

# Destination Image Through TripAdvisor's Reviews Analysis



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**Abstract** Tourists' satisfaction and motivation have been recurrent themes in tourism literature. In recent years these themes have also been addressed based on online evaluations carried out by tourists, TripAdvisor is one of the most used sites. In this context, this study aims to analyse the image of *Bragança's* tourism destination based on TripAdvisor reviews during the pandemic period (2020–2022). To this end, 1444 quantitative and qualitative reviews of attractions, hotels, and restaurants in *Bragança*, Northern Portugal, were analysed. Based on the Latent Dirichlet Allocation Algorithm three dimensions were determined for the attractions, two dimensions for the hotels and two dimensions for the restaurants. The descriptive statistics made it possible to establish that the municipality has a positive tourist image. Given results, theoretical and practical implications of this important Marketing theme are presented.

**Keywords** Destination image · TripAdvisor · Travellers

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# 1 Introduction

The constant challenges that tourist destinations face make necessary the creation of several strategies to maintain competitive advantage [1]. In the process of destination selection and choice, tourists search for advice and recommendations from others and trust the perception and opinion of those who have already tested the tourism product [2].

The increasing amount of user-generated content disseminated through social media services and travel websites has made a wealth of information available online. On the one hand, tourists access this information to support their decision-making process [3]. Alternatively, tourism enterprises see these online services as appealing promotional mediums.

For decades, some researchers have been trying to study motivations and interpretations derived from this online information, furthering study on the image of the destination, the trustworthiness of the comments, the impact of the rating and the reactions of travellers, highlighting, in the last three years, the pandemic trends [1, 2, 4–8].

Considering the world's largest travel website, TripAdvisor [9, 10], this study aims to analyse the image of *Bragança's* tourism destination based on TripAdvisor reviews during the pandemic period (2020–2022). The definition of an attraction on TripAdvisor includes a wide range of groups and categories; each has a geographical locator [9] and presents additional comments and quotations. In this prism, the methodological process explores the reviews and quotations of *Bragança's* attractions, hotels, and restaurants in the Northern Portugal region. *Bragança's* tourism is promoted by its culture, heritage, gastronomy, and rurality. As support tools for this analysis, the Knime Analytics 4.6.4 platform was used to prepare and process the data, and IBM SPSS software, for descriptive statistics. Based on TripAdvisor's reviews, the Dimensions of analysis of the tourist destinations' components (attractions, hotels, and restaurants), are supported by the Latent Dirichlet Allocation (LDA) Algorithm. The quantitative data allowed to determine the image of *Bragança* as positive, negative, or neutral during the analysed period.

This study's thinking and logical structure followed some steps, filtering the field of research. Specifically, this research started from a bibliometric analysis that allowed knowing the development and impacts of the existing literature until then. Using the bibliometrix R tool, this analysis was compiled in a database of the open access papers under the search equation: "Tourism" and "TripAdvisor", considering the SciVerse Scopus and Web of Science (WoS) databases. Then, the literature was discussed by analysing the most cited, most recent, and most relevant productions.

Continuously, as a methodological process, the descriptive analysis of the data and the relationship tests of the comments are exposed. After the pre-processing of the comments, the LDA algorithm modelling was used, which determines dimensions based on the existence of a hidden structure between the words. Finally, tables are presented to complement and expose the data obtained in the presentation and

discussion of the results. The number of comments, the components of the evolution and development of the destination of the different dimensions under analysis, divided by attractions, hotels, and restaurants, were analysed.

At the end of the study, future suggestions are also presented, which relate the field of study to further research.

## 2 Framework

### 2.1 *Bibliometric Framework*

Bibliometrics is a field in biblioteconomics and information science that applies statistical and mathematical methods to analyse and build indicators on the dynamics and evolution of scientific information. Many studies explain the need to use bibliometric tools for more quantitative analysis of scientific production [11–13]. The Bibliometrix R Package is an open-source tool for quantitative research in scientometrics and bibliometrics that includes all the main bibliometric analysis methods. Bibliometrix is more than a statistical tool, becoming a community of international creators and users who exchange questions, impressions, opinions and examples with an open-source project [14].

