

# Tourists' sentiment analysis about their experience in a smart destination: The case of Bora Bora.

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# Summary

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# About insularity and sustainability...

- ▶ By offering a natural setting and a rich cultural offer, far from urban constraints, islands convey for centuries, an idealized and exotic tourist destination image (Carlsen & Butler, 2011).
- ▶ Insularity creates an imagination such that tourists are willing to cross the most distant borders, ignoring the social, cultural and political boundaries that they can present, as long as they can feel disoriented (Lim & Cooper, 2009).
- ▶ Nevertheless, by virtue of their vulnerability due to their ecosystem, their rate of reception capacity or the particularity of their accessibility, islands remain fragile destinations that need a management focused on nature preservation and sustainable tourism.

# About insularity and sustainability...

- ▶ Furthermore, island tourism policies, by focusing mainly on economic indicators, sometimes set aside the social, human and natural aspects of the destinations; thereby developing undesirable results in terms of sustainable tourism (Apostolopoulos & Gayle, 2002).
- ▶ On the other hand, smart destination (SD) concept has been emerged these last years, introducing a new paradigm for destination management (Ivars-Baidal, Celdrán-Bernabeu, Mazón, & Perles-Ivars, 2019), giving major importance to sustainability.
- ▶ Although the subject arouses enthusiasm among the research community, many gaps remain: the issues regarding to the tourists themselves are under-represented in academic literature (da Costa Liberato, Alén-González, & de Azevedo Liberato, 2018).
- ▶ Therefore, it is interesting to explore the tourist experience within a smart destination through a tourist-centric approach.

# Purpose

- ▶ To do so, Bora Bora has been chosen as a case study. Indeed, the island located in the archipelago of French Polynesia received the smart destination award during the Smart Islands World Congress, which took place in Madrid in April 2017.
- ▶ The island was notably rewarded for its actions in favor of the preservation of the environment.
- ▶ Otherwise, it remains quite difficult to identify documents of any kind about the status of Bora Bora as a smart destination and its current efforts regarding environment and sustainability in a touristic context.

# Purpose

- ▶ Then, the main objective of this research is **to analyze tourists' sentiments within the island of Bora Bora as a smart destination**, by focusing on the **tourists' perception** with regard to the activities and hotels experienced during their stay.
- ▶ Since measuring tourists' perception constitutes **a key element to improve management tourist experience** (Lemon & Verhoef, 2016). Therefore, to conduct this research, an analysis is carried out using textual data from the online travel review platform: TripAdvisor.com.
- ▶ To do this, accommodations and popular activities for tourists who visit Bora Bora have been chosen to investigate tourists' perception and observe how tourists feel during their stay.

# Hypothesis

- ▶ This work deals with semantic data related to the tourist experience within the smart destination Bora Bora, in order to explore the following two hypothesis:
- ▶ **Hypothesis 1** : In a smart environment-friendly destination, tourists' perception with regard to the environmental aspect of their activities and hotel experiences is positive.
- ▶ **Hypothesis 2** : In a smart destination, tourists can perceive digital and ICT's tools to be used during on-site visit and criteria specific to a smart destination.



# LITERATURE REVIEW

# The tourist experience

- ▶ To date, there is no international consensus that defines the tourist experience.
- ▶ Some scholars design the tourist experience as a relationship between tourists and the objects they use during their trip, while others consider the tourist experience through the prism of the tourist himself, his emotions felt and his relationship to places during his stay (Decroly, 2015).
- ▶ Others authors conceive the tourist experience mainly as an identity adventure, embodied by the feeling of escape and euphoria (Urbain, 1989) or by an inner state of the individual, shaped by a proper experience or a feeling (Jafari & Xiao, 2016).

