

Traveling in the time of risk: The impact of vaccination on Turkish travellers

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Abstract

Focusing on travel risk perception, behavioural intention, and travel behaviour, the study investigated the impact of COVID-19 vaccines on travellers and examined whether the vaccination will allow individuals to travel more psychologically. The data were solicited from 485 outbound travellers. The research hypotheses were tested through partial least squares-structural equation modeling. It is concluded that vaccination has an impact on the risk perception, behavioural intention, and travel behaviour of travellers. COVID-19 vaccines decrease the pandemic risk perception and relieve travellers who find traveling unfavourable during this period. Behavioural intention and travel behaviour also increase after vaccinated. The study also revealed that travellers would prefer countries with a high COVID-19 vaccination rate.

Keywords: travel risk perception, behavioural intention, travel behaviour, vaccination, COVID-19

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Introduction

Actual or perceived risks associated with international tourism cause severe constraints on tourist behaviour (Reichel, Fuchs & Uriely, 2007). Health risk perception is among the travel-related risk factors which have been focused on by many tourism researchers (Fuchs & Reichel, 2006; Larsen, Brun, Øgaard & Selstad, 2011; Reisinger & Mavondo, 2005; Reisinger & Mavondo, 2006). Health psychology studies elicited a positive relevance between risk perception and protective action. The higher health risk perception encourages individuals to avoid travel and to strive to reduce the risk (Chien, Sharifpour, Ritchie & Watson, 2017).

When tourists perceive risk, their intention to travel decreases. Thus, they tend to postpone or cancel travel plans to destinations they perceive as risky and unsafe (Pizam & Mansfeld, 2006; Sönmez & Graefe, 1998). This situation can be explained by the Protection Motivation Theory. According to the theory, people can make changes in their attitudes and behaviours based on the severity of the incident, the possibility of exposure to danger, the effectiveness of the preventive measures, and their perceptions of self-efficacy. In addition, the theory first reveals how likely the risk threat is to occur and then evaluates the measures taken considering the severity of the threat (Rogers, 1983). Thus, it is thought that if tourists consider that they will encounter these risks in the destinations they plan to go and find the preventive measures insufficient, they might exhibit a delaying or canceling attitude.

Roehl and Fesenmaier (1992) revealed a significant classification of travellers considering perceived risk. They identified three risk groups in pleasure travel: *risk-neutral group*, *functional risk group*, and *place risk group*. As can be understood, the risk-neutral group continues their travels under any conditions. The functional risk group refers to travellers who perceived more physical and equipment risk and travel in small and large groups. The place risk group perceives vacations and destinations to be fairly risky. Therefore, they are more likely to visit destinations that they have already visited before and prefer visiting their relatives and friends on their trips.

However, in today's global world, it is not possible to avoid risks (Fletcher, Fyall, Gilbert & Wanhill, 2018; Walters, Wallin & Hartley, 2019). Therefore, although the travel behaviour of tourists has changed to a certain extent, there has been no significant change in their travel intentions. Just a decade ago, Larsen *et al.* (2011) also concluded that "*the fact that people expect negative emotions from traveling and that they expect the destinations to be risky, have not yet prevented people from experiencing the desire to travel*". Indeed, international tourism has gained steady momentum over the years despite occasional crises and regional drops until COVID-19 has blown up (UNWTO, 2021).

Although the world has witnessed large scale outbreaks including SARS, Avian influenza, swine influenza, MERS, Ebola, and Zika virus, the ongoing COVID-19 pandemic has hit life in economic, sociological, psychological, and many other aspects (Baum & Hai, 2020; Gössling, Scott & Hall, 2020; Zhan, Zeng, Morrison, Liang & Coca-Stefaniak, 2020). International tourist arrivals, with a 73% decrease, have plummeted in 2020 and the severe decline has continued at the beginning of 2021 recording a drop of 87% (UNWTO, 2021). As an integral component of global mobility, travel, and tourism both affected the pace and spread of the pandemic and intrinsically got affected by it (Hall, Scott & Gössling, 2020). Following the COVID-19, nonpharmaceutical interventions, such as suspension of flights, travel bans and restrictions, home isolations, mandatory testing, quarantines, and border controls, have been initiated worldwide first (Gössling *et al.*, 2020). Several countries then have begun to develop, roll out and distribute different vaccines. However, being a truly sensitive industry, the devastating impact on tourism continues globally since it has taken time to develop effective vaccines and mass vaccination is being slower than expected (UNWTO, 2021). Besides, there are still not enough vaccines for the whole

world, as well as the variances of the virus have been increasing over time and a vaccine compatible with all mutants has not yet been developed. Moreover, borders of some countries are still closed, or quarantine obligations continue after international travels to certain destinations, which means even if travellers desire to travel abroad they do not have the freedom of movement.

After the staggering introduction of the COVID-19 pandemic into our lives, there has been a concentration and accumulation in the publications containing rapid evaluations on the tourism industry (e.g. Gössling *et al.*, 2020; Hall *et al.*, 2020; Sigala, 2020; Wen, Kozak, Yang & Liu, 2020; Zhan *et al.*, 2020). However, it is still unknown whether vaccines will improve travellers' confidence and allow them to travel freely after vaccination. The purpose of the study is to reveal the impact of the coronavirus vaccines, which have been used in many countries recently, on travel risk perception, behavioural intention, and travel behaviour. The study tries to find an answer to the question of whether people will be willing to travel more psychologically after vaccinated. The study also examines the impact of travel risk perception on behavioural intention and travel behaviour, as well as the impact of behavioural intention on travel behaviour. Accordingly, the framework and hypotheses of the research are as follows.

Hypothesis Development

Vaccination protects travellers against the infectious diseases they may encounter while traveling and prevent the spread of diseases among countries (Adongo, Amenumey, Kumi-Kyereme & Dube, 2021). Vaccination not only protects the vaccinated person but also the people around and it reduces the spread of the virus (WHO, 2021). The COVID-19 vaccination has been initiated since December 2020, and as of September 2021, nearly 5 billion doses of vaccines have been administered worldwide. 2.3 billion people are fully vaccinated. This means that 29.3% of the world population is fully vaccinated (WHO, 2021). However, the expected level of vaccination has not been reached worldwide.

It is already known that vaccination is essential and the most effective method of protection from infectious diseases before international travels (Fong *et al.*, 2020). Travellers need to make their preparations considering the target country and have the necessary vaccinations before their travels. Similarly, during the pandemic, vaccination has become crucial for the necessity of travel and the safety of tourists. Since tourism has a significant potential in the spread of a pandemic, it is directly affected when health-related risks arise (Sanchez-Canizares, Cabeza-Ramírez, Muñoz-Fernández & Fuentes-García, 2021). Therefore, the COVID-19 refers to the health risk that affects tourist behaviour and tourists take certain measures such as sanitation and hygiene to reduce this risk (Matiza, 2020; Pappas & Glyptou, 2021). Wearing masks, maintaining social distance, and using protective clothing are some of these measures (Parady, Taniguchi & Takami, 2020). The COVID-19 vaccines are also among the fundamental measures. Lee, Song, Bendle, Kim and Han (2012) have previously evaluated these measures for the 2009 H1N1 pandemic regarding the non-pharmaceutical interventions and recommended the development of guidelines for hygiene, the development of online communication methods, and assurance of safety to tourists.