Accordingly, to quantitatively analyse the scientific literature's behaviour, it was considered, firstly, carrying a bibliometric analysis, using the Bibliometrix R Package tool.

Intending to know the development and impacts of literature in the field of research, this analysis collects in a database the open access papers according to the search equation: "Tourism" and "TripAdvisor", considering the SciVerse Scopus and Web of Science (WoS) databases.

The filtering process of the compiled database involved some necessary steps until the final database was obtained. In the search for the equation, only open-access papers were considered.

From the Scopus databases, 190 results were considered, and WoS 233 results. In the compilation process of both databases, 140 repeated papers were excluded, resulting in a final database of 283 papers.

A descriptive database reading highlights the scientific production between 2012 and 2022, with 165 sources, 737 authors and more than 950 keywords. The annual growth rate was 49.29%, and the average citations per document were 16.38 citations.

Once the scientific production of the field under research was analysed, a gradual growth was observed from the appearance of the first scientific paper in 2012, until 2020. In 2021, scientific production decreased slightly, growing again in the last months. On the other hand, when observing the citation rate of the scientific papers by year, the analysis turns out to be the opposite. There was a gradual increase in citations until 2015, followed by a sharp decline until 2018. In the following years,

until 2021, there was a slight growth, but it was from 2021 onwards that there was a peak in citations, with a current growth trend.

This growth stands out in the journals *Tourism Management*, and *International Journal of Hospitality Management* highlighted as the sources with the most significant citations influence in the research field. The journal *Sustainability* stands out in the publication of scientific papers in the field of research.

The origin of these researches highlights some international co-authorship and co-citation relationships. Specifically, the relationship between Europe and North America, collaborating in some studies, is distinguished. Besides, it was interesting to understand that the most prominent affiliations belong to the Iberian Peninsula, emphasising the University Institute of Lisbon (ISCTE-IUL) and the Complutense University of Madrid. Spain and Portugal are among the TOP3 countries of the authors who contribute most to this scientific production, also highlighting the United Kingdom.

In evidence of this bibliometric analysis, the authors' keywords are analysed, which show the topics worked so far. With a higher occurrence, it stands out the words: TripAdvisor; tourism; online reviews; social media; sentiment analysis.

The coupling authors' study reveals some clusters that show the relation of the keywords with their development and relevance. Specifically, with extraordinary relevance and development, it was categorised into three niches: tourism, satisfaction, and tourism development; online reviews, sentiment analysis and hotels; hospitality, word-of-mouth and impact. TripAdvisor, online reading systems and online platforms form a group at the centre of development and relevance. On the other hand, the clusters of big data, regression analysis and tourists are topics to emerge or decline. From this list of topics, tourism development and satisfaction, sentiment analysis through online reviews, and the impact of word-of-mouth on hospitality are in the spotlight of scientific research.

Finally, to leave topics for future studies, it was considered interesting to study the research trends. Observing sentiment analysis, machine learning, the hotel industry, online reviews, satisfaction, and marketing are featured as keywords of tendency.

Considering these results in the bibliometric analysis and the scientific papers with greater relevance in the research field, the next session is dedicated to the literature review of the scientific papers in the database.

## ***2.2 Literature Review***

This session presents some studies on the topics and the conceptualisation of some important concepts. The database under analysis was used for this discussion, specifically the most cited, recent, and relevant scientific papers.

The first paper registered in this database was in 2012, by Matthias Fuchs and Markus Zanker, entitled "Multi-criteria Ratings for Recommender Systems: An Empirical Analysis in the Tourism Domain". In this study, the authors sought to

analyse TripAdvisor's multi-criteria ratings and the structuring of reviewers' overall satisfaction with the help of a Penalty-Reward Contrast analysis [15].

Henceforth, studies in the research field have followed different directions. Considering the list of the most relevant scientific papers obtained from the bibliometric analysis, it is understood that the authors have worked on themes associated with: the interpretation of the destination image by visitors [1]; the creation of decision support models using social information [4]; the trustworthiness of positive and negative comments, and the analysis of companies' responses to negative comments [2, 5, 6]; the impact of traveller ratings on hospitality [7]; and, most recently, traveller reactions during pandemic trends [8]. Place branding and place reputations are also themes related to image studies [16, 17].

