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The impact of the COVID-19 on the airline industry emerging from online comments

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Master in Hospitality and Tourism Management

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NOVA Information Management School

March 2021



BUSINESS
SCHOOL

Department of Marketing, Strategy and Operations

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Last, but not the least, this goes to all my friends, met along this beautiful journey called life, for the endless fun, joy and love they gave me. I hope I have been as inspirational as you have been to me.

Resumo

O objetivo deste estudo é avaliar como o impacto do novo Coronavírus no setor aéreo se reflete nas preocupações dos viajantes afetados através dos comentários que eles escrevem on-line. Neste estudo, uma amostra de 639 comentários relacionados com o setor aéreo, escritos no website da União Nacional dos Consumidores da Itália, foi avaliada através de uma análise de sentimentos automática. Os resultados alcançados mostraram que a atenção dos viajantes foi sobretudo focada nas compensações, cancelamentos e COVID-19 sendo que, ao mesmo tempo, os sentimentos revelados eram confusos e imprevisíveis. Tal sugere que os consumidores podem ter de certa maneira aceite que as empresas aéreas estão a enfrentar situações insustentáveis de tesouraria e receita. Adicionalmente, todas as hipóteses, baseadas na literatura existente, foram refutadas. Assim, argumentamos que o contexto real impedem análises baseadas em assunções anteriores, sendo que é necessário desenvolver de raiz estudos relacionados com o impacto da COVID-19.

Keywords

COVID-19; comentários nas redes sociais; viajantes aéreos; Itália.

Abstract

The aim of this research is to evaluate how the novel Coronavirus impact on the airline industry is reflected on the affected travelers' concerns expressed in the comments they write online. In this study, a sample of 639 comments related to the airline industry, written on the website of the Italian National Consumer Union, has been assessed through an automated sentiment analysis. The achieved results showed that travelers' attention was directed mainly towards compensations, cancellations, and COVID-19 and at the same time they had mixed and unpredictable feelings. This suggests that consumers may understand that airline companies are facing unsustainable cash-flow and revenue situations. Moreover, all the hypotheses, grounded on the existing literature were refuted. Accordingly, we argue that the actual context prevents assessments based on previous assumptions and studies related to the impact of COVID-19 need to be conducted anew.

Keywords

COVID-19; online reviews; air-travelers; Italy.

JEL Classification System

L930 Air Transportation.

L830 Tourism.

Table of Contents

Acknowledgements	iii
Resumo	v
Abstract	vii
1. Introduction	1
2. Background	3
2.1. Past Pandemics and Travel Activities	3
2.2. COVID-19 and Travel Activities	4
2.3. Proposed hypotheses	5
3. Methodology	8
4. Results and Discussions	11
5. Conclusions	21
5.1. Theoretical contributions	21
5.2. Practical implications	22
5.3. Limitations and future research	22
References	24

List of Tables

Table 3.1 – Dictionary for airline industry	10
Table 4.1 – Term frequency	12
Table 4.2 – Business type frequency	12

List of Figures

Figure 2.1 – Air Transport, passengers carried.....	4
Figure 3.1 – Proposed approach.....	8
Figure 4.1 – On time performance	13
Figure 4.2 – Boarding Issue	14
Figure 4.3 – Cancellation.....	15
Figure 4.4 – Compensation.....	16
Figure 4.5 – Customer service	16
Figure 4.6 – Evolution of cancellation and compensation sentiment scores	18
Figure 4.7 – Comments mentioning COVID-19	19
Figure 4.8 – COVID-19	20

1. Introduction

The tourism industry plays a crucial role in the global economy. According to the World Travel and Tourism Council (2020), in 2019 Travel and Tourism's direct, indirect, and induced impact accounted for US\$ 8.9 trillion to the global GDP (corresponding to 10.3% of the global GDP) and employed 330 million people. As a development pillar in many countries, and although its relevant economic power and apparent resiliency, tourism is highly sensitive to internal and external shocks such as economic downturns, natural disasters, epidemic disease, and international conflicts (Sonmez et al., 1999). In the literature, great attention has been dedicated to the assessment of the influence of those factors on tourism operation and demand (e.g., Sonmez et al., 1999; Chien & Law, 2003; Alonso-Almeida & Bremser, 2013). Although the world has been hit by several crises in the current Century, none of them led to a long-term decline in the global development of tourism. Despite a relatively small tourism recession between 2008 and 2009 due to the global economic crisis, the trendline still showed growth (Gossling et al., 2020).

As a key element in the travel and tourism industry, air transport takes almost 11% of consumer spending, employs roughly one in every nine people and contributes largely to economic development (Hanlon, 2007). Therefore, it is crucial to analyze how such vital industry is being affected by the spreading COVID-19 epidemic disease. This study aims to evaluate how the novel Coronavirus impact on the airline industry is reflected in the affected travelers' concerns expressed in the comments they write online.

During the first quarter of 2020, the disease had already caught the global attention of media, health organizations and researchers and the theme had been analyzed under multiple facets (e.g., Ayittey et al, 2020; Velavan & Meyer, 2020; Rothan & Byrareddy, 2020). Yet, little is known about how the impact of the virus outbreak on the airline industry was perceived by the related prospective customers. Indeed, the purpose of this research is to reduce such gap through a sentiment analysis of online comments related to the airline companies. Understanding customers' point of view and opinion, and how the main concerns evolved during the pandemic would help the air carriers cope with the crisis more effectively and enrich their contingency plans.

In this study, an automated textual analysis was run on a sample of 639 comments related to the airline industry, written by consumers on the website of the Italian National Consumer Union. The source has been chosen because Italy is among the countries most severely affected by the pandemic worldwide. Sentiment analysis was adopted to unveil affected travelers'

sentiments towards a set of relevant categories grounded on existing literature. Unlike previous studies that also adopted sentiment analysis, here it has been implemented to investigate the opinion of consumers towards the airline companies during the unprecedented COVID-19 pandemic, instead of measuring the perceived quality of the services themselves (e.g., Adeborna & Siau, 2014). Consequently, compared to previous studies (e.g., Baker, 2014; Brochado et al., 2019) where the dataset was composed by after-service reviews, this research is innovative in the way that most of the complaints lie in a pre-service stage, where the consumers are uncertain whether or not they will be able to actually travel.

The remainder of this paper is structured as follows: section 2 presents a literature review on the subjects relevant to this paper and proposes research hypotheses. Section 3 describes the dataset and methodology. Section 4 showcases the results and reviews their main implications. Lastly, section 5 summarizes findings, addresses the limitations, and proposes new paths for future research.

2. Background

2.1. Past Pandemics and Travel Activities

Pandemics are epidemics occurring over a very wide area, crossing international boundaries, and usually affecting a large number of people (Porta, 2014). According to Potter (2001), in the past 300 years approximately 10 pandemics have been identified and their repeating pattern together with their unpredictability and our inability to contain them, indicate that pandemics will continue to occur. Consequently, it is crucial to analyze the past to be able to make predictions for the future. According to Kilbourne (2006), during the last Century there have been three major pandemics: the Spanish Flu in 1918, the Asian influenza in 1957 and the Hong Kong influenza in 1968. The Spanish flu was the most severe among them. Some of the worst-case scenarios for the current COVID-19 pandemic are based on it and a similar event happening today, considering a much larger population and quicker travel times around the world could lead to more than 80 million deaths (Fernandes, 2020). However, since major progresses in medical science and technology occurred during the 20th Century, it is appropriate to consider the pandemics that hit the world in the current Century and their impact on travel activities: SARS in 2003, Avian Flu in 2009, MERS in 2012 and Ebola in 2014.