Ma, Heywood and MacIntyre (2021) revealed in their study that most of their participants were willing to get the COVID-19 vaccine in the future. They also declared that the pandemic risk perception of the travellers would decrease whereas the travel intention would increase with the help of vaccination. Besides, Peric, Dramicanin and Conic (2021) stated that the pandemic will affect the risk perception of travellers as long as it continues and until an effective vaccine that covers all humanity can be found. Particularly, those that 65 years and older ages with the heaviest damage risk and those with chronic diseases will intend to delay international travels till a completely protective vaccine is ready (Wilson &

Chen, 2020). On the other hand, Schlagenhaut *et al.* (2021) reported that the dominant virus variances or mutations in the destination for a vaccinated traveller may continue to be a risk factor due to the concern that it might also be less responsive to the vaccine.

Gursoy, Can, Williams and Ekinci (2021) revealed that perceived health risk, fear of infection, and travel anxiety in the early stages of vaccination negatively affect tourists' travel intentions. On the contrary, the increase in the number of pro-vaccine tourists and the fact that these people start to travel more have led to an increase in tourists' intention to travel to a destination and stay in a hotel in general. Williams, Nguyen, Del Chiappa, Fedeli and Wassler (2021), on the other hand, classified tourists into two groups as high-confidence and low-confidence. It has also been suggested that those with high confidence are willing to access the vaccine as quickly as possible and their intention to travel will increase after being vaccinated. These findings led to the first three hypotheses of the study:

H₁: Vaccination impacts travel risk perception negatively.

H₂: Vaccination impacts behavioural intention positively.

H₃: Vaccination impacts travel behaviour positively.

Impacts of risk increase significantly when uncertainty, anxiety, and fear prevail in the tourism decision-making process (Abraham, Bremser, Carreno, Crowley-Cyr & Moreno, 2020; Bae & Chang, 2020; Pappas & Glyptou, 2021). The COVID-19 also creates fear and anxiety that can affect the recovery of tourism even after it ends (Zheng, Luo & Ritchie, 2021). Regarding the COVID-19, the higher the travellers perceive pandemic risk, they will be more likely to experience anxiety and fear of the virus (Li, Zhang, Liu, Kozak & Wen, 2020). Therefore, COVID-19 risk perception causes holidays to be canceled, delayed, shortened, and not to travel abroad (Abdullah, Dias, Muley & Shahin, 2020; Bratić *et al.*, 2021; Peric *et al.*, 2021; Terziyska & Dogramadjieva, 2021).

The tourism industry is faced with a security and health problem that arises during the travel and destination stays of tourists. This situation affects travellers' risk perceptions and hinders the flow of tourists and their travel intentions (Peric *et al.*, 2021). Similarly, Neuburger and Egger (2020) ascertained that the COVID-19 risk perception significantly influences the desire to change or cancel travel plans. Concerns about future travel plans are common among travellers, resulting in more negative predictions about future vacations (Karl, Kock, Ritchie & Gauss, 2021). A prominent thought is that due to the perception of COVID-19 risk, overseas holidays will be replaced by domestic holidays for a certain period and will lead travellers to visit less crowded destinations (Bratić *et al.*, 2021; Chebli & Said, 2020; Menegaki, 2020). Besides, Peric *et al.* (2021) stated that travellers' risk perception will affect their travel intentions negatively during the pandemic and there will be a decrease in travel plans. These findings yield the last three hypotheses of the study:

H₄: Travel risk perception impacts behavioural intention negatively.

H₅: Travel risk perception impacts travel behaviour positively.

H₆: Behavioural intention impacts travel behaviour negatively.

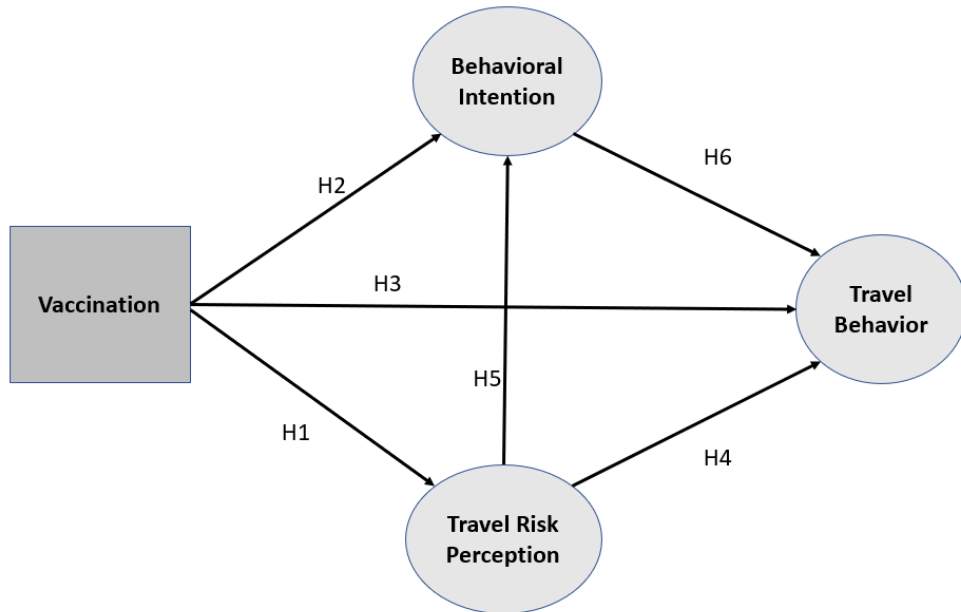


Figure 1. *Research framework*

Methodology

Measurement instrument

Adopting a quantitative research design, the instrument is a structured five-part survey with three dependent variables: perceived travel risk, travel behaviour, and behavioural intention; and one independent variable: vaccination intervention for the COVID-19. The last part of the survey consists of participants' characteristics such as demographic information (age, gender, and education) and travel patterns (domestic and international travel averages, and latest domestic and international travels).

Perceived Travel Risk scale was adapted from Cahyanto, Wiblishauser, Pennington-Gray and Schroeder (2016) and consisted of 11 items. The scale was based on the Ebola virus and was initially developed by Lee *et al.* (2012). Perceived travel risk scale of Cahyanto *et al.* (2016) was associated with COVID-19 in the present study.

Travel Behaviour scale was adapted from Neuburger and Egger (2020) who examined the literature and adjusted the scale to the COVID-19 pandemic. The original scale consisted of 10 items; however, the item "Currently I would avoid trips by airplane/boat" was split into two separate items to avoid double meaning (DeVellis, 2017). Therefore, the travel behaviour scale was measured under 11 items in this study.

Behavioural Intention scale was developed by Lee *et al.* (2012), which examined the impact of 2009 H1N1 influenza on travel intentions with five items. Although the original scale was measured with a seven-point Likert-scale, this study measured the behavioural intention with a five-point scale to ensure the integrity with the other scales of the study.