Standing out from the most cited scientific papers in the research field, different concepts are understood. Destinations must deal with various new challenges to gain and maintain a competitive advantage. Smart destinations, which emerged from the concept of smart cities, particularly highlight the significance of synergies between stakeholders and addressing travellers' needs before, during and after their trip [1].

When choosing a tourist destination, people must often rely on the advice and recommendations of other people. Other people's opinions can be accessed through direct word of mouth, books, journalists, or even writings on social media [2].

The increasing amount of user-generated content disseminated through social media services, such as reviews, comments, and past experiences, has made a wealth of information available. Tourists can access this information to support their decision-making process. This information is freely accessible online and generates so-called "open data". Studies show that tourists can consider adopting open data analytics to make better predictions about the attractiveness of a particular destination [3].

New data could be acquired now by analysing tourists' interactions on social media sites or their use of mobile apps that enhance their travel experience. Big data analysis can provide new insights into destination choices and support strategic decision-making in tourism destination management. In this context, social media and online analytics play a significant role as they support information search, decision-making and knowledge exchange for tourists. For companies operating in the tourism sector, social media represent a means of communication with customers and a place for implementing a good part of the marketing strategy. Travel websites are utilised by tourists who have specific questions, which are usually not answered in common reviews of tourist attractions: forums reveal specific information needs and their connection with potential destinations [18].

TripAdvisor is the world's largest travel website. Founded in 2000, it was used by 390 million unique visitors every month at the end of 2016. It hosts user-generated content and reviews of destinations worldwide, and different language and nationality versions offer access to information in multiple settings. The global, multilingual reach and widespread use of TripAdvisor offers a potential opportunity to overcome some difficulties of studying geographically dispersed activities [9, 10].

TripAdvisor's efficiency as a collaborative recommendation medium depends mainly on several factors: the extent to which the problem can be easily represented;

the extent to which its solution requires self-motivated people and context-specific, distant and pervasive knowledge; and the extent to which its evaluation includes a large number of experienced internet users. While false and paid online reviews can negatively affect TripAdvisor's efficiency [6], the extent to which the crowd is efficient can also produce the antibodies that safeguard against this opportunistic conduct [19].

The definition of an attraction on TripAdvisor includes various groups and categories, including venues, tours, operators, events and activities. Each has a geographical locator [9] and features different reviews.

Online reviews provide additional information about the product to reduce uncertainty. Thus, consumers often rely on online reviews to form purchasing decisions. However, an explosion of online reviews brings the problem of information overload to individuals. Identifying reviews containing valuable information from many reviews becomes increasingly important for consumers and businesses, especially for experiential products such as attractions. Unlike consumers, businesses want to detect potential valuable reviews before they are rated to avoid or promote their negative or positive influence, respectively [7, 20].

The most recent scientific papers show the impacts of the pandemic and customer satisfaction with restaurant service quality during the outbreak of COVID-19 [21, 22]. The research trends also highlight studies on linguistic interpretation, text and sentiment analysis of reviews [23–25].

### 3 Methodology

#### 3.1 Data Collection and Pre-processing

To achieve the aim of this study, TripAdvisor the major tourism review platform was used. Other studies have been dedicated to this analysis, using the same platform in different tourism components [26, 27]. Thus, the scope of this study was the attractions, hotels, and restaurants of *Bragança*, located in the Northern region of Portugal, in the sub-region of *Terras de Trás-os-Montes*, on the Spanish border with approximately 34,582 residents [28]. In terms of tourism, *Bragança* is a town where tourists can visit and know the heritage, and natural landscapes, in the Natural Park of *Montesinho* and diversified gastronomy.

Therefore, the data, corresponding to quantitative ratings, the titles and the reviews written in all languages were collected in October 2022. The top ten attractions, the top seventeen hotels and fifteen restaurants presented on TripAdvisor in the month were considered, totalling 1,444 reviews and quantitative evaluations (Table 1). In addition, the period considered for analysis was the reviews posted during 2020–2022.