Despite much attention has been given to the Spanish Flu due to the fear of massive outbreak reaching pandemic proportions (Jonung & Roeger, 2006), there is a gap in the literature regarding its impact on traveling activities. Additionally, it should be mentioned that travel and tourism at the time of the Spanish flu were not as advanced and accessible as they are now.

Regarding the major pandemics occurred in the current Century, as highlighted by Gossling et al. (2020), although the world has been hit by several crises, none of them led to a longer-term decline in the global development of tourism. Figure 2.1 illustrates the number of air passengers (Billion) carried including both domestic and international aircraft passengers of air carriers registered since 2000 (The World Bank, 2020). Despite a little recession between 2008 and 2009, due to the global economic crisis, the trendline shows significant growth.

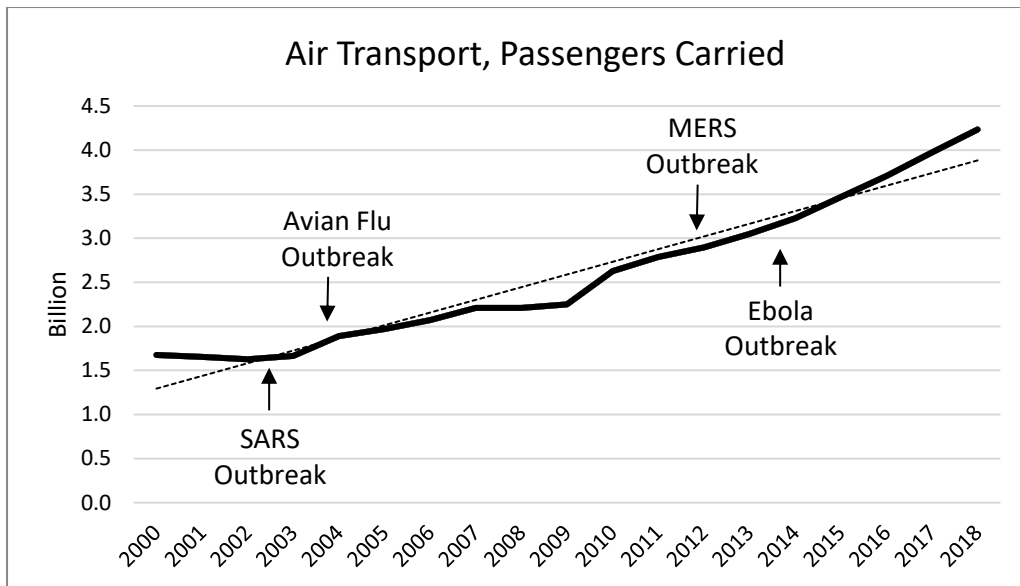


Figure 2.1 – Air Transport, passengers carried (The World Bank, 2020)

2.2. COVID-19 and Travel Activities

According to the World Health Organization (WHO, 2020a), “Coronaviruses (CoV) are a large family of viruses that cause illness in animals or humans (...) in humans several coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV)”. Specifically, “COVID-19 is the infectious disease caused by the most recently discovered coronavirus” (WHO, 2020a) and it has erupted in Wuhan, the capital city of the Hubei province in China, in December 2019 and spread across Asia and the world like a wildfire. It became a global public health crisis few months later (Ruiz Estrada et al., 2020). The spread of the disease became unstoppable and the WHO (2020b) ended up characterizing it as a pandemic.

As Wilder-Smith (2006) stated for SARS, one can say that COVID-19 and travel are intricately interlinked. Travelers were among those primarily affected in the early stages of the outbreak, becoming vectors of the disease, and finally, travel and tourism themselves became the victims. Like in the previous SARS crisis of 2003, restrictions to the freedom of movements quickly became adopted by countries to limit the spread of the disease (Chen et al., 2007). Moreover, similarly to what has been pinpointed for SARS (Wilder-Smith, 2006), the outbreak of COVID-19 created international anxiety because of its novelty, its ease of transmission in certain settings, the large number of asymptomatic individuals detected, and the speed of its spread, combined with extensive media coverage. Unfortunately, it seems that the effects of the current pandemic would be unprecedented (Gossling et al., 2020), since this time we are

facing several new challenges which prevent simple comparison with past crises, such as: a global pandemic is occurring and it is not focused on low-middle income countries; interest rates are at historical lows; the world is much more integrated; this current crisis is generating spillover effects throughout supply chains; one has simultaneously destruction of demand and supply (Fernandes, 2020).

2.3. Proposed hypotheses

With the development of the Web 2.0, writing worldwide accessible online feedback became extremely easy (Moro et al., 2020), and as an electronic form of word-of-mouth (WoM), comments constitute up-to-date and reliable information for both consumers and scholars (Lu & Stepchenkova, 2012). Researching customers' textual reviews can reveal their experiences, highlight their interest regarding the product and service attributes, and provide their detailed perceptions through freely written text (Zhao et al., 2019). Additionally, considering that reviews have a significant business value and influence future customers' demand (Xie et al., 2014), understanding clients' opinions helps business owners to improve their strategic plans. Likewise, tourism decision makers at both a regional and a national level can benefit from the insights provided by online reviews (Moro et al., 2018; Guerreiro & Rita, 2019).

The sentiment analysis run on the comments enables to determine their polarity (positive or negative) as well as the intensity of consumers' perceptions (with zero being a neutral sentiment comment and a different numeric value reflecting that intensity for both polarities, negative and positive) (Pang & Lee, 2008). Therefore, sentiment analysis has been extensively applied within tourism and hospitality literature to understand tourists' perceptions from online reviews (e.g., Gao et al., 2018; Nave et al., 2018; Moro et al., 2019). After recognizing its importance and large development in existing literature, both Khaturia et al. (2018) and Tiwari et al. (2019) ran a sentiment analysis on a Twitter dataset related to the airline industry and highlighted that passengers had negative opinions regarding delayed and cancelled flights, booking issues and customer service. Indeed, as the increase of COVID-19 cases and consequent travel bans that led to a reduction of flights (Chinazzi et al., 2020) prevented prospective travelers from actually traveling, the concerns regarding boarding and on-time departures were less, while the concerns toward cancelation issues increased. Thus, the following hypotheses are proposed:

- (H1) The sentiment score regarding boarding issues and on-time performance is neutral during the pandemic.

- (H2) The sentiment towards cancellations and related compensations and interaction with the customer service is decreasing (i.e., becoming more negative) as COVID-19 spreads worldwide.

Moyle et al. (2014) stressed the importance of having a contingency plan whether events have a high risk to be canceled due to causes of force majeure. In their study, they analyzed how a change due to the bad weather in the schedule of the Ironman New Zealand 2012 event was perceived by participants, and despite some concerns, most athletes were quite satisfied with the substitute event that the race management organized under such difficult circumstances (Moyle et al., 2014). Furthermore, Liao & Tan (2014), while studying customers' opinion towards low cost carriers (LCC) through text mining, pinpointed that LCCs' customers negatively perceive flight cancellations, despite the attempt by companies to please them with a monetary compensation. In line with Moyle et al. (2014) it can be assumed that, in case of unexpected circumstances that may cause cancellations, if an organization properly handles the matter and compensates its customers, their sentiment would be positive. However, in this peculiar context, the numerous cancellations led to an unsustainable cash-flow and revenue situation for the transport and travel sectors (European Commission, 2020b). Indeed, to support operational costs by preserving their liquidity, the carriers were offering primarily vouchers instead of refunds (Suau-Sanchez et al., 2020). This practice seems to be not in line with customers' expectations since they do not know when it will be possible to fly and are afraid to do it (Riefa, 2020). Consequently, the following hypothesis was also assessed:

- (H3) The management of cancellations by the carrier, in this specific emergency time when companies need to preserve liquidity, is causing a constant negative sentiment score towards compensations and cancellations.