Although nonpharmaceutical interventions have gained attention in travel and tourism literature (Chua, Al-Ansi, Lee & Han, 2020; Das & Tiwari, 2020; Lee *et al.*, 2012), the impact of vaccination on travel

behaviour remains limited. Therefore, the scale for the *Vaccination Intervention* for COVID-19 was added by the authors of this study based on the previous studies (Marques Santos, Madrid, Haegeman & Rainoldi, 2020; Rüksamen *et al.*, 2015).

The survey comprises a total of 27 items; three items with factor loadings below .40 were removed from the study to ensure the validity of the instrument (Hair, Hult, Ringle & Sarstedt, 2013). All items were originally in English and translated into Turkish through modifying and formulating each item to cover the context of the study. After completing data collection, all findings were retranslated in English by obtaining expert opinions in each stage. All scale items were measured with a five-point Likert scale ranging from “1 = strongly disagree” to “5 = strongly agree”.

Sampling

An online survey was administered in Turkey between January 20 and March 1, 2021. The data were first collected within the framework of purposive sampling. People who were thought to be frequent travellers were first contacted via social media. In the selection of people over social media, those who were members of travel and excursion groups were targeted. Accordingly, respondents were mostly members of familiar travel groups on different social media platforms. While collecting data, a convenience sampling method was used; travel groups with at least a thousand members were preferred and active users sharing comments and photos were selected.

First, an invitation was sent to each respondent, which explains the purpose of the study and the affiliation of the authors. After receiving an acceptance from the respondents to participate in the study, the authors sent an email or a direct message containing the survey link. In addition, participants were asked to share the questionnaire with their friends, which integrates snowball sampling into the data collection. The main purpose of using snowball sampling is to reach more people in a short time.

Since the data was collected through social media, the participants were not asked about where they live or the destinations they traveled to. However, only Turkish-speaking participants were included in the study, which can be accepted as a limitation of the study. The reason for the selection of the sampling is that the study aims to reveal the attitudes and behaviours of Turkish participants on their travel intention and risk perceptions after vaccination.

To avoid common method bias, discussions were held with some of the participants on the questions after filling out the questionnaire. The main reason was to determine whether they actually filled out the questionnaire willingly. In addition, all statements were checked by experts in order to fully understand the scale statements and to eliminate ambiguity in the statements. Moreover, both explanatory and confirmatory factor analyzes were performed on the scales.

The required sample size was calculated with the G*Power 3.1 robot, which was 472 (Test family: t-tests, Statistical test: Linear bivariate regression: One group, size of slope, Type of power analysis: A priori: Compute required sample size – given α , power, and effect size), with a 95% confidence interval (Faul, Erdfelder, Lang & Buchner, 2007). For the population above one million, Krejcie and Morgan (1970) stipulate that 384 participants are sufficient with a 95% confidence interval. Besides, Westland (2010) states that it will be sufficient to collect 10 times the scale items in data collection. As the scale of this current study consists of 30 items, it is sufficient to collect 300 questionnaires. Consequently, nearly 2,000 travellers were reached online and totally 485 respondents completed the survey.

Data Analysis

The data were statistically evaluated with partial least squares-structural equation modelling (PLS-SEM). Therefore, smartPLS 3 data analysis program was utilized to test the hypotheses and a structural model was improved within the scope of the study. The path coefficients of the working model and the importance of the loadings were tested with a bootstrap (5000 samples) method (Hair *et al.*, 2013). It is recommended to use smartPLS when the data do not show normal distribution. Therefore, the main reason for testing the model with the smartPLS program in this study is that the collected data did not show normal distribution (Ali, Kim & Ryo, 2016; Hair *et al.*, 2013).

The characteristics of the participants and the skewness and kurtosis values of the data were determined through the SPSS program. The skewness statistics of the items vary between -3.195 and 0.157, and the kurtosis statistics between -1.135 and 4.349. It is recommended not to exceed 2 for the skewness value and 3 for the kurtosis value (Kline, 2011). Therefore, the skewness and kurtosis values of some of the scale items used in the study were found above the desired level.

Findings

Characteristics of participants

The descriptive characteristics of the participants were examined in the study first (Table 1). The gender distribution of the travellers participating in the study is balanced. However, participants are between the ages of 18-40 mostly and have at least a bachelor's degree. Although majority of the participants attend both domestic and international travel at least once a year, they have been unable to travel abroad recently due to the pandemic.

Exploratory Factor Analysis (EFA)

Before examining the construct validity with PLS, exploratory factor analysis was performed on the scales used in this current study. Exploratory Factor Analysis results are shown in Table 2.

All scales were gathered under a single factor. Principal Component Analysis was used as the factor extraction method and Promax was used as the rotation method in explanatory factor analysis. All the findings obtained are above the desired levels (.50 for Total Variance Explained, .70 for KMO, .70 for α) (Hair, Black, Babin & Anderson, 2014).

The correlations between the factors obtained from the scale were .86 between travel risk perception and travel behaviour, -.48 between travel risk perception and behavioural intention, .31 between travel risk perception and vaccination, -.52 between travel behaviour and behavioural intention, .32 between travel behaviour and vaccination, and -.2 between behavioural intention and vaccination. All correlation coefficients are too small to be suspicious, so it can be said that there is no indication of "close" linear dependence between the variables.

Measurement Model Evaluation

The model was first tested in terms of convergent validity in the measurement model evaluation. Factor loadings, composite reliability (CR) and average variance extracted (AVE) values are essential in terms of the convergent validity (Ali *et al.*, 2016). Cronbach's and means of items of the model are also added to Table 3.

Table 1. *Characteristics of participants*

Characteristics		N	%
Gender	Female	260	53.6
	Male	225	46.4
Education	Primary-School	3	0.6
	High-School	37	7.6
	Under-graduate	326	67.2
	Post-graduate	119	24.5
Age	18-30	203	41.9
	31-40	137	28.2
	41-50	77	15.9
	50 and up	68	14.0
Domestic Travel Average	Once in two years	32	6.6
	Once a year	85	17.5
	Between 2-5 per year	282	58.1
	6 and over a year	86	17.7
International Travel Average	Once in two years	202	41.6
	Once a year	120	24.7
	Between 2-5 per year	130	26.8
	6 and over a year	33	6.8
Latest Domestic Travel	1 month ago	78	16.1
	3 months ago	64	13.2
	6 months ago	133	27.4
	1 year ago	99	20.4
	More than 1 year	111	22.9
Latest International Travel	1 month ago	13	2.7
	3 months ago	11	2.3
	6 months ago	15	3.1
	1 year ago	126	26.0
	More than 1 year	320	66.0
Total		485	100.0

Table 2. *EFA results*

Scales	Total Variance Explained	Kaiser Meyer Olkin (KMO)	Cronbach's Alpha (α)	Factor loadings range
<i>Vaccination</i>	75.7	0.70	0.84	0.924 - 0.798
<i>Travel Risk Perception</i>	50.7	0.87	0.89	0.884 - 0.501
<i>Travel Behaviour</i>	56.3	0.94	0.92	0.887 - 0.426
<i>Behavioural intention</i>	86.2	0.87	0.96	0.950 - 0.905

