The behaviour of airlines' passengers in the context of COVID-19 pandemic

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Abstract

The COVID-19 pandemic has negatively been influencing the air transport industry. The devastating impacts, which started to be felt since the first months of 2020, consisted in rationalizing the fleet, reducing staff number and reconfiguring their networks and capacity. Therefore, understanding passengers' attitudes towards travelling during a global pandemic may strengthen aviation industry practices and minimize the costs in the downturn period. Considering these aspects, the purpose of the present paper is to analyse the behaviour of airlines' leisure and business passengers in the context of the COVID-19 pandemic, by underlying those factors that may have a strong impact on their travelling attitudes. In order to achieve this purpose, we have conducted an online survey on a sample of 146 respondents from Romania.

Keywords: airlines' passengers, COVID-19 pandemic, behavioral predictors

Introduction

It is known that the airline industry is very sensitive to the global downturns, such as economic crisis, natural disasters, political instability or pandemics (Sadi and Henderson, 2000). Therefore, the fact that the air transport industry has been severely impacted by the COVID-19 pandemic came as no surprise. The devastating consequences, which started to be felt since the first months of 2020, consisted in rationalizing the fleet, reducing staff number and reconfiguring their networks and capacity (Wenzel *et al*., 2020). All these measures have been taken in the context in which the governments imposed various travel bans and restrictions in order to limit the spread of the virus. Meanwhile, the demand diminished due to both economic factors, such as income decrease, and behavioural aspects: concerns for own health or health of the others, fear of imposing new restrictions or fear of being close to others, especially in airports and on aircrafts (Lamb *et al.*, 2020).

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The demand for airlines' services is, by its nature, a derived one: it results from the fact that passengers and goods need to move between different places in an efficient manner, from cost and time perspectives. Therefore, understanding passengers' attitudes towards travelling during a global pandemic may strengthen aviation industry practices and minimize the costs during the downturn period.

Considering these aspects, the purpose of the present paper is to analyse the behaviour of airlines' leisure and business passengers from Romania in the context of the COVID-19 pandemic, by underlying those factors that may have a strong impact on their travelling attitudes. Therefore, the initial sample included 146 Romanian travellers, which were subsequently grouped into leisure and business passengers. We divided the respondents into these two groups because, based on the findings of previous studies (Sonmez and Graefe, 1998), we assume that leisure passengers who fly to vacation destinations or to visit family and friends are more skeptic about travelling by airplane, due to the increased risk of contracting the virus. Meanwhile, the business travelers are flying more frequently and, since they are more familiar to the exposure to air travel, they may perceive less risk (Goodrich, 1991). Moreover, since the new pandemic led to an increased online activity in many business fields, we consider important to analyze how the preferences regarding the purpose of travel can be changed in the conditions in which the job's activities can be carried out remotely.

The findings of this research might present importance for airlines and government agencies, which could use them in order to identify the proper messages transmitted to customers to ensure about the actions taken to provide a safe environment for air travelling even in the context of a major health crisis. Yet, considering the fact that this study included participants only from Romania and taking into account that the nowadays health crisis is a global one, future studies on travelers from other countries affected by COVID-19 are required in order to generalize the results regarding the factors which influence the behavior of airlines' passengers in the context of the pandemic.

The rest of this paper is structured as follows: the next section briefly summarizes the literature on the behavior of the airlines' passengers, in general, and during the downturns, in particular. The third section presents the methodological approach and the last sections highlight the results of our analysis and the conclusions.

1. Theoretical background

In the literature, studies on evaluating the expectations and perceptions of airlines' passengers have been conducted with regularity. Depending on the purpose of the research, the methodology that was used varied from one study to another. For example, in order to identify factors that determine

the choice of airports and airlines, most of the researchers applied the logit analysis (Ong and Tan, 2010; Lee *et al.*, 2016).

Structural equation models have been used to investigate especially the quality of the airlines' services through passengers' satisfaction and loyalty (Mikulic and Prebežac, 2011; Forgas *et al.*, 2012). Bogicevic *et al.* (2016) found that passengers' satisfaction is related to airport design characteristics and cleanliness. Meanwhile, Chen and Chao (2015) concluded that passengers' loyalty is related to five factors: ground services, convenience, in-flight services, price and travel availability.

To identify the changes in the passengers' choices in different downturns periods, the most used research techniques were the comparative analysis of travelers' behavioral patterns through cross-cultural studies (Lee and Lee, 2009) or the intervention model. The last one was used particularly to identify the changes occurred in the purchasing decisions of the travelers after the September 11 terrorist attacks. For example, Lirn and Sheu (2009) investigated behavioral particularities in Taiwan and Lai and Lu (2005) looked into the impact of on air transport passenger demand in the US.

