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Impact of the perceived risk from Covid-19 on intention to travel

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ABSTRACT

The objective of this study is to analyse the impact of perceived risk on intention to travel in the Covid-19 pandemic situation. Applying the Theory of Planned Behaviour, the study addresses the modulating effects of risk on the antecedents of intention; additionally, the resulting model includes the impact of this intention on the willingness to pay (WTP) more to benefit from additional safety measures at the destination. Furthermore, this paper addresses respondents belonging to an at-risk group for Covid-19 as a source of heterogeneity that may exert an effect on the results of the model. The model is tested using PLS-SEM,

and the empirical results can contribute to the development of safety measures in tourism services and the design of effective actions to restore tourism.

KEYWORDS

- Theory of planned behaviour
- perceived risk
- willingness to pay
- Covid-19
- intention to travel

Introduction

The global consequences of Covid-19 remain difficult to gauge as today's society finds itself immersed in one of the greatest health and humanitarian crises witnessed in the last century (OECD, 2020a). Collateral effects of the fight against the virus include the paralysis of productive activity, with serious economic and social repercussions at the global level (Bapuji et al., 2020). One of the sectors that is most sensitive to health and safety problems, changes in the political situation, economic crises, natural disasters (Cakar, 2020) and epidemics (Chuo, 2014) is tourism. On average, this sector accounts for 4.4% of GDP and 21.5% of exports of services in OECD countries, while in certain cases such as Spain, these figures rise to over 52% of total exports of services and 11.8% of GDP (OECD, 2020b).

Due to the global pandemic, the decision to travel involves risks, not only because of the uncertainty surrounding the conditions that the tourist will encounter in the destination, but also because of the potential negative outcomes related to the decision taken (Chang, 2009). In the area of tourism, there are a number of different types of risk worth mentioning (Fuchs & Reichel, 2006 [Q2]): physical/health risk (food safety, epidemics, accidents, etc.); equipment risk (equipment or organizational problems); psychological risk (the tourist may not derive personal satisfaction from the trip); financial risk (unexpected expenses); social risk (change in the attitude of friends and relatives towards the tourist due to the trip); and time risk (the trip could be a waste of time). Although each of these cases could be directly related to the consequences of Covid-19, in recent years, travelers' concerns about risks to their health or the possibility of catching an infectious disease have been influencing their behaviour and the choice of tourist destination (Chinazzi et al., 2020; Lee et al., 2012).

As things currently stand, there is still scant research on intention to travel in an environment of pandemic risk (Wen et al., 2020). This type of analysis is of the utmost importance, as it helps to facilitate the decision-making needed to revive the demand for tourism. The present study seeks to fill this gap and is justified on the basis of the characteristics of Spanish tourism described above. The analysis is based on one of the most established theoretical frameworks in the analysis of intention (Gollwitzer & Sheeran, 2006), the theory of planned behaviour (TPB) (Ajzen, 1985). The objective of this study is to analyse the impact of perceived risk on intention to travel in a pandemic situation. The study addresses the modulating effects of risk on the antecedents of intention in the TPB; additionally, the resulting model includes the impact of this intention on the willingness to pay (WTP) more to benefit from additional safety measures at the destination. Empirically, the findings of this study can contribute to the design of more effective actions to restore tourism and to the development of safety measures in tourism services.

Literature review and hypothesis development

Previous tourism research in the context of epidemic crises has primarily focused on examining the subsequent recovery patterns (Cheer, 2020), analysing the impact of infectious diseases on tourist arrivals and movements (Shi et al., 2020), studying how different outbreaks can alter travelers' lifestyle and preferences (Wen et al., 2020), or assessing their economic repercussions. However, the accumulated knowledge about the decision-making process and intention to travel in pandemic situations is still very limited. In this regard, mention can be made of studies such as those by Chuo (2014) on the self-protection behaviour of customers in restaurants, or Lee et al. (2012) on the impact of non-pharmaceutical interventions (NPI) on potential international tourists' intention to travel.

Despite the above, and even though tourism is a very vulnerable activity, the sector had been relatively resistant to external shocks until the current Covid-19 crisis. With the exception of the 2008 financial crisis, none of the major disruptive events – September 11 terrorist attacks, SARS, and MERS – resulted in a long-term decline in global tourism development (Gossling et al., 2020; Hall, 2010).