# The tourist experience

- ▶ The creation of the tourist experience follows a sequence that contains in that order: the sensation, the perception and the interpretation, thus helping to create memories (Volo, 2009).
- ▶ The tourist experience is intimately linked to space and time where tourists are seeking an elsewhere for something they do not find in their daily life, engaging in unusual activities or sleeping in a foreign place (Cohen, 1979).
- ▶ Furthermore, the body also plays a key role in the tourist experience, in fact, the tourist will soak up his environment, internalize and capture the emotions that will transform him, thus giving learning a body dimension (Brougère, 2012).
- ▶ From a marketing point of view, tourists are assimilated to consumers where the tourist experience is conceived as a commercial relationship covering all types of services, with the aim of analyzing satisfaction through expectations and perception (Mossberg, 2007).

# Smart destination

- ▶ The smart destination can be defined as “an innovative tourist destination, built on an infrastructure of state-of-the-art technology guaranteeing the sustainable development of tourist areas, accessible to everyone, which facilitates the visitor’s interaction and integration into his or her surroundings, increasing the quality of the experience at the destination and improves residents’ quality of life” (Lopez de Avila, 2015).
- ▶ In this definition, the very concept of the smart destination is closely associated with the development of new technologies, which serve as a support for the deployment of an inclusive and sustainable tourist territory that benefits both local populations and tourists.
- ▶ In practice and according to the European Commission, a destination to become smart should satisfy four criteria:
  - Sustainability
  - Accessibility
  - Digitalization
  - Cultural heritage and creativity

# Online review and sentiment analysis

- ▶ Sentiment analysis consists in a textual data analysis that seeks to identify the emotions behind words; it is mostly used to decrypt perceptions, opinions and feelings expressed in online reviews (Li, Xu, Tang, Wang, & Li, 2018).
- ▶ Actually, this methodology aims at classify sentiments that can be positive, negative or neutral, to analyze tourists' perceptions towards activities, hot spot visited or hotel services (Li et al., 2018).
- ▶ Smart tourism is closely linked to ICT (Gretzel, Werthner, Koo, & Lamsfus, 2015) and one of its goal is sustainability.
- ▶ Otherwise, UGC from online reviews provide essential information for destination management and contribute to move toward sustainability. (Xu et al., 2020)

# Online review and sentiment analysis

- ▶ Thereby, managers can position or readjust their strategies to influence tourists' behavior encouraging them to adopt sustainable practices through communication and thus have a better monitoring of environment (Xu et al., 2020).
- ▶ Consequently, vulnerable tourist destinations such as islands must develop their knowledge of tourists by using this type of data, and thus have a better visibility of the points to be improved for the management of sustainable tourism.
- ▶ This is what the concept of smart tourism advocates, namely, using new digital communication tools to convert data into value propositions to provide a more efficient and sustainable tourism experience (Gretzel, Sigala, et al., 2015).
- ▶ Overall, sentiment analyses enabled by online reviews data can reach tourists and thus adapt the management according their perceptions or behaviors (Xu et al., 2020).



BORA BORA

# The island of Bora Bora

## Bora Bora

- Also called the “Pearl of the Pacific”, Bora Bora is a 30.55 km<sup>2</sup> island, it has 10 549 inhabitants (Insee, 2017) and is located in the Society Islands of French Polynesia.
- Bora Bora is a major international tourist destination, famously known for its lagoon, lush nature and idyllic setting; it is a favorite destination for young brides and tourists looking for relaxation, outdoor and marine activities.
- Given its extraordinary and fragile natural assets, sustainable tourism within island territories must be at the heart of strategies.
- Both at the level of destination management and public policies, in order not only to preserve nature but also to guarantee the quality of the tourist destination (Dehoorne & Saffache, 2008), increase the quality of life of residents and local development (Blondy, 2005).



