

ORIGINAL RESEARCH ARTICLE

After the pandemic subsides: The impact of motivation for vaccination and attitude toward COVID-19 vaccination certificate toward tourists' travel intention

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ABSTRACT

The COVID-19 pandemic has limited human mobility, including in matters of vacation. Governments in many countries require their citizens to vaccinate to reduce patients and deaths from COVID-19. On the other hand, the government also provides concessions to residents who want to travel if they have received vaccinations. This study examines the factors that influence the intention of tourists to travel during the pandemic. The predictor factors used in this study were motivation for COVID-19 vaccination, perception of COVID-19, travel risk perception, and attitude toward COVID-19 vaccination certificate. We conducted this study in a city on the island of Java, Indonesia. This study's data collection used an online questionnaire, and participants were selected using a convenient sampling method. In total, there were 212 participants involved. The data were processed using exploratory factor analysis, confirmatory factor analysis, and structural equation modelling. As a result, motivation for COVID-19 vaccination and travel risk perception significantly affected the attitude toward COVID-19 vaccination certificates. Besides, travel risk perception greatly influenced travel intention after the pandemic subsides. This study deepens the field of tourism marketing and health marketing.

Keywords: COVID-19 vaccination certificate; travel risk perception; motivation to vaccination

1. Introduction

The convergence of tourism and health marketing faces significant challenges after the global COVID-19 pandemic. With four major pandemics occurring in the last 65 years, including the ongoing COVID-19 crisis, there is a pressing need for a deeper exploration of the marketing implications of pandemics ^[1]. This macro-level challenge has far-reaching effects on various industries, such as healthcare, retail, education, hospitality, and tourism.

Health tourism, a rapidly expanding global sector, has undergone a transformative shift due to the

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pandemic. The Western Balkans countries specifically have sought revival through regional cooperation and re-evaluating business practices ^[2]. Beyond health tourism, the broader tourism industry has adapted marketing strategies in response to the pandemic. Ketter and Avraham ^[3] identified six crucial marketing strategies, pointing out digital approaches and anticipating a potential shift towards digitalising with technological advancements like virtual reality and artificial intelligence.

Furthermore, Volgger et al. ^[4], who conducted an experiment assessing factors influencing domestic tourists' intentions during and after COVID-19, explored recovery marketing strategies. Factors such as the presence of international visitors and a surge in COVID-19 cases intricately influenced domestic tourists' booking intentions.

The focal point of this study is the COVID-19 vaccination certificate, perceived as a vaccination passport or digital health pass. Sharun et al. ^[5] highlight its significance as a document providing proof of vaccination, certifying the holder's protection from illness, and enabling travel privileges without restrictions. Most countries dependent on travel and tourism exhibit a positive inclination towards implementing COVID-19 vaccination passports, with potential economic and health benefits for gradual economic recovery ^[5-8]. In addition, the scoping review by Zhu et al. ^[8] and Cascini et al. ^[6] in their studies shed light on the associated challenges, ethical considerations, and global efforts for mutual recognition of COVID-19 status certificates.

This study focuses on essential predictors in examining influential factors on travel intention post-pandemic. Motivation for COVID-19 vaccination emerges as a crucial predictor given its extensively researched impact on individuals' willingness to resume travel by mitigating the spread of the virus. The second predictor, attitude toward COVID-19 vaccination certificates, still needs to be explored but holds significance in understanding the intersection of public health measures and travel intentions. Perception of COVID-19, a well-researched predictor, retains importance due to its multifaceted impact on travel intentions, encompassing health risks and economic implications. Lastly, despite extensive study, travel risk perception remains a critical predictor requiring continued scrutiny due to the evolving nature of the pandemic's influence on individuals' concerns and decision-making regarding travel post-pandemic.