Lastly, Chen et al. (2020) recently investigated the Chinese news coverage related to COVID-19 and tourism by developing an automated content analysis on 499 articles. Nine main themes emerged, and, among them, the 'people's sentiment' reflected that the disease affected public emotions and that at the beginning anxiety and panic might have risen, most likely among tourists stuck at the destination. However, with the assistance of the hospitality staff aimed to bolster guests' confidence through setting a 'home environment', the pressure was released. Moreover, Mao et al. (2010), while examining the post-SARS recovery of inbound arrivals in Taiwan, pinpointed that out of three countries of origin that composed the dataset (Hong Kong, United States and Japan), the number of tourists arriving from two of them (Hong Kong and United States) bounced back to the pre-SARS level right after the removal of the SARS alert in Taiwan.

As the confinement measures implemented to avoid healthcare systems from collapsing (Grasselli et al., 2020) resulted in turning the exponential increase of new cases into more controllable numbers (i.e., by reducing the number of new cases versus recoveries), it was more likely that prospective travelers became more positive toward the disease risk (Chen et al., 2020). Also, as Mao et al. (2010) confirmed on the SARS 2003 case, a reduction of infected cases led governmental authorities to analyze the removal of travel bans, which increased travelers' predisposition to think about traveling again, mitigating the negative effect of the outbreak. Thus, it is proposed that:

- (H4) The decrease of new cases and fatalities leads to an increase in the sentiment score (i.e., more positive sentiment) towards the disease itself.

3. Methodology

The source of the online comments analyzed in the current research was the *Unione Nazionale Consumatori* (National Consumer Union) website (<https://www.consumatori.it/bacheca-reclami/>) (UNC, 2020a). Founded in 1955, the UNC is the oldest consumer association in Italy. UNC is member of the National Council of Consumers and Users (CNCU), set up within the Italian Ministry of Economic Development, and it is a social promotion Association approved by the Italian Ministry of Labor and Social Policy. Moreover, UNC is officially notified to the European Commission as a Consumer Association in Italy (UNC, 2020b).

The full approach undertaken for the experiments is summarized in Figure 3.1.

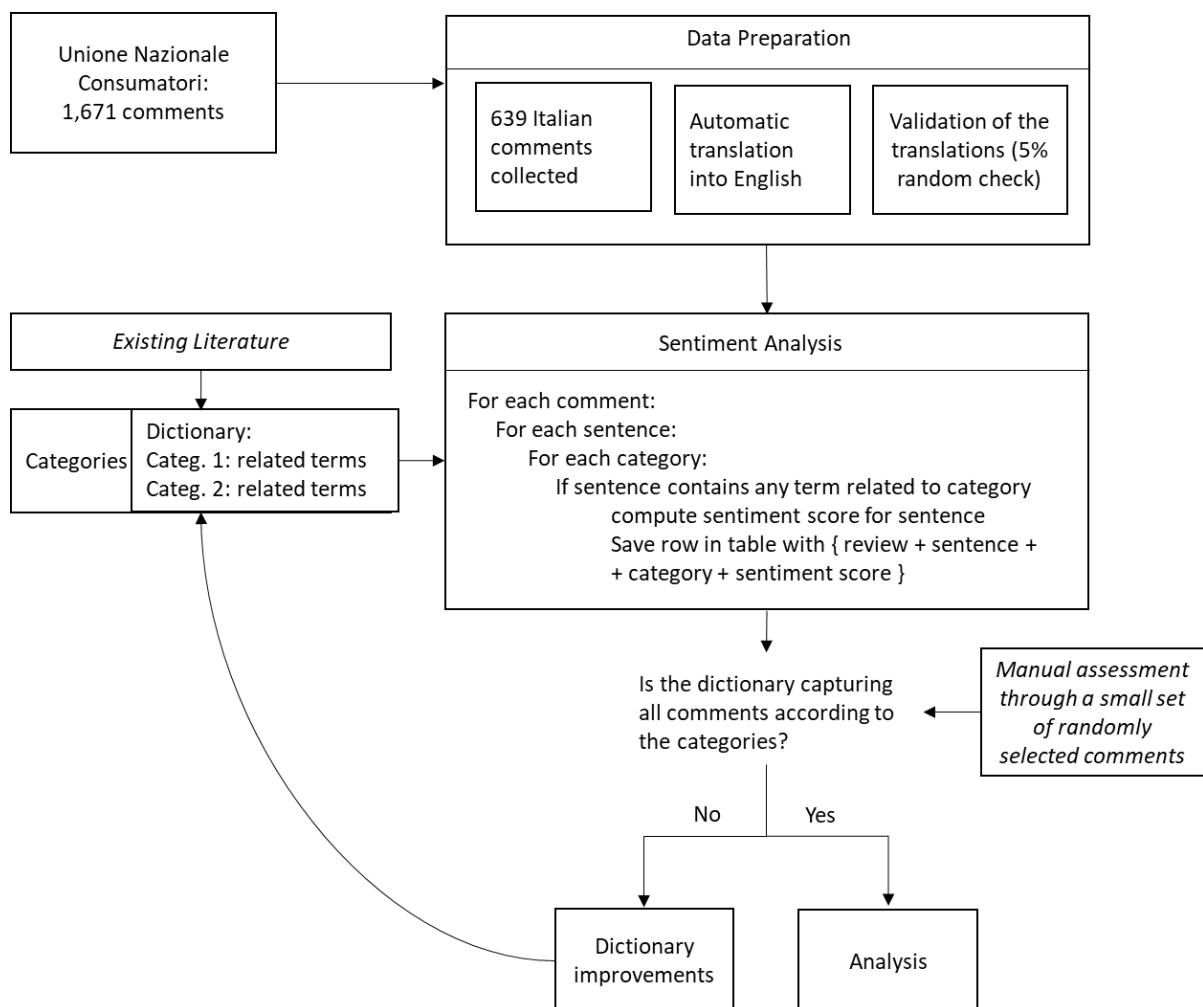


Figure 3.1 – Proposed approach

On the National Consumer Union’s website, consumers can write comments related to every issue that they encounter with a product or a service with an entity. While submitting a comment, firstly the macro category (e.g., Car Rental, E-Commerce, Tourism & Travel) closer to the issue (if none of the macro categories work, there is the ‘generic’ one) needs to be chosen and then the related company. In case the company is not listed there is the possibility to select

the ‘other’ option. The consumer fills a form with the comment and can decide whether it is published or not.

