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The Impact of COVID-19 on Travelers' Travel Behavior

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Abstract

The purpose of this paper is to investigate the impact of a global pandemic, Coronavirus (COVID-19), on travel behavior by integrating crisis management with other behavior variables. Online surveys via the Amazon Mechanical Turk website were used for data collection. A total of 1978 responses were collected from 19 countries (September, 2020); 1607 valid cases were undertaken for the data analysis. The results suggest that crisis management intervention was the most influential factor impacting travel behavior during the COVID-19 pandemic. Non-pharmaceutical interventions followed as the second most influencing predictor. . Personal traits were the only variable that recorded a negative relationship with travel behavior. This study has significant practical and theoretical implications since it adopted the extended model of goal-directed behavior while including crisis management intervention, which is a unique approach. Although attitudes generally strongly influence travel behavior, in a pandemic situation, such relationships weaken. In terms of practical implications, it has become apparent that firms and governments should implement integrated risk management and crisis management strategies. Travelers need to be reassured that these tourist destinations have become safe again. This will likely decrease the risk factor, therefore influencing them to travel to this region. This study contributes to understanding how a global pandemic influences travel behavior It will be invaluable in predicting the early reflections of travelers as the pandemic ends.

Keywords: crisis management, COVID-19, Extended Model of Goal Behavior

1. Introduction

1.1 Introduce the Problem

Following six decades of continued growth, tourism is one of the world's most important and fastest-growing service sector economies – creating jobs, stimulating regional development and supporting local communities ("OECD Tourism Trends and Policies", 2020). Unlike other industries, tourism is not one clear product; it incorporates many industries including Lodging, Transportation, Attractions, Travel Agent's, Tour Groups and local services, i.e., Restaurants, Tour Guides, Dry Cleaning, etc. (Thomala, 2020). After the influenza A (H1N1) virus in 2009–2010 ("Past Pandemics" n.d.), the world, once again, faced the reality of how local outbreaks of an infectious disease become global pandemics. The local outbreak in Wuhan Province, China, opened the route for a global pandemic of Coronavirus (COVID-19) (Normile, 2020). When looking at records of epidemics prior to H1N1 and Coronavirus, the world population experienced epidemic outbreaks of SARS (Severe Acute Respiratory Syndrome) in 2003 and swine flu in 2009. The Coronavirus outbreak was declared a Public Health Emergency of International Concern on 30 January 2020 and recognized as a pandemic on 11 March 2020 (Ghebreyesus, 2020). In the end, "travel and tourism themselves became the victims" (Wilder-Smith, 2006) due to regulatory restrictions and the crisis psychology of the general population.

To limit the spread of the virus, a series of drastic actions was taken globally: canceling both outbound and inbound international and national flights (Schaper, 2020); strictly controlling land and sea borders (Salcedo et al., 2020); restricting citizens' mobility (North, 2020) and 4) announcing public restrictions like wearing masks, social distancing and forbidding gatherings (Sheikh, 2020), 5) closing retail and public recreation spaces (Thomas and Berk, 2020). Moreover, a significant number of cruises, conferences, cultural and sporting events were postponed.

These measures had a direct negative impact on tourism and associated industries which rely on tourism such as agriculture, laundries, local souvenir markets, and manufacturing. Similarly, indirect impacts have been observed in other sectors, such as the oil industry where prices fell 49.5% from one year ago (David, 2020).

As the Coronavirus spreads around the globe, it is also taking a toll on global tourism, and economists predict that the impact on economic growth will be great ("Deeper Revenue Hit from COVID-19", 2020). Overall, this uncertain and unexpected situation, coupled with the psychological impacts of Coronavirus, have created a high economic cost due to the loss of confidence (Vinelli et al., 2020). Therefore, this study aims at investigating the impact of a specific global pandemic, COVID-19, on travel behavior by integrating crisis management and looking through the lens of travelers.