However, the same cannot be said of the current pandemic, which, in the specific case of the Spanish tourism sector, had caused losses of 43.5 billion euros as of 30 June 2020 (Statista, 2020), with losses forecasted to reach approximately 83.1 billion euros for the entire year. Furthermore, by April 2020, the number of workers officially employed in the tourism sector had already dropped by 12.5%. To date, Covid-19 has been responsible for more than 29,000 deaths in the country (according to official figures), which has undoubtedly affected Spaniards' intention to travel. According to data from Statista (2020), a survey carried out during the

lockdown revealed that 23% of respondents did not intend to go to a hotel until there was a vaccine against the disease, and 36% would not go back to an airport until then. In addition, 70% of respondents would be willing to pay more to travel if it gave them more flexibility when it came to making changes or cancellations. All these figures are reflected in changes in Spaniards' behaviour and intention to travel as they perceive all around them the risks arising from the pandemic. Thus, the theory of planned behaviour (TPB) is useful for modeling their behaviour in terms of intention to travel during the situation created by Covid-19. Although this theory is well known and has been applied in different fields, it has not yet been used in pandemic contexts except to model intention variables related to medical aspects (e.g. Agarwal, 2014; Zhang et al., 2020); only the study by Lee et al. (2012) uses it in the field of tourism during a health crisis (H1N1) to study potential tourists' intention to travel. Nevertheless, in the wake of the spread of Covid-19 worldwide, new studies have begun to employ this theory to the same ends: Bae and Chang (2020) analyse behavioural intention towards 'untact tourism' in South Korea; Li et al. (2020) focus on post-pandemic intention to travel in China; and Wang et al. (2020a) examine Chinese residents' intention to use hotels after Covid-19.

The theory of planned behaviour

The TPB is an extension of the theory of reasoned action (TRA) (Chaulagain et al., 2020; Park et al., 2017). In the original theory, Fishbein and Ajzen (1975) established that a person's intention to engage in a behaviour is determined by his/her attitude (individual's personal conviction and feelings towards said behaviour) and by the subjective norm (individual's perception of what his/her salient referents would think about the performance of the behaviour). However, behaviour depends to a large extent on volitional control (Ajzen, 1991), which refers to the person's ability to perform the behaviour. To overcome this limitation, the TRA was expanded to become the current TPB, which posits that a person's intention to perform a behaviour is determined by attitude, the subjective norm, and perceived behavioural control (PBC) (Ajzen, 1991; Park et al., 2017).

The TBP is one of the most commonly-used psychological models to explain and predict human behaviour (Chaulagain et al., 2020) and has been extensively applied and tested in a variety of contexts, disciplines and countries (Armitage & Conner, 2001; Steinmetz et al., 2016). In the tourism sector, for example, it has been used to shed light on the decision-making process leading to destination choice (Lam & Hsu, 2006), the differential impact of risk and uncertainty on decision-making about trips (Quintal et al., 2010), or the influence of public environmental facilities on the environmentally-responsible behaviour of tourists (Wang et al., 2020b). In the present analysis, intention is defined as the individual's inclination to travel in the short term, which implies assuming the risk from Covid-19 in this mobility. Therefore, the first three hypotheses proposed are as follows:

H1: The more positive the attitude towards the possibility of traveling during the Covid-19 pandemic situation, the stronger the intention to travel.

H2: The greater the positive influence of the subjective norm on the decision to travel during the Covid-19 pandemic situation, the stronger the individual's intention to travel.

H3: The greater the individual's PBC over the possibility of traveling during the Covid-19 pandemic situation, the stronger his/her intention to do so.

Risk perception as an antecedent in TPB

The use of the risk construct has become widespread in recent decades (Bruwer & Cohen, 2019; Quintal et al., 2010), with it being conceptualized as a subjective potential loss derived from uncertainty to which some probability of occurrence can be assigned. However, its definition varies depending on the service with which it is associated or the context in which it is found.

In tourism, perceived risk characterizes situations in which it clearly predicts the decision to avoid traveling to certain destinations; for example, due to terrorism, political instability, or health risks (Sönmez & Graefe, 1998). Fuchs and Reichel (2006) define the perception of risk as the potential danger associated with the trip; this perception may change the decision to travel in cases where the risk is likely to exceed an acceptable level for the individual. There are widely-varying analyses of potential risks covering all industries related to the tourism sector (transport, accommodation, hospitality, etc.). In this regard, mention can be made of studies such those by Bruwer and Cohen (2019), who address the perception of risk in the restaurant business, or Yeung and Yee (2020), who focus on food safety. Other studies observe its impact on trip cancellation after 9/11, fear of illness or lack of health care (Chen & Noriega, 2004; Lepp & Gibson, 2003).

It thus seems clear that the perception of risk is a central element in the decision-making process of the traveler or tourist (Kozak et al., 2007), and may even alter rational decisions regarding travel or choice of destination (Sönmez & Graefe, 1998). Therefore, in this study, risk perception is incorporated into the TPB, as in the articles by Zhu et al. (2009) or Sparks and Pan (2009), among others. It is defined here as the degree of potential loss perceived by an individual, stemming from the adverse outcomes of traveling because of the global pandemic situation caused by Covid-19.