# Bora Bora as a smart destination

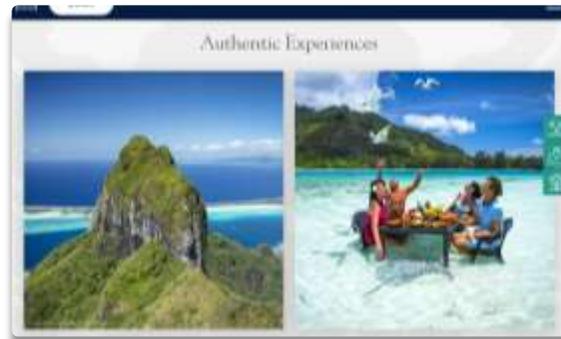
- ▶ Bora Bora has been awarded as a smart destination in 2017 during the Smart Island World Congress, for its actions in favor of the environment and the beauty of its landscapes. (Tahiti Infos, 24/04/2017)
- ▶ Actually, except two articles from the local press published on the Internet and an official document issued by the High Commissioner of the French Republic in French Polynesia, it is quite difficult to find information relating to Bora Bora as a smart destination.
- ▶ However, it remains difficult to perceive the smartness of the island. Therefore, considering the need for islands to move towards sustainability and competitiveness (Xiang, Tussyadiah, & Buhalis, 2015), it seems interesting to explore the case of Bora Bora as a smart destination.

# Romance, nature and vacation



## Honeymoon

Romance vocable



## Outdoor

Nature and authentic experiences



## Packages

Vacation in Bora Bora

- The editorial and visual content of the website gives us some clues about how the DMO is leading the destination image of Bora Bora.
- The terms used appeal to the senses with a large place given to the sea, the feeling of escape, nature, serenity and romance; authentic experiences are even proposed.
- Concerning the visual items of the website, beautiful landscapes, food and cultural pictures are highlighted and the colors used, composed of shades of blue and green, constantly recall the sea.

# Methodology

## Data collection :

- ▶ For this work, an extraction of comments written by tourists was carried out through the online travel review platform TripAdvisor.com, which provides the possibility for tourists to write their views about places, products or services.
- ▶ According to (Brandt, Bendler, & Neumann, 2017), there is evidence that supports the reliability of user-generated content as shown on this type of platform.
- ▶ The comments taken from TripAdvisor allow us to obtain sentiment trends about the tourist experience, through semantic analysis techniques of the words used by tourists (Li et al., 2018).
- ▶ This methodology allows investigating a contemporary phenomenon, namely tourism, within its real world context (Ridder, 2012).

# Techniques used

- ▶ This study has been carried out using mainly two specific techniques, webscraping and the semi-quantitative text analysis technique (text mining).
- ▶ To fulfill the purpose of this study, a series of computer functions have been developed entirely in R language (Team, 2020).
- ▶ As a starting point, the online travel review platform TripAdvisor has been chosen for extracting comments.
- ▶ This platform has been analyzed by associating the TripAdvisor search engine with one of our computer functions developed from the rvest package (Wickham, 2019) that allows the analysis of the structure of nodes in XML and HTML objects, as well as its extraction from tags.
- ▶ **During this phase, in total, 2551 comments (in English language) have been collected and subsequently analyzed for the period 2012-2020, from any types of travelers.**



# DATA ANALYSIS

# DATA ANALYSIS

- ▶ Two types of accommodation belonging to different categories of standing :

**The Intercontinental Resort Thalasso Spa**

**Blue Heaven Lodge**

- ▶ Two popular activities for tourists who visit Bora Bora :

**Bora Bora Lagoonarium**

**Bora Bora Turtle Center**

# Accommodations analyses

## The Intercontinental Resort Thalasso Spa

- ▶ The Intercontinental Resort Thalasso Spa is a 5-star luxury resort located in Motu Piti Aau in Bora Bora.
- ▶ Its high standing offer suits perfectly for honeymoon stays or tourists looking for relaxation, idleness or romance.
- ▶ As indicated on their website, the hotel is involved in the protection of the planet by providing Sea Water Air Conditioning, and offer products and services inspired by the benefits of the sea that surrounds it.

## Blue Heaven Lodge

- ▶ The Blue Heaven Lodge is a guesthouse located in Bora Bora.
- ▶ The establishment has five traditional bungalows and operates according to a philosophy of simple life with the essentials: fans instead of air conditioning, a Wi-Fi connection that works intermittently and a rustic lifestyle largely offset by the peaceful atmosphere and the breathtaking natural landscapes.

