Research article

Understanding the travel decision-making processes of COVID-19-vaccinated South Korean travelers

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A B S T R A C T

During the COVID-19 pandemic, many countries allowed only the vaccinated to travel abroad, and some still continue with these restrictions. This study aimed to determine the factors associated with the intention to travel abroad during this pandemic. An online survey was conducted with 270 vaccinated Korean participants. The theoretical framework of the extended goal-directed behavior model was used to predict the overseas travel intentions of tourists in the COVID-19 environment. The data were examined using frequency analysis, confirmatory factor analysis, correlation analysis, and path analysis using CB-SEM. The results show, first, that attitude, expected positive emotions, and expected negative emotions are positively correlated with desire. Second, desire and prior knowledge are positively correlated with behavioral intentions. Thus, attitude toward COVID-19 and expected emotions significantly influenced desire, and prior knowledge influenced travelers' behavioral intentions during the pandemic. The findings suggest that travelers' attitudes and emotions during the pandemic reflect their desire to travel abroad and to do so with prior knowledge. Therefore, to help potential overseas tourists meet their basic needs for personal quarantine security during travel, travel industry staff should provide personalized security services. Airlines and the tourism industry should continue to provide hand sanitizers and personal hygiene products at airports and tourist attractions to make the travel experience relatively safer for tourists. In addition, the tourism industry should introduce a campaign on safe quarantine and health to give a positive impression to potential tourists, planning their next trip. The study identifies changing travel trends, provides a foundation for safe travel experiences, and can help develop policies to improve future international travel.

1. Introduction

More than three years have passed since the COVID-19 pandemic emerged. The global economy has been severely affected. The measures to combat the pandemic, such as travel restrictions, border closures, and the suspension of international flights, have hampered the travel and tourism industry in particular. During the last fiscal year, Cathay Pacific reported losses of KRW 869 billion due to the pandemic [1]. Global tourism has slowed significantly, and the number of flights worldwide has declined by more than half [2]. In 2020, IATA estimated that revenue passenger kilometers would decrease by 38% compared to the previous year, resulting in a revenue loss of $252 billion [3].

The U.S. Centers for Disease Control and Prevention (CDC) has a four-level risk assessment system for rating international travel

destinations, with level 1 being the lowest and level 4, the highest. During this research, a level-4 country was defined as a country with more than 500 people per 100,000 population affected by COVID-19. In May 2021, there were seven countries rated level-1 and 137 countries rated level-4, and the CDC strongly recommended vaccination before traveling to a level-3 country [4]. As vaccines started being developed and administered, many countries waived self-quarantine and other measures for the vaccinated. However, even as vaccines are widely used now, the flow of international travelers to tourist destinations continues to be very low and many countries use restrictions sporadically. The travel industry has introduced various policies and programs to promote tourism. For example, under the "Travel Bubble" agreement with South Korea, the Marianas Travel Authority provided travel vouchers worth $100 per person to South Koreans traveling to the Northern Marianas, including Saipan [5]. However, traveling overseas remains difficult for air passengers in the ongoing pandemic. As vaccinated travelers are generally allowed to travel overseas, studying their decision-making processes is expected to be important for the tourism industry.

The threat of COVID-19 that has kept the world in a state of emergency for more than two years is in stark contrast to previous disease threats that only had a short-term impact on the travel industry [6]. Indeed, international travel is predicted to experience explosive growth as the effects of the pandemic recede. This study developed a research framework based on the Model of Goal-Directed Behavior (MGB), a representative theory for understanding the decision-making process of overseas tourists [7–9]. This framework has been proven effective in various studies [10]; researchers argue that the MGB can be expanded and developed further by considering other variables that could directly or indirectly influence decisions in a particular context [11–13].

In the context of travel, the components of the MGB framework could influence whether a tourist chooses to receive vaccinations. Although vaccination is an important factor for the industry, there has been little research on the intentions of vaccinated travelers. Existing research on infectious diseases and travel has explored the effects of SARS on tourism [14], the 2009H1N1 influenza and travel intentions [15], and Ebola risk awareness among tourists [16], and assessed tourism and global changes amid the COVID-19 pandemic [17]. Thus, it is worthwhile to apply a socio-psychological theory to understand the decision-making processes of international tourists.

This study uses the theoretical framework of the MGB model to anticipate the decision-making processes of vaccinated travelers in the context of COVID-19 with the aim to provide results with meaningful, practical implications. The remaining paper is organized as follows. First, Section 2 presents the literature review, describing the needs and objectives of the study and giving a general overview of viruses and international travel, and the Model of Goal-Directed Behavior. An outline of the methods used in this study is provided in Section 3, followed by the findings in Section 4 and a discussion of these in Section 5. Section 6 concludes the paper.

2. Theoretical background and research hypotheses

2.1. Viruses and international travel

Diseases, especially viruses, have always affected tourism. Yang and Chen [14] study how the SARS virus affected the tourism industry in Taiwan. They examined the quantitative impact of the decline in inbound tourists and how the decline in tourist expenditures affected Taiwan's economy. Due to the decline in tourism, the SARS virus had a negative impact on Taiwan's GDP and employment. A study of the 2009H1N1 influenza on travel intentions [15] introduced the concept of non-pharmaceutical interventions (NPI) and demonstrated their influence on potential international tourists' travel intentions. It combines the concept of NPI with perceptions of the 2009H1N1 in a goal-directed model framework to hypothesize that desire, perceived behavioral control, frequency of previous behavior, and NPI influence travel intentions, but finds that perceptions of the 2009H1N1 influenza had no influence on desire or intention to travel. In addition, an Ebola virus risk perception study [16] examines user discourse and risk management tactics suggested by the online community via social media. The study presents positive thinking and encouragement, knowledge development and preparation, and personal risk assessment to examine online communities' attitudes toward and management of Ebola risk perceptions. The spread of COVID-19 resulted in international travel bans, impacting over 90% of the world's population and resulting in widespread restrictions on public gatherings and community mobility that halted tourism in March 2020. Early evidence shows that the impact on air travel, cruises, and accommodations was devastating [17]. Accordingly, this study of international travel intentions during a virus outbreak provides a theoretical framework for predicting travel intentions.

2.2. Theoretical framework: model of goal-directed behavior

The MGB was developed to extend the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB) and has become a representative social psychological theory for understanding individuals' decision-making processes [13,19].