Each individual's perception of risk may be more or less in line with the actual situation, but, since it implies an expectation of

loss, it is highly likely to negatively affect their attitude towards a particular behaviour. Indeed, in studies related to tourism, authors such as Lobb et al. (2007) or Quintal et al. (2010) have found this type of negative relationship. Thus, the following hypothesis is proposed:

H4: The higher the perceived risk from Covid-19, the more negative the attitude towards the idea of traveling during the pandemic situation.

That said, risk can also influence the PBC over an action, since the greater the perception of possible negative consequences arising from the intention to travel, the less control the individual will feel he/she has over that behaviour (Quintal et al., 2010). Therefore, the following hypothesis is proposed:

H5: The higher the perceived risk from Covid-19, the lower the PBC over the idea of traveling during the pandemic situation.

Willingness to pay as a consequence of intention to travel

When actors in the tourism sector provide their customers with additional safety and hygiene measures in response to the Covid-19 pandemic (sanitizing gel, safety distances, disinfection of furniture items, etc.), it contributes to the improvement of public health; as such, it could be considered an impure public good or service, the benefits of which are partially rivalrous in consumption and/or partially excludable (Cornes & Sandler, 1996). It can be argued that part of the cost of these measures should be borne by the State, with the rest of the costs being borne by the tourism companies, who would ultimately pass them on to the customer through the price. Thus, the cost of such actions would be passed on depending on the benefit generated; a part would be borne by tourists or users, who would see their probability of infection reduced; and the rest by the State, due to the social benefit derived from minimizing the occurrence of resurgences of the virus, which affect society as a whole.

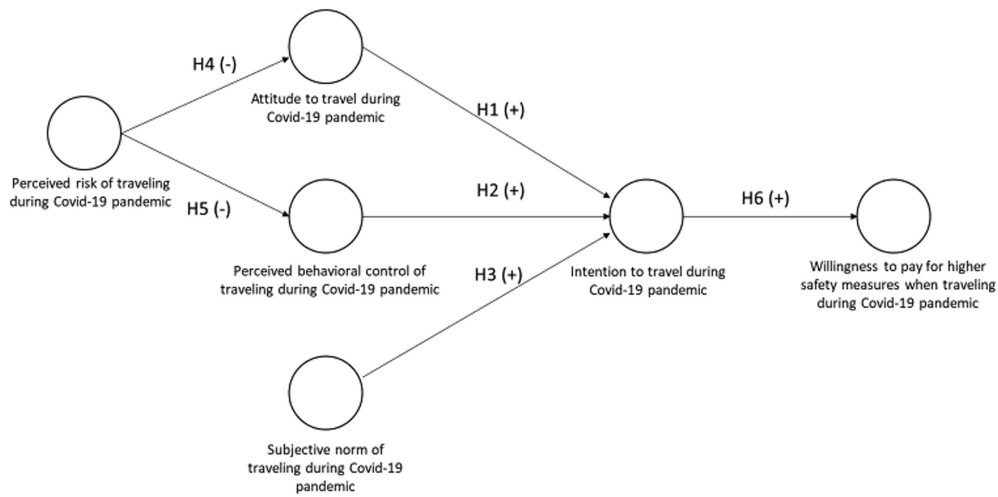
The economic value, expressed in monetary terms, of an alteration in the current situation of an environment is known as willingness to pay (WTP). This concept can be understood as the monetary amount or cost that an individual would commit to paying for an increase or improvement in quality of a good or service (Ramdas & Mohamed, 2014). WTP can be a useful tool for assessing goods or services that do not have a specific commercial or market value, although this measure evolves constantly, as it can change when the individual obtains additional information (Nowacki, 2013).

The model proposed in this study analyses the potential traveler's WTP for the provision of extraordinary hygiene and safety measures. This WTP will be used as a behaviour variable within the TPB model. Actual behaviour is the final element of the TPB according to Ajzen (1991), and is viewed as the positive consequence of intention. In the analysis presented here, intention is defined as the individual's inclination to travel, but it obviously cannot be verified whether this intention will ultimately result in real travel behaviour, since the survey was conducted prior to the end of the lockdown in Spain. For that reason, it would be interesting to consider the possibility that individuals showing a stronger intention to travel will be more willing to pay extra for their safety in all aspects of travel. Thus, behaviour in relation to WTP has been defined as a consequence of intention to travel in the TPB model, in line with studies such as those by Ramdas and Mohamed (2014), who use WTP as behaviour stemming from attitude towards a series of environmental attributes, or Hultman et al. (2015), who suggest that intention has a direct and positive influence on WTP in the context of ecotourism.

In short, the last hypothesis of the model summarized in Figure 1, is as follows:

H6: The stronger the intention to travel during the Covid-19 pandemic situation, the higher the individual's WTP for additional safety measures.

Figure 1. Research model.



