What Changes in Restaurant Satisfaction during Covid-19? An Overview Based on Online Reviews

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ABSTRACT

Lately, online users have become avid content creators and consumers of brands and firms through reviews. These serve as sources to peers and reflect reviewers' satisfaction levels with different elements of the experiences. Thus, online reviews are considered reliable sources of information to understand customers' perceptions. Using hybrid methodologies and text-mining techniques is recommended to obtain useful knowledge based on user-generated data. This study intended to understand customers' perceptions of restaurant service and unveil any change that might occur driven by the COVID-19 pandemic. Therefore data was collected on TripAdvisor for two different periods - before and after the pandemic, using the top restaurants of two island tourism destinations. An upturn in customer satisfaction during Covid-19 and changes in attribute weight in the overall evaluation was observed. Therefore, the attribute "service" acquires even more special relevance. This methodology is considered adequate to meet the objectives defined, allowing to obtain relevant conclusions; it might also be applied to other phenomena and sectors.

KEYWORDS

ARTICLE HISTORY

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1. Introduction

The COVID-19 pandemic affected all sectors of activity and the population's daily life globally. To contain the spread of the virus, the authorities of various countries have been applying measures that have been reflected more intensively in specific industries, with tourism and specifically the restaurant sector having felt the most impact. This situation has forced establishments in general, and restaurants in particular, to restructure and adapt strongly to comply with the defined rules.

As a result, consumers have also faced an inevitable need to adapt the way they use these services. This phenomenon will have intensified the importance of business managers in the restaurant area to understand the perception of their customers about the service provided since the crisis experienced by the sector has accentuated the need to maximize satisfaction and loyalty (Hakim, Zanetta, & Cunha, 2021; Madeira, Palrâo, & Mendes, 2021).

The Internet and social media platforms have been strongly changing how people search and share information; multiple platforms where users register their opinions have been given the power to produce content between businesses and their consumers. Consequently, consumers heavily rely upon these new sources of information, especially regarding choices related to the tourism sector (Borges-Tiago, Arruda, Tiago, & Rita, 2021).

Online reviews thus also emerge as a rich, reliable, and accessible source from which managers can draw to learn more about the expectations, experiences, and even trends of consumer preferences for these services (Amaral, Tiago, Tiago, & Kavoura, 2015). This premise is reinforced by the fact that destinations seek to distinguish themselves through the so-called tourism intelligence, which motivates a better understanding of visitors' expectations and experience, strongly supported by the large amounts of user-generated data (Gretzel, Sigala, Xiang, & Koo, 2015; Ye, Ye, & Law, 2020). Moreover, since restaurants represent a particularly crucial sector in the economy and the identity of the regions, it is urgent to take advantage of the data produced by users and convert it into valuable knowledge for decision-making.

Two fundamental components compose online reviews: scores, which enable quantitative statistical analyses, and written comments, which allow qualitative analyses. The importance of integrating quantitative and qualitative methods supported in these elements is identified, originating hybrid approaches, particularly relevant when the purpose is to understand social phenomena. Furthermore, the emergence of CAQDAS software has enabled simultaneous quantitative and qualitative analyses (Amaral et al., 2015). In this sense, text mining techniques and sentiment analysis are proposed, possibly due to the evolution of machine learning technologies and natural language processing associated with the processing of databases on a large scale (Gan, Ferns, Yu, & Jin, 2017). This can be done in two ways regarding the classification of sentiments: through machine learning or lexical-based approaches, proposing the collection of helpful information from unstructured text data of customer reviews (Calheiros, Moro, & Rita, 2017).

Therefore, this study using these information resources and techniques intended to unveil the most valuable attributes linked to customer satisfaction expressed in reviews before and after the pandemic and consequently highlighted the "new" features that need to be taken into account by restaurant managers.

2. Literature Review

2.1 Quality of Service in Restaurants

Services have unique particularities that influence consumers' behaviour as to how they obtain information about them, being more challenging to make comparisons that facilitate their decision-making (Gabbott & Hogg, 1994). The risk factor has a more significant role in conditioning the decision to be taken; the risks perceived by the consumer may be functional, financial, temporal, physical, psychological, social, or sensory (Kotler & Keller, 2006).

Various phenomena explain the choices made by consumers, being the phenomenon of aversion to extremes is relevant in this regard. The phenomenon of hatred to extremes and the effect of compromise are the tendency of consumers to avoid extreme choices by selecting intermediate options when present-

ed to them. Personal characteristics can influence the intensity of this trend, the context of consumers, and other situational factors, which occur mainly in travel-related choices (J. Kim et al., 2021). As with the entire tourism sector, consumers of restaurant experiences are increasingly demanding and study the destinations and services offered before visiting them (Madeira et al., 2021).