In the data collection period, the best attractions, hotels, and restaurants on TripAdvisor are those presented in Table 2. Considering the total number of existing reviews

**Table 1** Number of reviews

Destination components	Number of reviews
Attractions	241
Hotels	230
Restaurants	973
Total	1,444

Source Authors' own elaboration

**Table 2** Destination components and number of reviews (n) on TripAdvisor

Attraction	n	Hotels	n	Restaurants	n
<i>Castelo de Bragança</i>	73	<i>Pousada de Bragança</i>	26	<i>Solar Bragançano</i>	210
<i>Aldeia de Rio de Onor</i>	52	<i>Ibis Hotel</i>	24	<i>O Abel</i>	159
<i>Domus Municipalis</i>	15	<i>São Lázaro</i>	26	<i>Bela Época</i>	63
<i>Cidadel de Bragança</i>	10	<i>A. Motesinho</i>	41	<i>G Pousada</i>	28
<i>Igreja de Santa Maria</i>	16	<i>Tulipa Hotel</i>	8	<i>O Careto</i>	53
<i>Centro de Arte Contemporânea</i>	7	<i>Glamping Hills</i>	7	<i>O Batoque</i>	21
<i>Igreja da Sé</i>	7	<i>Candeias do Souto</i>	11	<i>Tasca do Zé Tuga</i>	145
<i>Museu Ibérico da Máscara e do Traje</i>	11	<i>Estalagem</i>	14	<i>Poças</i>	66
<i>Museu Abade de Baçal</i>	7	<i>Pousada da Juventude</i>	4	<i>Geadas</i>	41
<i>Parque Natural Montesinho</i>	8	<i>Informal</i>	10	<i>Casa Nostra</i>	13
<i>Centro de Ciência Viva</i>	9	<i>Moleiro de Bacal</i>	2	<i>Rosina</i>	80
<i>História e Arte</i>	0	<i>Arado</i>	3	<i>O Javali</i>	54
<i>Centro de Interpretação da Cultura Sefardita do Nordeste Transmontano</i>	2	<i>Nordeste Shalom</i>	6	<i>Alma Lusa</i>	31
<i>Galeria George Dussaud</i>	3	<i>Santa Apolónia</i>	8	<i>Emiclau</i>	6
<i>Museu Militar de Bragança</i>	21	<i>O Abel</i>	16	<i>Quinta das Queimadas Panorama</i>	2
		<i>Baixa Hotel</i>	18		
		<i>Santa Maria Solar</i>	6		
<b>Total reviews</b>	<b>241</b>	<b>Total reviews</b>	<b>230</b>	<b>Total reviews</b>	<b>973</b>

The original names in Portuguese presented on TripAdvisor

Source Authors' own elaboration

on TripAdvisor, the number of reviews collected in the period proposed in this study corresponds to 11.1% of the attractions, 12.8% of the hotels and 17.3% of the total reviews of the restaurants.

In the first step, Knime Analytics Platform 4.6.4 was used to prepare and analyse the data. This software was previously used in other tourism studies [26, 27]. This open-source software uses modular pipelining to analyse analytics data [26]. The data pre-processing consists of a punctuation eraser, removing all punctuations from the text, followed by a case converter, changing the text to lowercase. After this, all the numbers and the reviews with less than three characters (N Chars filter) were removed. The next step was to apply the stop word filter to remove no significant words. Considering the reviews were all translated into Portuguese, a list of common stop words in this language was used. Using the Porter algorithm all words were stemmed.

Related to quantitative evaluations, a descriptive analysis was performed to determine the means, standard deviations, and distributions of the evaluations. Based on a previous study [29], the positive image was considered with scores of 4–5, the neutral image with a score of 3 and the negative image with scores of 1–2.

### 3.2 Data Analysis

Different methods have been used to analyse TripAdvisor's reviews, which extract and model the topics and establish the image of destinations or the feeling towards the visit. One of the most used is LDA modelling which determines dimensions based on the existence of a hidden structure. Considering a large number of reviews, LDA dimensions according to the co-occurrence of the terms. The dimension is considered a latent construct of the total corpus of comments [30].

Hence, following previous studies, the steps below were performed to complete the LDA analysis. i) determine the number of dimensions; ii) extract the dimensions; iii) appoint the dimensions; iv) determine the number of reviews in each dimension. Next, on SPSS, the mean scores, and the distribution of reviews in each dimension were established. This step was performed to determine the destination's positive, neutral, and negative image.