# Data analysis and results

- ▶ From the TripAdvisor comments, world clouds and sentiments' graphics were performed for each type of accommodation and selected activities.
- ▶ For the word clouds, the size of the words is proportional to the frequency of appearance: the larger the word, the more frequently it is found in textual analysis.

# Accommodations analyses

## ► The Intercontinental Resort Thalasso Spa



Figure 1.

- Figure 1 represents the word cloud synthesizing the most frequently used words among the 1871 comments extracted from the platform TripAdvisor.
- In Figure 1, the words "intercontinental bora", "thalasso spa", "bora resort" and "resort thalasso" appear more frequently, thus confirming the location of the hotel studied.
- The others terms that were most frequently used surround the themes of nature, ocean, beauty, activities that this place offers, for example: "deep ocean", "snorkeling", "coral island", "ocean spa", "handicraft demonstration", "kayaging", "canoeing", "stargazing", "overwater bungalow".

## ► Blue Heaven Lodge

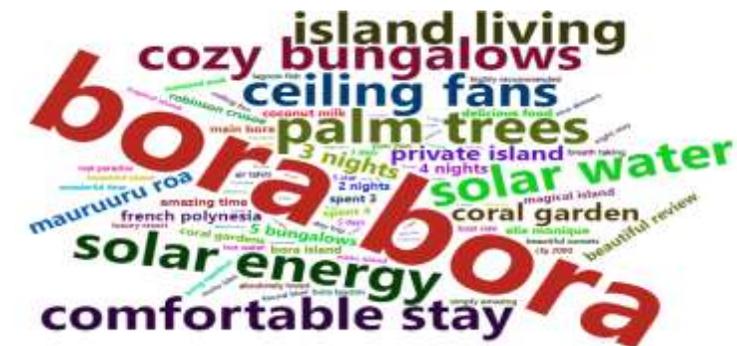


Figure 2.

Figure 2 shows us the word cloud issued from the synthesis of the 108 tourists' comments extracted from TripAdvisor. The word "bora bora" appears most frequently. Then, a series of terms relating to renewable energy or energy savers are quoted, among which "solar water", "solar energy", "ceiling fans". Tourists also perceive the warm atmosphere of the guesthouse by using the terms: "cozy bungalows", "comfortable stay", "island living", "delicious food", "nice dinners", and "amazing time".

As well as the exotic and beautiful scenery highlighted by the terms "palm trees", "coral garden", "magical island", "Robinson Crusoe", or "lagoon fish".

## The Intercontinental Resort Thalasso Spa

- More precisely, towards the perception of the tourist, on its upper side, Figure 3 represents the feelings of tourists that can be measured with the frequency of positive words (blue color) on the axis and the frequency of negative words (red color) under the shaft.
- For the period 2012-2020, we can observe a clearly positive perception, as seen on the lower side of the axis.
- Figure 4 with 87% positive words and 13% of negative words.
- Thus, the result shows the high satisfaction of the tourists about their experience in the Intercontinental Resort Thalasso Spa in Bora Bora.