First, the TRA asserts that an individual rationally considers the consequences of actions before undertaking them [20]. Factors associated with individual feelings have been categorized as "personal factors" or attitudes, those associated with the social aspect, such as social norms, as "social factors," and subjective norms dictate how an individual intends to behave. However, critics have argued that attitudes and subjective norms cannot solely determine behavioral intentions [21]. Ajzen and Fishbein [18] proposed the TPB by adding the component of "perceived behavioral control" to the TRA, which refers to the perception of one's ability to perform the behavior. The addition of perceived behavioral control to the TPB enabled a more realistic interpretation of an individual's behavior when external factors were present [23]. However, the TPB is limited in that it emphasizes only the cognitive side of individual behavior [24]. Perugini and Bagozzi [13] developed the MGB by adding in factors related to the target behavior; along with the original factors of the TPB, the MGB considers both positive and negative anticipated emotions and desires, as well as the frequency of past behavior. Anticipated emotions focus on the individual's evaluation of the achievement of personal goals.

By contrast, attitude focuses on the advantages or disadvantages of a particular action, whereas desire focuses on person's strong emotional state toward the target behavior, which includes people, things, and actions [13]. Desire plays a mediating role among the factors of attitude, subjective norms, perceived behavioral control, positive and negative anticipated emotions, behavioral intention, and frequency of past behavior [25]. Frequency of past behavior indicates how often a person has performed the same behavior in the past, and recency indicates how recently the behavior was performed [13].

Prior knowledge focuses on the accumulation of information through external research, such as via the Internet, newspapers, advertisements, magazines, and television, or internally through a review of one's own memory and experiences [26]. Yoon et al. [27] claim that prior knowledge regarding international travel could enhance travel intention and, therefore, plays an important role in the decision-making process. Reviewing studies comparing the extended goal-oriented behavior model with the goal-directed behavior model, Jung and Han [29] reveal the existence of a statistically significant difference between the two models, with the EMBG model showing improved explanatory power compared to the MBG model, as Lee and Yoon [51] too confirmed later.

2.3. Research model and hypotheses

Based on studies on international travel, the present study established the following variables and hypotheses for the MGB in the context of the COVID-19 pandemic as well as the research model. All hypotheses are presented in Fig. 1.

Hamada and Fukushima [52] present the status and tasks of vaccination for overseas travelers in Japan and explain that the vaccination rate of the Japanese people is relatively low compared to travelers from Europe or the United States. Therefore, they suggest, awareness of the importance of vaccination should be spread. Ekinci et al. [53] indicate that the desire to travel not only promotes the intention to vaccinate against COVID-19 but also adds knowledge to the emotional impact on health behavior. This suggests that the desire to travel could encourage the adoption of health protection measures that mitigate these potential risks. The positive effect of COVID-19 vaccine passports on the reservation intentions of travelers has been confirmed [54]. Zaman et al.'s [55] study finds that safety had a positive effect on vaccination intention and suggests that if a travel destination is COVID-19-free and promoted as providing a safe atmosphere, travelers' motivation to travel to that destination immediately after receiving the necessary vaccinations may increase.

Han and Hwang's study [28] explore behavioral intentions of screen golf participants to show that attitude, subjective norms, expected emotions, and perceived behavioral control influenced craving. According to a study on NPI for the 2009H1N1 influenza [15], attitude, subjective norms, positive and negative anticipated emotions, and perceived behavioral control positively influenced desire. In addition, Jung and Han [29] show that subjective norms, anticipated positive emotions, and perceived behavioral control positively influence a tourist's intention to purchase designer goods. Based on this discussion in the context of overseas travel behavioral intentions of vaccinated people during the pandemic, and considering that attitudes, subjective norms, positive and negative anticipated emotions, and perceived behavioral control affect desire, the following hypotheses are proposed.

H1. Attitude has a positive association with vaccinated people's desire to travel abroad.

H2. Subjective norms have a positive association with vaccinated people's desire to travel abroad.

H3. Anticipated positive emotions have a positive association with vaccinated people's desire to travel abroad.

H4. Anticipated negative emotions have a negative association with vaccinated people's desire to travel abroad.

H5. Perceived behavioral control has a positive association with vaccinated people's desire to travel abroad.

Previous studies have shown that the relationships among frequency of previous behavior, desire, and behavioral intention are
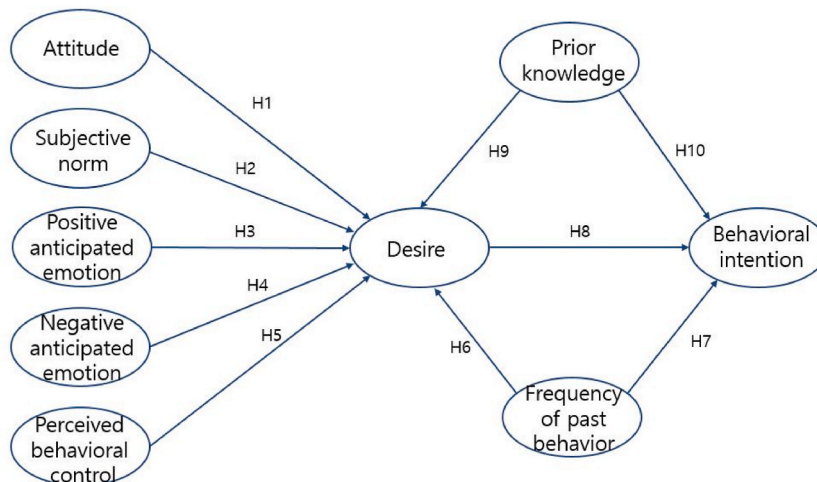

Fig. 1. Research model.

important variables. The frequency of previous behavior positively influences desire and behavioral intention, and desire positively influences behavioral intention [28–30]. In the context of COVID-19, the frequency of previous behavior has been judged to have a positive effect on vaccinated people's desires and behavioral intentions. Based on the literature, the following hypotheses are proposed.

H6. The frequency of past international travel has a positive association with vaccinated people's desire to travel.

H7. The frequency of past international travel has a positive association with the behavioral intentions of vaccinated travelers.

In a study on the behavioral intention of casino visitors, desire had a positive effect on behavioral intention [14], and the effect of NPI on influenza on travel intention also showed that desire has a positive effect on travel intention [15]. In addition, Perugini and Bagozzi's study also verified that desire has a positive effect on behavioral intentions [21]. Previous studies [14,15,21] have shown that desire plays a vital role in anticipating behavioral intention. Therefore, vaccinated people's desire in the COVID-19 context is judged to have a positive effect on their behavioral intentions. Thus, the following hypothesis is proposed.

H8. The desire to travel overseas has a positive association with the behavioral intentions of vaccinated travelers.