Table 3. *Validity and reliability for constructs*

Constructs	Items	Loadings	AVE	CR	α	Mean	σ
Vaccination Intervention	I wait to be vaccinated to travel internationally.	0.891	0.74	0.89	0.84	3.43	1.31
	I only travel to countries with high vaccination rates.	0.803				3.01	1.15
	I travel to countries where vaccination is mandatory when entering the country.	0.883				3.08	1.25
Travel Risk Perception	COVID-19 is a very frightening disease.	0.672	0.58	0.92	0.91	3.79	1.14
	I would feel comfortable traveling in the COVID-19 period (-).	0.713				3.81	1.05
	Domestic travel is just as risky as international travel right now.	0.551				3.89	1.10
	Because of COVID-19, domestic air travel should be avoided right now.	0.830				3.85	1.10
	Because of COVID-19, international air travel should be avoided right now.	0.846				3.87	1.20
	I am concerned about COVID-19 during travel by air right now.	0.858				3.51	1.16
	I am not concerned about contracting COVID-19 during travel by air right now (-).	0.597				3.64	1.30
	It is dangerous to travel internationally by air right now because of COVID-19.	0.887				3.88	1.11
	Traveling in the COVID-19 period is risky right now.	0.830				3.88	1.04
Travel Behaviour	My travel behaviour is likely to change due to coronavirus.	0.593	0.61	0.94	0.93	3.97	0.98
	I would avoid tourist attractions in my hometown.	0.833				3.69	1.18
	I would avoid any contact with tourists in my hometown.	0.763				4.06	1.06
	Currently, I would cancel travel plans to countries with reported cases of coronavirus.	0.754				4.03	1.03
	Currently, I would cancel travel plans to countries with no reported cases of coronavirus.	0.646				2.87	1.22
	Currently, I would avoid trips by airplane.	0.895				3.64	1.19
	Currently, I would avoid trips by boat.	0.769				3.22	1.25
	Currently, I would avoid trips by train.	0.869				3.55	1.17
	Currently, I would avoid domestic travel.	0.864				3.33	1.18
Currently, I would avoid big events.	0.734	4.33	0.89				
Behavioural intention	I intend to travel internationally in the near future.	0.906	0.86	0.97	0.96	2.91	1.39
	I am planning to travel internationally in the near future.	0.926				2.86	1.37
	I will make an effort to travel internationally in the near future.	0.950				3.00	1.41
	I will certainly invest time and money to travel internationally in the near future.	0.939				2.97	1.40
	I am willing to travel internationally in the near future.	0.921				3.15	1.41

(-) reverse items

Hair *et al.* (2013) propose that factor loadings need to be above .70, but items between .40 and .70 might not be removed if composite reliability does not make a significant difference. Therefore, some items with factor loadings below .70 were not extracted from the study. However, "People around me seem to refrain from domestic air travel right now because of COVID-19", "People around me seem to refrain from international air travel right now because of COVID-19" items from travel risk perception scale and "If I travel to another country depends on how media is reporting about that country" item in the travel behaviour scale whose factor loadings were below the desired level were excluded from the study. In the *Travel Risk Perception Scale* there were two reverse items ("I would feel comfortable traveling in the COVID-19 period" and "I am not concerned about contracting COVID-19 during travel by air right now"); therefore, they were recoded (5→1, 4→2, 2→4, 1→5) in the SPSS program.

Table 4. *Discriminant validity*

Constructs	1	2	3	4
Vaccine	0.860			
Travel Risk Perception	0.325	0.763		
Travel Behaviour	0.339	0.741	0.728	
Behavioural intention	-0.038	-0.504	-0.521	0.928

Values on the diagonal (bolded) are square root of the AVE while the off-diagonals are correlations. The discrimination validity was checked after convergent validity. No similarity between the measurements and a low correlation between the dimensions are expected in the analysis. Besides, Fornell and Larcker (1981) state that square roots of the AVE values of each dimension need to be higher than the correlations with other dimensions (Table 4).

Table 5. *Heterotrait-monotrait (HTMT)*

Constructs	1	2	3
Vaccine			
Travel Risk Perception	0.342		
Travel Behaviour	0.386	0.892	
Behavioural intention	0.069	0.534	0.545

Shaded boxes are the standard reporting format for HTMT procedure.

Henseler, Ringle and Sarstedt (2015) recommend the multitrait-multimethod matrix method for discrimination validity. For this, they state that the heterotrait-monotrait (HTMT) correlation rates should be considered. It is suggested that the HTMT value should be below 0.85, but below .90 is also acceptable (Henseler *et al.*, 2015; Kline, 2011). As a result of the Fornell-Larcker criterion and HTMT analysis, the necessary conditions for discrimination validity were provided (Table 5).

Structural Model Evaluation

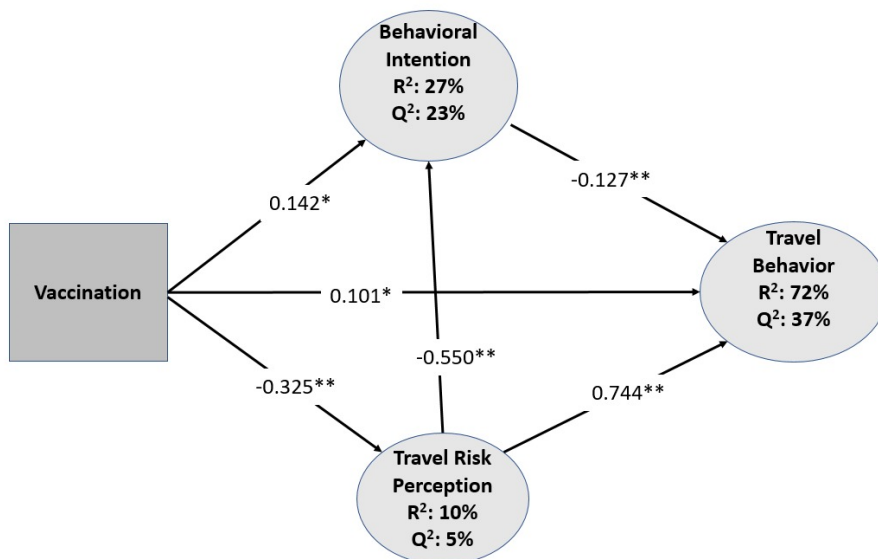
To evaluate the structural model, Hair *et al.* (2013) suggest re-analysis with 5000 bootstrapping and looking at R^2 , beta, corresponding t-values, the predictive relevance (Q^2) and effect sizes (f^2).