Since understanding passengers' perceptions and expectations regarding the services' quality under pandemic times is very important for future airlines' outcomes, Tsaur *et al.* (2002) proposed to introduce surveys based on fuzzy set theory. Yet, the already conducted airlines' passenger surveys, while very detailed, are not representative and clarifying for the current COVID-19 pandemic (Monmousseau *et al.*, 2020), because of the complexity and the magnitude of its consequences. Impacting 209 countries and overseas territories or communities, the airline sector has suffered the most devastating shock ever (OECD, 2020). Only one previous study, which measured passengers' perceptions of preventive measures against influenza H1N1 (Chou and Lu, 2011), may offer only partial theoretical support for estimating travelers' behavior during and after COVID-19 pandemic.

However, several studies have been conducted in the context of COVID-19, analyzing the relationship between the pandemic and airlines' industry from three main perspectives. One approach was related to the impact the airline travel on the spread of the virus. Lau *et al.* (2020) concluded that the air travel bans significantly slowed the spread of COVID-19 in China. Yet, not any kind of restriction had the same efficiency. For example, Chinazzi *et al*. (2020) found that the embargo would only delay the spread of the virus among China's regions by 3–5 days, while international travel restrictions are more effectively in delaying its spread from China to the rest of the world. Meanwhile, Zhang *et al*. (2020) investigated the effects of different means of

transportation on the spread of COVID-19 and they concluded that the air transport had the highest impact on the virus transmission.

The second investigation perspective was focused on the impact of the pandemic on the airlines' industry activity and, implicitly, revenues. All the restrictions and lockdowns led to a severely contraction of the supply of air services starting from the early months of 2020. In this context, until the end of 2020, over 60% of the world's commercial aircraft has been grounded (Hollinger, 2020), which led to a revenue drop by US$314 billion for the whole industry (IATA, 2020).

The third approach revealed the inhibitory effect of the pandemic on air travel, from the point of view of passengers' behavior. One of the first studies was conducted by Graham *et al.* (2020) on older passengers (65+) from China and Taiwan. They found out that the respondents not only intended to significantly reduce the air travels and replace them by other means of transportation, but also that they will focus more on the domestic trips than on the international ones. Similar conclusion was reached by Hensher *et al.* (2021), who considered that the pandemic led to a greater shift in travel from public transportation to cars.

In the case of airlines' leisure passengers, the COVID-19 pandemic determined them to be more concerned about their health and, thus, to become fearful and anxious about being close to the others (Lamb *et al*., 2020), so that they no longer perceived flying as unique and fun. In the case of the business travelers, they drastically reduced the number of their trips due to the fact that the majority of the meetings were conducted through various online platforms and they could work remotely (Hopkins *et al.,* 2020). All these aspects, together with passengers' changing preferences (Forsyth *et al*., 2020), are significant enough to raise concerns about the long-term evolution of the airlines' industry (Tuchen *et al*., 2020).

Considering all these aspects, we have developed the following research question:

Q: What are the factors that are mainly influencing Romanians' decisions of traveling for pleasure and business in the context of the pandemic?

2. Research methodology and data

In order to achieve the established purpose, we have conducted an online survey on a sample of 146 respondents from Romania. The survey was conducted between March and April 2021 and the final sample included 142 respondents because 4 questionnaires were invalid (for sample characteristics see Table 1).

Table 1. Sample characteristics

Characteristic	Groups	%
Travelling purpose	Business	47.18
	Leisure	52.82
Gender	Female	37.32
	Male	62.68
Education level	Primary education	1.41
	Lower-secondary education	8.45
	Upper-secondary education	19.01
	Tertiary education	71.13
Age	18-30 years old	35.21
	31-50 years old	41.55
	51-65 years old	18.3
	Over 65 years old	4.94

The questions addressed to the respondents were focused on identifying 18 predictors that may influence a passenger's willingness to fly for either business or pleasure: education level, age, gender, number of at-risk COVID-19 family members, current health level, level of religiousness, primary purpose of travel pre-coronavirus, pre-COVID-19 flight anxiety, perceived threat from COVID-19, satisfactions with health insurance, anticipatory flight anxiety, annual frequency of travel, extraversion, agreeableness, conscientiousness, neuroticism, risk taking propensity, affect and level of fear. We have chosen these predictors based on the findings of other studies which indicated that they may influence passengers' willingness to fly (Rice *et al*., 2019; Winter *et al*., 2018). Considering the nature of the 18 predictors, the questions of the questionnaire were grouped into five major categories: personality aspects, socio-demographic issues, affect or emotional related questions, health aspects and air travel particularities.