2. Literature review

2.1. Motivation for COVID-19 vaccination

The diverse studies shed light on the multifaceted motivations for COVID-19 vaccination across different regions, populations, and occupational groups. We can categorise the identified studies into several themes based on their findings. The first theme revolves around the influence of perceived severity and personal experiences with COVID-19 on individuals' motivation to get vaccinated. Studies by Wang et al. ^[9] and Whitehead et al. ^[10] highlight the positive association between perceived severity and the inclination to undergo COVID-19 vaccination. Whitehead et al.'s study, particularly in African countries, emphasises the impact of knowing someone who has died from COVID-19 on vaccination decisions, demonstrating the personal nature of these motivations.

A second theme is the role of information sources and influences in shaping individuals' attitudes towards vaccination. Jang et al. ^[11] in the United States identify various influencers, such as family members, workplace leaders, and healthcare workers, significantly correlating with people's willingness or unwillingness to receive the COVID-19 vaccine. This theme underscores the importance of targeted communication strategies tailored to different influencers and demographic variables. The third theme focuses on motivations' multifaceted nature, including intrinsic and extrinsic factors. Moore et al.'s ^[12] study on hesitant adopters in the United States reveals three loci for motivation: extrinsic motivators, intrinsic motivators, and structural motivators.

Understanding these diverse motivational factors is crucial for designing comprehensive and effective public health interventions. As explored by Sacco et al. ^[13], a fourth theme centres on readiness for vaccination and the decisional balance. This study, conducted in the United States, utilises the transtheoretical model to delve into factors such as self-efficacy, response efficacy, myths, and barriers, offering a nuanced understanding of the cognitive constructs influencing vaccine acceptance. Occupational motivations constitute a fifth theme, highlighted by studies such as Štěpánek et al. ^[14], focusing on different professional groups. The findings reveal variations in motives among healthcare workers, school employees, social service workers, security force members, and critical infrastructure workers, emphasising the need for tailored interventions based on occupation.

Lastly, the studies by Chen et al. ^[15] and Lin et al. ^[16] in Taiwan contribute to a theme focused on motivation classes and the association with protection motivation theory (PMT) constructs. Chen et al. identify three classes of motivations, each associated with different levels of threat and coping appraisals, highlighting the importance of considering various psychological factors in intervention programs. Lin et al.'s study compares motivations between frontline health workers and the public, emphasising the role of perceived vulnerability, severity, response efficacy, and response cost in shaping motivation.

2.2. Motivation for COVID-19 vaccination and Attitude toward COVID1-9 vaccination certificate

More studies must examine the impact of motivation for COVID-19 vaccination on attitudes toward COVID-19 vaccination certificates. However, certain existing studies can serve as references to illuminate related concepts. For example, Happ et al. ^[17] delved into the motivations of long-distance hikers (LDH) and their attitudes toward the activity and visited destinations. Their study revealed that sport-based expectations influenced LD hikers' motivation, impacting their attitudes. The study emphasised the interplay between motivations, expectations, and attitudes, highlighting the role of emotions as significant moderators in this relationship.

Dodd et al. ^[18] addressed the willingness of individuals to accept COVID-19 vaccines, showcasing variations across countries. The study in Australia indicated a high willingness (86%) to vaccinate against COVID-19. While not directly addressing motivation for vaccination, it provides insights into the general disposition towards COVID-19 vaccination.

Li et al. ^[19] explored the influence of positive information on COVID-19 on travel motivations and intentions among Chinese university students. Although focused on travel, the study highlighted the impact of perceptions on motivation, attitudes, and intentions, providing a framework for understanding the interplay of these factors. In addition, Hsu et al. ^[20] presented an Expectation-Motivation-Attitude (EMA) model in Chinese outbound travellers. The model highlighted the direct effects of expectation on motivation and attitude, emphasising the mediating role of motivation in the relationship between expectation and attitude.