2. Review of the Literature

2.1 Decision Making

The literature on decision making concerning both leisure and business travel after man-made or natural disasters is extensive (Al-Tawfiq et al., 2014; Filimonau and De Coteau, 2020; Sundling et al., 2016), but it deals with different and fragmented perspectives (Biggs et al., 2012; Wen et al., 2005) such as financial and economic instability, political crisis, the increasing price of oil and changes in the global environment. The contributions in the literature have explored the phenomena of disasters and crises (natural disasters, epidemic disasters, political and economic crises, etc.) by studying their impacts in the following years in order to explore the precise motivations of travel behavior (Lee et al., 2012; Wen et al. 2005). These studies concluded that effective communication systems and emergency measures are vital to recovering the damage in the tourist market.

In order to have a clear vision of travelers' behavior, previous studies have used the Theory of Reasoned Action and the Theory of Planned Behavior (Montano and Kasprzyk, 2015; Lee et al., 2012). Usually, the Theory of Planned Behavior is considered an expansion of the Theory of Reasoned Action since it includes the "perceived control over the performance of the behavior" (Montano and Kasprzy, 2015 p. 68). The Theory of Planned Behavior adds the perceived control constituted by perceived power and control beliefs.

The literature is advanced by the model of goal-directed behavior, which includes other important variables such as affective process, motivational process and past behavior (Lee et al., 2012). Indeed, the Theory of Reasoned Action, the Theory of Planned Behavior, and goal-directed behavior models do not consider events, such as a virus or other epidemic crises, that influence travelers' behavior. Therefore, some scholars have recently developed an Extended Model of Goal Behavior (EMGB) with more variables in order to predict the process of how travelers actually decide (Kim et al. 2017; Kim and Preis, 2016; Meng and Choi, 2016). However, those studies have not considered “crisis management” as one of the variables that can affect the decisions of travelers during a pandemic. Therefore, in this study, EMGB is studied by adding "crisis management" to the previous variables: frequency of past behavior, attitude, positive/negative personal traits, perceived behavioral control and non-pharmaceutical interventions.

2.2 Crisis Management Interventions

Several authors (Avci et al., 2011; Bundy et al., 2017; Campo et al., 2014; Mansour et al., 2019) have provided definitions of "crisis management" as the process of how organizations react to disruptive and unexpected events harming both the organization and its stakeholders. From the perspective of the tourism/travel industry, a crisis can be defined as an event and/or circumstances that result in damage to the reputation, sales and operations of destinations and organizations within a tourism region (Pasteur, 2016), which creates major concerns for travelers. Zech (2016) developed a crisis typology (Table I), which showed each crisis type and its macro and/or micro impact levels.

Table 1. Crisis typology and impacts

Crisis type	Major impact level
Economic crisis	Macro
Environment crisis	Macro/micro
Health crisis	Macro/micro
Informational/reputational crisis	Micro
Structural crises	Macro/micro
Political crises	Macro
Sociocultural crisis	Macro/micro
Technological crisis	Macro/micro

There need to be more studies that focus on topics from multi-dimensional views such as integrating crisis management with the changes in travelers' behavior, which is the main focus of this paper. Therefore, in the light of the above crisis management definition, the rest of this review will present a broader perspective of "travelers' behavior" by taking into account travelers' specific perceptions of the epidemic diseases/virus, their voluntary personal practices while traveling and changes in their behavior. This paper adopts the extended model of goal-directed behavior during the crisis period, in this case COVID 19, by taking into account the holistic process of traveler's travel behavior. In light of the discussed literature, the following hypotheses were developed:

Hp1: Attitude (AT) has a positive influence on travel behavior (TB)

Hp2: Personal traits (PT) have a positive influence on travel behavior

Hp3: Crisis Management Interventions (CM) have a positive influence on travel behavior

Hp4: Perceived Behavioral Control (PBC) has a positive influence on travel behavior

Hp5: Non-Pharmaceutical Interventions (NPI) have a positive influence on travel behavior

The conceptual model of the study is given in Figure 1.