Andaleeb and Conway (2006) highlight the importance of the quality-of-service theme, recovering the Servqual model developed in 1988, which is still used today. Servqual is a generic model for measuring the quality of service, originally designed based on several questions posed to executives of companies in specific sectors and another series of questions addressed to customers of these companies (Parasur-aman, Zeithaml, & Berry, 1988). According to Servqual, the perceived quality of service results from the consumer's appreciation, resulting from a comparison of expectations with the performance perceptions, based on several items grouped into five dimensions: "tangible", "reliability", "availability", "security" and "empathy".

Despite the importance of Servqual, and although it was also applied to restaurants (Andaleeb & Con-way, 2006), the model was adapted in 1995 to suit this sector better, giving rise to the Dineserv model (Stevens, Knutson, & Patton, 1995). The Dineserv model is considered particularly useful in assessing cus-tomers' perception of the quality of service of restaurants (Marković, Raspor, & Šegarić, 2010).

Kim, Ng and Kim (2009) developed a study to investigate the relative importance of these five factors that make up the Institutional Dineserv model as to their influence on consumer satisfaction and, con-sequently, in the intention to return and to recommend a particular restaurant. Through an online ques-tionnaire applied to university students, the authors obtained results that allowed them to conclude that all the attributes included in the model have a significant positive effect on the variables mentioned (W. G. Kim et al., 2009).

Gan et al. (2017) developed a study aimed at understanding the structure of online customer reviews and the attributes that have the most influence on the rating they assign to restaurants. The authors accept the main attributes suggested by previous studies, namely "food", "service", "environment", and "price". However, through the work of these authors, in which techniques of text mining and sentiment analysis were applied to registered reviews, the importance of the attribute "context" was also identified. The results suggest that this is the third determining factor for customers' evaluation of their experience (Gan et al., 2017).

Tian, Lu and Mcintosh (2021) developed a study to understand the factors that most affect restaurant customers' sentiments and evaluations, analyzing their online reviews. The authors concluded that the clients use more positive than negative words in their comments and that there is a positive relationship between the proportion of sentiments identified and the classification attributed. Through this analysis, the authors explain that customers reveal more sentiments (positive or negative) when referring to the "service" and less when referring to other aspects. It was also found that customers evaluate "service" better than "food" (Tian et al., 2021).

2.2 Online Reviews on Restaurants

Technologies associated with web 2.0 have changed the way users search and share information through new forms of communication – efficient, instant and without any geographical barriers (Pacheco, 2018).

From a cost-effective perspective, social media platforms will be one of the most advantageous ways to improve the quality of services since they allow to dispense with other marketing costs associated with more traditional methods to understand customers' opinion. Pacheco (2018) explains the strong influence that the so-called e-word-of-mouth has on the tourism, hospitality and similar sectors, as online reviews are particularly relevant in services that are characterized by being more intangible, as is the case with the experiences provided by these sectors, where quality can only be perceived through actual consumption.

Unlike tangible products, which do not change unless new versions or models are available, a meal in a restaurant is a product whose quality and delivery are influenced by numerous variables that may change at any time. In this sense, an exceptional need to ensure updated reviews is justified in these cases (Pa-checo, 2018). It is known that a customer who has a good experience in a restaurant tends to visit it again and recommend it. On the other hand, if customers have a bad experience, they will share it with friends, recommending that they do not visit the restaurant (Tiago, Amaral, & Tiago, 2015).

Tripadvisor, Booking and Airbnb websites are examples of platforms that aggregate content about tourism-related sectors, the first of which also applies to restaurants and stands out for the high amount of traffic it receives (Amaral et al., 2015) being widely used by consumers to register their ratings (Laksono, Sungkono, Sarno, & Wahyuni, 2019).

Tourism managers need to gain more knowledge about the behaviour of tourists to support their strategic planning and decision-making. However, their knowledge of the preferences and opinions of different tourist groups is still limited (Vu, Li, Law, & Zhang, 2019). The growth of travel and tourism-oriented online applications has contributed to the emergence of new business opportunities and challenges. Customers tend to do prior research on the internet about destinations to make their decisions. In this sense, the reviews they find online have become a primary source of information to support their choices about where to go and where to stay (Calheiros et al., 2017).

Restaurant managers should use customer reviews to understand their experiences and reactions and provide feedback, especially to the most dissatisfied. A regular visit to platforms such as Tripadvisor is specifically recommended to learn about industry trends from customers' point of view. Customer-generated reviews and content can help businesses improve the quality of their service, which will translate into better future reviews, greater visibility and, consequently, more revenue (Pacheco, 2018).

The new platforms for communication and sharing between online communities are proving to be of great importance for the tourism industry, as they are authentic data resources provided directly by users. Businesses, however, face the challenge of managing these highly dynamic elements and constantly monitoring user-generated content and its influence on the image of their brands (Borges-Tiago et al., 2021).