Huang and Hsu ^[21] investigated the effects of travel motivation, past experience, perceived constraints, and attitude on the intention of mainland Chinese visitors to revisit Hong Kong. The study found that shopping motivation positively influenced attitude. In addition, Pereira et al. ^[22] explored the relationship between travel motivation and tourists' attitudes toward a destination. The study highlighted the mediating role of destination image between travel motivation and attitude. It suggested that enhancing travel motivation builds a favourable attitude toward the destination.

After being grounded in the studies' research findings, scrutinising the ensuing hypothesis is as follows.

- H₁: Motivation for COVID-19 vaccination affects attitude toward COVID-19 vaccination certificate.

2.3. Perception of COVID-19

Perception of COVID-19, as explored in various studies, encompasses assessing and understanding the risks, attitudes, and behaviours associated with the global pandemic. Dryhurst et al. ^[23] highlight the significance of public risk perception in influencing people's willingness to adopt preventative public health behaviours. Their study, conducted in ten countries across Europe, America, and Asia, identifies factors such as personal experience with the virus, individualistic and prosocial values, trust in government and medical professionals, and personal knowledge of government strategy as predictors of risk perception.

Geniş et al. ^[24] focus on developing scales to evaluate perceptions and attitudes related to the COVID-19 outbreak. The study introduces scales like P-COVID-19, PCo-COVID-19, Pca COVID-19, AA-COVID-19, and ATV-COVID-19, each assessing different dimensions such as dangerousness, contagiousness, macro control, personal control, controllability, conspiracy, environment, faith, cognitive and behavioural avoidance, and positive and negative attitudes. Ilesanmi and Afolabi ^[25] investigate the perception and practices regarding COVID-19 among residents in selected urban communities in Nigeria. Their research findings reveal various practices, perceptions, and reported effects of the pandemic on the community, shedding light on the correlation between perception and preventive health behaviours.

De Stefani et al. ^[26] evaluate Italian dentists' knowledge and perception of COVID-19, addressing their readiness to resume activities and their judgment of institutional interventions. The study underscores the challenges dentists face regarding training and preparedness after the lockdown. Amin et al. ^[27] explore the knowledge and perception of frontline physicians in Pakistan about the pandemic. The study highlights the prevalence of anxiety/depression among healthcare professionals and identifies factors associated with mental health disorders. Nazar et al. ^[28] assess the Polish population's knowledge, behaviours, attitudes, and fears during the COVID-19 pandemic. The study reveals changes in behaviours and concerns between the onset of the pandemic and the strictest lockdown measures, emphasising the shift towards long-term epidemic management issues. Bhagavathula et al. ^[29] investigate the knowledge and perceptions of healthcare workers (HCWs) about COVID-19. The study identifies gaps in knowledge among HCWs regarding transmission and symptom onset, emphasising the role of age and profession in influencing knowledge and perceptions.

2.4. Perception of COVID-19 and Attitude toward COVID-19 vaccination certificate

To date, there is a noticeable gap in the existing literature regarding the impact of the perception of COVID-19 on attitudes towards COVID-19 vaccination certificates. Although numerous studies have explored different facets of COVID-19, ranging from vaccine hesitancy to knowledge, attitudes, and perceptions toward COVID-19 vaccines, a dedicated investigation into the linkage between the perception of COVID-19 and attitudes specifically towards vaccination certificates remains conspicuously absent. Rzymiski et al. ^[30] highlighted that vaccine hesitancy poses a significant threat to the success of COVID-19 vaccination programs. Their study among adult poles revealed varying levels of trust in different types of vaccines, with mRNA vaccines receiving high acceptance. Interestingly, the study identified factors such as age influencing the trust level in specific vaccine types, emphasising the importance of understanding demographic nuances in vaccine perceptions. In addition, Islam et al. ^[31] delved into community knowledge, attitudes, and perceptions towards COVID-19 vaccinations in Bangladesh. The study indicated that many participants believed in the safety of the COVID-19 vaccine available in Bangladesh, but many remained hesitant. The research findings underscored the need to explore factors influencing attitudes, which could be crucial in devising targeted interventions.