The optimal number of dimensions was determined by performing the Elbow Method, based on sum squared errors. The Elbow bend is confirmed as ideal 3 dimensions for the attractions, two for the hotels and two for the restaurants. Following the dimensions were extracted using the LDA algorithm, each of the dimensions contained 10 terms and then were nominated according to the experience of the researchers and based on previous studies related to the image of destinations and TripAdvisor ratings [26, 27].

Next, evaluations' means, standard deviations and frequency distribution were calculated. TripAdvisor allows a quantitative classification from 1 to 5, 1 is the lowest score and 5 is the highest. Thus, based on these evaluations it was possible to determine whether the image of the tourism components of *Bragança* presented a positive or negative image, in the analysed period.



## 4 Findings

As aforementioned, the number of dimensions in each component of the tourist destination was determined using k-means clustering. Calculating the sum squared errors was delimited by the Elbow Method to confirm the number of dimensions. Thus, three dimensions were determined for attractions, two dimensions for hotels and two dimensions for restaurants.

Subsequently, the LDA algorithm was used in Knime to extract the number of dimensions and the terms that were a component of each dimension, as also the weight that each of the terms represents in the dimension; the higher the dimension, the more representative that term is in that dimension. Some terms are repeated in the dimensions; however, the weights are different. The labels of each dimension were determined by the authors of this research, based on previous studies. Tables 3, 4 and 5 present the dimensions and the prevalent terms and their respective weight.

Attractions have three dimensions: heritage, regional characteristics, and culture. The heritage dimensions are characterised by elements that represent the heritage of *Bragança* such as a castle, museum, tower, and military. The second dimension was named regional characteristics once representing locals where tourists can see the regionality aspects such, as the villages, houses and typical. Although the terms of the third dimension are similar to the first one, culture was the name of this dimension, since it presents aspects related to this, such as churches and paintings municipality.

There are two dimensions related to the hotels: quality and infrastructure. The first dimension, quality, includes terms related to the perception of the services and this is indicated with terms such as good, excellent, clean, and comfortable. The second dimension is the infrastructure, which connotes analysis regarding the structure used during the staying in hotels in *Bragança*, such as pool, place, and farm.

**Table 3** Dimensions of attractions

Heritage		Regional characteristics		Culture	
Term	Weight	Term	Weigh	Term	Weigh
Castle	204	Village	135	Church	77
Museum	121	House	36	Interior	32
Military	70	Centre	26	Castle	28
Tower	57	Exhibition	24	Beautiful	20
Fortress wall	55	Typical	22	Building	20
Interior	44	Pretty	22	Painting	16
Interesting	40	Beautiful	20	Public	16
Entrance	33	Excellent	20	Monument	16
Art piece	32	Museum	20	Saint	15
Space	31	Art	10	Municipality	15

Source Authors' own elaboration

**Table 4** Dimensions of hotels

Quality		Infrastructure	
Term	Weight	Term	Weigh
Good	179	Pool	50
Excellent	116	Stay	37
Clean	106	Local	32
City	95	Place	31
Enjoyable	83	Space	30
Kindly	78	Clean	29
Centre	77	Enjoyable	29
Comfortable	66	Kindly	26
Quality	65	Farm	25
Big	64	Good	23

Source Authors' own elaboration

**Table 5** Dimensions of restaurants

Quality		Gastronomy	
Term	Weight	Term	Weigh
Excellent	552	Meat	260
Quality	357	Pieces of meat	246
Service	345	Potato	178
Price	340	Service	157
Menu	297	Price	136
Attendance	282	Wine	136
Ambience	247	Menu	119
Wine	216	Codfish	119
Enjoyable	199	Excellent	114
Kindly	179	Nuts	112

Source Authors' own elaboration

Like hotels, restaurants also have two dimensions. The first dimension is named quality with a similar term cited in hotels. The main terms are excellent, quality, attendance and ambient. The second dimension is gastronomy where are cited the principal ingredients used in gastronomy in the region of *Terras de Trás-os-Montes*. The meat is recognised as a product of excellence in the region, and this is demonstrated in this dimension.