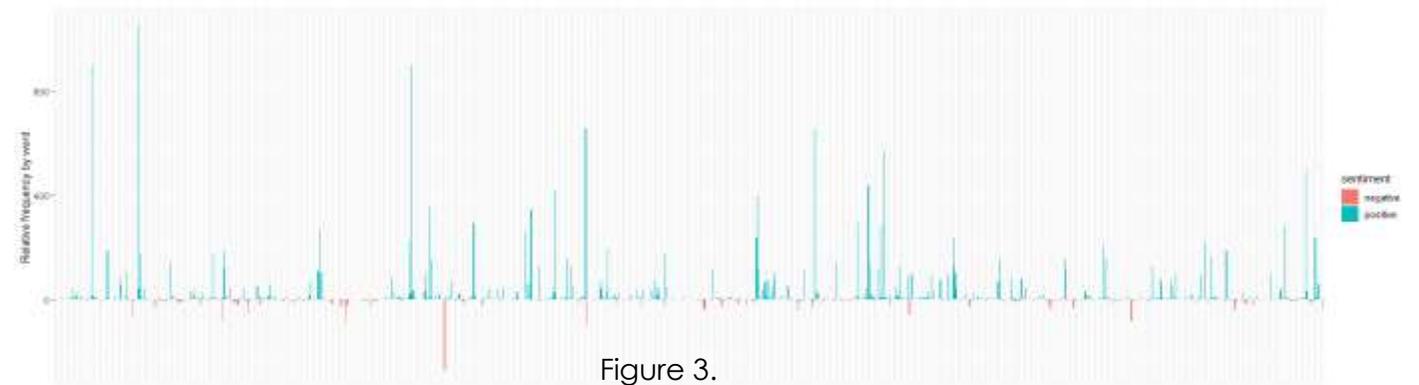


Figure 3.

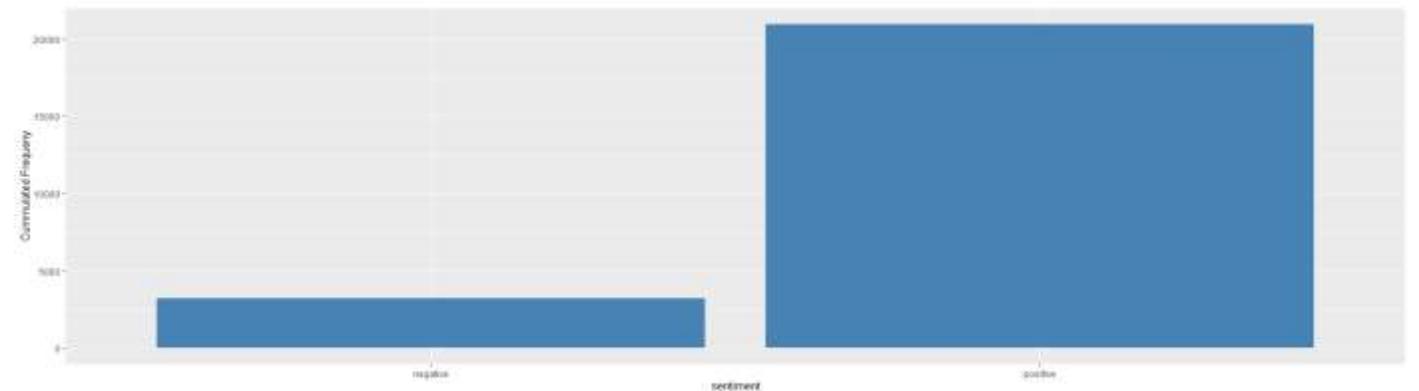


Figure 4.

## Blue Heaven Lodge

- Due to the terms used in Figure 2., it could be said that tourists who stay here look for simplicity and nature connection.
- In addition, great actions in favor of the environment are leading by this guesthouse.
- The perception is highly positive what confirms the Figure 5. with the high percentage of positive feelings outweighing negative feelings.
- Namely, 85% of positive words and 15% of negative words, as shown in Figure 6.

Figure 5.

