of preventing diseases (UNWTO, 2015). Thus, this objective is directly associated to *restrictions*, which are associated with positive feelings, and *COVID-19* which was related to negative sentiments. However, 16 sustainable development goals were practically not discussed on Twitter during the research period.

This study pinpoints that the majority of the topics emerging from the data extraction on Twitter during the Christmas holidays of 2020 were associated with positive sentiments. Precisely, user-generated content of seven topics expressed positive sentiments, which can be related to positive psychology theories regarding the anticipatory phase of the tourist experience (i.e., positive motivations) and positive on-site experiences (Filep & Laing, 2019). Hence, two of topics (*restrictions* and *new*) can be associated with that early stage where the tourist is planning the tourism activity, and the other five positive topics (*nature*, *moment*, *adventure*, *photo* and *day*) which are linked to the on-site experience. These results suggest that the posts were written during these two different stages. The topics about home, hotel and culture were related to neutrally expressed sentiments. These neutral values express indifferences (Alaei et al., 2017). Finally, *COVID-19*, *government* and *trains* were associated to negative emotions, which is reasonable as these are positions directly related to the pandemic and its effects. Precisely, *trains* as a topic

was extrapolated from posts that described the sanitary problems that trains have in avoiding the spread of COVID-19.

Also, as shown by many scholars, user-generated content can improve tourism planning and management plans by tracking the different trendy issues, topics, sub-topics, and sentiments expressed (Ainin et al., 2020; Kim et al., 2017). Saura et al. (2019) demonstrated the usefulness of extracting meaningful insights to detect innovative trends that can improve learning performance. Precisely, Doyle et al. (2015) developed a framework to evaluate the effectiveness of social media for collaborative learning, which inputs can be easily adopted by an instructor to ensue this educative process. In short, all the tourism topics associated to the emotions expressed about user-generated content offer valuable information which can be used by implementing the principle of anticipation in future tourism crises (Misiura, 2006).

Conclusions

This chapter examined the main tourism issues that emerged during the COVID-19 pandemic as expressed by users on Twitter. Based on the results, there are four main conclusions reached. Firstly, RQ_1 was confirmed by detecting 13 tourism topics (see Table 3 and Fig. 5). Secondly, we found that although sustainable development goals seems relevant for the tourism industry, just two of these topics (restrictions and COVID-19) were linked to one goal, namely, good health and wellbeing. This finding suggests that users are still not aware of the relevance of pursuing sustainable tourism. Thirdly, it was revealed that topics that arouse positive emotions are related to two stages of tourism experience (the planning and anticipatory phase of the tourist experience and on-site experiences), whereas neutral and negative topics are not associated with the tourist experience. Finally, our results are found to be useful in detecting trends and relevant issues for planning and managing tourism activities under similar circumstances.

Managerial Considerations

This chapter provides useful information for tourism managers and staff responsible for boosting tourism employees' training. It also offers practical insights for tourism organizations and companies. Basically, our findings assist decision-making processes by improving the knowledge of some of the trendiest issues discussed on Twitter, which is considered the most popular microblogging site and one of the top 10 most visited sites on the Internet.

This information offers valuable insights for topics that most concern users during this pandemic. Hence, the three top topics are restrictions, nature and moment, all associated with positive emotions. Based on these results, tourism

managers are aware that communications regarding the restriction indications are meaningful for users and are positively perceived. Thus, it is important to offer that information to potential tourists so they know the recommendations and propositions promoted to avoid the spread of COVID-19. Also, nature tourism has been identified as a trendy topic, which is quite reasonable as a consequence of lockdowns. Hence, nature-based tourism initiatives are probably much welcomed by potential tourists under these actual circumstances. Finally, the topic of moment has been pinpointed as potential tourists heavily depend now on the moment to practice tourism activities due to the pandemic as new regulations can be imposed so as to avoid the spread of COVID-19 and its variants and tourist's plans are to be modified.

Regarding the relevance of sustainable development goals, the findings outline the lack of popularity among these goals in society. These results denote the lack of education among users of the future consequences if these goals are not accomplished. Hence, tourism organizations are recommended to more precise develop communication endeavors that demonstrate the impact of tourism activity if these objectives are not fulfilled, for instance by showcasing real examples of the implications.

Finally, collaborative learning can be promoted among employees by following Doyle et al.'s (2015) suggestions to improve sustainable tourism management plans and design a future tourism framework for actions that fulfill issues that worry users at the same time that sustainable development goals are fulfilled. This last point is particularly important as finding out the topics that users pay attention to is crucial; these topics can be valuably employed to plan actions that entail and promote sustainable development. For instance, nature-based tourism is gaining popularity among users as this study has demonstrated, thus actions that imply the sustainable development goal concerning responsible consumption and production are welcomed (UNWTO, 2015).