After determining the dimensions, the tourism image components were divided into positive, neutral, or negative based on TripAdvisor quantitative evaluations. Tables 6–8 present the means, standard deviations, and absolute and relative distribution of the scores for each dimension, determining the image.

**Table 6** Evaluation of attractions

Score	Global		Dimension 1		Dimension 2		Dimension 3	
	4.16 ± 0.979		4.21 ± 0.092		4.33 ± 0.110		3.84 ± 0.128	
	n = 241	%	n = 99	41.1%	n = 81	33.6%	n = 61	25.3%
1	6	2.5	1	1.0	3	3.7	2	3.3
2	12	5.0	6	6.1	2	2.5	4	6.6
3	27	11.2	9	9.1	6	7.4	12	19.7
4	89	36.9	38	38.4	24	29.6	27	44.3
5	107	44.4	45	45.5	46	56.8	16	26.2

*Note* Dimension 1 = Heritage; Dimension 2 = Regional Characteristics; Dimension 3 = Culture  
*Source* Authors' own elaboration

The global media of attractions (Table 6) was 4.16 points ( $\pm 0.979$ ), where 81.3% was positive (scores 4 and 5 points). The evaluation of each dimension follows the same trend, and the dimension with the highest average was Regional Characteristics (4.33 points  $\pm 0.110$ ), this is also the dimension with the highest percentage of evaluations with a score of 5 points (56.8%). A positive evaluation written in August 2022 by a tourist from Amora (Portugal) concerns the beauty and the differential of the village of Rio de Onor:

Aldeia de Rio de Onor is a beautiful community village. Upon entering the village, the first thing you notice is the typical village houses built in schist. What incredible beauty combined with the friendliness of its inhabitants. Well worth a visit.

On the other hand, Dimension 3—Culture presented a mean between neutral and positive images (3.84 points  $\pm 0.128$ ) and the highest percentage of evaluations 1, 2 and 3 were presented in this dimension (29.6%). The evaluations with lower scores were related to the churches, with comments stating the churches were not open for visitation, as can be observed in the following review, written in October 2021 by a tourist from Brazil:

Unfortunately, I realize that here in the region they do not like us to visit the churches, because 80% of them were closed to the public even with the hours described on the signs of operation. The churches that I went to were open because I went to mass on Sunday.

Related to the evaluation of hotels (Table 7) the global mean is 4.07 points ( $\pm 1.173$ ), representing a positive image, also corroborated with 76.5% of the evaluations with scores 4 and 5 points. Dimension 1 presented a mean (4.20 points  $\pm 1.016$ ) over the global mean, representing 79.8% of positive evaluations (4 and 5 points). One of the best-evaluated aspects was cleanliness and quality of services, as can be observed in the comment made in September 2020 by a tourist from *Viana do Castelo* (Portugal):

The truth is that we loved everything: cleanliness, facilities, location, decoration, and friendliness. We went on a greenway promotion, but we didn't feel the difference in treatment, they were impeccable. The room was beautiful, the view unforgettable and the service 5 stars, I do not understand why it does not have more stars. The best!

**Table 7** Evaluation of hotels

Score	Global		Dimension 1		Dimension 2	
	4.07 ± 1.173		4.20 ± 1.016		3.73 ± 1.473	
	n = 230	100%	n = 168	73%	n = 62	27%
1	16	7.0	7	4.2	9	14.5
2	8	3.5	2	1.1	6	9.7
3	30	13.0	25	14.9	5	8.1
4	66	28.7	51	30.4	15	24.2
5	110	47.8	83	49.4	27	43.5

Note Dimension 1 = Quality; Dimension 2 = Infrastructure

Source Authors' own elaboration

**Table 8** Evaluation of restaurants

	Global		Dimension 1		Dimension 2	
	4.45 ± 1.080		4.78 ± 0.532		3.75 ± 1.507	
	n = 972	100%	n = 655	67.4%	n = 317	32.6%
1	45	4.7	0	0	45	14.2
2	42	4.3	6	0.9	36	11.4
3	51	5.2	19	2.9	31	9.8
4	132	13.5	85	13.0	47	14.8
5	702	72.3	544	83.2	158	49.8