Among all the macro categories, for this study the ‘Tourism and Travel’ one was selected. The related company’s list shows the following 6 sub-categories: ‘Alitalia’, ‘Ryanair’, ‘Trenitalia’, ‘Italo’, ‘Alpitour’ and ‘other for tourism and travel’. Between January 1st and April 30th, 2020, 1,671 comments were published under the macro category ‘Tourism and Travel’. Out of them, all the comments that were classified under the sub-categories ‘Alitalia’ and ‘Ryanair’ (both airlines) were selected. Additionally, from the comments classified under the remaining sub-categories, those that were clearly related to the airline industry were also selected. Moreover, duplicates were removed and all comments that mentioned that the purchase was made through a third party (e.g., Travel Agency, Online Travel Agency) were excluded. Considering that the intermediary is the direct client of the airline company instead of the final customer, for potential claims consumers should address the third party. This is because the goal of the study is to understand travelers’ perceptions about airlines and not towards travel agencies. Although affected by the pandemic too, these belong to a different segment and require a different research. The achieved result was a pruned set of 639 comments.

Most of the comments were written in Italian. Those were automatically translated into English using the Yandex translate API through a specifically developed R script using the “RYandexTranslate” package. The translation was validated with a random check of 5% of the comments.

Based on the existing literature (Dresner & Xu, 1995; Baker, 2014; Sousa & Desai, 2015; and Brochado et al., 2019) a first set of categories and related terms was created, their frequencies were measured, and sentiment analysis was conducted on the sentences that contained them. Such procedure is used to analyze a text string to determine its sentiment score, with zero meaning a neutral sentiment (Pang & Lee, 2008). Thus, the implemented algorithm (detailed in Figure 3.1) consisted in search within each comment for sentences that matched each of the categories. If a sentence matched a category, then the sentiment score of that sentence was associated to the comment. Such procedure enabled to capture the sentiments perceived by prospective travelers about each category as the epidemic turned into pandemic and spread globally and, specifically, to Italy during the analyzed period. Each category was initially composed by a set of related terms proposed in existing literature. Yet, the common language used by travelers in online posts was not fully captured in the initially dictionary matching terms to each category. To address such issue, a cyclic process was performed to

enrich the dictionary by manually evaluating a small set of randomly selected comments to assure if those contained any word that was not captured as belonging to a given category (e.g., ‘toll-number’ was not initially captured within category ‘Customer Service’; it was included later after the described tuning process). Consequently, the dictionary was enlarged to the version shown in the Table 3.1 and the analysis was re-run in each new iteration of the cycle.

Reference	Categories	Examples of terms related to the category*
Baker, 2014; Sousa & Desai, 2015	Boarding Issue	boarding denied, overbooking, check-in
Baker, 2014; Sousa & Desai, 2015	On time performance	delay, landed late, departed later
Sousa & Desai, 2015	Cancellation	cancellation, re-protection, reallocation, hijacking
Baker, 2014	Customer Service	customer service, chat, help desk, toll-free number
Baker, 2014	Compensation	refund, compensation, voucher
Abd-Alrazaq et al., 2020	COVID-19	coronavirus, pandemic, quarantine, decree
-	Airline company	ryanair, alitalia, ernest airlines, lufthansa

*All terms are in lower case and separated by commas

Table 3.1 – Dictionary for airline industry

4. Results and Discussions

Compared to previous studies (e.g., Baker, 2014; Brochado et al., 2019) where the dataset is composed by after-service reviews, this research is innovative in the way that most of the complaints lie in a pre-service stage where the consumers have not enjoyed the flights and actually doubt the possibility to take them. Indeed, as shown in Table 4.1, the words with the highest frequency belong to the category ‘Compensation’, considering the impossibility to consume the already booked and paid service, customers are immediately looking for a reimbursement. The pandemic, together with the ‘cancellation’ topic, attracted a great amount of attention. Regarding the ‘airline company’ theme, as shown in Table 4.2, it is interesting to highlight that low-cost carriers were mentioned 1.67 times more than traditional providers. These numbers are consistent with the market share of low versus traditional carriers, with the low-cost companies representing around 191M seats between 2016 and 2018, while traditional ones represented 106M seats on the same period (Statista, 2020). There is a preconception against low-cost airlines that the search for profit renders a bad service to customers; however, the business model of low-cost carriers results in profit while still delivering a good service quality (Casadesus-Masanell & Ricart, 2011). Such preconception is rooted precisely on their business model. While analyzing European LCCs, Dobruszkes (2006) highlighted that when a flight was cancelled or delayed, LCCs travelers usually were not compensated, nor they were re-allocated or accommodated overnight. Since most LCCs do not belong to the International Air Transfer Association (IATA), they initially did not have to comply with certain quality standards (e.g., finding a solution for travelers whose flight was canceled). Nevertheless, starting from February 2004, the new European Union regulation on compensation and assistance to passengers in the event of denied boarding and of cancellation or long flight delay (see European Parliament and the Council of the European Union, 2004) enhanced air travelers’ rights (Dobruszkes, 2006). Since the regulation applies identically to every airline (Judgment of the Court Grand Chamber, 2006), LCCs had to adjust their approach towards customers. Thus, it can be concluded that the concerns regarding COVID-19 are independent of the carrier type.

Nr.	Term	Frequency
1	Compensation	881
2	Airline company	770
3	Cancellation	390
4	COVID-19	359
5	Customer Service	127
6	Boarding Issue	30
7	On time performance	26

Table 4.1 – Term frequency

Nr.	Business Type	Frequency
1	Low-cost Carrier	463
2	Traditional Carrier	277
3	Charter & Traditional Carrier	30

Table 4.2 – Business type frequency

The results of the sentiment analysis are presented through box-and-whiskers diagrams (also known as box plots). In each figure, the *x*-axis represents the weeks, while the left *y*-axis and the right *y*-axis show the sentiment scores and the number of new and death COVID-19 cases reported in Italy, respectively (European Center for Disease and Control, 2020). The data is aggregated per week and each box-and-whiskers plot shows the weekly sentiment scores' five summary-statistics (minimum, maximum, median, lower quartile and upper quartile).

According to IATA (2020), April 2020 saw a drop of 94.3% year over year in the passenger demand due to the travel restrictions implemented to contain the spread of the virus. Indeed, with the reduction of flights, one might expect a null score towards both 'on-time performance' of flights and issues related to boarding, since most commercial flights were not operating. Notwithstanding, it can be noticed from Figure 4.1 that from the beginning of the outbreak in Italy (beginning of March), most of the expressed sentiments were negative toward 'on-time performance'. Only after April the sentiment became neutral and even positive as the weekly new cases plummeted. As for boarding issues, Figure 4.2 highlights that there was actually an increase in the sentiment generated for boarding when the outbreak hit Italy exponentially hard. It can be hypothesized that this was the result of most flights to, from and within Italy being grounded from March 10th, 2020 onwards (for example, both Ryanair and EasyJet, the two low-cost carriers operating the most flights to Italy, cancelled all flights to Italy starting from March 10th, 2020). Thus, as observed in Figure 4.2, despite the pandemic struck hard since the end of February, the media coverage of the travel sector and preannounced flight bans might have triggered a positive effect on travelers for actually being able to travel on that situation. Also, as more prospective travelers chose not to travel to avoid risk, the boarding procedure

was likely swifter. The dispersion in the box plots shown after flights being grounded may also be justified by the fact that consumers write their opinions whenever they want, and that may happen after some time of the original situation (Stamolampros & Korfiatis, 2018).