Method

This empirical research is based on the primary information captured through an ad hoc survey designed to test the hypotheses raised in the proposed theoretical model.

Survey instrument

The measurement instrument was designed based on scales used in previous research to ensure its consistency, reliability, and validity (Agag et al., 2020). As is standard practice, the measures were adapted to the context of the analysis carried out, in this case, the environment of the pandemic situation. Following a review of the instrument by tourism specialists, the final questionnaire was comprised of four sections.

The first block focuses on TPB, that is, the variables related to attitude, the subjective norm, PBC and intention to travel, in all cases under the conditions created by the Covid-19 pandemic. Attitudes were measured through five items on a seven-point semantic differential scale (enjoyable-not enjoyable, pleasant-not pleasant, etc.). Two questions were asked to evaluate subjective norm, while PBC was measured through three items. The three variables were based on the studies of Bagozzi et al. (2003) and Quintal et al. (2010). Lastly, intention to travel was analysed by means of three items adapted from Hsu and Huang (2012).

The second section seeks to analyse the risk perceived by the respondent when traveling in conditions where the pandemic is still active, to a greater or lesser extent. Five items related to risk perception were used, adapted from the work of Rittichainuwat and Chakraborty (2009), Tavitiyaman and Qu (2013) and Karl (2016). A seven-point Likert scale (1-totally disagree, 7-totally agree) was applied to all the items in these first two blocks.

The third part of the questionnaire focuses on the respondent's WTP for a series of elements related to travel safety. Five items adapted from Han et al. (2010), Wei et al. (2018) and Agag et al. (2020) were used. On a 7-point scale (1 – nothing; 7 – 50% or more) the respondent is asked how much above the standard price he/she would be willing to pay for different services (transportation, accommodation, restaurants, etc.), in order to have additional safety measures against Covid-19.

Finally, the fourth section refers to the respondent's sociodemographic data: sex, age, education, occupation, income level and whether they belong to an at-risk group for Covid-19. This last variable will be used in the results to analyse the possible heterogeneity of the model depending on the respondent's situation.

Sampling and data collection

The population under study consists of residents in Spanish territory – as a case of a country particularly affected by the Covid-19 pandemic – who may potentially be travelers in the short/medium term within the environment created by the disease. A convenience sample was obtained, with data collected for the empirical analysis by means of a self-administered questionnaire. The link to the survey was shared on social networks and travel forums for Spaniards. Before the publication of the final survey, a pre-test was administered to a control group ($N = 10$) to ensure that the items were understood and to correct any wording that could be misleading.

A total of 618 valid responses were obtained. Some incomplete or incorrectly filled-out questionnaires were removed, yielding this final database.

The sociodemographic data of the sample are presented in Table 1, where it can be seen that women slightly outnumber men, the predominant age range is above 50 years old, while more than half the sample have university studies and are public

employees or salaried employees. For about 25% of the sample, the net monthly household income lies between 1000 and 2000 euros, and between 2001 and 3000 euros for slightly more than another quarter of the respondents.

Table 1. Sociodemographic profile of respondents.

Variable (unit)	Categories	Value
Sex (%)	Male	46.1%
	Female	53.9%
Age (%)	Below 20	1.1%
	20–29	7.7%
	30–39	12.0%
	40–49	25.7%
	50–59	37.4%
	60 and older	16.1%
Education (%)	Secondary level or lower	4.3%
	High School diploma	15.6%
	University	50.1%
	Master/PhD	30.0%
Employment/Current activity (%)	Self-employee	14.2%
	Wage-employee	27.0%
	Student	4.4%
	Homemaker	2.3%
	Public employee	38.1%
	Retired	9.0%
	Unemployed	5.0%
Monthly household income	<1000€	6.6%
	1001–2000 €	25.7%
	2001–3000 €	26.6%
	3001–4000 €	19.2%
	4001–5000 €	13.1%
	>5001 €	8.8%

Results

Procedure, validity and reliability of the measurement model

The model and hypotheses presented were tested using the Partial Least Squares (PLS) procedure. The measurement model was validated by assessing the reliability of the individual indicators through their loadings (Table 2), as well as the internal consistency and convergent and discriminant validity (Table 3). It should be noted that some of the items in certain constructs had

to be removed from the measurement model because of multicollinearity; thus, attitude was eventually measured using three items, PBC was reduced to two, and WTP to three indicators.

Table 2. Measurement model. Outer loadings.