Yoon et al.'s [27] study on the international travel intentions of South Koreans shows that prior knowledge positively influences behavioral intent, and a study on tourists' intentions to purchase designer goods [29] shows that prior knowledge positively influences desire. Moreover, a study of casino patrons' behavioral intentions shows that prior knowledge positively influences both desire and behavioral intention [25]. Therefore, prior knowledge of vaccinated people during COVID-19 is considered to have a positive effect on desire and behavioral intention, yielding the final hypotheses.

H9. Prior knowledge of international travel has a positive association with vaccinated people's desire to travel.

H10. Prior knowledge of international travel has a positive association with the behavioral intentions of vaccinated travelers.

3. Materials and methods

3.1. Participants

South Koreans who had been vaccinated for COVID-19 and had international travel experience were selected as participants to understand their international travel intentions using the MGB model. The participants comprised both men and women, and the inclusion criteria did not distinguish between the first and second vaccination. Our sample size was determined using the online "A-priori Sample Size Calculator for CB-Structural Equation Models" [32,56]. The number of participants was calculated based on the structural model, and their responses were obtained via an online survey by an online market research company from May 10–17, 2021. The 10-min survey was sent via email using the company's database. The participants received a detailed explanation of the survey and had the opportunity to decide whether to participate. A total of 458 questionnaires were distributed, 188 people did not respond, and the 270 that were recovered were used for data analysis.

An Institutional Review Board (IRB) statement was not required for this study in South Korea. However, to develop ethical sensitivity toward research participants, we took formal researcher ethics training conducted by the IRB of the Collaborative Institutional Training Initiative (CITI) and received a certificate of completion before the study. The general characteristics of the participants are presented in Tables 1 and 2.

Table 1
Demographic characteristics of participants.

Characteristics	Variables	N	Percentage (%)
Gender	Male	134	49.6
	Female	136	50.4
Age	20–29	51	18.9
	30–39	55	20.4
	40–49	53	19.6
	50–59	55	20.4
	≥60	56	20.7
Occupation	Student	14	6.3
	Civil servant	11	1.5
	Office worker/Professional	148	60.4
	Sales/Services	14	4.4
	Homemaker	34	13.3
	Self-employed	15	8.5
	Unemployed	18	2.6
	Other (Freelance, Production)	16	3.0
Total		270	100

Table 2
International travel characteristics of participants.

Characteristics	Variables	N	Percentage (%)
Vaccine status	Completed the first vaccination	134	49.6
	Completed the second vaccination	136	50.4
Frequency of international travel	Once a year	154	57.0
	Twice a year	43	15.9
	Three times a year	15	5.6
	Four times a year	2	0.7
	Five or more times a year	7	2.6
	Other (Once in 2–5 years)	27	10.0
	None	22	8.1
Experience of international travel in the past two years	Yes	55	20.4
	No	215	79.6
Desired destination	South America (Mexico, Cuba, Argentina)	7	2.6
	North America (USA, Canada)	33	12.2
	Islands (Hawaii, Guam, Saipan, Bali, Boracay, Maldives)	29	10.7
	Asia (Japan, China, Hong Kong, Taiwan, India, Thailand, Vietnam, Singapore, Philippines)	88	32.6
	Africa	1	0.4
	Oceania (Australia, New Zealand)	13	4.8
	Europe (Eastern, Northern, Western)	99	36.7
Amount spent on international travel	<1 million KRW	24	8.9
	1–3 million KRW	120	44.4
	3–5 million KRW	87	32.2
	5–10 million KRW	35	13.0
	>10 million KRW	4	1.5
Total		270	100

3.2. Measures

To determine the relationship between the variables and the international travel intentions of vaccinated South Koreans in a structured manner, components found to be valid in previous studies were selected and used. First, the survey included items such as gender, age, and occupation to determine the demographic characteristics of the participants as well as items such as desired destination, travel cost, and vaccination status to determine the characteristics of international travel. There were seven items in total.

Second, the items used in previous studies [13,15,21,22,28,33–37] for the constructs of the MGB were revised for the present study. The survey included seven items on attitude, three on subjective norms, three on perceived behavioral control, four on expected positive emotions, six on expected negative emotions, three on desire, and three on behavioral intention. Each item in the survey was rated on a 5-point Likert scale (1 = disagree at all, 5 = agree completely).

3.3. Confirmatory factor analysis and reliability

The survey was designed to collect data to test the formulated hypotheses, and a professor who specializes in leisure sports and tourism confirmed the validity of the content. Confirmatory factor analysis (CFA) was performed to assess construct validity and reliability. The model was evaluated using the Tucker-Lewis index (TLI) and the comparative fit index (CFI) for the non-normed fit index and the root mean square error of approximation (RMSEA) for the absolute fit index. The model is deemed valid when the TLI and CFI are above 0.90 and the RMSEA is below 0.08 [38]. Additionally, RMSEA is a fit index developed to supplement the limitations of the χ^2 statistic, with <0.05 being very good, <0.08 being good, and <0.1 being normal [39]. The CFA results show that the model is valid with TLI 0.925, CFI 0.934, and RMSEA 0.070, as shown in Table 3. Additionally, Cronbach's α was used to test reliability. The value ranged above 0.70, the suggested minimum criterion showing that each construct had a sufficient level of reliability [40].

The model fit of the measurement model was assessed using construct reliability (CR) and the average variance extracted (AVE), with the CR and AVE values over 0.6 and over 0.5, respectively, indicating reliability [41]. The CR value was 0.806–0.970 and the AVE value was 0.582–0.890, confirming convergent validity. To confirm discriminant validity, the square root of AVE was calculated, and it was higher than the correlation between other components, confirming discriminant validity [55]. Pearson's correlation analysis was performed to determine the correlation between variables. The results are shown in Table 4. Attitude and positive anticipated emotion showed the highest correlation with r = 0.790, and positive anticipated emotion and frequency of past behavior had the lowest correlation with r = 0.181. In addition, the mean and standard deviation for each variable in the study were confirmed. In the normality test, the skewness value was −0.058 to 0.435 and the kurtosis value was −1.055 to 0.599, which satisfied normality. The results are presented in Table 5.

Tolerance and VIF were evaluated to confirm multicollinearity. If the VIF value is 3.3 or less, there is no problem with multiplicity [56]. All VIF values ranged from 1.173 to 2.956, confirming that there was no problem with multicollinearity. Table 6 shows the

Table 3
Confirmatory factor analysis and reliability results.