Given the above discussed results, H1 can be assessed. Despite flights have been grounded in entire Italy since the second week of March, the trend regarding sentiments towards ‘on-flight performance’ kept pace with the pandemic evolution, showing significant dispersion. While this contradicts the findings by Chinazzi et al. (2020), it should be noted that these authors analyzed the Chinese context, and before the disease was declared a pandemic by the WHO. Also, they considered traffic flow and disease spreading, not the travelers’ perceptions. The results regarding boarding issues were also not consistently neutral, as proposed in H1. Thus, H1 is not supported.

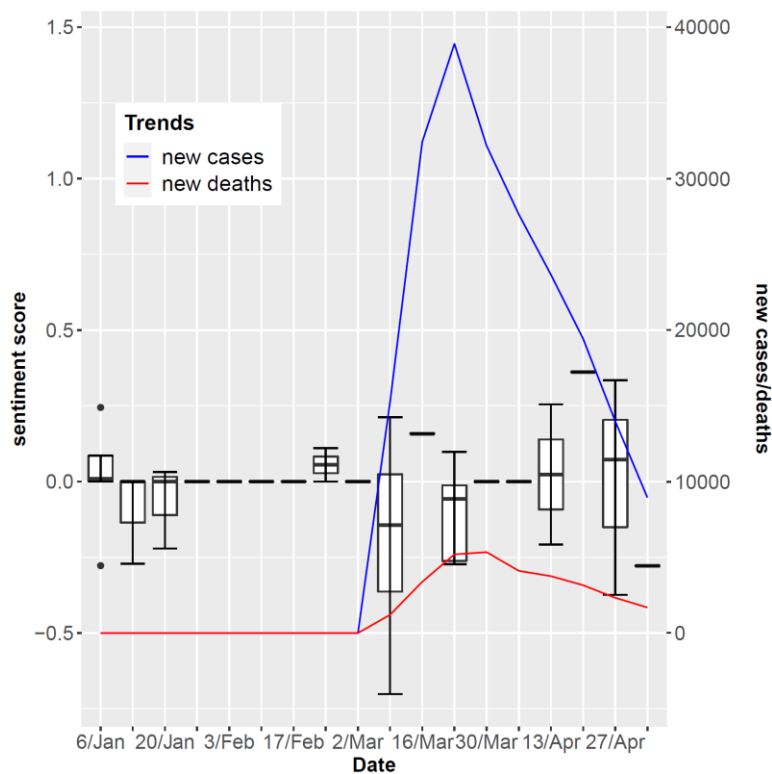


Figure 4.1 – On time performance

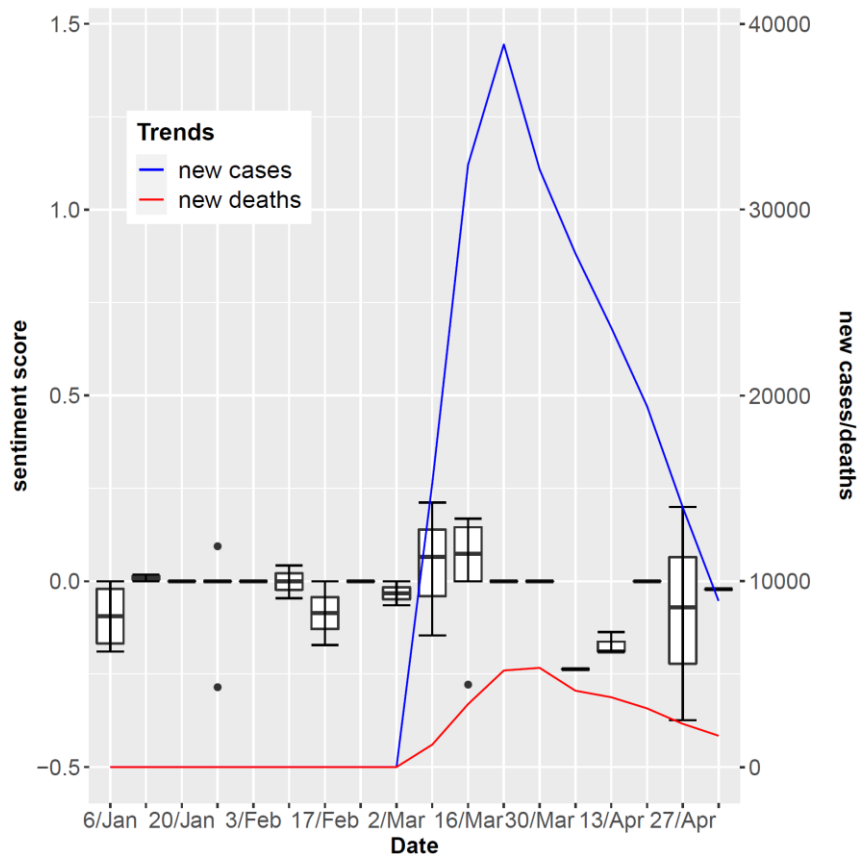


Figure 2.2 – Boarding Issue

Contextually, following the reduction of the flying activities, it was expected a decrease in the sentiment score (more negative) towards cancellations and related compensations as well as towards the interaction with customer service. The sentiment analysis towards ‘cancellation’ showed how in Italy at the beginning of the outbreak the feeling started to have a greater variation during each week, compared to the previous periods when it was more consistent. Additionally, when the casualties started to arise the average sentiment score towards cancellations was slightly negative and then remained neutral (Figure 4.3). The large variation shows that consumers experienced very different feelings. The results suggest that few people cancelled flights before the pandemic (and, subsequently, few reported them online). From the sentiment analysis, it can be noticed that the consumers’ perceptions of the topic ‘compensation’ present a large variation each week regardless of the pandemic. From the beginning of the outbreak until the end of the selected timeframe, the sentiment was averagely positive (Figure 4.4).

Since at these peculiar times airline customer services are flooded with calls from customers needing assistance and long wait times are a consequence (The Wall Street Journal, 2020), a negative sentiment score towards it was presumed. Unexpectedly, during the outbreak the average sentiment scores were alternating negative, neutral and positive positions with large

weekly variations (Figure 4.5). Zendesk, a CRM software company builder, while investigating the impacts of COVID-19 on customers' experience, discovered that global customer satisfaction scores remained stable during the pandemic. More precisely, towards airlines, customer satisfaction had a fall of only 3%, suggesting that customers may be more forgiving during a crisis (Zendesk, 2020).

Unlike hypothesized, the sentiment scores related to cancellations, compensations, and customer service showed heterogeneous perceptions among consumers. Thus, H2 is not supported. One can argue that the COVID-19 pandemic and its unprecedented impact in present times generated mixed feelings in citizens. Some travelers are also workers in small and medium enterprises (some are owners) and understand that airlines are facing huge difficulties and may not be able to refund travelers at all. On the opposite side, if citizens are facing financial difficulties and if they see that airlines may never be able to fully recover, people will heavily complain and demand to be refunded.