Note Dimension 1 = Quality; Dimension 2 = Gastronomy

Source Authors' own elaboration

On the opposite side, Dimension 2—infrastructure, presented a mean (3.73 points ±1.473) lower than the global mean, presenting a higher percentage (32.3%) of negative or neutral evaluations (1, 2 and 3 points). The comment that best demonstrates the disappointment with the infrastructure was made in January 2020:

Disappointing! Terrible service, I was assigned the worst room in this hotel! A back, side room with a tiny, claustrophobic window, it was probably a storage room that they remodelled to be a room! When I complained about the Wi-Fi and that there was not enough network in these rooms (number 34) the reception simply said they would send "someone" to fix it and until the day I left nobody came to see the case! They promise something and simply ignore me, the hotel with many empty rooms and make me wait for someone to fix a weak Wi-Fi signal? This room is tiny, the bathroom leaks water from the shower to the entire floor! The kettle to make tea only has tea! The coffee that appears in the photos is a lie! The mini bar is locked! Bath towels, although perfume, don't dry! The so-called Spa, they charge for everything and is outside the hotel, Turkish bath is closed for work (new detail). But the most regrettable in this inn is the disregard for the customer ... and the absurd price for what it is! Not even worth €30!.

Regarding the *Bragança* destination's components, the restaurants were the ones that presented the highest mean 4.45 points ( $\pm 1.080$ ), with 85.8% of positive evaluations. When each dimension is analysed, Dimension 1—Quality had a high mean (4.78 points  $\pm 0.532$ ), with 96.2% of positive evaluations. The quality can be proven in the review written in December 2021 (Table 8):

Restaurant with a very welcoming atmosphere. I found the food very good, well-served portions, with adequate quality and price. The staff was very friendly and attentive.

Gastronomy, with its ingredients (Dimension 2), presented a mean lower than the global mean (3.75 points  $\pm 1.507$ ) and 35.4% of negative or neutral evaluations. Although the region of *Terras de Trás-os-Montes* is recognised for its unique gastronomy, some comments evidenced displeasure with the services and the products, as is observed in the review written by a tourist from Madrid, in September 2020:

We were surprised at the low quality of the product seeing the number of good references this place has. We did not feel that our experience was like many reviews. The dishes were sad and not very tasty. The mushrooms were very tough. The rice was oily, and the tomatoes were nice but tasteless. The service was slow for the few tables there were. The only decent thing was the homemade chocolate cake. A shame.

## 5 Discussion and Conclusion

### 5.1 Research Implications

Related to the bibliometric analysis, the results obtained in this study highlight the scientific production between 2012 and 2022, with an annual growth rate of 49.29% and average citations per document of 16.38 citations, showing a high evolution from 2017 to the present day, demonstrating a continuous interest in this subject and introducing new approaches to analyse the image of tourist destinations.

The countries that contribute most to scientific production in the research field are Portugal and Spain, showing higher production and affiliations ratios. About 80% of the comments in the database under analysis are of Portuguese and Spanish origin.

The increasing amount of user-generated content disseminated through social media services and travel websites has made available a large amount of online information, where, in the process of destination selection and choice, tourists take advice and recommendations from others and rely on the perception and opinion of those who have already tested the tourism product [1–3].

Several studies show the positive evaluation of destinations and services from the analysis of comments on the TripAdvisor platform [1, 26, 31]. Using the same methodology, the present study can positively assess *Bragança*'s global destination, underlining distinctive ratings for the different components. Similar studies have also revealed this positive image of destinations such as Thailand [26] and also tourist equipment such as train stations [27] and airports [31].

Extensive data analysis can provide new perceptions of destination choices and support strategic decision-making in tourism destination management. In this context, for companies operating in the tourism sector, TripAdvisor represents a means of communication with customers and a place to implement a good part of the marketing strategy [9, 10, 18].

It is worth noting that studies analysing TripAdvisor are important when related to place branding and place reputation since positive reviews such as those found in this study demonstrate a good reputation of the destination and reinforce the place branding.

The definition of an attractive on TripAdvisor includes many groups and categories. For the present study, three dimensions were determined for attractions, hotels, and restaurants.