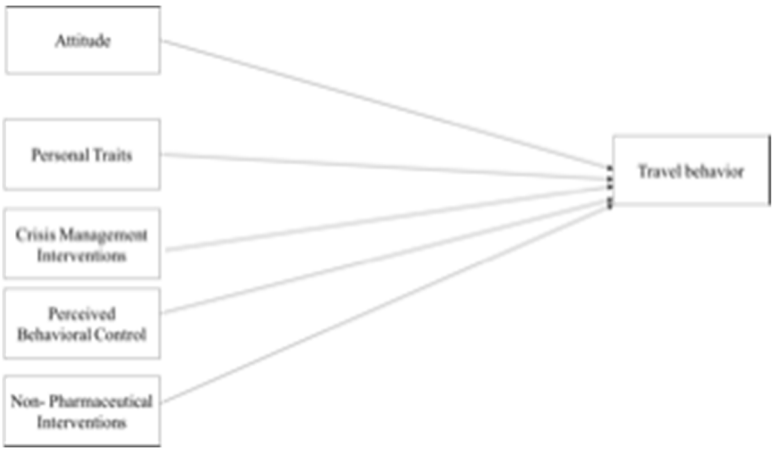

Figure 1. The Conceptual Model of the Study

3. Results

This study adopted a quantitative approach in order to reach a broader audience quickly (Enright and Newton, 2004). To test the hypotheses, we adopted the Partial Least Squares-Path Modeling (PLS-PM) algorithm using

the module R-package. The purpose of PLS-PM is to estimate the relationships among Q blocks of variables.

We consider K variables manifest on N subject (n = 1,…,N). The data x_nkq were collected in a partitioned data matrix X:

$$X= \{X_1,\cdots,X_(q,)\cdots\dashv \quad \vdash \ 〖,X〗_Q \}$$

A PLS path model involves two parts: the measurement model (or outer model), which defines the relationships between the manifest variables (MVs) and their respective latent variable (LV) ξ_q, and the structural model (or inner model), which defines the relationships between the LVs.

The Inner Model can be written as (Vinzi et al. 2010 a, b):

$$ξ_j=Σ_(q:ξ_q \ 〖→ ξ 〗_j)^Q▒β_qj \quad ξ_q+ζ_j$$

where ξ_j (j=1,...,J) is the endogenous latent variable, β_qj is the path coefficient connecting the q -th exogenous latent variable to the j-th endogenous, and $ζ_j$ is the error in the inner relation.

In the Measurement model, two ways to link each of the manifest variables (MVs) to its latent variable (LVs) can be distinguished:

Reflective way: MVs (X_kq) are considered to be reflections of their latent variables 〖 (ξ 〗_q):

$$X_kq= λ_kq \ ξ_q+ε_kq$$

where λ_kq is the loading coefficient, and ε_kq is a zero mean random term uncorrelated with the latent variable ξ_q.

Formative way: MVs 〖(X〗_kq) are considered as causes of their latent constructs 〖(ξ 〗_q):

$$ξ_q= \quad Σ_(k=1)^K▒w_kq \quad X_kq+δ_q$$

where w_kq is the coefficient connecting each MV to the corresponding LV, and the error term δ_q is a zero mean random term uncorrelated with the manifest variable.

LV estimates (ξ^_q) by means of the weight relations are defined as follows:

$$ξ \ ^_q= \quad Σ_(k=1)^K▒ω_kq \quad X_kq$$

where ω_kq are the outer weights used to estimate the LVs as linear combinations of their observed MVs.

The PLS algorithm considers two double approximations for the latent variables: a) external estimation, obtained as the product between the block of manifest variables and the outer weights; b) internal estimation obtained as the product between the external estimation and the so-called inner weights. Then, the parameter estimation is performed through the alternation of the external and the internal estimations, iterating until convergence. The paths among the LVs are got through the ordinary least squares (OLS).

3.1 Survey Instrument

To ensure validity, all the items used were adopted from previous studies. Five items were created by the authors since the measures taken during this pandemic are unique and therefore could not be adapted from an existing study. The questionnaire covered the possible impacts of Coronavirus on respondents in terms of general impact, attitude and preferences, safety, and hygiene. A 5-point Likert scale was used, and participants were asked to rate their level of agreement according to their own judgment. The questionnaire continued with a demographics section and a final question about the likelihood of traveling in the future (George and Swart, 2012). attention check questions were used to ensure validity.

3.2 Sample

Through Amazon Mechanical Turk™ (MTurk), the questionnaire was distributed in the mode of a self-administered online questionnaire, and each participant was paid $0.15 cents. To ensure quality data collection, several actions were taken, as Cobanoglu et al. (2016) suggested. These are: 1) sending the survey to only users with an approval rate of 95% or higher; 2) implementing several attention check questions inside the survey (i.e., please select "agree" from the responses below) and removing the ones that do not pass these checks; 3) disabling the possibility of taking the survey more than once from the same internet protocol address.