Moreover, Adane et al. ^[32] conducted a study among healthcare workers in Ethiopia, revealing a

significant association between negative attitudes and poor perceptions about COVID-19 vaccines and the intention to refuse vaccination. The study emphasised the importance of addressing attitudes and perceptions to enhance vaccine acceptance. Kishore et al. [33] also explored the perception and attitude toward COVID-19 vaccination among the adult population in India, with a substantial proportion expressing willingness to get vaccinated. The study highlighted the need for targeted strategies to address specific concerns and perceptions that might influence vaccine acceptance.

Furthermore, Sonmezer et al. [34] assessed community knowledge, attitudes, and perceptions regarding COVID-19 vaccines in Turkey. The research findings revealed that positive perceptions were prevalent among participants, with various factors influencing perceptions, such as age, previous history of influenza vaccines, education level, and personal history of COVID-19.

After considering the studies conducted above, a hypothesis subjected to testing is articulated as follows.

- H₂: Perception of COVID-19 vaccination affects attitude toward COVID-19 vaccination certificate.

2.5. Travel risk perception

Travel risk perception encompasses various dimensions that tourists evaluate before and during their visits to a destination. Defined as a subjective assessment by tourists, this perception shaped by their experiences and knowledge encompasses security, safety, comfort, and other potential misfortunes [35,36]. The complexity of travel risk perception is the central focus in the studies of Cho et al. [37], Khan et al. [38], and Hashim et al. [39], who categorise it into physical, financial, performance, socio-psychological, and time-related dimensions. Furthermore, Wang et al. [40] note the influence of demographic profiles, including gender, age, education, and income, on travel risk perception. In the context of the COVID-19 pandemic, the perception of risk extends to the fear of infection and the constraints on individual freedoms [35].

The study by Godovykh et al. [41] delves into the concept of perceived risks in health, identifying cognitive, affective, individual, and contextual components as main antecedents. Their proposed conceptual model provides an integrated overview of the relationships between these factors, tourists' risk perceptions, and travel intentions. O'Connor and Assaker [42] extend the understanding by examining how the COVID-19 pandemic influences pro-environmental travel behaviour (PETB). Their model incorporates the norm-activation model, economic sacrifices theory, and perceived risks associated with COVID-19, revealing the influence of COVID-19 risk perception on PETB through environmental concerns, responsibility, moral obligation, and willingness to make economic sacrifices.

Further, Sánchez-Cañizares et al. [43] apply the Theory of Planned Behaviour to analyse the impact of perceived risk on the intention to travel during the COVID-19 pandemic. They explore the modulating effects of risk on intention and include the willingness to pay more for additional safety measures at the destination in their model. The study identifies respondents belonging to at-risk groups for COVID-19 as a source of heterogeneity in the model, providing insights for developing safety measures in tourism services. Agyeiwaah et al. [44] investigate the relationship between perceived impacts of COVID-19, risk perceptions, emotions, and travel intentions within higher education institutions in Macau. The research findings indicate that a high perceived risk of travelling during COVID-19 increases negative emotions and reduces intentions to travel. They highlight the importance of understanding specific market segments' perceptions and risk concerns for practical hospitality and tourism recovery strategies. Additionally, Bae and Chang [45] focus on 'untact' tourism as a health-protective behaviour stemming from individuals' perceptions of COVID-19 risk. Using the Health Belief Model and the extended Theory of Planned Behaviour, they examine the effect of COVID-19 risk perception on behavioural intention towards 'intact' tourism. The study provides timely implications for tourism practitioners preparing for the post-corona era.