Theoretical Implications

This research offers valuable contributions to researchers for three main reasons. First, it expands knowledge concerning user-generated content sentimental analysis impact on tourism management strategies under crisis circumstances. Second, it offers information regarding the effect of sustainable development goals on social media. Third, it proposes 13 topics that can be used as an agenda for collaborative learning that can be employed to understand more about tourist behavior.

This study poses several future research lines that can be pursued. These results can be used as a basis for studies on other social media channels and compared with the methodology used here. Also, the channels can be related to additional structural equation modelling (Boluk et al., 2017). Scholars are prompted to address a main limitation of this study, that is, the period lapse where the data were collected. This study is based on a specific period of time where the data was extracted. Hence, it would be very practical in future studies to explore other periods as well as other

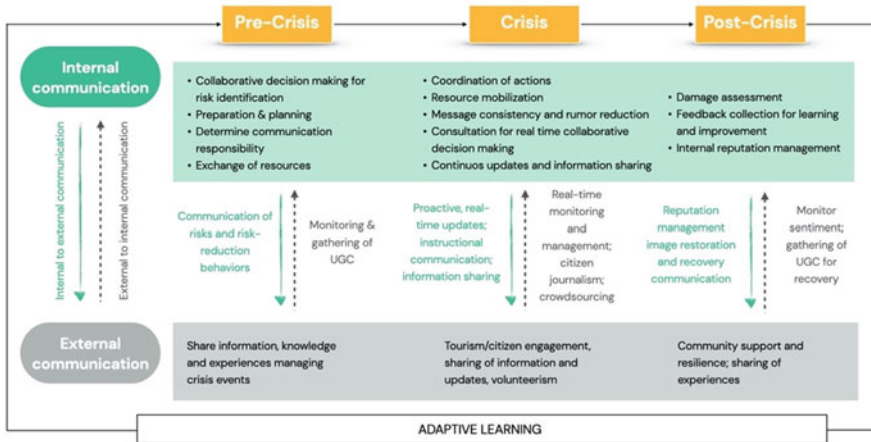


Fig. 6 Social media crisis communication in tourism developed by Barbe and Pennington-Gray (2020)

social media networks. Finally, it would be really important to examine if the user-generated content regarding COVID-19 tourism crisis reduced or increased uncertainty among tourists, which could be done by considering the accomplishment of the inputs that Barbe and Pennington-Gray (2020) pointed out in Fig. 6.

References

Ainin, S., Feizollah, A., Anuar, N. B., & Abdullah, N. A. (2020). Sentiment analyses of multilingual tweets on halal tourism. *Tourism Management Perspectives*, 34, 100658. <https://doi.org/10.1016/j.tmp.2020.100658>

Alaei, A. R., Becken, S., & Stantic, B. (2017). Sentiment analysis in tourism: Capitalizing on big data. *Journal of Travel Research*, 58(2), 175–191. <https://doi.org/10.1177/0047287517747753>

Barbagallo, D., Bruni, L., Francalanci, C., & Giacomazzi, P. (2012). An empirical study on the relationship between twitter sentiment and influence in the tourism domain. In M. Fuchs, F. Ricci, & L. Cantoni (Eds.), *Information and communication technologies in tourism 2012* (pp. 506–516). Springer.

Barbe, D., & Pennington-Gray, L. (2020). Social media and crisis communication in tourism and hospitality. In Z. Xiang, M. Fuchs, U. Gretzel, & W. Höpken (Eds.), *Handbook of e-tourism*. Springer. https://doi.org/10.1007/978-3-030-05324-6_130-1

Blasco-Lopez, F., Recuero Virto, N., Aldas Manzano, J., & Cruz Delgado, D. (2019). Facebook’s power: Factors influencing followers’ visit intentions. *Spanish Journal of Marketing – ESIC*, 23(1), 95–117.

Boluk, K., Cavaliere, C. T., & Higgins-Desbiolles, F. (2017). Critical thinking to realize sustainability in tourism systems: Reflecting on the 2030 sustainable development goals. *Journal of Sustainable Tourism*, 25(9), 1201–1204. <https://doi.org/10.1080/09669582.2017.1333263>

Büschken, J., & Allenby, G. M. (2016). Sentence-based text analysis for customer reviews. *Marketing Science*, 35(6), 953–975. <https://doi.org/10.1287/mksc.2016.0993>