Factors and Items	Standard loadings	Mean	Standard deviation
Perceived risk			
Perc_risk_1: Given the current situation, I prefer to avoid traveling to large cities	0.786	5.582	1.706
Perc_risk_2: Given the current situation, I prefer to shorten the duration of my potential trips	0.876	4.912	2.015
Perc_risk_3: I feel more averse to traveling because of the risk from the Covid-19 pandemic.	0.604	5.117	1.811
Attitude			
Att_1: In the current situation, it would be nice to travel in the short/medium term	0.926	3.881	1.684
Att_2: In the current situation, it would be fun to travel in the short/medium term	0.932	3.814	1.783
Att_3: In the current situation, traveling in the short/medium term would be positive	0.911	4.285	1.811
Perceived behavioral control			
PBC_1: Whether or not to travel in the current situation is entirely up to me	0.819	2.701	1.829
PBC_2: I have the necessary resources to travel in the current situation	0.879	4.428	1.978
Subjective norm			
Sub_norm_1: I would be influenced by my family's opinion when making the decision to travel in the current situation	0.684	1.923	1.530
Sub_norm_2: I would be influenced by my friends'/colleagues' opinion when making the decision to travel in the current situation	0.868	3.818	1.99
Intention to travel			
INT_1: I intend to travel as soon as I can	0.771	2.557	0.910
INT_2: If I need to travel for work in the short/medium term, I intend to do so	0.756	4.921	1.987
INT_2: If I need to travel for leisure in the short/medium term, I intend to do so	0.875	3.485	2.077
Willingness to pay			
WTP_1: I am willing to pay more for additional safety measures for the staff who serve me during my possible trips	0.921	2.880	1.949
WTP_2: I am willing to pay more for additional safety measures in the accommodation where I stay during my potential trips	0.788	2.889	1.699
WTP_3: I am willing to pay more for additional safety measures on the means of transport I use during my potential trips	0.939	3.284	2.034

***All loadings of the reflective measurement model are significant at the 1% level (two-tailed test).

Table 3. Internal consistency, convergent validity and discriminant validity of the measurement model.

			Fornell–Larcker criterion
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	Composite reliability	AVE	PR	AT	PBC	SN	IN	WTP
Perceived Risk (PR)	0.803	0.581	0.763					
Attitude (AT)	0.945	0.852	-0.421	0.923				
Perc. Behav. Control (PBC)	0.838	0.722	-0.509	0.586	0.850			
Subjective norm (SN)	0.756	0.611	-0.302	0.064	0.216	0.782		
Intention to travel (IN)	0.844	0.644	-0.426	0.595	0.622	0.182	0.802	
Willingness to pay (WTP)	0.915	0.776	0.044	0.014	-0.057	-0.091	-0.069	0.885

Most of the outer loadings exceed the cut-off value of 0.707 suggested by Carmines and Zeller (1979), except for three items related to perceived risk, the subjective norm and intention to travel. However, since they are in different constructs and do not fall below the value of 0.4 established by Hair et al. (2011) as the cut-off for the removal of an indicator, they are left in the model as they can help extract useful information available in the indicator to generate a better latent variable score and, equally, the rest of the measurement indicators for the constructs verify the discriminant validity (Table 3).

Regarding internal consistency and convergent validity (Table 3), composite reliability surpasses the value of 0.7 suggested by Nunnally and Bernstein (1994) as an appropriate level for acceptable reliability. Regarding convergent validity, all the constructs satisfy the AVE criterion proposed by Fornell and Larcker (1981) by exceeding the cut-off of 0.5; that is, each construct explains at least 50% of the variance of the assigned indicators. The discriminant validity requirement is also fulfilled, as the square root of the variance shared between the construct and its indicators (AVE), shown in the values on the main diagonal (in bold), is greater than the correlations between each construct and any other (the rest of the matrix).

Estimation and evaluation of the structural model

Figure 2 shows the estimation and validation of the structural model. After confirming the absence of multicollinearity ($VIF < 5$ for all indicators), a bootstrap procedure with 5000 samples was carried out to estimate the parameters; they were significant in all cases ($p < 0.05$) except the path between Intention and WTP (Table 4). The standardized root mean square residual (SRMR) registers a value of 0.098; since it does not exceed the cut-off of 0.10, this indicates the goodness of fit of the model (Henseler et al., 2009).

Figure 2. Measurement and structural model with loadings and estimated path coefficients (P -value).