Factor	Item	Estimates	S.E.	CR	AVE	A
Attitude	1. I think international travel is good.	.863	.164	.964	.795	.946
	2. I think international travel is desirable.	.828	.231			
	3. I think international travel is pleasant.	.873	.140			
	4. I think international travel is wise.	.786	.290			
	5. I think international travel is favorable.	.838	.202			
	6. I think international travel is joyful.	.863	.131			
	7. I think international travel is positive.	.881	.133			
Subjective norm	1. Those who influence my decision will approve of my international travel.	.930	.128	.937	.834	.928
	2. Those who influence my decision will support my international travel.	.947	.108			
	3. Those who influence my decision will understand my international travel.	.831	.250			
Perceived behavioral control	1. I have the overall ability to travel overseas.	.671	.405	.806	.582	.783
	2. I can travel overseas whenever I choose to do so.	.818	.379			
	3. I have the time, opportunity, and means to travel overseas.	.756	.426			
Positive anticipated emotion	1. I would be excited to travel overseas.	.901	.121	.970	.890	.954
	2. I would be pleased to travel overseas.	.926	.096			
	3. I would be satisfied to travel overseas.	.913	.099			
	4. I would be happy to travel overseas.	.923	.096			
Negative anticipated emotion	1. I would be sad if I could not travel overseas.	.865	.314	.950	.763	.961
	2. I would be disappointed if I could not travel overseas.	.891	.243			
	3. I would be angry if I could not travel overseas.	.900	.248			
	4. I would be dissatisfied if I could not travel overseas.	.931	.170			
	5. I would be depressed if I could not travel overseas.	.904	.253			
	6. I would be upset if I could not travel overseas.	.897	.269			
Desire	1. I earnestly desire to travel overseas in the near future.	.913	.156	.956	.880	.946
	2. I want to travel overseas.	.956	.068			
	3. I hope to travel overseas.	.912	.125			
Frequency of past behavior	1. I have frequently traveled overseas in the past two years after being vaccinated.	.989	.030	.930	.870	.951
	2. I have frequently traveled overseas.	.921	.242			
Prior knowledge	1. I know everything about international travel and can inform others about it.	.891	.194	.952	.869	.948
	2. I know enough about international travel to inform others about it.	.953	.089			
	3. I have some general knowledge about international travel to inform others about.	.939	.105			
Behavioral intention	1. I intend to travel overseas in the near future.	.884	.202	.907	.764	.907
	2. I intend to travel overseas.	.842	.314			
	3. I will make an effort to travel overseas.	.898	.190			

Notes: CR – construct reliability; AVE – average variance extracted; TLI – Tucker-Lewis index; CFI – comparative fit index; RMSEA – root mean square error of approximation.
X^2 1134.526; DF 491; TLI 0.925; CFI 0.934; RMSEA 0.070.

Table 4
Discriminant validity and correlation results.

	1	2	3	4	5	6	7	8	9
1	.892								
2	.526**	.914							
3	.464**	.502**	.763						
4	.790**	.534**	.410**	.944					
5	.350**	.297**	.274**	.289**	.874				
6	.716**	.543**	.484**	.706**	.415**	.939			
7	.287**	.269**	.264**	.181**	.365**	.290**	.933		
8	.454**	.361**	.474**	.362**	.375**	.458**	.439**	.932	
9	.593**	.478**	.426**	.609**	.391**	.688**	.307**	.484**	.875

Notes: 1. Attitude; 2. Subjective norm; 3. Perceived behavioral control; 4. Positive anticipated emotion; 5. Negative anticipated emotion; 6. Desire; 7. Frequency of past behavior; 8. Prior knowledge; 9. Behavioral intention.
The diagonal is the discriminant validity (square root of AVE). $**p < .01$.

results.

3.4. Data analyses

The most representative analytical technique to analyze non-experimental causality in the field of social science is Structural Equation Modeling, introduced by Keesling [47] and Wiley [48] as a combination of path analysis and confirmatory factor analysis. The method has seen a remarkable increase in domestic and international use because of its various advantages [49].

The structural equation model belongs to a confirmatory study, not an experimental one. Prior to the analysis, the investigator

Table 5
Normality test.

	M	SD	Skewness	Kurtosis
Attitude	4.05	0.69	−0.461	−0.297
Subjective norm	3.54	0.90	−0.261	−0.343
Perceived behavioral control	3.66	0.81	−0.377	−0.182
Desire	4.14	0.74	−0.816	0.584
Positive anticipated emotion	2.70	1.04	0.307	−0.626
Negative anticipated emotion	3.85	0.86	−0.614	0.599
Frequency of past behavior	2.28	1.18	0.435	−1.055
Prior knowledge	3.06	0.92	−0.058	−0.453
Behavioral intention	3.64	0.91	−0.600	0.320

M – mean; SD – standard deviation.

Table 6
Multicollinearity evaluation.

Dependent variable	Independent variable	Tolerance	VIF
Desire	Attitude	.338	2.956
Desire	Subjective norm	.603	1.658
Desire	Perceived behavioral control	.687	1.455
Desire	Positive anticipated emotion	.357	2.804
Desire	Negative anticipated emotion	.852	1.173
Desire	Frequency of past behavior	.807	1.239
Desire	Prior knowledge	.807	1.239
Behavioral intention	Desire	.781	1.281
Behavioral intention	Frequency of past behavior	.797	1.254
Behavioral intention	Prior knowledge	.688	1.453

establishes a research model based on a thorough review of prior research or theoretical or logical background. After creating the questionnaire and checking whether the research model designed by the investigator can be verified through the data, the data are analyzed. Structural equation modeling has the characteristic of simultaneously estimating a causal relationship between variables. In addition, when multiple measurement items are used as observation variables to measure one constituent concept, the causal relationship between variables is measured using latent variables while the measurement errors of the observed variables are excluded [50].

SPSSWIN and AMOS were used to analyze the data collected from the surveys. First, demographic characteristics were determined using frequency analysis. CFA and Cronbach's α were performed separately for the MGB factors. In addition, correlation analysis was performed to determine the relationships among variables such as attitude, subjective norms, desire, and prior knowledge, while structural equation modeling was performed for path analysis to test the hypotheses.

4. Results

4.1. Structural model goodness of fit

The structural model of variables, such as attitude, subjective norms, and perceived behavioral control, was examined, and the results are presented in Table 7 using maximum likelihood. The results show CFI at .933 (>0.90), TLI at 0.925 (>0.90), and RMSEA at 0.070 (<0.10), indicating that the model fit meets all standards.