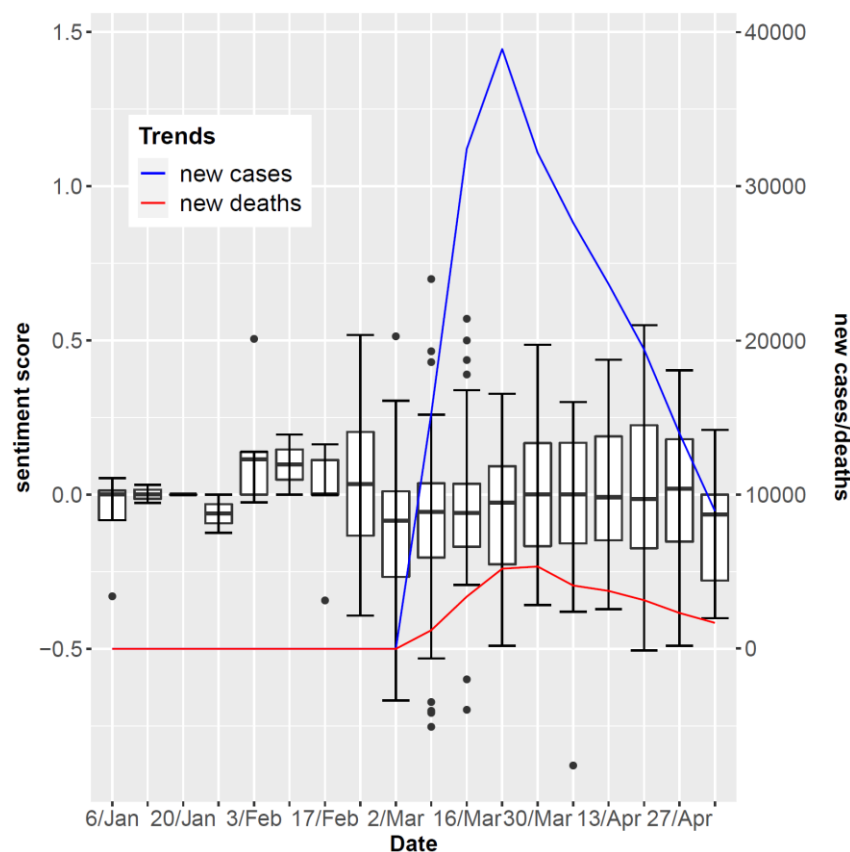


Figure 4.3 – Cancellation

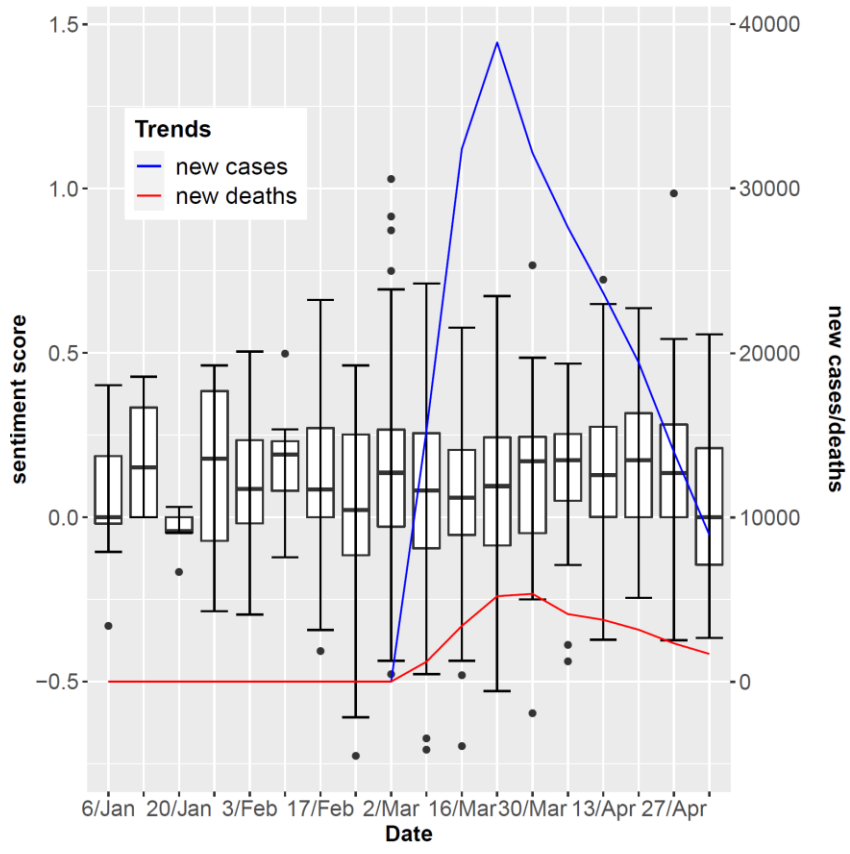


Figure 4.4 – Compensation

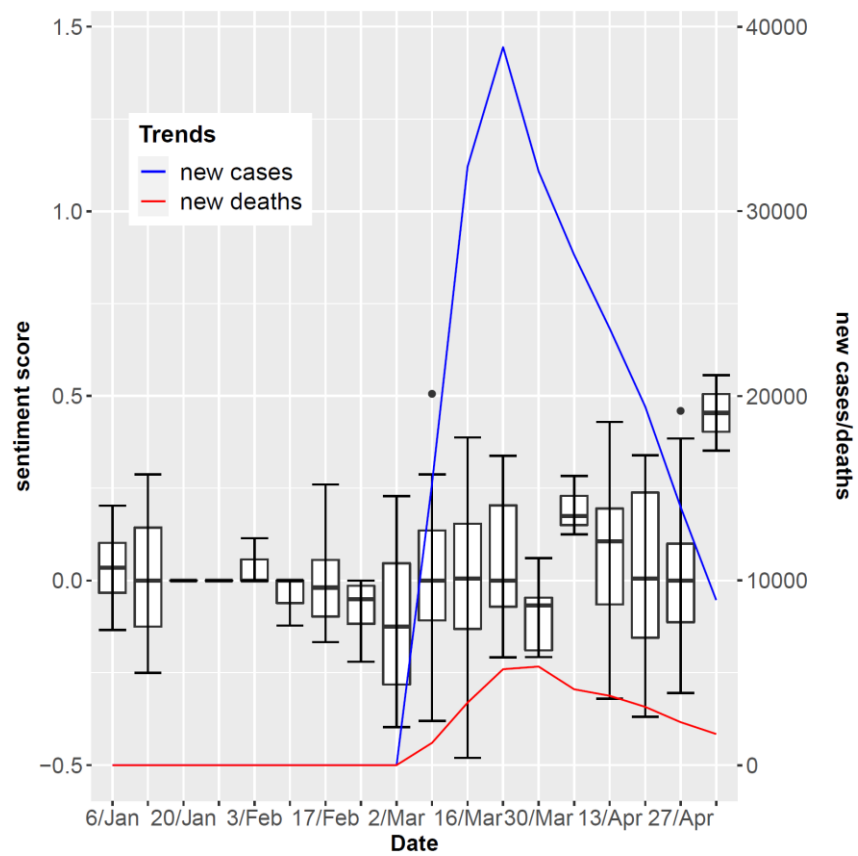


Figure 4.5 – Customer service

In this unprecedented time, where the airline companies are experiencing unsustainable cash-flow and revenue situations (European Commission, 2020b) to preserve their liquidity they are offering vouchers instead of refunds (Suau-Sanchez et al., 2020) for canceled flights. Vouchers would help to ease the liquidity problems and could lead to better protection of the interests of passengers (European Commission, 2020b). However, the European regulation Nr. 261/2004 guarantees the right of the passengers to be refunded (European Parliament and the Council of the European Union, 2004) and in their interpretative guidelines the European Commission clarified that if the carrier proposes a voucher, passengers have the right to opt instead for a reimbursement (European Commission, 2020a).