Table 6. *Structural estimates (hypotheses testing)*

Hypotheses	Beta	T Value	Decision	R ²	f ²	Q ²	VIF
Vaccine → Travel Risk Perception	-0.325	7.436**	Supported	0.105	0.118	0.058	1.000
Vaccine → Behavioural intention	0.142	3.341*	Supported	0.725	0.025	0.232	1.118
Vaccine → Travel Behaviour	0.101	3.618*	Supported	0.272	0.033	0.378	1.145
Travel Risk Perception → Travel Behaviour	0.744	21.964**	Supported				
Travel Risk Perception → Behavioural intention	-0.550	14.424**	Supported				
Behavioural intention → Travel Behaviour	-0.127	3.766**	Supported				

Notes: Critical t-values. *1.96 (P < 0.05); **2.58 (P < 0.01).

The research model revealed a significant impact of the vaccination on travel risk perception ($\beta = -0.325$; $p < 0.01$), behavioural intention ($\beta = 0.142$; $p < 0.05$) and travel behaviour ($\beta = 0.101$; $p < 0.05$). Travel risk perception significantly impacts both behavioural intention ($\beta = -0.550$; $p < 0.01$) and travel behaviour ($\beta = 0.744$; $p < 0.01$). Behavioural intention also significantly impacts travel behaviour ($\beta = -0.127$; $p < 0.01$) (Table 6). Therefore, H₁, H₂, H₃, H₄, H₅, and H₆ hypotheses were supported.



Notes: Critical t-values. *1.96 (P < 0.05); **2.58 (P < 0.01).

Figure 2. *Structural Model*

When the R² values obtained for the model are examined, the vaccination explains the variance of 10% of travel risk perception, 72% of behavioural intention, and 27% of travel behaviour. While the travel risk perception variable was moderate, behavioural intention and travel behaviour variables had a high level of explanation rate (Chin, 1998; Hair *et al.*, 2013; Henseler *et al.*, 2015). Besides, f² is used to reveal the effect size. The p-value in the model is a significant indicator, but it does not indicate the size of an effect. Therefore, it is essential to give the f² effect size in addition to the p-value (Ali *et al.*, 2016). All variables have a low effect size coefficient (Cohen, 1988; Sarstedt, Ringle & Hair, 2017).

The predictive sample reuse technique (Q^2) shows an effective predictive relationship (Chin, Peterson & Brown, 2008). Q^2 indicates how data can be reconstituted empirically employing the model and PLS parameters according to the Blindfolding procedure. The fact that the predictive power coefficients (Q^2) calculated for endogenous variables are greater than zero indicates that the research model has the power to predict endogenous variables (Ali *et al.*, 2016; Hair *et al.*, 2013). As demonstrated in Figure 2, Q^2 showed the acceptable predictive relationship for the three endogenous variables. Also, there was no linearity problem between variables because the variables were below 5, which is the desired value for VIF (Variance Inflation Factor) values (Hair *et al.*, 2013). VIF values also indicate no serious multicollinearity problem in the data.

In this current study, the mediation effects in the model were also examined. Accordingly, travel risk perception appeared to have a role of complementary mediation on the direct effect of vaccination on travel behaviour (Beta: 0.252, $p = 0.000$). Travel risk perception had also a competitive mediation role on the direct effect of vaccination on behavioural intention (Beta: 0.179, $p = 0.000$). The behavioural intention appeared to play a competitive mediation role in the direct effect of vaccination on travel behaviour (Beta: -0.018, $p = 0.008$). Finally, the behavioural intention was found to have a role in complementary mediation on the direct effect of travel risk perception on travel behaviour (Beta: 0.070, $p = 0.000$).

Discussion and conclusion

Health and safety are at the forefront in travel plans during the pandemic period. Therefore, it is essential to understand the risk perceptions and concerns of travellers (Bratić *et al.*, 2021). Accordingly, results of this study showed that the vaccination has a significant impact on travellers' risk perception, behavioural intention, and travel behaviour. Travellers who find travel risky, uncomfortable, who are afraid of contracting the COVID-19, and who find traveling by public transport unfavourable during the pandemic appear to reduce their risks and concerns less when vaccinated. Considering the type of perceived risk, these travellers are similar to the place risk group in Roehl and Fesenmaier's (1992) classification and Williams *et al.*'s (2021) high confidence group in terms of their willingness to travel after getting vaccinated. These results can also be explained by Rogers's (1983) Protection Motivation Theory as people are scared of the consequences of the risk and try to protect and reassure themselves. Vaccination helps to alleviate the concerns of travellers who change their travel preferences due to the pandemic and find it unfavourable to travel during this period. Therefore, vaccination ensures to decrease travellers' perception of pandemic risk and enhances behavioural intentions after vaccination in this study. Similarly, Fong *et al.* (2020) state that tourists tend to reduce health risks by taking special vaccines and preventive and therapeutic medicines before traveling to health-risky destinations. Lee *et al.* (2012) also revealed that non-pharmaceutical interventions have a positive effect on tourists' travel intentions. Besides, the risk perception of people who take such measures decreases while their travel intention increases.

It is likely that people with high-risk perceptions do not intend to travel owing to the COVID-19 pandemic (Abdullah *et al.*, 2020). However, it is essential to take measures to reduce people's perception of risk. COVID-19 vaccines are one of these preventive and protective measures. It is known that the higher the number of vaccinated people, both potential and traveling tourists in the destinations, the lower the risk perception of travellers. Similarly, the pre-pandemic tourism, travel, and vaccination literature suggest that tourists traveling to risky regions should be vaccinated before traveling (Adongo *et al.*, 2021; Fong *et al.*, 2020; Ma *et al.*, 2021).

Vaccination has played a crucial role in many epidemics. Even the obligation to vaccinate travellers going to specific destinations is still valid. In the COVID-19 pandemic, the number of vaccinated people is also increasing day by day. Therefore, it is thought that COVID-19 vaccines will be required by certain countries before travel as happened in other epidemics. However, as there is no worldwide access to the vaccines currently, citizens of undeveloped countries and minority groups will be at a disadvantage (Schlagenhauf *et al.*, 2021). Hence, practices such as vaccination passports or allowance of only the vaccinated to travel will be perceived as unethical unless access to vaccines reaches universal dimensions.

This study also concluded that travellers would prefer countries with a high COVID-19 vaccination rate. In this case, it means that countries that cannot reach the sufficient level in COVID-19 vaccination would not be able to get the share that they desire from tourism in the coming years. In addition to the tourist attractions of the host country, how well the country struggles with the pandemic will be significant in the plans of travellers' hereafter. It is likely that travellers' trips to countries reporting a very high rate of cases on a daily basis might be blocked or restricted. For instance, the Russian government has decided to restrict flights to Turkey in the first week of April 2021 due to reaching the highest level of COVID-19 cases in Turkey. The UK also redlisted Turkey in international travel restrictions in May 2021. Those returning to the UK from the countries on the red list have to stay in hotel quarantine instead of home, covering their expenses for 10 days. This restriction, certainly, prevented British travellers from traveling to Turkey.