4. Results

4.1 Demographics

A total of 1978 responses were collected from 19 countries (September 2020). Incomplete questionnaires and the responses that did not pass the validity questions were removed, and the final number for valid and complete

surveys was 1607. Among these 1607 respondents, a total of 750 (47%) are male and 857 (53) are female. In terms of age, the most substantial portion was between 18 and 35 years old (50%). Thirty-eight percent of the respondents have a master's degree, and nearly 18% have a college associate degree. A monthly income of $20,000 to $29,999 comprised the largest group (14%). People working in management, professional and related sectors accounted for 38% of all participants. Most of the respondents traveled at least once in six months (32%).

Table 2. Demographics

Variable	*(%)*
Gender	
Female	53
Male	47
Level of education	1
Less than high school degree	9
High school graduate (high school diploma or equivalent-including GED)	18
Some college but no degree	10
Associate degree in college (2-year)	38
Bachelor's degree in college (4-year)	17
Master's degree	4
Doctoral degree	3
Professional degree (JD, MD)	
Income	
Less than $10,000	10
$10,000 to $19,999	10
$20,000 to $29,999	14
$30,000 to $39,999	10
$40,000 to $49,999	12
$50,000 to $59,999	10
$60,000 to $69,999	8
$70,000 to $79,999	6
$80,000 to $89,999	5
$90,000 to $99,999	4
$100,000 to $149,999	8
$150,000 or more	3
Age group, years	
18 - 35	50
36 - 55	33
55 above	17
Occupation	
Management, professional, and related	38
Service	17
Sales and office	14
Farming, fishing, and forestry	1
Construction, Extraction, and maintenance	3
Production, transportation, and material moving	4
Government	7
Retired	4
Unemployed	12
Frequency of travel for leisure or business	
Once a week	2
Once a month	9
Once every other month	15
Once every six months	32
Once a year	22
Less than once a year	20

4.2 Hypothesis Testing

In order to check the quality of the outer model we verified the unidimensionality of the reflective MVs block. We checked the unidimensionality of the manifest variables blocks through Dillon-Goldstein's rho. A block is unidimensional if the Dillon-Goldstein's rho (DG rho) is greater than 0.7. In our case, the value of the DG rho is >0.7 for all the manifest variables blocks.

Afterwards, we assessed the convergent validity using the Average Variance Extracted (AVE $\geqslant$ 0.50). AVE attempts to measure the amount of variance that a latent variable captures from its indicators in relation to the amount of variance due to measurement error. In our research, AVE is usually equal to or greater than 0.50.

To validate a PLS-PM globally we consider the Goodness of Fit (GoF), which is a compromise between the quality of the measurement model and the quality of the structural model. An acceptable GoF of 0.5855 was obtained. Moreover, a satisfying coefficient of determination R2 (0.67) for the endogenous latent variable travel behavior was obtained.

Table III shows the bootstrap results for the Outer Model (loading coefficients). The confidence intervals indicate that the regression coefficients are significant. If a confidence interval does not include zero, the hypothesis that the parameter is equal zero is rejected. The loading coefficients (Table III) are positive (except the loading for PT2) and significant (the confidence intervals never include zero).