4.2. Hypothesis testing

The results concerning the international travel intentions of vaccinated South Koreans are presented in Table 8 and Fig. 2.

The results show that five hypotheses were supported and the other five were rejected. H1, "Attitude has a positive association with vaccinated people's desire to travel abroad," was supported with a path coefficient value of 0.397 and a t-value of 3.648 (p < .001). H3, "Anticipated positive emotions have a positive association with vaccinated people's desire to travel abroad," was supported with a path coefficient value of 0.406 and t-value of 4.061 (p < .001). H4, "Anticipated negative emotions have a negative association with

Table 7
Structural model goodness of fit.

| X^2	DF	CFI	TLI	RMSEA
1149.136	496	.933	.925	.070

Notes: TLI – Tucker-Lewis index; CFI – comparative fit index; RMSEA – root mean square error of approximation.

Table 8

Structural model results.

H	Path	Standardized Coefficient	S.E.	T	Results
H1	Attitude → Desire	.397	.109	3.648***	Supported
H2	Subjective norm → Desire	.101	.053	1.891	Rejected
H3	Positive anticipated emotion → Desire	.406	.100	4.061***	Supported
H4	Negative anticipated emotion → Desire	.122	.041	2.960**	Supported
H5	Perceived behavioral control → Desire	.149	.094	1.579	Rejected
H6	Frequency of past behavior → Desire	.015	.036	.412	Rejected
H7	Frequency of past behavior → Behavioral intention	.032	.038	.829	Rejected
H8	Desire → Behavioral intention	.624	.055	11.282***	Supported
H9	Prior knowledge → Desire	.051	.055	.936	Rejected
H10	Prior knowledge → Behavioral intention	.178	.056	3.193**	Supported
R^2 (Desire)		.454			
R^2 (Behavioral Intention)		.431			

***$p < .001$, **$p < .01$.
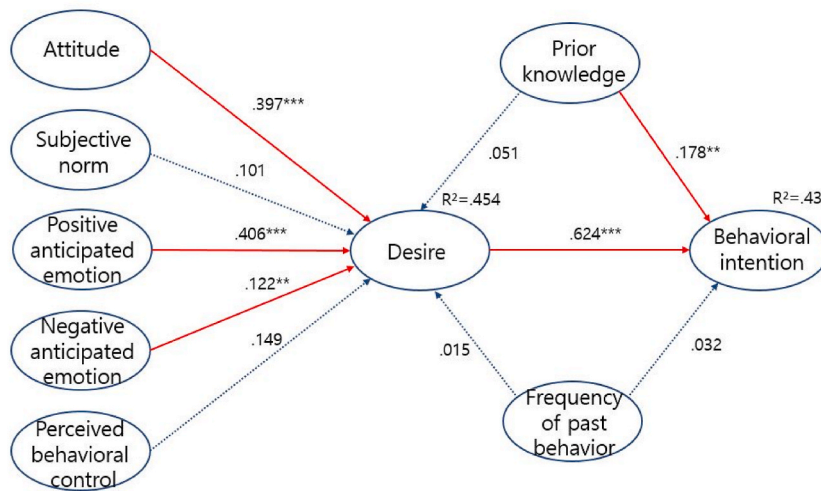
Fig. 2. Result of the path analysis.

vaccinated people's desire to travel abroad," was supported with a path coefficient value of 0.122 and t-value of 2.960 ($p < .01$). H8, "The desire to travel overseas has a positive association with the behavioral intentions of vaccinated travelers," was supported with a path coefficient value of 0.624 and t-value of 11.282 ($p < .001$). Finally, H10, "Prior knowledge of international travel has a positive association with the behavioral intentions of vaccinated travelers.," was supported with a path coefficient value of 0.178 and t-value of 3.193 ($p < .01$).

By contrast, H2, "Subjective norms have a positive association with vaccinated people's desire to travel abroad," was rejected with a path coefficient value of 0.101 and t-value of 1.891. H5, "Perceived behavioral control has a positive association with vaccinated people's desire to travel abroad," was rejected with a path coefficient value of 0.149 and t-value of 1.579. H6, "The frequency of past international travel has a positive association with vaccinated people's desire to travel," was rejected with a path coefficient value of 0.015 and t-value of 0.412. H7, "The frequency of past international travel has a positive association with the behavioral intentions of vaccinated travelers," was rejected with a path coefficient value of 0.032 and t-value of 0.829. Finally, H9, "Prior knowledge of international travel has a positive association with vaccinated people's desire to travel," was rejected with a path coefficient value of 0.051 and t-value of 0.936.

In sum, hypotheses H1, H3, H4, H8, and H10 were supported, but H2, H5, H6, H7, and H9 were rejected. Desire's R^2 value was 45%, and Behavioral Intention's was 43%.

5. Discussion

This study investigates the behavioral intentions of South Koreans vaccinated against COVID-19. According to the results, attitude as well as positive and negative anticipated emotions had a positive influence on desire, while subjective norms, perceived behavioral control, frequency of past behavior, and prior knowledge had no influence. In addition, desire and prior knowledge had a positive influence on behavioral intention, while the frequency of past behavior had no influence. Several inferences can be drawn from these results.

5.1. Relationships among attitude, subjective norms, perceived behavioral control, and desire

Attitude had a positive influence on the desire to travel abroad among vaccinated people, whereas subjective norms and perceived behavioral control showed no relationship with desire or attitude. This suggests that, although individuals had a positive attitude toward international travel and wanted to travel in the midst of a pandemic, their environment or current situation was unfavorable toward international travel.

Unlike Lee et al.'s [15] study, where the NPI for COVID-19 significantly affect attitude craving but not perceived behavioral control, in this study, attitude and perceived behavioral control showed the same results. In the case of attitude, it can be hypothesized that a positive attitude translates into a positive craving since the pandemic began. Additionally, the relationship between perceived behavioral control and desire suggests that people need to consider resources and opportunities for international travel if they have a desire to travel abroad. Moreover, Song et al. [31] examine the strategies of casino patrons and find that their attitudes had a positive influence on desire, whereas subjective norms and perceived behavioral control did not, complementing the present findings. In other words, some South Korean visitors had negative attitudes toward casinos. According to this study, friends and family in the surrounding area perceive foreign travel negatively because of the dangers of COVID-19.

5.2. Relationships among positive anticipated emotion, negative anticipated emotion, and desire

Both positive and negative anticipated emotions had a positive influence on the desire to travel abroad among vaccinated people. This shows that emotional variables have a significant influence on desire when predicting travel behavior.