User-generated content on various websites has enormous potential, suggesting data mining techniques to produce useful and valuable knowledge about business performance, specifically regarding restaurants (Bilgihan, Seo, & Choi, 2018). Text mining is a relevant technique in this matter, being a specific type of data mining consisting of an analysis of the textual contents attempting to reveal hidden patterns that can be translated into useful knowledge. In addition, through the analysis and classification of sentiments, business managers will be able to understand which categories of services influence most customer satisfaction, which is important to help define Customer Relationship Management (CRM) strategies (Calheiros et al., 2017).

Information and Communication Technologies (ICT) have fostered the emergence and growth of new tools and opportunities for the tourism industry (Buhalis & Amaranggana, 2013; Ye et al., 2020). These technologies can add value to tourists' experiences, promoting increased efficiency and automating processes in tourism-related sectors. By adequately incorporating ICT into their environments, tourism destinations can enrich the tourist experience and improve their competitiveness.

Buhalis and Amaranggana (2013) explain that the sector's activities related to tourism generate vast amounts of digital data, contributing in a large scale to the production of the so-called big data. By acquiring the capacity to manage this data, tourism-related organizations can extract valuable knowledge that could raise them to a higher level in the consumer experience, gaining a competitive advantage over their competitors.

In this context, Smart Tourism Destinations emerge with the purpose of improving the tourism experience through smart systems that combine ITC, local cultures, and innovation in the tourism industry to promote the quality of service, improve tourism management, and amplify the scale of the industry (Buhalis & Amaranggana, 2013).

2.3 The impact of COVID-19 on Restaurants

The COVID-19 pandemic has brutal consequences on economic activity, and it is impossible to estimate its real impact since it will depend on determinant variables whose evolution is still unpredictable. It is known, however, that there has been an immediate impact on the revenues of companies from various industries, with the sectors associated with hospitality and the like being among the most affected, given their dependence on the mobility of people, which has been severely limited, with a drastic reduction in travel (Byrd et al., 2021; Hakim et al., 2021; Song, Yeon, & Lee, 2021).

Restaurants, already characterized as high-risk businesses, saw this risk dramatically exacerbated in the pandemic context. The restaurant sector was progressively affected as the pandemic evolved, with a strong impact on sales volume, employee lay-offs, and reduced hours worked as early as March 2020, noting the trend to close many businesses due to the pandemic (Song et al., 2021).

Usually, there is a natural solid motivation for people to interact socially and physically. However, historically pandemics generate an increase in fear about others, which results from the high perception of threat. In these contexts, people tend to have subjective perceptions of the threat of disease, having difficulty maintaining an objective point of view about the phenomenon surrounding them (J. Kim & Lee, 2020). In addition, there is evidence that customers mistakenly perceive restaurant food and its packaging as sources of COVID-19 contagion (Byrd et al., 2021). These insights contributed to customers' reluctance to go to restaurants, significantly impacting the activity (Al-Marzouqi & Yahia, 2021).

A study aimed at assessing the first impacts of the COVID-19 pandemic on restaurant demand found that, with each 1% increase in the number of new cases per day, visits to restaurants decreased by 0,0556%. There was also a negative relationship between the number of orders to eat at home and the number of restaurant visits (Yang, Liu, & Chen, 2020).

Through a survey applied to tourism destination residents, aiming to unveil the impact of the pandemic on tourism expectations, it was found that the factor "cleanliness and security" was the most decisive when choosing where to eat and stay in the near future. In addition, a significant proportion of the study participants indicated they were willing to pay a higher price for services that would provide a higher security guarantee (Couto et al., 2020).

The prominence of the virus and perceived threat by consumers increased the preference for isolated tables and private spaces in restaurants. In addition, customers will be more interested in places that perceive greater preparation and exhibit it, like those certified as "Clean and safe" (Borges-Tiago et al., 2021). This preference reflects that people seek solutions involving less risk (J. Kim & Lee, 2020).

In a study to investigate the influence of the intensity of health measures on consumers' behaviour in relation to restaurants, it was concluded that, although the perceived risk concerning COVID-19 may negatively impact the perception of quality, the application of health measures tends to reduce this effect. The authors also suggest that "hygiene" is a determining factor in customers' expectations (Al-Marzouqi & Yahia, 2021).

Many *chefs* and entrepreneurs demonstrated their concern about the reopening of restaurants as they estimated a possible lack of customers, which they associated with probable initial anxiety that they would have when visiting restaurants in the context of a pandemic (Madeira et al., 2021). However, as the restaurants resumed activity, the demand from customers was high, showing their interest in attending restaurants during the pandemic (Hakim et al., 2021). Hakim et al. (2021) have stressed the need to understand the factors that motivate consumers to visit restaurants during a pandemic. The pandemic is expected to continue to affect directly and indirectly the restaurant sector for a long time.

The perception and importance of the COVID-19 threat are factors that amplify the general trend of selecting commitment options and avoiding extreme choices. Thus, consumers tend to make intermediate choices when presented with a number of options (J. Kim et al., 2021).