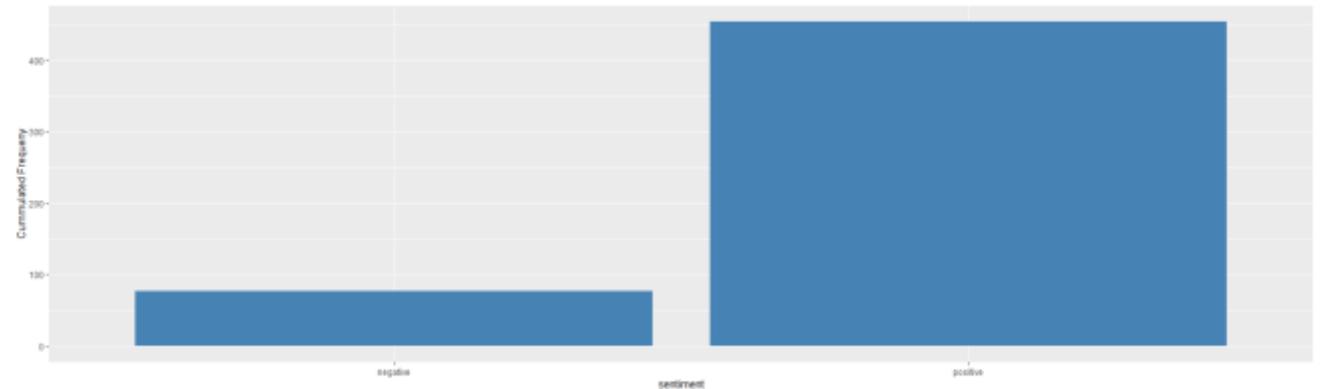
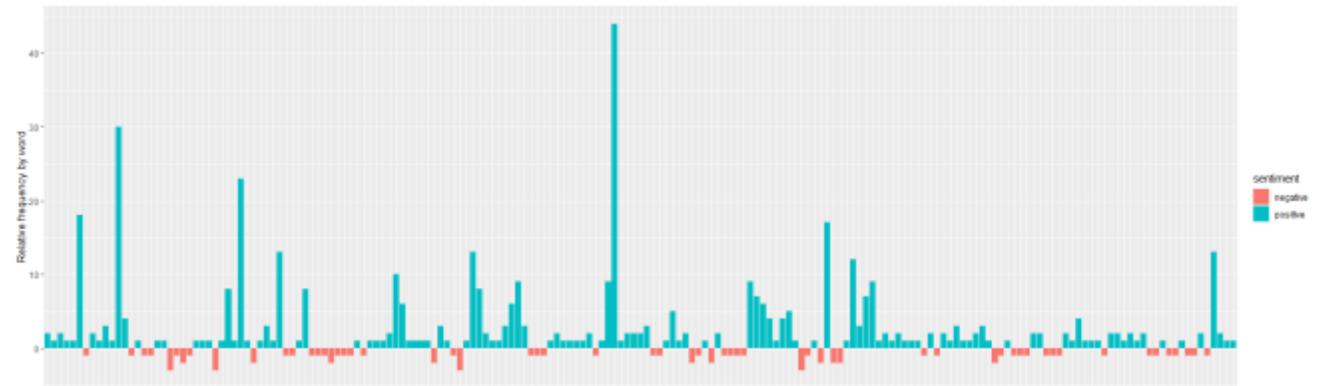


Figure 6.

# Activities analyses

## Bora Bora Lagoonarium

- ▶ It is an excursion from Bora Bora that allows tourists to discover marine life and animals living in the lagoon.
- ▶ It is a very popular activity for tourists, and given the context of nature and flora preservation, it represents an interesting activity to analyze.

## Bora Bora Turtle Center

- ▶ The Bora Bora turtle center is an information and discovery center about marine life in French Polynesia. Actually, it is a refuge for injured or sick turtles who receive care there.
- ▶ The center aims at increase local population and tourists' awareness about the protection of the fauna and the sustainable management of nature and environment. Thus, it represents a popular spot to visit for tourists during their stay in the island; it is interesting then to analyze how tourists perceive it.



## Bora Bora Lagoonarium

- According to these comments, tourists enjoyed the experience; they could see exceptional marine fauna, their perception is highly positive and they highly recommend the experience.
- As shown in the lower side of Figure 6, there are 72% of positive words and 28% of negative words.

Figure 9.