When faced with uncertainty, people may experience anticipatory positive or negative emotions toward future behaviors [14]. Anticipated emotions include an anticipated positive emotion when a goal is achieved, or an anticipated negative emotion when a goal is not achieved, and desires represent important motivators in goal achievement [13]. Thus, it is reasonable to assume that anticipated emotions stimulate the desire to travel internationally during the pandemic.

Chiu et al.'s study [42] on consumers' purchase intentions when buying sports equipment online finds that anticipated emotions positively influence desire, supporting the findings of this study. Additionally, Kim et al. [43] examine how gender affected international travel and show that anticipated emotions positively influenced desire. A study on understanding cruise tourists' decision-making process during the pandemic [44] also shows that anticipated emotions positively influence desire.

5.3. Relationships among prior knowledge, frequency of past behavior, desire, and behavioral intent

In vaccinated South Koreans' decision-making process regarding foreign travel, prior knowledge and desire positively influenced behavioral intention. However, prior knowledge did not influence desire, and the frequency of past behavior did not influence desire or behavioral intention. The results confirm that the prior knowledge and desire of vaccinated individuals positively influenced their decision-making process for international travel. Therefore, the reason why one's prior knowledge or how often they have traveled in the past does not influence desire could be the limitations caused by the COVID-19 pandemic. A study of NPI for the 2009H1N1 influenza on travel intention [15] finds that the frequency of past behaviors did not influence desire, whereas desire positively influenced behavioral intention, partly supporting the present study's findings. Furthermore, in a study of cruise travelers' environmentally conscious choices [45], desire was found to positively influence their behavioral intention, supporting the results of the current study. Song et al. [21] investigate the effect of environmentally friendly perceptions on the decision-making process of festival attendees and find that the frequency of past behavior did not affect behavioral intention, supporting the results of this study. Based on their results, it is not possible to predict whether a person has attended a festival before or whether they intend to attend one again. A study of the reasons for mobile device use by seniors found that the frequency of past behavior [46] did not influence desire and behavioral intention, again consistent with the results of the present study. Jung and Han [29] conclude that prior knowledge has a positive effect on tourists' desire but not their behavioral intention to purchase designer goods. Their results differ from those of the present study, in which prior knowledge had no effect on desire but a positive effect on behavioral intention, suggesting that intention plays a stronger role than desire in determining whether a person decides to travel abroad. The fact that an individual's prior knowledge, rather than desire, influences behavioral intention suggests that the COVID-19 pandemic itself acts as a variable in decision-making and positively influences international travel.

6. Conclusions

This study explored the decision-making processes of South Koreans vaccinated against COVID-19 when traveling internationally. According to the results, attitude as well as positive and negative anticipated emotions have a positive influence on desire. In addition, desire and prior knowledge have a positive influence on behavioral intention. This research provides insights into the changing travel trends and actions taken in the pandemic era, as well as future measures and guidelines for a safe travel experience. Further, it sheds light on the decision-making processes involved in arriving at a safe travel decision or when facing a risky situation.

6.1. Theoretical implications

First, attitudes and expected emotions toward COVID-19 influenced desire, while prior knowledge significantly influenced tourists' international travel intentions during the pandemic. This study focused on improving vaccinated people's anticipation of decision-

making processes and behavioral intentions regarding international travel. It provides the tourism industry with insight into the relationship between vaccination and international travel through the first-hand experiences of vaccinated tourists.

Second, the study examined how vaccinated travelers' decision-making process affects the tourism industry. The implications are drawn from how potential travelers' experiences with COVID-19 impact their behavioral intentions. This research shows that positive behavior increases the desire for international travel among vaccinated tourists, demonstrating how attitude and anticipated emotion influence desire and how desire and prior knowledge play an important role in international travel intentions in a pandemic environment.

Finally, this study provides a model for predicting the latent international travel intentions of vaccinated tourists using an extended MGB model. The results also show that cognitive (attitude) and emotional factors (expected positive and negative emotions) play a crucial role in this process, and desire is an important motivational mediator among cognitive factors (attitude), emotional factors, and behavioral intentions. The results provide a better understanding not only of the above factors but also of prior knowledge regarding international travelers.

6.2. Practical implications

The study offers practical suggestions to professionals in the tourism industry. First, the industry should provide a tailored security practice service to potential international travelers and assess their international travel intentions. The results illustrate how cognitive, non-cognitive, and emotional factors influence travelers' intentions, making it essential for service providers to anticipate tourists' needs in order to rejuvenate international tourism. For example, an airline can evaluate its existing safety protocols and disclose them in detailed publications or on airline tickets. In addition, the tourism industry can reduce tourists' reservations about traveling in the event of a pandemic by improving online communication. Accordingly, a system must be introduced that allows tourists to check additional safety information on their own.

Second, airlines and tour operators can provide free masks or disinfectants to improve tourists' safety during a trip. Tour operators can set up safety and health management zones in their information centers or kiosks to provide better access to personal protective equipment. The industry can improve the accessibility and placement of personal protective equipment at airports or other destinations to improve international tourists' attitudes and emotional factors.

Finally, as the results show that attitude, desires, prior knowledge, and emotional factors influence how vaccinated travelers form their intentions, the industry can implement a safety and health campaign that promotes hygiene to encourage potential tourists to travel. These findings can not only help improve the services offered by the tourism industry but also enhance tourists' perceptions of international travel through health and safety practices.

6.3. Limitations and suggestions for future studies

The study has some limitations. First, the survey participants were all vaccinated against COVID-19. Due to the exclusion of unvaccinated individuals, this study does not represent those who chose not to be vaccinated or had enough reasons for doing so. Second, the direct application of the MGB model has theoretical limitations, and future research may consider replacing, expanding, or combining the variables used in this study.

Future research should consider how the tourism industry affects evaluations, such as satisfaction with the trip, safety protocols during the trip, and the likelihood of a tourist visiting again. During the pandemic, the level of satisfaction with the trip may reflect an overall evaluation of international travel and travelers. Second, a safety assessment of all types of international travel should be considered. There are several services that allow individuals to assess their security, such as QR codes, online security services, and other services, including mobile applications. Finally, future research should consider qualitative research methods to gather more information on the experiences of international travelers in a pandemic situation.

Author contribution statement

Jee-Hoon Han; Hye ji Sa: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Data availability statement

Data will be made available on request.

Declaration of interest's statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

[1] H.J. Kim, Hong Kong Cathay Pacific lost 869 billion won last year due to COVID-19, Asia Economy, 2022. Available online: https://view.asiae.co.kr/article/2022030914285970775 (accessed on 09 March 2022).