Personality type is considered to be a good predictor for both personal and professional behaviors (Riaz *et al*., 2012). The literature indicates five categories of personality traits, known as "the Big Five" (John and Srivastava, 1999), which recently have been associated with the willingness to fly during and after the COVID-19 pandemic (Lamb *et al*., 2020): extraversion, openness, agreeableness, neuroticism and conscientiousness. We have assessed personality by using the Ten-Item Personality Inventory, which is a very brief measure of the Big-Five personality aspects (Gosling *et al*., 2003). For each item, we assessed whether we could argue the relationship between that personality trait and the willingness to fly in the current pandemic context. We evaluated the responses on a five-point Likert scale, ranging from 1 "strongly disagree" to 5 "strongly agree". Apart from these personality issues, we have also included in the current study the risk-taking propensity, because we consider it an important predictor of the willingness to fly during the current pandemic. Risk taking was measured by the General Risk Propensity Scale, developed by Meertens and Lion

(2008) to evaluate different risk-taking behaviors, such as selecting a risky traveling destination. The scale includes nine items to assess different aspects of risk, on a nine-point scale.

The socio-demographic aspects, such as education level, age, gender and level of religiousness, were found to be important determinants of risk-taking propensity in the context of the current pandemic (Mitchell and Oliphant, 2020).

Apart from the fact that emotions strongly influence the decision-making process, in matters related both to work and to personal aspects (Sayegh *et al*., 2004), it is known, from previous studies, that affect can impact the willingness to fly (Anania *et al*., 2018). In the current research, we are particularly interested in the flight anxiety, generated by the current health crisis. Therefore, the questions referred to pre-COVID-19 flight anxiety, perceived threat from COVID-19 and anticipatory flight anxiety. The responses were assessed on a five-point scale, ranging from 1 "no flight anxiety at all" to 5 "extreme flight anxiety".

In this research we investigated three health-related predictors, which we considered to be the most relevant in the context of current pandemic: current health level, satisfactions with health insurance and number of at-risk COVID-19 family members. In order to asses these three predictors, we relied on the Perceived COVID-19 Threat Questionnaire, developed by Conway *et al*. (2020). We have adapted it, including only five items that are measured with seven-point Likert scale, ranging from 1 "not true at all" to 7 "very true for me".

The air travel aspects were assessed through seven items considered by Rice *et al*. (2020) in the development of the Willingness to Fly Scale. The responses were measured through a five-point Likert scale, ranging from 1 "strongly disagree" to 5 "strongly agree". In this part, we have also included the frequency of air travel in order to see if the frequent business travelers would indicate different willingness to fly than the leisure travelers or those who travel less in the context of the nowadays health crisis.

Multiple linear regression was used for processing and analyzing the data. While the independent variables were related to the 18 predictors mentioned before, the dependent variables referred to the purpose of the travel and, thus, they were: the willingness to fly for business and the willingness to fly for pleasure.

3. Results and discussions

The results of the regression analysis indicate two statistically significant models corresponding to the two types of passengers: business and leisure (see Table 2). The coefficients can be seen in Table 3 – for business travelers and, respectively, Table 4 – for leisure travelers.

Table 2. Regression analysis – summary

	Business travelers	Leisure travelers
N	67	75
R^2	0.685	0.691

In the case of the business passengers, only 6 from the 18 predictors were significant (see Table 3): perceived threat from COVID-19, annual frequency of travel, risk taking propensity, level of fear, current health level and extraversion. These findings suggest that in the case of those persons with increased perceived threat from COVID-19 and level of fear, the willingness to travel for business purposes decreases. On contrary, for those whose propensity of risk taking, annual frequency of travel and extraversion level are high, the willingness to fly for business increases. Meanwhile, the passengers with current health problems tend to be more skeptics about travelling in future.

The model was statistically significant, $F(6, 142) = 117.32$, $p < 0.001$.

Table 3. Regression coefficients for business travelers

Predictors	M(SD)	Beta	t	SE	Sig.	β
Perceived COVID-19 threat	3.29	-0.243	-3.74	0.030	< 0.001	-0.212
Annual frequency of travel	-0.63	0.178	4.23	0.032	0.001	0.239
Risk	-1.78	0.323	4.17	0.042	< 0.001	0.488
Fear	2.98	-0.080	-2.81	0.029	< 0.001	-0.430
Current health	3.17	-0.367	-2.12	0.041	0.002	-0.471
Extraversion	-1.24	0.410	5.10	0.018	0.002	0.311

For the pleasure passengers, 8 predictors were significant for the willingness to travel (see Table 4): primary purpose of travel before COVID-19, perceived threat from COVID-19, fear, propensity of risk taking, current health status, extraversion, satisfactions with health insurance and affect. These results indicate that as a person's risk-taking propensity, satisfaction with health insurance, extraversion level and affect increase, their willingness to fly for pleasure will also increase. On contrary, when the perceived threat from COVID-19 and fear increase, the passengers will have a lower desire to travel for pleasure. Moreover, as in the case of the business passengers, those respondents with current health problems tend to be more skeptics about travelling in future.