Table 3. Bootstrap results for loading coefficients

	Original	Mean.Boot	Std.Error	perc.025	perc.975
AT-AT1	0.646	0.646	0.02153	0.607	0.684
AT-AT2	0.755	0.754	0.01298	0.726	0.775
AT-AT3	0.694	0.695	0.01746	0.670	0.731
AT-AT4	0.544	0.548	0.02074	0.532	0.605
AT-AT5	0.704	0.706	0.01457	0.674	0.728
PT-PT1	0.477	0.483	0.05908	0.365	0.597
PT-PT2	-0.840	-0.836	0.03447	-0.893	-0.757
CM-CM1	0.570	0.573	0.02169	0.536	0.616
CM-CM2	0.672	0.674	0.01750	0.646	0.705
CM-CM3	0.754	0.755	0.01165	0.732	0.776
CM-CM4	0.799	0.801	0.00986	0.782	0.819
CM-CM5	0.714	0.716	0.01419	0.681	0.745
CM-CM6	0.790	0.791	0.00954	0.775	0.808
CM-CM7	0.682	0.680	0.01464	0.653	0.707
CM-CM8	0.628	0.628	0.01848	0.594	0.663
CM-CM9	0.715	0.715	0.01499	0.680	0.746
PBC-PB1	0.637	0.637	0.01852	0.601	0.669
PBC-PB2	0.849	0.850	0.00808	0.832	0.864
PBC-PB3	0.863	0.863	0.00740	0.850	0.876
PBC-PB4	0.871	0.872	0.00667	0.859	0.884
NPI-NPI1	0.871	0.870	0.00888	0.851	0.886
NPI-NPI2	0.862	0.861	0.00926	0.843	0.880
NPI-NPI3	0.843	0.845	0.01087	0.825	0.865
NPI-NPI4	0.752	0.754	0.01375	0.728	0.777
NPI-NPI5	0.849	0.850	0.01049	0.830	0.869
TB-TB1	0.560	0.555	0.02338	0.516	0.599
TB-TB2	0.783	0.784	0.01114	0.762	0.805
TB-TB3	0.815	0.815	0.00805	0.800	0.830
TB-TB4	0.635	0.637	0.01780	0.603	0.665
TB-TB5	0.680	0.679	0.01934	0.644	0.712

Later, from the analysis of the path-coefficient, we can deduce the significance of all the links, except the link between personal trait and travel behavior (see Table IV and Figure 2).

Table 4. Bootstrap results for path coefficients

	Original	Mean.Boot	Std.Error	perc.025	perc.975
AT-> TB	0.17355	0.17798	0.0272	0.1274	0.228
PT-> TB	0.00343	0.00411	0.0182	-0.0329	0.039
CM-> TB	0.17330	0.16951	0.0258	0.1264	0.231
PBC -> TB	0.36450	0.36561	0.0271	0.3203	0.421
NPI -> TB	0.21941	0.21763	0.0175	0.1846	0.254

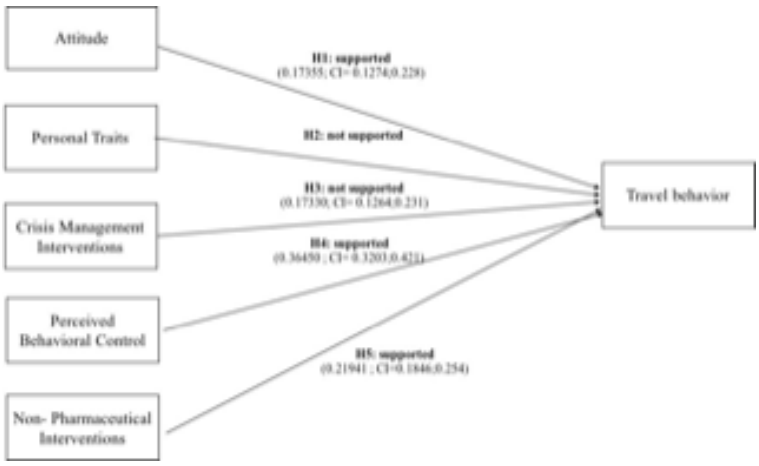

Figure 2. The Link between Personal Trait and Travel Behavior

The attitude was significant and positively associated with traveling behavior, thus providing support for H1 (path coefficient 0.1735; CI=0.1274;0.228). The path coefficient of personal traits on travel behavior is not significant (CI=-0.0329; 0.039), so H2 was not supported.

Crisis management interventions also impact significantly and positively on travel behavior (path coefficient= 0.17330 with CI=0.1264;0.231). Therefore, H3 was well supported. The coefficient of perceived behavioral control and travel behavior implies the effect is positive and significant (path coefficient = 0.36450; CI=0.3203;0.421). Therefore, H4 is also confirmed.

Finally, non-pharmaceutical interventions showed a significant and positive relationship with travel behavior (path coefficient 0.21941; CI = 0.1846;0.254).

Finally, we apply a group comparison in PLS-Path Modeling (Chin, W.W, 2003) in order to verify whether significant differences between the two groups in terms of path coefficient exist (Table 5). The null and alternative hypothesis to be tested are:

〖H〗_0: path coefficients are not significantly different.