[2] IATA Economics, COVID-19 updated impact assessment, 2020. Available online: https://www.iata.org/en/iata-repository/publications/economic-reports/third-impact-assessment/.

[3] Centers for Disease Control and Prevention, International travel requirements and recommendations, 2022. Available online: https://www.cdc.gov/coronavirus/2019-ncov/travelers/international-travel/index.html (accessed on 09 March 2022).

[4] Y.J. Sung, More than 10,000 Korean tourists visited Saipan after the travel bubble, Yonhapnews, 2022. Available online: https://www.yna.co.kr/view/AKR20220224152600805?input=1195m (accessed on 24 February 2022).

[5] S.H. Lee, The influence of risk perception of COVID-19 and travel involvement on overseas travel intention in post-Corona era: expanding on the theory of planned behavior, J. Tourism Manag. Res. 25 (2) (2021) 437–457.

[6] R.P. Bagozzi, U.M. Dholakia, Antecedents and purchase consequences of customer participation in small group brand communities, Int. J. Res. Market. 23 (1) (2006) 45–61, https://doi.org/10.1016/j.ijresmar.2006.01.005.

[7] A. Prestwich, M. Perugini, R. Hurling, Goal desires moderate intention-behavior relations, Br. J. Soc. Psychol. 47 (1) (2008) 49–71, https://doi.org/10.1348/014466607X218221.

[8] S.A. Taylor, The addition of anticipated regret to attitudinally based, goal-directed models of information search behaviors under conditions of uncertainty and risk, Br. J. Soc. Psychol. 46 (4) (2007) 739–768, https://doi.org/10.1348/014466607X174194.

[9] B. Meng, H. Han, Effect of environmental perceptions on bicycle travelers' decision-making process: developing an extended model of goal-directed behavior, Asia Pac. J. Tourism Res. 21 (11) (2016) 1184–1197, https://doi.org/10.1080/10941665.2015.1129979.

[10] I. Ajzen, The theory of planned behavior, Organ. Behav. Hum. Decis. Process. 50 (2) (1991) 179–211, https://doi.org/10.1016/0749-5978(91)90020-T.

[11] L. Leone, M. Perugini, A.P. Ercolani, Studying, practicing, and mastering: a test of the model of goal-directed behavior (MGB) in the software learning domain, J. Appl. Soc. Psychol. 34 (9) (2004) 1945–1973, https://doi.org/10.1111/j.1559-1816.2004.tb02594.x.

[12] M. Perugini, R.P. Bagozzi, The role of desires and anticipated emotions in goal-directed behaviors: broadening and deepening the theory of planned behavior, Br. J. Soc. Psychol. 40 (1) (2001) 79–98, https://doi.org/10.1348/014466601164704.

[13] H.Y. Yang, K.H. Chen, A general equilibrium analysis of the economic impact of a tourism crisis: a case study of the SARS epidemic in Taiwan, J. Policy Res. Tour. Leis. Events 1 (1) (2009) 37–60, https://doi.org/10.1080/19407960902738313.

[14] C.K. Lee, H.J. Song, L.J. Bendle, M.J. Kim, H. Han, The impact of non-pharmaceutical interventions for 2009 H1N1 influenza on travel intentions: a model of goal-directed behavior, Tourism Manag. 33 (1) (2012) 89–99, https://doi.org/10.1016/j.tourman.2011.02.006.

[15] I. Mizrachi, G. Fuchs, Should we cancel? An examination of risk handling in travel social media before visiting Ebola-free destinations, J. Hospit. Tourism Manag. 28 (2016) 59–65, https://doi.org/10.1016/j.jhtm.2016.01.009.

[16] J.J. Kim, After COVID-19... I Want to Travel Abroad, Leisure Activities, Gatherings of Friends, Kukminilbo, 2020. Available online: http://news.kmib.co.kr/article/view.asp?arcid=0924159445&code=11131400&cp=nv (accessed on 9 March 2022).

[17] M. Zint, Comparing three attitude-behavior theories for predicting science teachers' intentions, J. Res. Sci. Teach. 39 (9) (2002) 819–844, https://doi.org/10.1002/tea.10047.

[18] I. Ajzen, M. Fishbein, A Bayesian analysis of attribution processes, Psychol. Bull. 82 (2) (1975) 261, https://doi.org/10.1037/h0076477.

[19] H.J. Song, C.K. Lee, S.J. Boo, Understanding visiting behavior of nature-based festival: focusing on environment friendly tourism behavior, Korea J. Tour Hosp. Res. 25 (4) (2011) 21–38.

[20] I. Ajzen, From intentions to actions: a theory of planned behavior, in: J. Kuhl, J. Beckmann (Eds.), Action Control, Springer, Berlin, Heidelberg, 1985, pp. 11–39.

[21] S. Cheng, T. Lam, C.H. Hsu, Negative word-of-mouth communication intention: an application of the theory of planned behavior, J. Hospit. Tourism Res. 30 (1) (2006) 95–116, https://doi.org/10.1177/1096348005284269.

[22] M. Conner, C.J. Armitage, Extending the theory of planned behavior: a review and avenues for further research, J. Appl. Soc. Psychol. 28 (15) (1998) 1429–1464, https://doi.org/10.1111/j.1559-1816.1998.tb01685.x.

[23] H.J. Song, C.K. Lee, Predicting behavioral intentions for visitors to integrated resort casino using model of goal-directed behavior, J. Tour Leisure Res. 22 (5) (2010) 341–360.

[24] D. Gursoy, K.W. McCleary, Travelers' prior knowledge and its impact on their information search behavior, J. Hospit. Tourism Res. 28 (1) (2004) 66–94, https://doi.org/10.1177/1096348003261218.

[25] S.M. Yoon, S.Y. Oh, S.J. Yoon, A study for the effect relationship about overseas trip intention of local by using theory of planned behavior (TPB): focusing on the additional role of prior knowledge and perceived risk, Korean J. Hosp. Tour. 19 (6) (2010) 289–307.

[26] H. Han, J. Hwang, Investigation of the volitional, non-volitional, emotional, motivational, and automatic processes in determining golfers' intention: impact of screen golf, Int. J. Contemp. Hospit. Manag. 26 (7) (2014) 1118–1135, https://doi.org/10.1108/IJCHM-04-2013-0163.

[27] J.S. Jung, H.S. Han, Extending the model of goal-directed behavior to understand tourists' decision-making process for purchasing luxury goods, J. Tour. Sci. 39 (6) (2015) 163–183.