In order to recover during and after the pandemic, businesses should have adaptive strategies based on a better understanding of how consumers react to threats since, thanks to digital platforms, consumers can easily compare the price and attributes of the options at their disposal. Therefore, it is critical that businesses pay attention to how they position themselves on these platforms in the face of competition and strive to adapt their offer, seeking to satisfy consumers' greater need for security (Kim et al., 2021).

Therefore, restaurant clients' behaviour is not a simple matter. It includes an ever-evolving set of influences that need to be considered when planning the restaurant activity and trying to minimize the perceived risks and increase overall satisfaction. In light of these concerns, this research focuses on answering these questions:

1. What are the most prevalent factors affecting consumers' experience in restaurants?
2. Does clients' online discourse present significant differences before and during a pandemic?
3. To what extent do the destinations' characteristics and public policies mould consumer perceptions and preferences?

3. Methodology

A hybrid analysis was carried out to answer these questions based on qualitative and quantitative elements. This analysis was supported by online reviews registered by restaurant customers on the TripAdvisor platform to understand their perception of the service provided, especially seeking to produce and interpret results through non-standard textual content.

Two distinct periods of analysis were defined, one prior to and the other subsequent to the outbreak of the pandemic, namely the second half of 2019 and the second half of 2020. For this purpose, two urban locations of high tourist affluence were selected in different Portuguese islands and outermost regions: the city of Ponta Delgada on the island of São Miguel and the city of Funchal on the island of Madeira. It was also necessary to define and apply additional criteria to select a limited number of establishments from each town to be considered in the sample. The criteria adopted considered the top 10 restaurants present in the TripAdvisor ranking. Also, it was defined as the eligibility criterion for restaurants that had reviews registered in both periods, which led to the exclusion of two establishments. Given their greater representativeness, only comments in English and Portuguese were considered.

These two islands belong to the two autonomous regions of Portugal, and during the pandemic, they adopted different sanitary measures to contain the virus's spread. Madeira closed to tourism later than the Azores, having confinement and testing policies established from the beginning. Both destinations created and applied a "safe & secure" accreditation to ensure that firms operated according to the sanitary guidelines and that customers felt safe. These were chosen due to their different tourism maturity level. In contrast, Madeira has more than a hundred years as a tourism destination, and most population works in the tourism and hospitality industry. The Azores have been fully committed to tourism for the last two decades. Thus, the economic impact of the lockdown and tourism constraints affected the two regions differently, with Madeira facing more pressure to reopen all activities.

The data were collected using web scraping tools, and its processing was done using text mining tools by applying machine learning technology and categorizing and classifying content based on the lexicon, that is, with the application of dictionaries that would enable this categorization, namely through the Wordstat software. Figure 1 summarizes the main steps of the methodology employed in this research.

Figure 1. Main Steps of the Methodology Employed
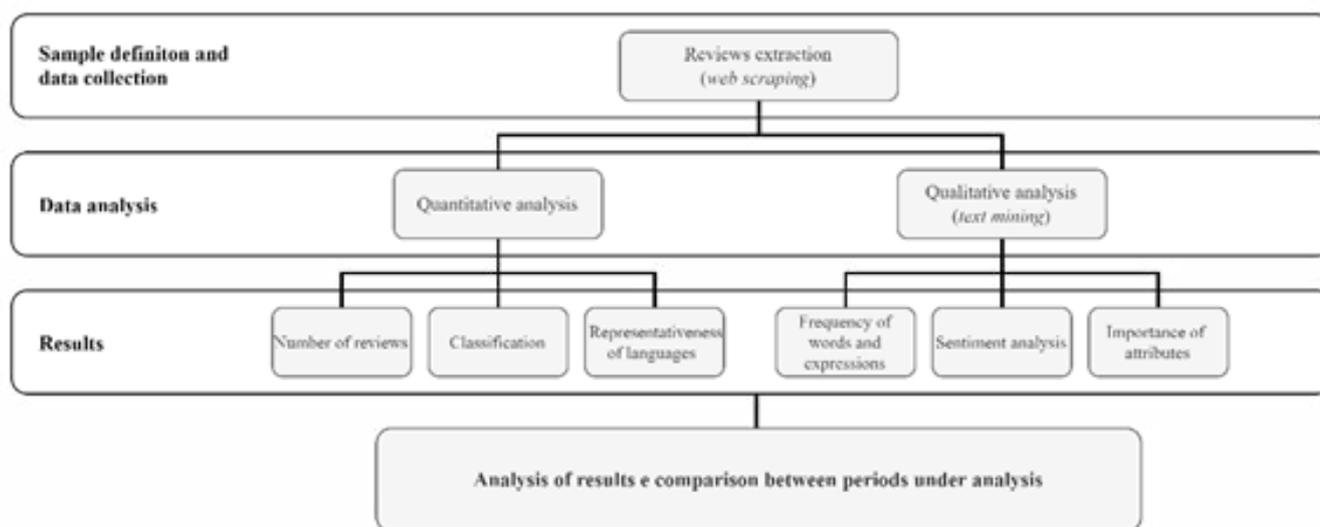
Source: Own Elaboration

As for the qualitative analysis, the textual content processing performed in Wordstat software was divided into two steps.