Considering that initially companies were omitting the refund option and according to Forbes (2020) some airlines have been accused of actively hiding the steps to get a cash refund, one can assume that the improper management of the cancellations and related compensations acted by the carriers (i.e., highly advertising vouchers as a form of compensation for the flights cancelled rather than offering the refund option) caused a great frustration (i.e., constant negative score related to compensations and cancellations) among prospective travelers. Furthermore, taking into account that the Employment Expectations Indicator plummeted to its lowest level on record in April 2020 (Directorate-General Financial and Economic Affairs of the European Commission, 2020), those passengers may have suffered the economic impact of the pandemic and have seen their income cut following the reduction of the economic activities (European Commission, 2020b), indeed a monetary compensation would be much needed.

In addition to what has been previously pinpointed regarding the sentiment scores towards ‘cancellation’ and ‘compensation’ (Figures 4.3 and 4.4), Figure 4.6 summarized the trend of both themes showing that ‘cancellation’ was always perceived more negatively than ‘compensation’, whereby the values were computed with the average of the sentiment scores emerged from the sentences containing the keywords. Moreover, both themes had a common behavior at different levels, suggesting that they were strictly interconnected. Lastly, even though the form of compensation presented was not the preferred one, sentiment toward compensation was averagely positive throughout the timeframe selected.

Given the above discussed results, H3 can be assessed. Despite the improper management of the cancellation adopted by carriers, sentiment scores towards ‘compensation’ were positive and the ones related to the ‘cancellations’ were slightly negative when the casualties started to arise, and then remained neutral. Thus, H3 is not supported.

Although in contrast with the findings of Liao & Tan (2014) where the cancellation is perceived as a negative issue, and Moyle et al. (2014) where the proper compensation against a cancellation determines a positive sentiment, it should be noted that COVID-19 created an unprecedented environment where people have mixed and unpredictable feelings.

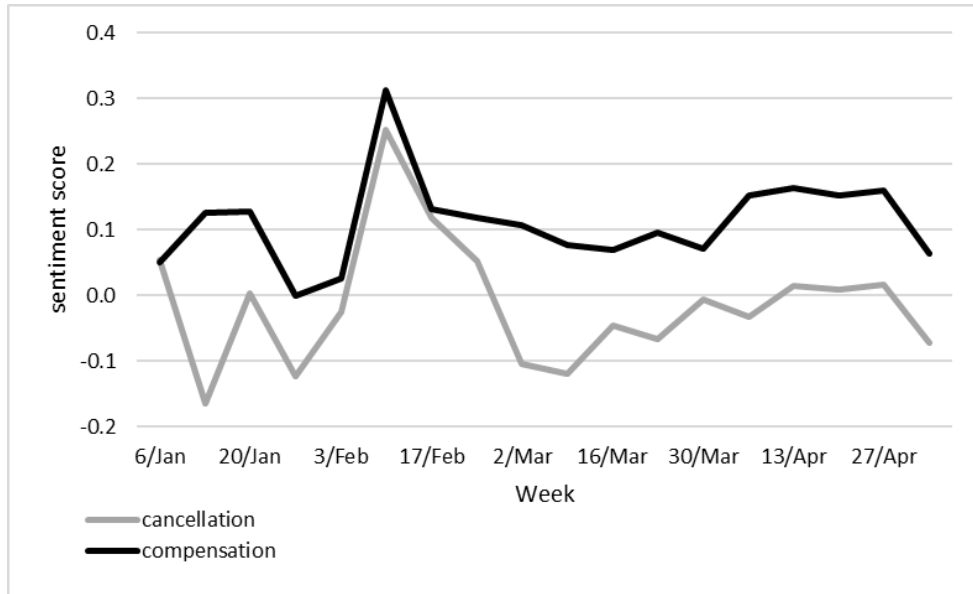


Figure 4.6 – Evolution of cancellation and compensation sentiment scores

Although its first appearance in China occurred at the end of 2019, the current analysis pinpointed that COVID-19 was mentioned for the first time on the National Consumer Union website only at the beginning of February. Most likely, travelers whose destination was Asia, were already concerned about the matter occurring at the destination. Later, at the beginning of the outbreak, as soon as the first cases were detected in Italy, the mention of the disease incredibly rose (Figure 4.7). A similar pattern occurred with the diffusion of MERS in South Korea: according to Yongsu (2016), once the first case was registered the number of related tweets increased and surged when the first death case was reported. As stated for MERS (Yongsu, 2016), it can be argued that the knowledge of the actual number of victims increased among travelers the feeling that COVID-19 could threaten their safety (and consequently generating a negative score). Indeed, with the decrease of new cases, the feeling towards the disease should be more positive.

The sentiment analysis (Figure 4.8) shows that before the outbreak in Italy the theme COVID-19 was firstly perceived positively and then neutrally with little dispersion, meaning that consumers had a consistent similar opinion towards it. Also, little was known about the matter at that time, travel bans were not in place and the WHO had not yet declared it as a pandemic. Later, during the outbreak the sentiment alternated between slightly negative and

neutral scores with large variations, showing again that people had mixed feelings. The only exception occurred at the end of March where the lowest average score towards the disease and the smallest variations were detected, concurrently with the number of deaths reaching its peak in Italy. Moreover, with the number of cases decreasing, starting from a slightly negative position, the sentiment score became more negative to then return almost neutral.

Mao et al. (2010) taught us that a reduction of SARS infected cases made the authorities considering the removal of travel bans, predisposing travelers to think about future journeys and ‘virtually’ escape from their lockdown situation, generating a general positive feeling. Furthermore, Mao et al. (2010) highlighted that as soon as the travel bans were removed, the number of incoming visitors from two out of three countries analyzed bounced back, showing that people were eager to travel and feared less the disease.

To conclude, unlike hypothesized, while the new cases were decreasing, the sentiment score was not increasing. Thus, H4 is not supported. However, it should be underlined that from its lowest average score at the end of March, with the number of cases dropping, the score improved while remain negative almost reaching a neutral status.