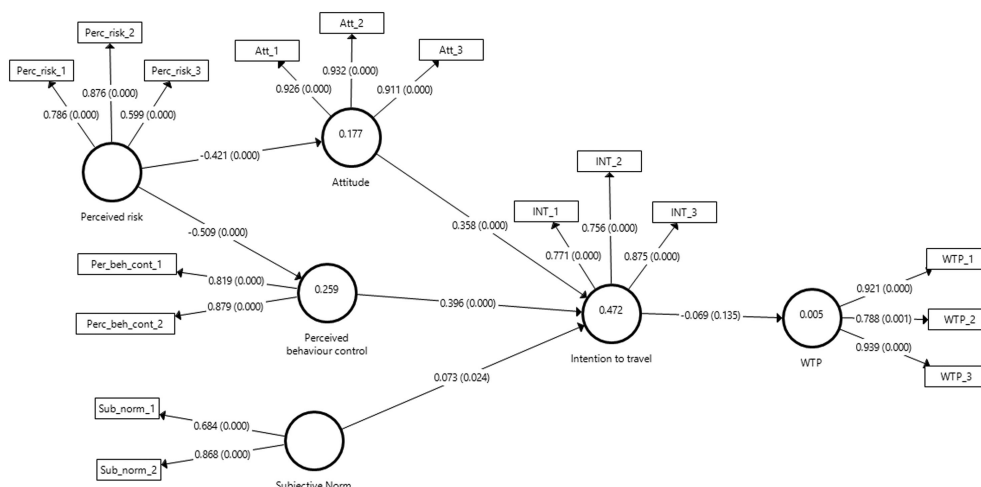


Table 4. Path coefficients and t -value (structural model).

Hypothesis	Expected sign	Path	t -value
H1: PR ATT	-	-0.421	11.072***
H2: PR PBC	-	-0.509	14.749***

H3: ATT INT	+	0.358	8.956***
H4: PBC INT	+	0.396	9.924***
H5: SN INT	+	0.073	2.257**
H6: INT WTP	+	-0.069	1.496

*** $p < 0.01$ ** $p < 0.05$.

The R^2 values of the endogenous variables are above the minimum cut-off value of 0.1 proposed by Falk and Miller (1992) except in the relationship between Intention to travel and WTP ($R^2 = 0.005$). The direct relationship of Perceived Risk with Attitude ($R^2 = 0.177$) and with PBC ($R^2 = 0.259$) show weak effects, as they do not reach the cut-off of 0.33 indicated by Chin (1998). The combined effect of Attitude, Subjective Norm and PBC on Intention to Travel can be considered moderate ($R^2 = 0.472$).

Hypothesis testing

The risk perceived by the respondents has a negative influence (Table 4) both on their attitude towards traveling ($\beta = -0.421, p = 0.000$) and on PBC ($\beta = -0.509, p = 0.000$). As these two paths are negative and statistically significant, both hypothesis 1 and hypothesis 2 can be accepted.

Regarding the TPB, the three explanatory variables of intention to travel have a direct positive and significant influence on it, as expected. It is PBC ($\beta = 0.396, p = 0.000$) that has the quantitatively greatest effect, meaning that if the individual perceives that he/she can control the elements associated with the idea of traveling, he/she will show greater intention to do so. The path associated with attitude registers a value only slightly lower than that of PBC ($\beta = 0.358, p = 0.000$), meaning that a positive attitude also increases intention to travel. About the subjective norm, despite showing a positive and statistically significant path ($\beta = 0.073, p = 0.024$), it has only limited influence on intention. In this case, although the opinion of the individual's referents regarding the idea of traveling influences intention to travel, the effect is weaker. In any case, hypotheses 3, 4 and 5 are supported by the model.

Lastly, the path associated with the influence of intention to travel on the individual's WTP for better safety measures during the trip is statistically non-significant ($\beta = -0.069, p = 0.135$), so hypothesis 6 is not accepted. In other words, having a stronger intention to travel does not necessarily indicate the individual would be willing to pay above the standard price to be assured of additional safety measures due to Covid-19. This result will be further analysed in the implications for tourism management.

Effect of the variable at-risk group

This paper also addresses respondents belonging to an at-risk group for Covid-19 as a source of heterogeneity that may exert an effect on the results of the model. Thus, the bootstrap-based multi-group analysis PLS-MGA (Chin & Dibbern, 2010) was then carried out to assess the differences in the estimated coefficients according to the variable of whether individuals belong to this category (0 – Not in an at-risk group; 1 – At-risk group: diabetes, cancer, cardiovascular or respiratory disease, etc.)

To apply and interpret the PLS-MGA, it is first necessary to check that the requirement of measurement invariance is met, in order to be able to make an appropriate comparison between the groups in terms of the estimates of the standardized path coefficients in the structural relationships of the constructs. After confirming the measurement invariance in the measurement model, the structural model is compared for the two risk groups (Table 5).

Table 5. Multi-group analysis by risk group.

Relationship	Path coefficients		Path coefficient difference	Henseler's MGA	Welch-Satterthwait Test	
	No-risk group β_1	At-risk group β_2	$\beta_1 - \beta_2$	p -value	t	p -value
H1: PR ATT	-0.462	-0.344	-0.118	0.170	1.355	0.177
H2: PR PBC	-0.562	-0.401	-0.161	0.039**	2.003	0.046**
H3: ATT INT	0.300	0.461	-0.161	0.067*	1.879	0.062*
H4: PBC INT	0.470	0.251	0.219	0.010***	2.601	0.010***
H5: SN INT	0.068	0.076	-0.008	0.919	0.075	0.940

H6: INT WTP	-0.056	-0.122	0.067	0.387	0.534	0.594
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*** $p < 0.01$ ** $p < 0.05$, * $p < 0.1$.