〖H〗_1: path coefficients are significantly different.

Table 5. Group Comparison: G1 (Female) *vs* G2 *(*Male)

	global	Group.Female	Group.Male	diff.abs	t.stat	p.value	sig.05
AT->TB	0.1735	0.1811	0.1630	0.0182	0.2384	0.4058	no
PT->TB	0.0034	0.0096	0.0098	0.0002	0.2177	0.4138	no
CM->TB	0.1733	0.1624	0.1899	0.0274	0.4630	0.3217	no
PBC->TB	0.3645	0.3903	0.3251	0.0652	1.1726	0.1206	no
NPI->TB	0.2194	0.1896	0.2559	0.0662	1.7362	0.0413	yes

In our case, we compare the path coefficients for groups male and female (Table V and Figure 3). Results from this analysis show that there is a different significant link between the non-pharmaceutical interventions and travel behavior. In particular, the effect of this relationship is higher in males.

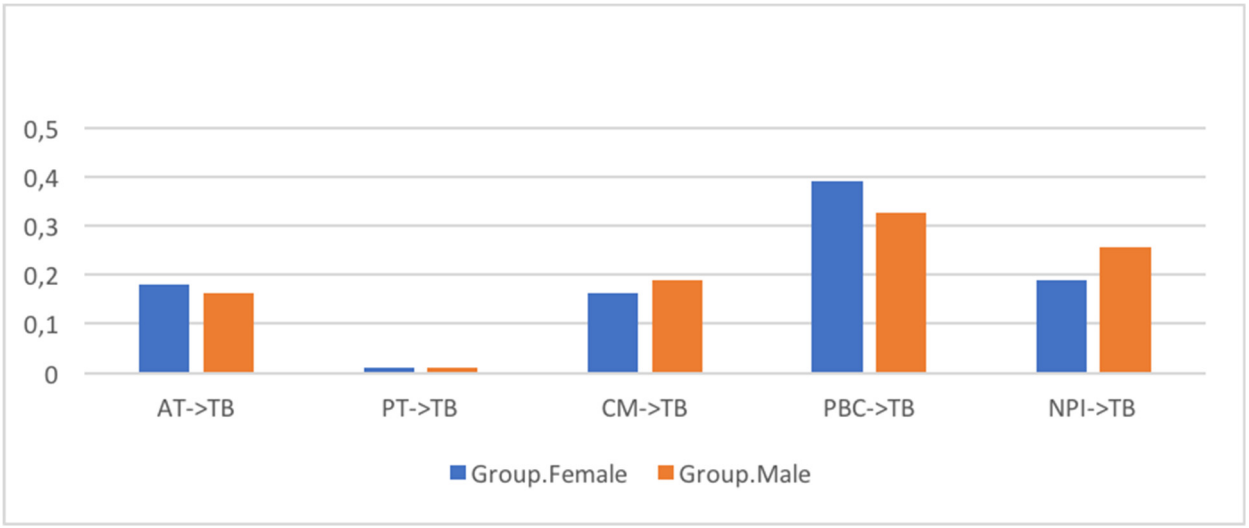

Figure 3. The path coefficients for group male and female

5. Discussion

This study investigated the impact of a global pandemic, Coronavirus, on travel behavior by integrating crisis management with attitude, personal traits, perceived behavioral control and non-pharmaceutical interventions. The results suggest that, with the exception of personal traits, all of these impacted travel behavior during the COVID-19 pandemic.

While crisis management intervention was the main factor in making travel plans, non-pharmaceutical interventions (NPIs) came in second. Non-pharmaceutical interventions were measured in terms of what one knows regarding how the Coronavirus affected their upcoming destination and the necessary precautions to be taken. During pandemics, crises influence the method of travel and travelers take certain non-pharmaceutical interventive actions before and during their travels.

Attitudes and behaviors evolve over time (Paulssen et al., 2013), and since the current pandemic situation is ever-evolving, then perhaps at that moment in time when the data was collected, the attitudes of the participants were not defined well enough to significantly influence their travel behavior.

As indicated by our results, apart from perceived behavioral control, the other two core variables (non-pharmaceutical interventions and crisis management interventions) are Coronavirus crisis specific.