Theoretical implications

The study makes significant contributions to the pandemic risk perception, behavioural intention, travel behaviour, and COVID-19 literature. Risk perception plays a significant role on the travel decisions of tourists. Because tourists tend to delay, cancel, and avoid their travels during periods when they perceive risk (Fletcher *et al.*, 2018). Therefore, risk perception and travel intention are seen as fundamental issues in tourism marketing and tourist behaviour studies. In the tourism sector, which has been closed for a long time, studies on vaccination and vaccinated tourists have become essential in the pandemic literature (Adongo *et al.*, 2021; Gursoy *et al.*, 2021; Ma *et al.*, 2021; Schlagenhauf *et al.*, 2021; Williams *et al.*, 2021). In particular, it is necessary to improve studies on the COVID-19 vaccines to reduce the fear and anxiety of travel which increased during the pandemic. This current study seeks answers to these questions as there are still facts to be clarified in the literature.

This study provides an opportunity to increase the current level of knowledge of the pandemic literature with its findings and recommendations. Even though there are studies on the travel decision-making process of the COVID-19 vaccine, clear information has not yet emerged. For example, Gursoy *et al.* (2021) found in the first data they collected in January 2021 that people have low intention to travel even if they intend to vaccinate. However, in the data they collected in May 2021, it was revealed that the travel anxiety of vaccinated tourists decreased whereas their travel intentions increased. In addition, the constant mutation of the COVID-19 virus and the decrease in the effectiveness of vaccines can also be influential on tourists' travel intentions. Therefore, considering that the pandemic is still ongoing, studies on tourists who have had the COVID-19 vaccine should increase. Furthermore, studies in the tourism promotion and advertising literature should focus not only on the impact of the COVID-19 vaccine on the risk perceptions and travel intentions of tourists but also on the benefits that the vaccination of tourism workers will bring to the tourism sector.

Practical implications

Since the tourism industry has been experiencing great difficulties for the last two years, it is substantial to allow the vaccinated travellers to travel worldwide to reduce the losses of the industry to some extent. Therefore, provided that all necessary measures are taken, lifting travel bans for vaccinated tourists is recommended, regardless of which COVID-19 vaccine has been used. Although it seems controversial, it is a temporary solution in this period when the pandemic is still quite effective. However, it is persistently recommended to tourism businesses to pay utmost attention to protective masks, distance, and hygiene rules as the virus is likely to mutate quite easily. Moreover, countries should apply regular COVID-19 tests between certain periods due to the mutation potential of the virus, even if they only allow vaccinated travellers to enter the country.

As vaccination is essential for potential travellers, it is crucial for the host countries to take necessary measures to reduce travellers' risk perception, particularly by completing the vaccination process immediately, as well as offering vaccination opportunities to their incoming travellers. It is also recommended to give priority to the tourism workers in the vaccination order after governments vaccinate strategically important parties (e.g. health, education, and security) within the country. Because, as a result of the study, it has been revealed that vaccination has positive effects on people's travel intentions. In addition to the fact that the tourists themselves are vaccinated, the vaccinated tourism workers at the destination or a hotel can increase the intention of the tourists to travel. Therefore, tourism businesses should vaccinate all their employees. They can even use it as a marketing tool. However, even if all tourism workers are vaccinated, tourism and destination organizations should prepare guidelines that explain the infection precautions they take during their travels in detail. These guidelines should be delivered to tourists both through traditional media and social media.

Based on tourists' vaccination intentions, the results of the study also provide significant contributions to tourism planners and policymakers by investigating how travel anxieties and fears are affected as well as risk perceptions and travel intentions. As has been revealed in many previous studies, the COVID-19 pandemic has caused great damage to the tourism industry. This current study suggests that vaccination will help the tourism industry recover. Considering that the vaccination positively affects tourists' travel intentions and reduces risk perceptions, tourism marketers' communication, advertising, and marketing activities based on vaccinated tourists will help more tourists participate in tourism.

Finally, previous studies show that people continue traveling for business and VFR during outbreaks (Abdullah *et al.*, 2020; Abraham *et al.*, 2020; Ma *et al.*, 2021). Therefore, these segments of travellers should be considered by tourism businesses in their promotion and marketing activities. The needs and demands of these travellers should definitely be regarded in planning.

Limitations and further research

Vaccination applications in Turkey have just begun in the data collection phase of the study. However, COVID-19 mutations have started to appear after this period. Therefore, concerns, behaviour, and intention of the travellers about the virus mutations are not known. Because, even if the individual is vaccinated, it is thought that the high number of cases with mutations at the destination will increase the anxiety and risk perception of the traveller. Moreover, it is not known what percentage of the participants in this study were vaccinated. Therefore, the answers of the participants present future predictions.

Rather than analyzing sociodemographic factors (e.g. age, gender, education, occupation) as control variables, the study only included the frequency ranges of these variables. Therefore, it is recommended

to examine the differences in risk perception, travel intention, and travel behaviour of vaccination in future studies. Besides, since the data of the study are collected on social media, the participants are mostly between the ages of 18-40. It is unclear how the elder age groups' risk perception, travel behaviour, and behavioural intentions will be after vaccination. Besides, as the data were collected from a single country, this study reflects the perspectives of Turkish travellers. However, it is recommended to carry out cross-cultural and comprehensive studies on how tourists will behave after vaccination.

This study examines the impact of vaccination on travellers. However, many countries are currently restricting traveling regarding the spread of the pandemic will increase. Therefore, even if the rate of vaccination increases, it is unclear whether governments will lift these restrictions to those who are vaccinated. Further studies to understand the government officials' attitudes towards COVID-19 and travel and tourism are recommended.

In the end, although the current study focused on the impact of vaccination on tourists' risk perception, travel behaviour, and travel intentions, the legal regulations and obligations of countries regarding the COVID-19 vaccination were not considered.

References

- Abdullah, M., Dias, C., Muley, D., & Shahin, M. (2020). Exploring the impacts of COVID-19 on travel behaviour and mode preferences. *Transportation Research Interdisciplinary Perspectives*, 8, 1-13. Doi: 10.1016/j.trip.2020.100255.
- Abraham, V., Bremser, K., Carreno, M., Crowley-Cyr, L., & Moreno, M. (2020). Exploring the consequences of COVID-19 on tourist behaviours: Perceived travel risk, animosity and intentions to travel. *Tourism Review*, 1-17. Doi: 10.1108/TR-07-2020-0344.
- Adongo, C. A., Amenumey, E. K., Kumi-Kyereme, A., & Dubé, E. (2021). Beyond fragmentary: A proposed measure for travel vaccination concerns. *Tourism Management*, 83, 1-22. Doi: 10.1016/j.tourman.2020.104180.
- Ali, F., Kim, W. G., & Ryu, K. (2016). The effect of physical environment on passenger delight and satisfaction: Moderating effect of national identity. *Tourism Management*, 57, 213-224. Doi: 10.1016/j.tourman.2016.06.004.
- Bae, S. Y., & Chang, P. J. (2020). The effect of coronavirus disease-19 (COVID-19) risk perception on behavioural intention towards 'untact' tourism in South Korea during the first wave of the pandemic (March 2020). *Current Issues in Tourism*, 1-19. Doi: 10.1080/13683500.2020.1798895.
- Baum, T., & Hai, N. T. T. (2020). Hospitality, tourism, human rights and the impact of COVID-19. *International Journal of Contemporary Hospitality Management*, 32(7) 2397-2407. Doi: 10.1108/IJCHM-03-2020-0242.
- Bratić, M., Radivojević, A., Stojiljković, N., Simović, O., Juvan, E., Lesjak, M., & Podovšovnik, E. (2021). Should I stay or should I go? Tourists' COVID-19 risk perception and vacation behavior shift. *Sustainability*, 13(6), 1-19. Doi: 10.3390/su13063573.
- Cahyanto, I., Wiblishauser, M., Pennington-Gray, L., & Schroeder, A. (2016). The dynamics of travel avoidance: The case of Ebola in the US. *Tourism Management Perspectives*, 20, 195-203. Doi: 10.1016/j.tmp.2016.09.004.
- Chebli, A., & Said, F. B. (2020). The impact of COVID-19 on tourist consumption behavior: A perspective article. *Journal of Tourism Management Research*, 7(2), 196-207. Doi: 0.18488/journal.31.2020.72.196.207.