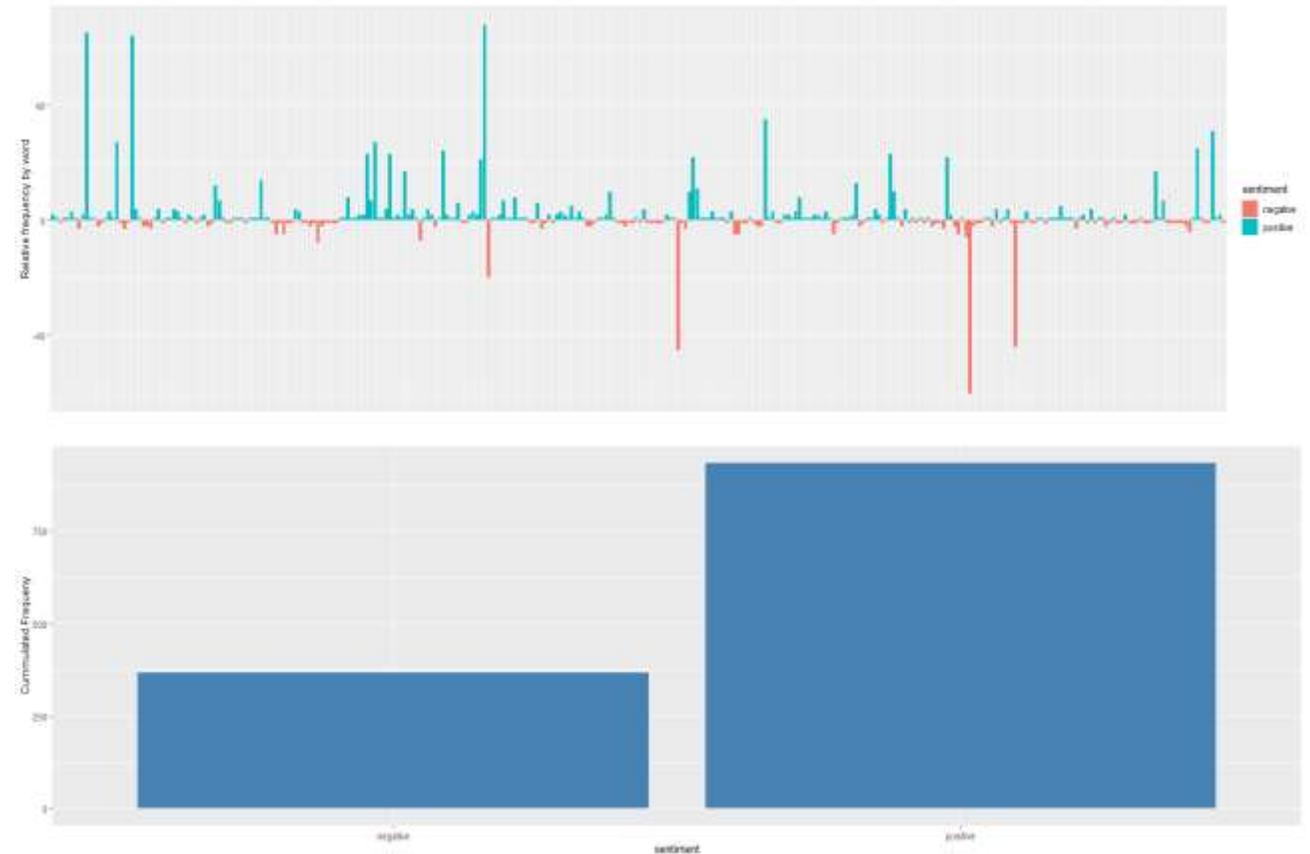
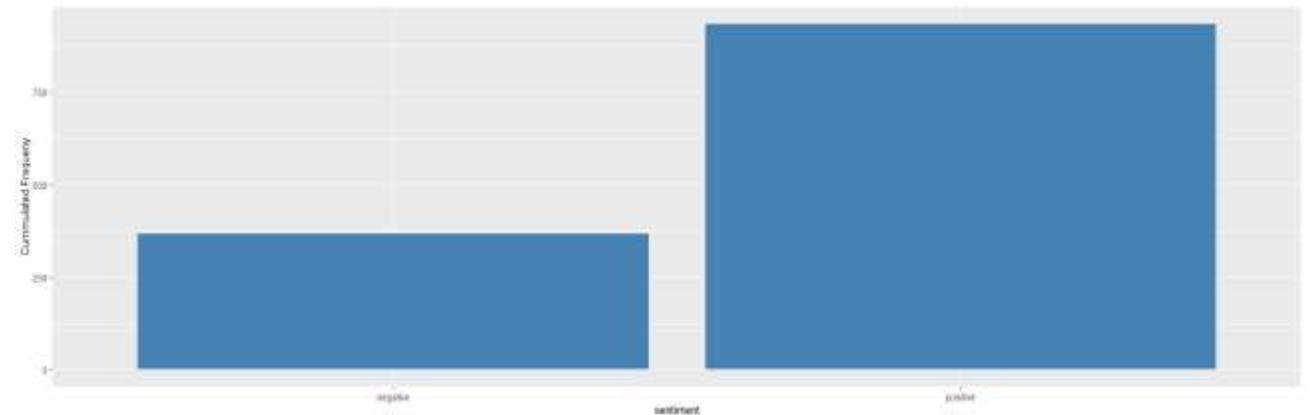