Table 5 shows the results of the MGA using two alternative approaches, Henseler's MGA (Henseler et al., 2009) and the Welch-Satterthwait Test. Both procedures yield the same result, indicating that the issue of whether or not an individual belongs to the at-risk group gives rise to significant differences in the relationship between perceived risk and PBC, the effect of attitude on intention and the effect of PBC on intention. Specifically, the path coefficient for the effect of perceived risk on PBC is negative in both groups, but somewhat lower in absolute value for the respondents belonging to the at-risk group. The influence of PBC on intention to travel is also lower for this group. Conversely, the difference is in favor of the second group in the relationship between attitude and intention to travel; therefore, the path coefficient and the influence are now higher for those who are in the at-risk group.

Discussion and conclusions

This research has analysed the influence of perceived risk from the recent Covid-19 pandemic on intention to travel and WTP for safety measures on trips. From the results obtained here, several academic implications can be drawn, but they are also of interest for tourism management.

Theoretical implications

The proposed model, based on Ajzen's TPB, includes two variations on the original. On the one hand, perceived risk from travel in the situation generated by the Covid-19 pandemic negatively influences both attitudes and PBC, with a higher absolute value in the relationship between perceived risk and PBC. Consequently, the perceived risk influences intention to travel through these two constructs, as previously suggested by Sönmez and Graefe (1998). Other studies that applied TPB in a pandemic environment, on the other hand, did not find a relationship between perception and intention to travel: Lee et al. (2012) found no significant influence of perceptions regarding H1N1 on intention to travel in their extended TPB model since 'potential tourists had some adaptive behavior in mind (NPI) which lowered the infection threat to a level acceptable to them' (p. 96).

The TPB model has explained intention to travel moderately well (the percentage of variance explained is close to 50%). The variable that has the most notable effect on intention is PBC: if the individual believes that he/she can control the circumstances of the trip, even in the pandemic situation, his/her intention to travel will be significantly greater. These findings are in line with those reported by Shen et al. (2009) or Hsu and Huang (2012) among others. Attitudes also play an important role in intention, with the direct effect being only slightly lower than that of PBC. Other studies report similar findings, such as Hsu (2013) or Al Ziadat (2015) but, in contrast, other studies did not find this type of relationship (Sparks & Pan, 2009). In this area, Yuzhanin and Fisher (2016) evaluated 15 studies in which the TPB was applied in different settings to determine intention to travel or not to certain locations. The results were not entirely consistent, but three of these studies found that the three antecedent variables were significantly related to intention (Han et al., 2010; Lee et al., 2012; Phetvaroon, 2006). Nevertheless, as Yuzhanin & Fisher themselves point out (2016, p. 135), 'there is nothing in the TPB suggesting that all the constructs of the model must contribute equally, significantly and simultaneously to behavioural intentions'. Indeed, in the proposed model, while the effects of attitudes and PBC are of a similar magnitude, the positive and significant influence of the subjective norm on intention is much less important. This result coincides with Shen et al. (2009), who found that the subjective norm had the smallest effect on intention to travel. Conversely, other authors point to the opinion of relatives or friends and even, albeit to a lesser extent, of travel agents or co-workers (Hsu et al., 2006), as having a strong association with individuals' intention to travel (Martin et al., 2011).

The second of the novel theoretical aspects of this study lies in the analysis of WTP for more extensive safety measures in travel-related activities (transport, accommodation, restaurants, etc.) as a consequence of the respondents' intention to travel during the global pandemic situation. However, no evidence has been found to support this hypothesis, with the estimated model yielding a non-significant coefficient. This result differs from those reported by Hultman et al. (2015), who found that the intention to engage in a favorable behaviour towards ecotourism positively influenced the WTP for this type of experience. It is, however, in line with the findings of Agag et al. (2020) who, in their study of 'green travel', conclude that WTP does not stem from a single factor, but can only be explained by a combination of demographic variables, values, normative influence and travelers' personality traits.

A last novel feature of this study relates to the effects of the heterogeneity stemming from whether the respondents belong to an at-risk group for Covid-19, with significant differences found for three of the coefficients of the model. First, perceived risk negatively influences PBC in both groups, although the absolute value of the path coefficient is slightly lower in the at-risk group (-0.401 vs. -0.562); the difference in the path coefficient between PBC and intention to travel is also significant, with the at-risk group registering a lower value (0.251 vs. 0.470). Interestingly, the individuals belonging to said group consider that the control

they can exert over a potential trip does not depend so much on the risk that they may face from the pandemic (which is greater for them than for those who do not belong to the at-risk group); rather, they somehow separate these concepts, probably because of the precautions they should take, which means these individuals perceive a higher degree of control if properly adopted. As for their intention to travel, it is also less dependent on perceived control than for individuals who are not in the at-risk group. Indeed, the path from attitude to intention to travel presents a significantly higher value in the at-risk group (0.461 vs. 0.300).