- Chien, P. M., Sharifpour, M., Ritchie, B. W., & Watson, B. (2017). Travellers' health risk perceptions and protective behavior: A psychological approach. *Journal of Travel Research*, 56(6), 744-759. Doi: 10.1177/0047287516665479.
- Chin, W. W. (1998). The Partial Least Squares Approach to Structural Equation Modeling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 295-358). Mahwah, NJ: Lawrence Erlbaum Associates.
- Chin, W. W., Peterson, R. A., & Brown, P. S. (2008). Structural equation modelling in marketing: Some practical reminders. *Journal of Marketing Theory and Practice*, 16(4), 287-298. Doi: 10.2753/MTP1069-6679160402.
- Chua, B. L., Al-Ansi, A., Lee, M. J., & Han, H. (2020). Tourists' outbound travel behavior in the aftermath of the COVID-19: Role of corporate social responsibility, response effort, and health prevention. *Journal of Sustainable Tourism*, 1-28. Doi: 10.1080/09669582.2020.1849236.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Lawrence Erlbaum, Mahwah.
- Das, S. S., & Tiwari, A. K. (2020). Understanding international and domestic travel intention of Indian travellers during COVID-19 using a Bayesian approach. *Tourism Recreation Research*, 1-17. Doi: 10.1080/02508281.2020.1830341.
- DeVellis, R. F. (2017). *Scale development theory and applications (4th ed.)*. Sage Publication.
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioural, and biomedical sciences. *Behaviour Research Methods*, 39(2), 175-191. Doi: 10.3758/BF03193146.
- Fletcher, J., Fyall, A., Gilbert, D., & Wanhill, S. (2018). *Tourism: Principles and practice*. Harlow: Pearson.
- Fong, E. K., Pell, L. G., Faress, A., Nguyen, J. H., Ma, X. W., Lam, R. E., ... & Morris, S. K. (2020). Adherence to recommendations at a Canadian tertiary care Family Travel Clinic-A single centre analysis. *Travel Medicine and Infectious Disease*, 34, 1-7. Doi: 10.1016/j.tmaid.2020.101579.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50. Doi: 10.1177/002224378101800104.
- Fuchs, G., & Reichel, A. (2006). Tourist destination risk perception: The case of Israel. *Journal of Hospitality & Leisure Marketing*, 14(2), 83-108. Doi: 10.1300/J150v14n02_06.
- Gössling, S., Scott, D., & Hall, C. M. (2020). Pandemics, tourism and global change: A rapid assessment of COVID-19. *Journal of Sustainable Tourism*, 29(1), 1-20. Doi: 10.1080/09669582.2020.1758708.
- Gursoy, D., Can, A. S., Williams, N., & Ekinçi, Y. (2021). Evolving impacts of COVID-19 vaccination intentions on travel intentions. *The Service Industries Journal*, 41(11-12), 719-733. Doi: 10.1080/02642069.2021.1938555.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate data analysis (17. Ed.)*. Edinburg: Pearson.
- Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2013). *A Primer on Partial Least Squares Structural Equation Modelling (PLS-SEM)*. Los Angeles: Sage Publications.
- Hall, C. M., Scott, D., & Gössling, S. (2020). Pandemics, transformations and tourism: Be careful what you wish for. *Tourism Geographies*, 22(3), 577-598. Doi: 10.1080/14616688.2020.1759131.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115-135. Doi: 10.1007/s11747-014-0403-8.
- Karl, M., Kock, F., Ritchie, B. W., & Gauss, J. (2021). Affective forecasting and travel decision-making: An investigation in times of a pandemic. *Annals of Tourism Research*, 87, 103-139. Doi: 10.1016/j.annals.2021.103139.
- Kline, R. B. (2011). *Principles and Practice of Structural Equation Modeling*. New York: Guilford Press.

- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607–610. Doi: 10.1177/001316447003000308.
- Larsen, S., Brun, W., Øgaard, T., & Selstad, L. (2011). Effects of sudden and dramatic events on travel desire and risk judgments. *Scandinavian Journal of Hospitality and Tourism*, 11(3), 268–285. Doi: 10.1080/15022250.2011.593360.
- Lee, C. K., Song, H. J., Bendle, L. J., Kim, M. J., & Han, H. (2012). The impact of non-pharmaceutical interventions for 2009 H1N1 influenza on travel intentions: A model of goal-directed behaviour. *Tourism Management*, 33(1), 89–99. Doi: 10.1016/j.tourman.2011.02.006.
- Li, Z., Zhang, S., Liu, X., Kozak, M., & Wen, J. (2020). Seeing the invisible hand: Underlying effects of COVID-19 on tourists' behavioural patterns. *Journal of Destination Marketing & Management*, 18, 1–12. Doi: 10.1016/j.jdmm.2020.100502.
- Ma, T., Heywood, A., & MacIntyre, C. R. (2021). Travel health seeking behaviours, masks, vaccines and outbreak awareness of Australian Chinese travellers visiting friends and relatives—implications for control of COVID-19. *Infection, Disease & Health*, 26(1), 38–47. Doi: 10.1016/j.idh.2020.08.007.
- Marques Santos, A., Madrid, C., Haegeman, K., & Rainoldi, A. (2020). Behavioral changes in tourism in times of Covid-19. *Luxembourg: Publications Office of the European Union*. ISBN 978-92-76-20401-5, Doi: 10.2760/00411.
- Matiza, T. (2020). Post-COVID-19 crisis travel behaviour: Towards mitigating the effects of perceived risk. *Journal of Tourism Futures*. 3–10. Doi: 10.1108/JTF-04-2020-0063.
- Menegaki, A. N. (2020). Hedging feasibility perspectives against the COVID-19 for the international tourism sector. *Preprints*, 1–18. Doi: 10.20944/preprints202004.0536.v1.
- Neuburger, L., & Egger, R. (2020). Travel risk perception and travel behavior during the COVID-19 pandemic 2020: A case study of the DACH region. *Current Issues in Tourism*, 1–14. Doi: 10.1080/13683500.2020.1803807.
- Pappas, N., & Glyptou, K. (2021). Accommodation decision-making during the COVID-19 pandemic: Complexity insights from Greece. *International Journal of Hospitality Management*, 93, 1–9. Doi: 10.1016/j.ijhm.2020.102767.
- Parady, G., Taniguchi, A., & Takami, K. (2020). Travel behavior changes during the COVID-19 pandemic in Japan: Analyzing the effects of risk perception and social influence on going-out self-restriction. *Transportation Research Interdisciplinary Perspectives*, 7, 1–15. Doi: 10.1016/j.trip.2020.100181.
- Perić, G., Dramićanin, S., & Conić, M. (2021). The impact of Serbian tourists' risk perception on their travel intentions during the COVID-19 pandemic. *European Journal of Tourism Research*, 27, 2705.
- Pizam, A., & Mansfeld, Y. (2006). Toward a theory of tourism security. In Y. Mansfeld & A. Pizam (Eds.), *Tourism, security and safety: From theory to practice* (pp. 1–27). Burlington: Elsevier.
- Reichel, A., Fuchs, G., & Uriely, N. (2007). Perceived risk and the non-institutionalized tourist role: the case of Israeli student ex-backpackers. *Journal of Travel Research*, 46, 217–226. Doi: 10.1177/0047287507299580.
- Reisinger, Y., & Mavondo, F. (2005). Travel anxiety and intentions to travel internationally: Implications of travel risk perception. *Journal of Travel Research*, 43, 212–225. Doi: 10.1177/0047287504272017.
- Reisinger, Y., & Mavondo, F. (2006). Cultural differences in travel risk perception. *Journal of Travel & Tourism Marketing*, 20(1), 13–31. Doi: 10.1300/J073v20n01_02.
- Roehl, W. S., & Fesenmaier, D. R. (1992). Risk perceptions and pleasure travel: An exploratory analysis. *Journal of Travel Research*, 30(4), 17–26. Doi: 10.1177/004728759203000403.
- Rogers, R. W. (1983). Cognitive and physiological process in fear appeals and attitude change: A revised copy of protection motivation. In J. T. Cacioppo & R. E. Petty (Eds.), *Social psychophysiology – A sourcebook* (pp. 153–176). New York: Guilford Press.