- Coombs, W. T. (2014). *Ongoing crisis communication: Planning, managing, and responding* (4th ed.). Sage.
- De Albuquerque, J. P., Herfort, B., Brenning, A., & Zipf, A. (2015). A geographic approach for combining social media and authoritative data towards identifying useful information for disaster management. *International Journal of Geographical Information Science*, 29(4), 667–689. <https://doi.org/10.1080/13658816.2014.996567>
- Doyle, C., Sammon, D., & Neville, K. (2015). Building an evaluation framework for social media-enabled collaborative learning environments (SMECLEs). *Journal of Decision Systems*, 24(3), 298–317. <https://doi.org/10.1080/12460125.2015.1054694>
- Filep, S. J., & Laing, J. (2019). Trends and directions in tourism and positive psychology. *Journal of Travel Research*, 58(3), 343–354.
- Fu, Y., Hao, J.-X., Li, X. R., & Hsu, C. H. C. (2019). Predictive accuracy of sentiment analytics for tourism: A metalearning perspective on Chinese travel news. *Journal of Travel Research*, 58(4), 666–679. <https://doi.org/10.1177/0047287518772361>
- Gössling, S., Scott, D., & Hall, M. (2021). Pandemics, tourism and global change: A rapid assessment of COVID-19. *Journal of Sustainable Tourism*, 29(1), 1–20. <https://doi.org/10.1080/09669582.2020.1758708>
- Hall, M. C. (2019). Constructing sustainable tourism development: The 2030 agenda and the managerial ecology of sustainable tourism. *Journal of Sustainable Tourism*, 27(7), 1044–1060. <https://doi.org/10.1080/09669582.2018.1560456>
- Jeong, M., & Lee, S. A. (2017). Do customers care about types of hotel service recovery efforts? An example of consumer-generated review sites. *Journal of Hospitality and Tourism Technology*, 8(1), 5–18. <https://doi.org/10.1108/JHTT-09-2016-0049>
- Jia, S. (2018). Leisure motivation and satisfaction: A text mining of yoga centres, yoga consumers, and their interactions. *Sustainability*, 10, 44–58. <https://doi.org/10.3390/su10124458>
- Jiang, Q., Chan, C. S., Eichelberger, S., Ma, H., & Pikkemaat, B. (2021). Sentiment analysis of online destination image of Hong Kong held by mainland Chinese tourists. *Current Issues in Tourism*. <https://doi.org/10.1080/13683500.2021.1874312>
- Jin, X., & Cheng, M. (2020). Communicating mega events on Twitter: Implications for destination marketing. *Journal of Travel & Tourism Marketing*, 37(6), 739–755. <https://doi.org/10.1080/10548408.2020.1812466>
- Jin, S. A., & Phua, J. (2014). Following celebrities' tweets about brands: The impact of twitter-based electronic word-of-mouth on consumers' source credibility perception, buying intention, and social identification with celebrities. *Journal of Advertising*, 43(2), 181–195. <https://doi.org/10.1080/00913367.2013.827606>
- Kim, K., Park, O., Yun, S., & Yun, H. (2017). What makes tourists feel negatively about tourism destinations? Application of hybrid text mining methodology to smart destination management. *Technological Forecasting and Social Change*, 123, 362–369. <https://doi.org/10.1016/j.techfore.2017.01.001>
- Kirilenko, A. P., Stepchenkova, S. O., Kim, H., & Li, X. (2017). Automated sentiment analysis in tourism: Comparison of approaches. *Journal of Travel Research*, 57(8), 1012–1025. <https://doi.org/10.1177/0047287517729757>
- Krippendorff, K. (2004). Measuring the reliability of qualitative text analysis data. *Quality and Quantity*, 38(6), 787–800. <https://doi.org/10.1007/s11135-004-8107-7>
- Lalicic, L., Huertas, A., Moreno, A., & Jabreel, M. (2020). Emotional brand communication on Facebook and Twitter: Are DMOs successful? *Journal of Destination Marketing & Management*, 16, 100350. <https://doi.org/10.1016/j.jdmm.2019.03.004>
- Liu, B., & Pennington-Gray, L. (2015). Bed bugs bite the hospitality industry? A framing analysis of bed bug news coverage. *Tourism Management*, 48, 33–42. <https://doi.org/10.1016/j.tourman.2014.10.020>
- Lu, W., & Stepchenkova, S. (2014). User-generated content as a research mode in tourism and hospitality applications: Topics, methods, and software. *Journal of Hospitality Marketing & Management*, 4(2), 119–154. <https://doi.org/10.1080/19368623.2014.907758>