Figure 10.



## Bora Bora Turtle Center

- The analyses of the comments show a positive description of the Bora Bora turtle center.
- Not surprisingly and more precisely, the Figure 11 shows the high satisfaction of the tourist during his stay in the turtle center, where we can observe a clearly positive perception.
- Figure 12 shows the use of 83% of positive words against 17% of negative words.

Figure 11.



Figure 12.



# DISCUSSION

# HYPOTHESIS

- ▶ With regard to our first hypothesis (H1), the perception of tourists with respect to the efforts made by Bora Bora in the preservation of its environment is positive.
- ▶ To answer our second hypothesis (H2) and according to the data analysis, tourists do not perceive the digital, accessibility, inclusion and local culture criteria specific to a smart destination.

# A highly positive perception from the tourists

- ▶ **The sentiment analyses methodology applied in this research allowed observing the tourists' perception regarding their experience in a smart destination, namely Bora Bora.**
- ▶ Perception refers to the senses that constitute a receptor system for tourists who are able to smell, taste, touch, see and hear everything they experience during their stay (Solomon, 2020) to create memorable memories.
- ▶ The results show -through sentiments analyses- how tourists perceive and feel while in Bora Bora, particularly regarding to their hotel and excursions experiences.
- ▶ **Globally, the results obtained from the data analysis clearly showed a positive perception from the tourists, whether in a luxury hotel or in a guesthouse, as well as during their excursion activities.**
- ▶ On the other hand, a smart destination is also an innovative destination that uses new information and communication tools to provide personalized services and products, facilitate the accessibility, and improve the quality of life of residents. **Yet, the data analysis provides no reference to these criteria. For example, tourists do not allude to Wi-Fi, digital facilities, hotel or excursion transport access, nor local life, heritage or their interaction with islanders.**



# CONCLUSION

# PERSPECTIVES

- ▶ This study allowed proposing the way in which tourists perceive a smart destination. Actually, **it exists a real lack in terms of information about the Bora Bora status as a smart destination**, whether in the media or from stakeholders' online communication, there is no clue that allows us to know it, despite the prize awarded in 2017.
- ▶ **Regarding the management of sustainable tourism** that lies with smart tourism, tourists do not really perceive Bora Bora as a smart destination, this term is not mentioned, but it is embodied and perceived with positive environment comments about hotels and activities, particularly concerning the guesthouse Blue Heaven Lodge, the Lagoonarium and the turtle Center.
- ▶ Thus, with respect to the analysis, it seems that **Bora Bora fulfills certain duties leading to the protection and the preservation of the environment.**
- ▶ Nevertheless, to go beyond this study, it would be interesting to conduct field surveys to collect stakeholders and residents' perceptions about the smartness of Bora Bora and tourism practices in favor of sustainability.
- ▶ Finally, the research also calls for further research and critical points of view about the status of smart destination, its implementation and its importance for sustainable tourism.

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