- Rübsamen, N., Castell, S., Horn, J., Karch, A., Ott, J. J., Raupach-Rosin, H., Zoch, B., Krause, G., & Mikolajczyk, R. T. (2015). Ebola risk perception in Germany, 2014. *Emerging Infectious Diseases*, 21(6), 1012-1018. Doi: 10.3201/eid2106.150013.
- Sánchez-Cañizares, S. M., Cabeza-Ramírez, L. J., Muñoz-Fernández, G. & Fuentes-García, F. J. (2021). Impact of the perceived risk from Covid-19 on intention to travel. *Current Issues in Tourism*, 24(7), 970-984, Doi: 10.1080/13683500.2020.1829571.
- Sarstedt, M., Ringle, C., & Hair, J. F. (2017). Partial least square structural equation modeling, In C. Homburg, M. Klarman, & A. Vomberg (Eds.). *Handbook of Market Research* (pp. 1-40), Heildelberg: Springer.
- Schlagenhauf, P., Patel, D., Rodriguez-Morales, A., Gautret, P., Grobusch, M. P., & Leder, K. (2021). Variants, vaccines and vaccination passports: Challenges and chances for travel medicine in 2021. *Travel Medicine and Infectious Disease*, 40, 1-4. Doi: 10.1016/j.tmaid.2021.101996.
- Sigala, M. (2020). Tourism and COVID-19: Impacts and implications for advancing and resetting industry and research. *Journal of Business Research*, 117, 312-321. Doi: 10.1016/j.jbusres.2020.06.015.
- Sönmez, S. F., & Graefe, A. R. (1998). Determining future travel behaviour from past travel experience and perceptions of risk and safety. *Journal of Travel Research*, 37, 171-177. Doi: 10.1177/004728759803700209.
- Terziyska, I., & Dogramadjieva, E. (2021, January). Should I stay or should I go? Global COVID-19 pandemic influence on travel intentions of Bulgarian residents. *SHS Web of Conferences*, 92(10), 2021.
- UNWTO (2021). UNWTO world tourism barometer and statistical annex, March 2021. *UNWTO World Tourism Barometer (English version)*, 19(2), Doi: 10.18111/wtobarometereng.2021.19.1.2.
- Walters, G., Wallin, A., & Hartley, N. (2019). The threat of terrorism and tourist choice behaviour. *Journal of Travel Research*, 58(3), 370-382. Doi: 10.1177/0047287518755503.
- Wen, J., Kozak, M., Yang, S., & Liu, F. (2020). COVID-19: Potential effects on Chinese citizens' lifestyle and travel. *Tourism Review*, 76(1), 74-87. Doi: 10.1108/TR-03-2020-0110.
- Westland, C. (2010). Lower bounds on sample size in structural equation modelling. *Electronic Commerce Research and Applications*, 9(6), 476-487. Doi: 10.1016/j.elerap.2010.07.003.
- WHO (2021). Coronavirus disease (COVID-19): Vaccines. Retrieved from [https://www.who.int/news-room/q-a-detail/coronavirus-disease-\(covid-19\)-vaccines?adgroupsurvey={adgroupsurvey}&gclid=CjoKCQjwsLWDBhCmARIsAPSL3_2WrX4Wbiju6Mn3JJGcHOTYXjsvmegx9OFNkMuVVXQ5FNYc9xhIWGMaAkvREALw_wcB](https://www.who.int/news-room/q-a-detail/coronavirus-disease-(covid-19)-vaccines?adgroupsurvey={adgroupsurvey}&gclid=CjoKCQjwsLWDBhCmARIsAPSL3_2WrX4Wbiju6Mn3JJGcHOTYXjsvmegx9OFNkMuVVXQ5FNYc9xhIWGMaAkvREALw_wcB) (Access Date: 09.09.2021).
- Williams, N. L., Nguyen, T. H. H., Del Chiappa, G., Fedeli, G., & Wassler, P. (2021). COVID-19 vaccine confidence and tourism at the early stage of a voluntary mass vaccination campaign: A PMT segmentation analysis. *Current Issues in Tourism*, 1-15. Doi: 10.1080/13683500.2021.1963216.
- Wilson, M. E., & Chen, L. H. (2020). Re-starting travel in the era of COVID-19: Preparing anew. *Journal of Travel Medicine*, 27(5), 1-5. Doi: 10.1093/jtm/taaa108.
- Zhan, L., Zeng, X., Morrison, A. M., Liang, H., & Coca-Stefaniak, J. A. (2020). A risk perception scale for travel to a crisis epicentre: Visiting Wuhan after COVID-19. *Current Issues in Tourism*, 1-18. Doi: 10.1080/13683500.2020.1857712.
- Zheng, D., Luo, Q., & Ritchie, B. W. (2021). Afraid to travel after COVID-19? Self-protection, coping and resilience against pandemic 'travel fear'. *Tourism Management*, 83, 1-13. Doi: 10.1016/j.tourman.2020.104261.

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