3.1 Step 1

In the first step, a content analysis was initially performed, executing the "Analyze" function of Wordstat, selecting the option "Explore" with the English language application and without recourse to any specific lexical dictionary. Then, through the "Frequencies" function, the frequency of words was obtained in the first and second periods under analysis.

Through the "Phrases" function, configuring the minimum and the maximum number of words to be considered in the extraction, 20 phrases were obtained with 2 to 5 most frequent words in the first and second periods under analysis. In addition, the 20 phrases with 3 to 6 most frequent words in the first and second periods under study were also obtained using the same function.

Applying the "Topics" function, the 15 main topics identified in the reviews were extracted, resulting from the application of factor analysis, with segmentation per sentence and considering the highest level of confidence in the enrichment of the topics. These topics were ordered according to their eigenvalue to assess their relevance to the total number of reviews registered.

Then, to relate these topics with the theoretical attributes associated with the quality of service in restaurants, a replacement of the themes generated through Wordstat was made by the characteristics considered more compatible with them, based on the attributes synthesized in Table 1.

Table 1. Summary of the Attributes Considered for Association with the Themes Identified in the Reviews

| Model	Proposed Attributes
Institutional Dineserv (validated by W. G. Kim et al., 2009)	Food quality; Service quality; Price and value; Atmosphere; Convenience
Proposed by Gan et al. (2017)	Food; Service; Context; Price; Environment

Source: Own Elaboration

It was sought, whenever possible, to apply the attributes referred to by Gan et al. (2017). However, when this was not possible, the attributes foreseen in the Institutional Dineserv model validated by W. G. Kim et al. (2009), including the attribute "convenience", were used.

3.2 Step 2

In the second stage, a more specialized analysis was carried out using the "Run Expert Mode" option that enables the application of dictionaries to categorize the analyzed contents. This second strand of data analysis in Wordstat was subdivided into two phases, using different dictionaries: first, the "Wordstat Sentiment Dictionary" and later, the "Roget Categorization Dictionary".

First, "Wordstat Sentiment Dictionary" was applied to analyze the main sentiments identified in the texts. In this case, the following sets of categories were used separately: the categories "negative words" and "positive words" and the categories "negative to assess" and "positive to assess".

It was then applied to the "Roget Categorization Dictionary" to investigate specific attributes that could help understand the phenomenon under analysis. Once clues about the "price" attribute relevance emerged, a dictionary that would allow assessing the importance of this factor in each of the periods under analysis was adopted. It also sought to identify specific references in the health, safety, and hygiene reviews. Figure 2 systematizes the two main steps of processing the textual contents in Wordstat and the data obtained through each procedure.

Figure 2. Main Steps Performed in WordStat and Results Obtained
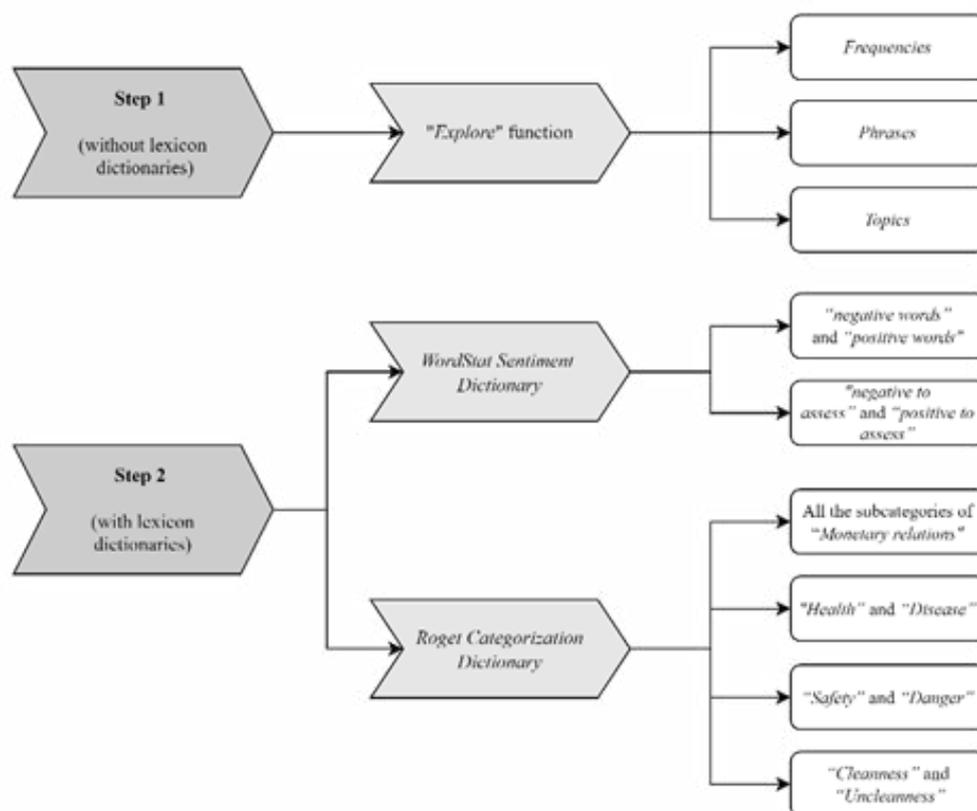
Source: Own Elaboration