Attractions are segmented into heritage, regional features, and culture. The heritage dimensions are characterised by elements that represent the heritage of *Bragança*, such as the castle, the museum, the tower and the military. The second dimension was named regional characteristics, representing places where tourists can see regional aspects, such as villages and typical houses. Although the terms of the third dimension are similar to the first one, culture was the prominent name in this dimension since it presents aspects related to art, churches, painting and municipality. This result is directly related to the historical and cultural characteristics of *Bragança*.

There are two dimensions related to hotels: quality and infrastructure. The first dimension, quality, includes terms related to the perception of services and this is indicated with terms such as sound, excellent, clean, and comfortable.

The second dimension is the infrastructure which contains the analysis regarding the structure used during a stay in hotels in *Bragança*, such as the swimming pool, venue, and farm.

Like hotels, restaurants also have two dimensions. The first dimension is called quality, with similar terms cited in hotels. The main terms are excellent, quality, service, and atmosphere.

The second dimension is gastronomy, where the main ingredients used in the gastronomy of the *Terras de Trás-os-Montes* region are cited. Meat is recognised as a product of excellence in the region, which is demonstrated in this dimension.

The results related to hotels and restaurants did not differ from similar studies, as these are clear attributes presented in the evaluations related to these tourism destination components [26].

The most recent scientific papers show the research trend on the impacts of the pandemic and customer satisfaction with the quality of restaurant service during the outbreak of COVID-19 [21, 22]. From the analysis obtained, which considered the pandemic period, there was no disturbance caused by the pandemic, noting only a lesser influence in the lockdown months, a more significant impact on domestic tourism and a new category of analysis associated with sanitation and safety.

## 5.2 *Practical Implications and Contributions*

After determining the dimensions, the image of the tourism components was divided into positive, neutral, or negative based on the quantitative evaluations of TripAdvisor. In general, the hotels are well-evaluated, but it is necessary to pay attention to their infrastructure. One of the points to be highlighted is that some comments refer that the images presented on booking websites do not represent reality. They are considering the need to pay attention to what is disclosed on the websites.

Regarding restaurants, the most positive component demonstrated by the average was the image. It was analysed that it is necessary to maximise this positive image by offering quality services and products, preferably of local origin.

The global average for attractions was equally positive, and the evaluation of each dimension followed the same trend. On the one hand, culture presented an average between neutral and positive images and the highest percentage of evaluations. On the other hand, the evaluations with lower scores were related to churches, with comments stating that churches were not open to visitors.

Regarding the evaluation of the hotels, the same positive image is observed. One of the underscored aspects with a better evaluation was the service's cleanliness and quality. On the opposite side, the infrastructures presented a higher percentage of negative or neutral evaluations. As for the components of the *Bragança*, restaurants were the ones that presented the highest average with 85.8% of positive evaluations.

Comparing all the analysed dimensions, quality had a high average. Gastronomy, with its ingredients, presented a lower average than the global.

It was highlighted that the region of *Terras de Trás-os-Montes* is recognised for its unique gastronomy, but some comments showed dissatisfaction with the services and products.

It was also important to analyse that the attractions must have determined the opening hours and their compliance since the main negative comments related to this component. Strengthening regional aspects is essential to make *Bragança* a differentiated destination.

Lastly, the analysis of TripAdvisor reviews can contribute to managers and planners identifying and minimising destination weaknesses as well as maximising strengths in their marketing strategies.

## 5.3 *Limitations and Future Studies*

TripAdvisor's efficiency as a collaborative recommendation medium depends mainly on several factors. Although false and paid online reviews can negatively affect TripAdvisor's efficiency, as the crowd is efficient, it can also produce the barriers that safeguard itself from these opportunistic behaviours. Still, it stands out, as a significant limitation of this project is the reliability of the comments and the influence of possible conditions in the period under study. A limitation of the study may be the

period of analysis. Since only the pandemic timeframe was determined, the image may be differentiated in an analysis of a longer period.

Specifically, in the bibliometric analysis, TripAdvisor; tourism; online reviews; social media; sentiment analysis stands out with a higher occurrence. In this sense, future studies should extend the analysis period and follow new lines of research within the field of sentiment analysis and regional tourist profiles.

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