Managerial implications

By identifying the factors that affect intention to travel in the context of the pandemic, the different actors in the tourism sector will be able to develop marketing strategies focused on the elements that exert the greatest influence. Thus, according to the results, the variables that show the most notable effect on intention are PBC followed by attitudes. Additionally, people show a more favorable inclination to travel if their friends and relatives agree with this idea, but this variable is not as relevant as the other two, reflecting the understanding that referents' opinions bear no relation to the greater or lesser risk of infection and disease that may be encountered when traveling. Accordingly, tourism agents should focus their attention on providing information linked to the potential traveler's sense of control. That is, it is crucial that travelers perceive they have the capacity, resources, and willingness to travel, and that the pandemic situation has not diminished those resources. Furthermore, tourism advertising has to influence travelers' attitude, so that they identify with the feeling that their travel experience will be pleasant, positive, and agreeable, while seeking to reduce the perception of the risk stemming from the fear of infection with Covid-19. Tourism quality seals, brand reputation and any communication about efforts to improve safety, cleanliness and hygiene measures, etc. are essential to bring down the potential traveler's psychological barriers regarding the risk of traveling at this time and improve their perception of control. Also, since social media is an important factor in provoking fear and anxiety, tourism managers and governments should attempt to make use of these media to convey a sense of the safety and quality of the tourism environment, which would reduce potential travelers' perception of risk. Actions to be undertaken by managers and policymakers could include promotional initiatives aimed at tour operators from other countries through familiarization trips, or providing reports produced by independent experts confirming the safety of tourist destinations and products. Travel agents can offer closed travel packages with a planned itinerary and pre-arranged visits that create barriers to risky environments. On the other hand, it does not seem necessary to create marketing actions that extend to individuals' entire referent environment, given the limited influence of the subjective norm on intention to travel. Instead, investing to ensure that the product or service on offer is well positioned and clearly differentiated in terms of the abovementioned aspects seems the best strategy at this time.

Another key issue arising is that it cannot be stated that respondents are willing to pay more for additional safety measures, even if they show greater intention to travel or belong to an at-risk group. This suggests the respondents believe that the agents providing tourist services have the obligation to implement safety measures, and so they should not be faced with variations in prices. This result has serious implications for tourism management as establishments must be aware that their customers, tourists or travelers would not approve of the costs of the measures taken to reduce the pandemic-related risks being transferred to the final price of the product or service. Tourism promotion should therefore seek to convey to potential travelers that prices will not change because of the pandemic, while reaffirming the health safety of the tourism offer.

Finally, the variable that has the strongest effect on intention to travel for at-risk group members is attitude, with control over the trip having a lesser influence. This group makes up 30.7% of the total sample, but it does not seem appropriate for tourism management to segment the demand market on this basis, since it is subjective elements related to attitude that will influence the decision to travel.

Limitations and future lines of research

This analysis is not without limitations, so further research is required to validate the conclusions drawn. First, it is a study framed in the Spanish context, with its specific characteristics in terms of Covid-19 measures and consequences. Therefore, the results cannot be generalized, although it would be highly advisable to open lines of research that involve replicating the study to make comparisons with other countries or cultures facing different situations regarding the pandemic.

Secondly, the study relies on a convenience sample collected through social networks and Spanish travel forums, so it may not be representative of the entire population. However, the recent Residents Travel Survey conducted by Spain's National Statistics Institute (INE, 2020) shows that women make up a slightly higher percentage of domestic travelers (50.7%), while travelers over 45 years of age account for 48.92% of the total. The sample in the present study also shows a predominance of women (53%), and respondents over the age of 50 account for 53.5% of the total. Therefore, *a priori* the sample collected seems to largely reflect the characteristic features of Spanish travelers.

Finally, the survey was conducted during the months in which the maximum restrictions were placed on mobility; therefore, the results obtained represent a snapshot of opinions at that time, the peak of the pandemic. However, the specific nature of the

study opens the door to new research focused on the evolution of risk perception, intention to travel and WTP in different phases of the pandemic. Distinct theoretical frameworks or methodologies could even be tested.

It should be recalled that, according to Gossling et al. (2020), there are few precedents for Covid-19. However, a reborn tourism sector can be expected to have a different form in a post-Covid-19 world, so it will be critical to review this issue in the future.

Disclosure statement

No potential conflict of interest was reported by the author(s) [Q3].

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