- Lu, Y., & Zheng, Q. (2020). Twitter public sentiment dynamics on cruise tourism during the COVID-19 pandemic. *Current Issues in Tourism*. <https://doi.org/10.1080/13683500.2020.1843607>
- Luo, J., Huang, S., & Wang, R. (2020). A fine-grained sentiment analysis of online guest reviews of economy hotels in China. *Journal of Hospitality Marketing & Management*, 30(1), 71–95. <https://doi.org/10.1080/19368623.2020.1772163>
- Marine-Roig, E., & Anton Clavé, S. (2015). Tourism analytics with massive user-generated content: A case study of Barcelona. *Journal of Destination Marketing and Management*, 4(3), 162–172. <https://doi.org/10.1016/j.jdmm.2015.06.004>
- Middleton, V. T. C., Fyall, A., Morgan, M., & Ranchhod, A. (2009). *Marketing in travel and tourism* (4th ed.). Elsevier.
- Miller, M., Banerjee, T., Muppalla, R., Romine, W., & Sheth, A. (2017). What are people tweeting about Zika? An exploratory study concerning its symptoms, treatment, transmission, and prevention. *JMIR Public Health and Surveillance*, 3(2), e38. <https://doi.org/10.2196/publichealth.7157>
- Misiura, S. (2006). *Heritage marketing*. Elsevier.
- Newton-John, T. R. (2018). Qualitative data analysis in health psychology: Testing theoretical models using qualitative data. *Sage Research Methods*. <https://doi.org/10.4135/9781526427700>
- Paris, C. M., & Rubin, S. (2013). Backpacking, social media, and crises: A discussion of online social convergence. In L. Cantoni & Z. Xiang (Eds.), *Information and communication technologies in tourism 2013* (pp. 207–217). Springer.
- Park, E., Kang, J., Choi, H., & Han, J. (2018). Understanding customers' hotel revisiting behaviour: A sentiment analysis of online feedback reviews. *Current Issues in Tourism*, 1–7. <https://doi.org/10.1080/13683500.2018.1549025>
- Pennington-Gray, L., London, B., Cahyanto, I., & Klages, W. (2011). Expanding the tourism crisis management planning framework to include social media: Lessons from the Deepwater horizon oil spill 2010. *International Journal of Tourism Anthropology*, 1(3–4), 239–253.
- Saura, J. R., & Bennett, D. (2019). A three-stage methodological process of data text mining: A UGC business intelligence analysis. *Symmetry*, 11(4), 519. <https://doi.org/10.3390/sym11040519>
- Saura, J. R., Reyes-Menendez, A., & Bennett, D. R. (2019). How to extract meaningful Insights from UGC: A knowledge-based method applied to education. *Applied Sciences*, 9, 4603. <https://doi.org/10.3390/app9214603>
- Saura, J. R., Reyes-Menendez, A., & Thomas, S. (2020). Gaining a deeper understanding of nutrition using social networks and user-generated content. *Internet Interventions*, 100–312. <https://doi.org/10.1016/j.invent.2020.100312>
- Sigala, M. (2011). Social media and crisis management in tourism: Applications and implications for research. *Information Technology & Tourism*, 13, 269–283. <https://doi.org/10.3727/109830512x13364362859812>
- Sigala, M. (2020). Tourism and COVID-19: Impacts and implications for advancing and resetting industry and research. *Journal of Business Research*, 117, 312–321. <https://doi.org/10.1016/j.jbusres.2020.06.015>
- Sotiriadis, M. D., & van Zyl, C. (2013). Electronic word-of-mouth and online reviews in tourism services: The use of twitter by tourists. *Electronic Commerce Research*, 13(1), 103–124. <https://doi.org/10.1007/s10660-013-9108-1>
- Su, L., Stepchenkova, S., & Kirilenko, A. P. (2019). Online public response to a service failure incident: Implications for crisis communications. *Tourism Management*, 73, 1–12. <https://doi.org/10.1016/j.tourman.2019.01.011>
- Thelwall, M. (2019). Sentiment analysis for tourism. In M. Sigala, M.A. Thelwal & R. Rahimi (Eds.), *Big data and innovation in tourism, travel, and hospitality* (pp. 87–104). Springer.

- United Nations World Tourism Organization. (2015). *Tourism and the sustainable development goals*. UNWTO. <https://doi.org/10.18111/9789284417254>
- Westerman, D., Spence, P. R., & Van Der Heide, B. (2014). Social media as information source: Recency of updates and credibility of information. *Journal of Computer-Mediated Communication*, 19(2), 171–183. <https://doi.org/10.1111/jcc4.12041>
- Yin, J., Lampert, A., Cameron, M., Robinson, B., & Power, R. (2012). Using social media to enhance emergency situation awareness. *IEEE Intelligent Systems*, 27(6), 52–59. <https://doi.org/10.1109/MIS.2012.6>
- Yu, M., Li, Z., Yu, Z., He, J., & Zhou, J. (2020). Communication related health crisis on social media: A case of COVID-19 outbreak. *Current Issues in Tourism*. <https://doi.org/10.1080/13683500.2020.1752632>