The present study validates the conceptual model showing the most relevant variables that impact travel behavior during the Coronavirus pandemic. Personal traits were the only variable that recorded a negative relationship with travel behavior. In the context of this study, personality traits were related to how one's activities were impacted by this pandemic. This finding is supported by previous research (Sönmez & Graefe, 1998; Van Acker et al., 2016) in which personality traits influence travelers to travel to and/or avoid certain places. The areas affected by Coronavirus are among those that travelers avoid for understandable reasons. Another implication for travel companies and destinations based on the findings of this study is that destinations should promote activities that support social distancing and take precautions against Coronavirus, which will be likely to gain traveler confidence and further induce travel.

6. Implications and Conclusion

The current study has significant practical and theoretical implications. It adopted the extended model of goal-directed behavior but also included the crisis management intervention. In terms of practical implications, it has become apparent that firms and governments should understand and implement integrated risk management and crisis management strategies.

Attitudes of travelers was another factor influencing travel behavior. Hoteliers should review their cleaning and sanitation practices for rooms and public areas and highlight these in their marketing campaigns. Restaurants should review their cleaning and sanitation practices and implement social distancing in seating and waiting areas and highlight these in their marketing efforts until the Coronavirus disappears. This pandemic has raised awareness in the general public concerning hygiene. Unlike when previous pandemics happened, the internet and

news feeds in the current times are much more aggressive and accessible, which is beneficial as it keeps the population informed but can also be a means of spreading fear and panic amongst us.

Although personal traits usually strongly influence travel behavior, these relationships weaken in the case of a pandemic. Our results show this as the only variable having a negative relationship with travel behavior. This makes sense as research has shown that travelers travel to and/or avoid certain areas based on their personal feelings. The areas impacted by Coronavirus are naturally among those that travelers avoid at this time. Tourist destinations need to reassure travelers that these areas are again safe for travel. This will likely decrease the risk factor, therefore influencing travelers to travel to this region. As other regions beat the Coronavirus, travel will probably start again.

The limitation of this study is that the questionnaire was redistributed during the period when Coronavirus was still in its early stages, and the fullest extent to which the impacts could grow were not yet known. Future research could collect data during the peak of the Coronavirus and after it is finished and compare results to this study to see the impact of the severity of the crisis on travel behavior.

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Appendix

Construct	Item
Attitude	- Coronavirus has greatly affected my work and life (AT1)
	- Coronavirus has greatly affected my attitude towards life and my way of life (AT2)
	- I think that traveling is positive (AT3)
	- I think that traveling is useful (AT4)
	- I think that traveling is valuable (AT5)
Personal traits	- If I succeed in achieving my goal of traveling, I will be excited (PT1)
	- If I fail in achieving my goal of traveling, I will be angry (PT2)
Crisis Management Interventions	- All of my leisure travels have been cancelled during the Coronavirus period (CM2)
	- Safety is one of the most important issues while traveling (CM3)
	- Total closure of borders (CM4)
	- More control in all countries' borders (CM5)
	- Mandatory quarantine in case of disease diagnosis (CM6)
	- Limitations in all countries to receive migrants and foreigners (CM7)
	- Obligation of all citizens to be examined by medical teams (CM8)
	- Possibility for security forces to randomly stop people on the streets to be examined (CM9)
Perceived behavioral control	- I will greatly reduce my travel plans in the next 12 months (PB1)
	- I will avoid traveling to crowded big cities after Coronavirus (PB2)
	- I am confident that if I want, I can travel (PB3)
	- I have enough resources (money) to travel (PB4)
Non-Pharmaceutical Interventions	- I care more about the hygiene and safety of the tourist sites after Coronavirus (NPI1)
	- I care more about the hygiene and safety of the means of transportation after Coronavirus (NPI2)
	- I care more about the health of the members in the tour group after Coronavirus (NPI3)
	- I care more about the hygiene and safety of the daily necessities while traveling after Coronavirus(NPI4)
	- I will frequently wash my hands while traveling internationally (NPI5)
Travel behavior	- I intend to travel in the near future (TB1)
	- I am planning to travel in the near future (TB2)
	- I will make an effort to travel in the near future (TB3)
	- I will certainly invest time and money to travel in the near future (TB4)
	- I feel very comfortable traveling right now (TB5)