4. Results

4.1 Quantitative Analysis

Of the 18 establishments evaluated, 14 saw the number of reviews decreases in the second half of 2020. Thus, only four of these 18 establishments saw the number of reviews increases in the second analysis period. In the total of restaurants selected in both locations, there are 831 reviews referring to the first period under analysis and a total of 400 reviews referring to the second period under investigation, which corresponds to a decrease of 51,87%. There was a significant increase in the review number registered in Portuguese and a reduction in the number of comments made in English in both locations.

Of the 18 restaurants under review, 11 saw their average ratings rise in the second review period. Only six restaurants saw their average rating drop, while one restaurant maintained its average rating. The average rating of all reviews for the second half of 2019 was 4,82, while the average rating for the second half of 2020 was 4,87. Therefore, there was an increase of 1,04% in the average classification of reviews between periods under analysis.

4.2 Qualitative Analysis

The most mentioned word was "food" in both periods under analysis. However, the word "service" went from the fifth most mentioned word in the first period under analysis to the second in the second period under analysis. Also, the words "recommend" and "experience" were shown more frequently. In both periods, the most reported expressions were "great food" and "Indian food". However, the third of the most mentioned expressions in the first half of 2019 was occupied by the expression "excellent food", being occupied by the expression "great service" which rose five places in the second period. Also, the phrases "highly recommend" and "food and service" rose in position. While in the first period under analysis, the

most frequent expression was "worth a visit", in the second period, the most frequent expression was "food and service". Other terms that include the word "service" or that are related to it have taken more prominence. The emergence of two expressions with equivalent meanings with a high number of references in the second period was also observed, namely "good value for money" and "great value for money". It is also noted that the expression "make a reservation", which occupied the 10th place of the most mentioned expressions in the first period, no longer appears in this list in the second period.

While in the first period under analysis, the most determining topic in the totality of the reviews was "Ponta Delgada", in the second period, the most determining issue was "friendly staff". The themes "feel cosy" and "highly recommend" have also emerged, and these have assumed some relevance in the second period under analysis. It is also verified that the theme "make a reservation" ceased to be relevant in the second period under examination.

Then, a relation was established between the topics generated by Wordstat and the theoretical attributes related to the quality of service in restaurants considered more relevant, having identified the attributes "environment", "food", "context", "convenience", "price" and "service". While in the first period under analysis, the most determining attribute was "convenience", in the second, the most determining attribute was "service". In both periods, it can also be seen that the attribute "context" is one of the most impacting, ranking third in the first period under analysis and second in the second period. There is also the emergence of the "environment" attribute with relevance in the second period under analysis. It can also be observed that the "price" is one of the least relevant in both periods under analysis, appearing to be associated with the original topic "reasonable prices".

In addition to the contribution of each attribute, the frequency with which each attribute is referred to in the first and second periods under analysis was observed. It is verified that, while in the first period, the "context" and the "food" are the attributes referred to most frequently, in the second period, the most mentioned attributes are the "service" and the "context". The graphic representation of the frequencies of each attribute in the two periods under analysis is shown in Figure 3.

Figure 3. Frequency of the Attributes Identified in Reviews
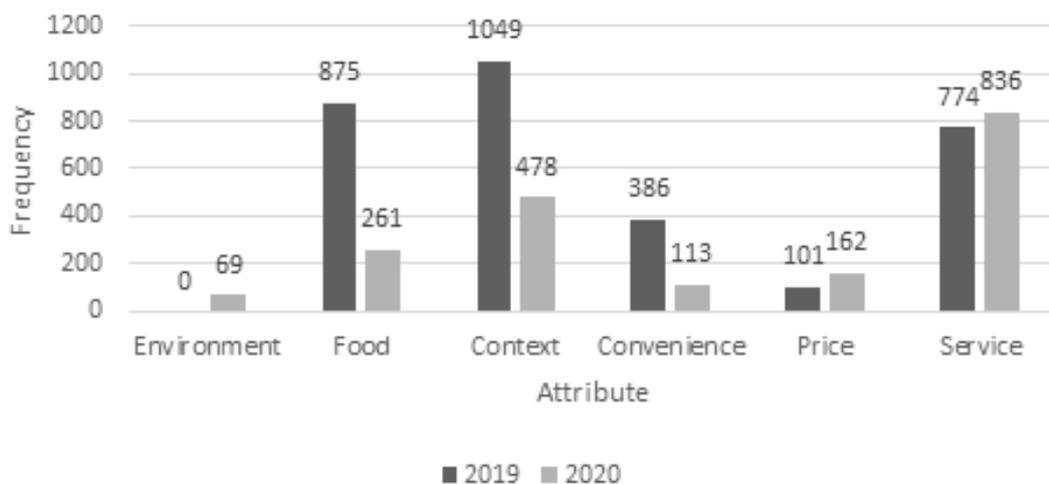
Source: Own Elaboration