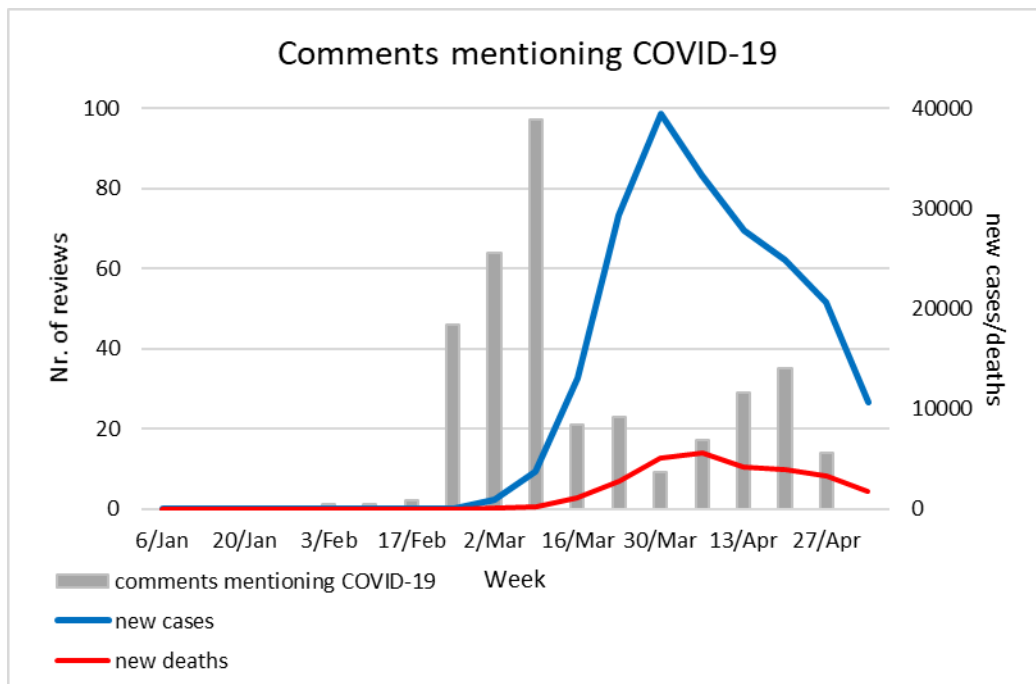


Figure 4.7 – Comments mentioning COVID-19

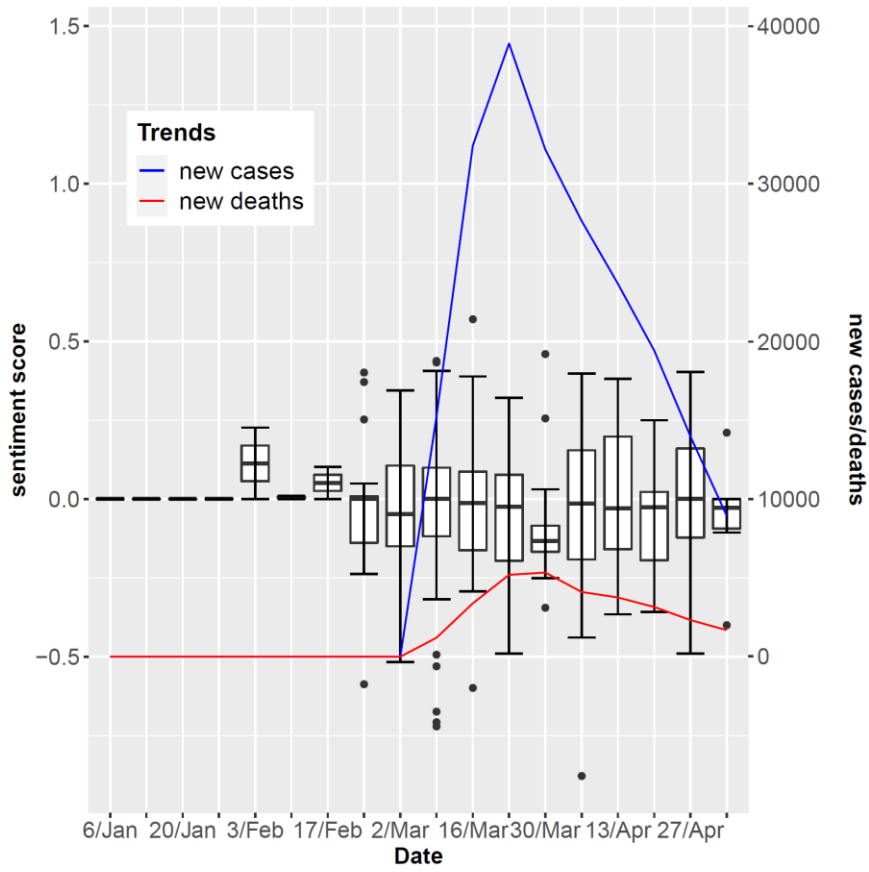


Figure 4.8 – COVID-19

5. Conclusions

5.1. Theoretical contributions

Coronavirus is a widespread infectious disease that is having a great impact on travel and tourism worldwide, in addition to affecting the health and safety of millions of people. Through a sentiment analysis of online reviews, this research showcased how air-travelers' concerns changed and developed during the pandemic.

In this study the comments that composed the dataset lied in a pre-service stage where the consumers had not flown yet. Indeed, considering the likely impossibility to fly, travelers were seeking for a 'compensation' and this explain the highest frequency of that theme. Moreover, 'cancellations' and 'COVID-19' attracted much attention and the LCC were mentioned 1.67 time more than traditional airlines.

COVID-19 pandemic and its unprecedented impact in present times definitely generated mixed feelings among travelers: sentiments towards delays and boarding issues kept pace with the pandemic evolution and showed significant dispersion, while the one related to cancellations, compensations, and customer service displayed unpredictable behaviors. Moreover, it can be contended that cancellations and compensations are linked and showed similar patterns at different levels, and although the carriers initially improperly managed cancellations by highly advertising and offering vouchers instead of refunds, sentiment toward cancellation was slightly negative when the casualties started to arise and then remained neutral, while the one related to compensation was averagely positive.

The COVID-19 theme firstly appeared in the dataset only at the beginning of February, and as soon as the first cases were detected in Italy its mentioning became more frequent. During the outbreak the related sentiment alternated slightly negative and neutral scores with large variations, showing again that people experienced mixed feelings. More precisely, with the number of cases decreasing the sentiment score became more negative to then return almost neutral.

Overall, the hypotheses formulated were not supported. They were grounded on the existing literature, but since the current pandemic context is unprecedented, assessment based on previous assumptions are not possible. Consequently, we can conclude that studies on the effects of COVID-19 need to be developed anew.

The resulting work from this thesis has been published on the prestigious **Tourism Management** journal, and can be cited as follows:

Piccinelli, S., Moro, S., & Rita, P. (2021). Air-travelers' concerns emerging from online comments during the COVID-19 outbreak. *Tourism Management*,85, 104313. DOI: <https://doi.org/10.1016/j.tourman.2021.104313>.

Moreover, **Tourism Management** is the **nr. 1** journal in Tourism according to the Scopus database in the category “Tourism, Leisure, and Hospitality Management” (SJR of 3.068, 1/123) and the **nr. 2** journal in the ISI Web of Science database in the category “Hospitality, Leisure, Sport & Tourism” (Impact Factor of 7.432, 2/56) as well as a top ABS 4 ranked journal in the exclusive Academic Journal Quality Guide list of the Association of Business Schools.

5.2. Practical implications

The effect of COVID-19 is unprecedented and unpredictable at the same time, especially considering that themes such as cancellations and compensations are not perceived strongly negatively. Results suggest that travelers are understanding the unsustainable cash-flow and revenue situations of the airlines, but they can also imply that they are eager to travel again and already planning a future journey by accepting a voucher. Moreover, they are perhaps confident that the European Union will support their rights and they will be able to get the refund. Regarding cancellations, the sentiment was always neutral/slightly negative as the pandemic progressed. This suggests that consumers may have understood that travelling would have been a threat to their safety and trust on the effect of travel bans and the actions of the governmental institutions.

5.3. Limitations and future research

During the study, the following limitations were encountered: consumers can write their comments whenever they want and not always closer to the day of the experience. Additionally, a few of them may select the wrong macro-categories making their comments not visible. Moreover, one limitation of free written text format is that comments may present misspelled words that are not detected by the automated word-matching search.

Despite the great attention provided to the topic, it will be interesting to investigate if LCCs receive greater attention compared to the traditional providers during crises. Moreover, as mentioned during the paper there is the need to investigate how the perception towards travel

agencies changed during the pandemic, especially since European countries from June 2020 started lifting their confinement bans.

Lastly, the study has been developed while the situation was unfolding in an uncertain climate regarding the future of travel and tourism. It provides a snapshot of the first 4 months of the year 2020 and it will be interesting to analyze how air-travelers perceptions will change when they will be able to travel again.

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