[28] H.J. Song, C.K. Lee, S.K. Kang, S.J. Boo, The effect of environmentally friendly perceptions on festival visitors' decision-making process using an extended model of goal-directed behavior, Tourism Manag. 33 (6) (2012) 1417–1428, https://doi.org/10.1016/j.tourman.2012.01.004.

[29] H.J. Song, C.K. Lee, W.C. Norman, H. Han, The role of responsible gambling strategy in forming behavioral intention: an application of a model of goal-directed behavior, J. Trav. Res. 51 (4) (2012) 512–523.

[30] D.S. Soper, A-priori sample size calculator for structural equation models [Software], 2021. Available online: https://www.danielsoper.com/statcalc.

[31] I. Ajzen, T.J. Madden, Prediction of goal-directed behavior: attitudes, intentions, and perceived behavioral control, J. Exp. Soc. Psychol. 22 (5) (1986) 453–474, https://doi.org/10.1016/0022-1031(86)90045-4.

[32] R.P. Bagozzi, R. Pieters, Goal-directed emotions, Cognit. Emot. 12 (1) (1998) 1–26, https://doi.org/10.1080/026999398379754.

[33] G. Carrus, P. Passafaro, M. Bonnes, Emotions, habits, and rational choices in ecological behaviors: the case of recycling and use of public transportation, J. Environ. Psychol. 28 (1) (2008) 51–62, https://doi.org/10.1016/j.jenvp.2007.09.003.

[34] T. Lam, C.H. Hsu, Theory of planned behavior: potential travelers from China, J. Hospit. Tourism Res. 28 (4) (2004) 463–482, https://doi.org/10.1177/1096348004267515.

[35] A.R. Rao, W.A. Sieben, The effect of prior knowledge on price acceptability and the type of information examined, J. Consum. Res. 19 (2) (1992) 256–270, https://doi.org/10.1086/209300.

[36] L.T. Hu, P.M. Bentler, Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives, Struct. Equ. Model. 6 (1) (1999) 1–55, https://doi.org/10.1080/10705519909540118.

[37] J.P. Yu, Structural Equation Model Concept and Understanding, Hannarae, Seoul, 2012.

[38] A.H. Van de Ven, D.L. Ferry, Measuring and Assessing Organizations, Wiley, Hoboken, 1980.

[39] R.P. Bagozzi, Y. Yi, On the evaluation of structural equation models, J. Acad. Market. Sci. 16 (1) (1988) 74–94, https://doi.org/10.1007/BF02723327.

[40] W. Chiu, T. Kim, D. Won, Predicting consumers' intention to purchase sporting goods online: an application of the model of goal-directed behavior, Asia Pac. J. Market. Logist. 30 (2) (2018) 333–351, https://doi.org/10.1108/APJML-02-2017-0028.

[41] M.J. Kim, M.J. Lee, C.K. Lee, H.J. Song, Does gender affect Korean tourists' overseas travel? Applying the model of goal-directed behavior, Asia Pac. J. Tourism Res. 17 (5) (2012) 509–533, https://doi.org/10.1080/10941665.2011.627355.

[42] W. Xu, H.J. Youn, C.K. Lee, Role of non-pharmaceutical interventions for COVID-19 in cruise tourists' decision-making process: an extended model of goal-directed behavior, Sustainability 13 (10) (2021) 5552, https://doi.org/10.3390/su13105552.

[43] H. Han, M.J. Lee, J. Hwang, Cruise travelers' environmentally responsible decision-making: an integrative framework of goal-directed behavior and norm activation process, Int. J. Hospit. Manag. 53 (2016) 94–105, https://doi.org/10.1016/j.ijhm.2015.12.005.

[44] M.J. Kim, M.W. Preis, Why seniors use mobile devices: applying an extended model of goal-directed behavior, J. Trav. Tourism Market. 33 (3) (2016) 404–423, https://doi.org/10.1080/10548408.2015.1064058.

[45] J.W. Keesling, Maximum Likelihood Approaches to Causal Analysis, Ph.D. diss, University of Chicago, 1972.

[46] D.E. Wiley, The identification problem for structural equation models with unmeasured variables, in: A.S. Goldberger, O.D. Duncan (Eds.), Structural Equation Models in the Social Sciences, Seminar, New York, 1973.

[47] M. Thelwall, P. Wilson, Does research with statistics have more impact? The citation rank advantage of structural equation modeling, J. Assoc. Inform. Sci. Technol. 67 (5) (2016) 1233–1244.

[48] J. Yu, The criticisms and considerations of structural equation modeling, J. Prod. Res. 34 (4) (2016) 83–93.

[49] Y.J. Lee, J.H. Yoon, An exploratory study on factors affecting the behavioral intentions of potential users of the sharing economy: an application of the extended model of goal-directed behavior, Int. J. Tour. Sci. 41 (5) (2017) 109–127, https://doi.org/10.17086/JTS.2017.41.5.109.127.

[50] A. Hamada, S. Fukushima, Present situation and challenges of vaccinations for overseas travelers from Japan, J. Infect. Chemother. 21 (6) (2015) 405–409, https://doi.org/10.1016/j.jiac.2015.03.006.

[51] Y. Ekinci, D. Gursoy, A.S. Can, N.L. Williams, Does travel desire influence COVID-19 vaccination intentions? J. Hospit. Market. Manag. 31 (4) (2022) 413–430, https://doi.org/10.1080/19368623.2022.2020701.

[52] H. Shin, J. Kang, A. Sharma, J.L. Nicolau, The impact of COVID-19 vaccine passport on air travelers' booking decision and companies' financial value, J. Hospit. Tourism Res. (2021), https://doi.org/10.1177/10963480211058475.

[53] U. Zaman, M. Aktan, M. Anjam, J. Agrusa, M.G. Khwaja, P. Farías, Can post-vaccine 'vaxication' rejuvenate global tourism? Nexus between COVID-19 branded destination safety, travel shaming, incentives and the rise of vaxication travel, Sustainability 13 (24) (2021), 14043, https://doi.org/10.3390/su132414043.

[54] O. Pesämaa, O. Zwikael, J. HairJr, M. Huemann, Publishing quantitative papers with rigor and transparency, Int. J. Proj. Manag. 39 (3) (2021) 217–222.

[55] C. Fornell, D.F. Larcker, Evaluating structural equation models with unobservable variables and measurement error, J. Market. Res. 18 (1) (1981) 39–50.

[56] G. Lee, W. Xia, Toward agile: an integrated analysis of quantitative and qualitative field data on software development agility, MIS Q. 34 (1) (2010) 87–114.