As for the sentiment analysis, in the second period under review, there was a slight increase in the percentage of words classified as positive (from 85,95% to 86,23%). At the same time, a slight decrease in the percentage of the words classified as negative (from 14,05% to 13,77%) occurred. The positivity tone expressed in overall evaluations also slightly increased (from 95,58% to 95,74%).

In both periods under review, most references to monetary aspects fall within the "value" subcategory, the emphasis being most evident in the second period under review. The weight of this subcategory exceeds that of the rest (from 18,73% to 20,45% of the observations).

In the second period under analysis, there is an increase in the percentage of words associated with disease (from 18,07% to 32,14%) and, at the same time, a decrease in the percentage of words associated with health (from 81,93% to 67,86%); also, there is an increase in the percentage of words associated with danger (from 9,80% to 14,29%) and, at the same time, a decrease in the percentage of words associated with safety (from 90,20% to 85,71%); additionally, there is an increase in the percentage of words associated with cleaning (from 43,08% to 52,24%) and, at the same time, a decrease in the percentage of words associated with dirt (from 56,92% to 47,76%).

5. Discussion

Of the 18 restaurants under review, 11 saw their ratings rise in the second review period. In both cities, the average value of the classifications increased between periods under analysis. Considering the average of all the classifications of each period under analysis, an increase from 4,82 to 4,87 between periods was confirmed, suggesting a slight improvement in the perception of quality during the pandemic.

Also, the results obtained through the analysis of the textual contents of the reviews are consistent with an improvement in the perception of quality, and there was an improvement of the implicit sentiment in the reviews registered in the pandemic context. In both periods under analysis, the sentiments identified in the reviews are mostly positive. This coincides with the results obtained by Tian et al. (2021), who suggest that clients use more positive than negative words in their reviews.

In both periods, the word most frequently mentioned in the reviews registered was "food", which is consistent with the results of the study by Tiago, Amaral, & Tiago (2015) that pointed to food as the most adopted variable in the content generated by users. However, the word "service" became more prominent in the pandemic context, having passed from the fifth most mentioned word in the first period under analysis to the second place in the pandemic period.

Regarding the short expressions identified most frequently in the reviews, in both periods of analysis, the most reported were "great food" and "Indian food". It was found, however, that the third place of the most mentioned expressions, which in the first period was occupied by the expression "excellent food", came to be occupied by the expression "great service". Regarding more extensive expressions, while in the period before the pandemic, the most frequent expression was "worth a visit", during the pandemic, the most frequent expression was "food and service". Also, at this stage, it was found that the expressions that include the word "service" or related became more referred to in the context of the pandemic, denoting greater importance of this attribute. There was also an increase in the frequency of the expressions "good value for money" and "great value for money", suggesting a greater perception of value.

The term "make a reservation", which was the tenth most frequently mentioned expression in the first period under review, is no longer included in this list in the second period, which suggests that it is easier to obtain a table without a reservation in a restaurant in the context of a pandemic, which may relate to the lower turnout to these establishments, resulting from customers' initial reluctance to go to restaurants, as reported by Al-Marzouqi and Yahia (2021).

As for the main topics extracted from the reviews of each period, while "Ponta Delgada" was the most determinant in the period before the pandemic, "friendly staff" became the most relevant in the pandemic context. The topics "feel cosy" and "highly recommend" also emerge, assuming some relevance in the second period under analysis. This analysis also shows that the theme "make a reservation" is no longer relevant during the pandemic period. Relating these topics to the theoretical attributes identified in the literature, namely those proposed by Gan et al. (2017) and those contemplated in the Institutional Dineserv model and validated by W. G. Kim et al. (2009), it was possible to identify the following attributes in the analyzed reviews: "environment", "food", "context", "convenience", "price" and "service".

While in the period before the pandemic, the most determinant attribute in the reviews was "convenience", during the pandemic period, the most determining characteristic was "service". In both periods, the attribute "context" is one of the most determinants, ranking third in the first period under analysis and second in the second period. The results obtained on the "context" attribute are in line with the study's conclusions by Gan et al. (2017), which proposed that this would be the third most determining attribute for the evaluation of experience by clients.

On the other hand, the attribute "food", although corresponding to the word most mentioned in the frequencies obtained, emerged, in terms of importance, in the fourth position in both periods. There was also the emergence of the attribute "environment" in the context of the pandemic. It was observed that the attribute "price" will have been one of the least determinants in both periods under analysis, appearing only associated with the original topic "reasonable prices". Gan et al. (2017) point to "price" as the second least determinant attribute for the evaluation of experience by customers, which is consistent with the reduced relevance of this attribute in the reviews analyzed.