The model was statistically significant, $F(8, 142) = 115.22$, $p < 0.001$.

An interesting finding was related to the fact that the persons which primarily travelled for business before the pandemic, now they are more willing to fly for pleasure. This change could be explained through the fact that the level of fear increased in their case. Meanwhile, they wanted to diminish the frequency of travel and found more suitable for them to work remotely.

Table 4. Regression coefficients for leisure travelers

Predictors	M(SD)	Beta	t	SE	Sig.	β
Perceived COVID-19 threat	4.31	-0.332	-4.85	0.023	< 0.001	-0.199
Affect	-0.82	0.238	6.23	0.033	< 0.001	0.101
Risk	-2.28	0.641	3.07	0.039	< 0.001	0.238
Fear	3.88	-0.065	-1.01	0.041	< 0.001	-0.320
Current health	3.17	-0.442	-2.56	0.021	< 0.001	-0.415
Extraversion	-1.14	0.327	6.09	0.023	0.002	0.419
Satisfactions with health insurance	-0.90	0.510	1.54	0.043	0.001	0.365
Primary purpose of travel before COVID-19*	N/A	0.211	2.81	0.100	0.026	0.093

*The values of the "primary purpose of travel before COVID-19" were nominal and, therefore, mean and standard deviation were not calculated.

By identifying some of the factors that are mainly influencing Romanians' decisions of traveling for pleasure and business in the context of the current pandemic, we have responded to our research question. Thus, according to our findings, 5 predictors were similar for both business and travel passengers: perceived threat from COVID-19, risk taking propensity, level of fear, current health level and extraversion. These results show that, no matter what the purpose of the travel is, when the perceived threat from COVID-19 and level of fear increase, the willingness to fly decreases. These results are not surprising, taking into account the fact that fear is often related to the perceived threat. Meanwhile, passengers with increased propensity of risk taking, current health level and extraversion level have a higher willingness to fly than the others. These results can be explained through the fact that those that are healthier are more energetic and socially focused. Therefore, they tend to have a higher risk propensity and be more willing to fly even under COVID-19 situation.

In the case of the business passengers, the annual frequency of travel was also a significant predictor, suggesting that if the number of travels is higher, the willingness to fly will be higher. This is explainable if we think to the fact that a higher number of business flights involves higher revenues and, thus, a higher risk-taking propensity.

In the case of the pleasure passengers, 3 more predictors were significant for their willingness to travel: primary purpose of travel before COVID-19, satisfactions with health insurance and affect. Those leisure travelers with a better health insurance, doubled by a good level of health, considered that they have nothing to worry about travelling in the pandemic context. Meanwhile, those with positive thinking and emotions were more enthusiastic at the idea of flying than the others. Yet, it is interesting that those that were traveling more for business purposes before COVID-19 are more tempted now to work remotely and travel for leisure. This result is explainable if we relate it to the other seven predictors found in the case of the pleasure passengers.

Conclusions

It is known that all the measures imposed by governments to limit the spread of COVID-19 virus are reducing the travelling motivation. Moreover, the increased public risk perception enhances passengers' health-protective behavior, which leads to a diminished willingness to fly or to changes in travel preferences. This last aspect may include a switch in the type of the risky trip: from business to leisure travels. Due to the COVID-19 pandemic, the airlines were forced to make various operation adjustments, including the reduction in the number of flights, aircrafts' occupancy and even destinations. Therefore, all these measures impacted the willingness to fly both for business and leisure purposes.

Since current health status and perceived threat from COVID-19 are influencing the willingness to fly of all types of passengers, both policy-makers and airlines should consider increasing passengers' trust. First of all, governments and especially the airlines should implement proper measures in order to meet travelers' expectation of health safety. Secondly, in order to avoid a rebound of the pandemic, the policy-makers should take into account the increase in the willingness to fly when the situation gets better. Moreover, they could work out a sustainable financial aid plan for the airlines, designed for short periods, so that the companies do not take drastic measures that could diminish the trust of the passengers and, implicitly, their willingness to fly.

The findings of this paper have two limitations in terms of generalizability: we used a convenience sample and the travelers were only from Romania. Therefore, in a future research, we intend to expand the investigation on other European countries and consider a systematic sampling, with a much larger pool of participants.

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