Concerning the frequency with which these attributes are referred to, it was found that, while in the first analysis period, the "context" and the "food" are the attributes referred to most frequently, in the second analysis period, the most mentioned attributes are the "service" and the "context". Thus, these results also suggest an increase in the relevance of the "service" attribute.

Regarding the frequency of words that fit in the subcategories relating to "monetary relations", in both periods under review, most references fall within the subcategory "value", which will indicate a good perception of the value received vis-à-vis the costs incurred. This importance seems to be even more evident in the second period under consideration, where the weight of this subcategory far exceeds that of the rest. These results are in line with the authors who suggest that in a pandemic context, the predisposition of clients to pay more to have an adequate experience increases, as reported by Couto et al. (2020).

In the second period under analysis, there was an increase in the relative frequency of words associated with "disease", which seems to indicate a greater concern for the disease in the context of a pandemic. There was also an increase in the relative frequency of words associated with "danger", which suggests a higher risk perception in the context of a pandemic. Byrd et al. (2021) showed that customers tend to mistakenly perceive that restaurant food is a source of COVID-19 contagion, which may justify the results obtained. Despite this, the results show that in the second half of 2020, there was an increase in the relative frequency of words associated with "cleanness", which will indicate the perception of adequate hygiene measures applied by establishments in the context of a pandemic. This is an aspect of which customers will have become more aware during the pandemic and impacts their preferences, as suggested by J. Kim and Lee (2020). Al-Marzouqi and Yahia (2021) also emphasize that, although the perceived risk of the disease may negatively impact the perception of quality of service, strict compliance with health measures tends to mitigate this effect.

6. Conclusions and Implications

Customers play an increasingly determining role in what is communicated about businesses and, consequently, in how other potential customers view them. In addition to reinforcing the importance of managers focusing on creating value for customers, this paradigm shift requires a continuous adaptation of models and tools to assess service quality so that they are increasingly aligned with consumer expectations.

The crisis caused by the COVID-19 pandemic in the various sectors, and in particular in the restaurants sector, has reinforced the importance of providing a service that meets customers' expectations, as the quality of service has an impact on their satisfaction and, consequently, their loyalty, which at this stage will have been particularly decisive for the continuity of many businesses.

There is a consensus that online reviews registered by users are reliable and useful sources of information to understand customers' perceptions. Many authors advocate applying hybrid methodologies and using text-mining techniques to obtain useful knowledge, which was tested in this research.

Through the analysis of the results obtained, it was verified that there was an impact of the COVID-19 pandemic on the perception of quality in restaurants. Furthermore, both quantitative and qualitative analyses produced results that indicate an improvement in this perception during the pandemic.

The results obtained through the analysis of the textual content of the reviews also allowed us to attest that there has been a change in the importance of the attributes that determine the reviews made by the clients. In the pandemic context, the attribute "service" acquired a greater extent, while in the period before the pandemic, the most determining attribute was "convenience". Also, the attribute "context" is particularly decisive for the overall review, and this importance increased in the pandemic context, mov-

ing from third to second place between periods. The attribute "food" appears only in fourth place concerning the topics that most influence the total reviews registered in both periods. Thus, it highlights the importance of providing a "service" that exceeds customers' expectations and understands the "context" in which they visit the establishments, not neglecting the other attributes identified.

It was also confirmed that the "price" is not a determining attribute for the overall review, being generally evaluated as "reasonable" by the clients who refer to it. Moreover, in a pandemic context, the perception of value was further strengthened in its relationship with price.

With regard to health, safety, and hygiene issues, it was found that, although there are more concerns about health issues and the perceived risk associated with going to a restaurant during the pandemic, this does not seem to affect customer satisfaction; reviews even reveal an increase in the perception of cleanliness. Therefore, the establishments must comply with the best hygiene practices to avoid the fears related to the disease affecting the perception of quality.

The findings support the idea that managers can gain from a clear customer orientation based on comments that work as an information source to assess customers' preferences and perceptions. Although the value of this approach is undeniable, it is recommended that businesses develop large-scale data treatment procedures since the manual and individual analysis of this often non-standard content may not be feasible. Considering the dimension of the business units and the resources available, this is quite a challenge that can find support on machine learning techniques to collect, process, and analyze information.

Tourism destinations should also seek to equip themselves with tools to extract useful knowledge from the enormous amount of data generated in the various tourism activities which users essentially create. Although this is a differentiation factor of destinations, there is still little research on the contribution of the restaurant sector to the development of Smart Tourism Destinations. This gap should also motivate further work on the knowledge obtained through the enormous amount of data produced at every moment on such rich and revealing experiences as restaurant meals. It should be stressed that this methodology and the techniques applied are considered reliable, and their application to other phenomena and sectors is recommended.

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