Zhu and Deng ^[46] consider rural tourism during COVID-19, revealing that potential participants pay attention to scenic spots' performance realisation and time cost. Risk aversion attitudes and knowledge of pneumonia risk play distinct roles in influencing travel and recommendation intentions for rural tourism. Neuburger and Egger ^[47] explore the relationship between the perception of COVID-19, travel risk perception, and travel behaviour in the DACH region (Germany, Austria, Switzerland). The study, conducted at two points in time during the early stages of the pandemic, identifies distinctive clusters of characteristics among respondents and observes a significant increase in risk perception and travel behaviour over a short period. Zhan et al. ^[48] measured risk perceptions among Chinese residents about travelling to Wuhan after the COVID-19 outbreak. They develop a risk perception scale with health, financial, social, and performance risks. The study identifies significant differences in risk perception based on occupation, place of residence, gender, age, education, income, respondent involvement in disease prevention, losses suffered during the pandemic, and previous experiences of visiting Wuhan.

Perić et al. ^[49] examine the impact of Serbian tourists' risk perception on their intentions to travel during the COVID-19 pandemic. They identify five categories of perceived risk affecting travel intentions: health risk, psychological risk, financial risk, destination risk, and travel risk. The research findings indicate that risk perception negatively affects travel intentions and varies concerning travel destinations. Rahman et al. ^[50] investigate the impacts of the COVID-19 outbreak on tourists' travel behaviour, revealing that COVID-19 has substantially affected travel decisions and perceptions of hygiene and safety. The study contributes valuable insights to tourism crisis studies.

Karl et al. ^[51] developed and tested an integrated travel-decision risk typology, examining the interplay of risk types, tourist attributes, and destination characteristics. The study reveals that past travel experience shapes risk perceptions and influences future destination choices. Natural hazards are found not to be the key barrier in the early decision-making stage of destination choice. Xie et al. ^[52] explore the moderation effect of public opinion climate on the relationships between tourist risk perception, destination image, and tourist satisfaction. They distinguish between pre-travel and post-travel risk perceptions, proposing a path model linking pre-travel risk's effect on tourist satisfaction with post-travel risk perception and destination image as serial multiple mediators. Abraham et al. ^[53] report on an international study focused on the impact of the COVID-19 pandemic on travel attitudes and behavioural intentions. They find that the attribution theory (locus of control) may account for international travel, with individuals attributing the spread of COVID-19 to their own countries more likely to travel abroad. They observed significant differences between generational cohorts concerning perceived travel risk and domestic and international travel.

2.6. Travel risk perception and attitude toward COVID1-9 vaccination certificate

More research is needed to explore the impact of travel risk perception on attitudes toward COVID-19 vaccination certificates. Nevertheless, relevant studies can serve as a foundation for further investigation. Notably, Rather ^[54] found that the perceived risk of travelling during COVID-19 significantly influences attitude. Similarly, Lebrun et al. ^[55] conducted an exploratory study on the effects of the COVID-19 pandemic on the travel intentions of French individuals. Their research findings, obtained through qualitative and quantitative methods, revealed that perceived risks and attitudes toward COVID-19 influenced tourists to prefer destinations with more excellent proximity, emphasising the need for tourism managers to implement proximity marketing strategies during global health crises.

Quan et al. ^[56] investigated travellers' perceptions and intentions regarding vaccine passports in the context of vaccinations. They identified four key factors—perceived usefulness, destination trust, risk perception, and perception of incentives—and highlighted the potential contribution of vaccine passports to

the revival of the travel industry. Furthermore, Dang ^[57] explored the impact of media credibility on the sustainable travel intentions of Chinese residents post-pandemic. Their study revealed a negative effect of media credibility on the risk perception of COVID-19, indicating that trusted media sources can reduce perceived risks when individuals contemplate travel. The research findings also emphasised the influential role of subjective norms in shaping sustainable travel intentions within a collective society.

Although direct research on the impact of travel risk perception on attitudes toward COVID-19 vaccination certificates is lacking, these studies offer valuable insights which can inform future investigations in this crucial area.

2.7. Travel risk perception and travel intention

Several studies indicate a significant influence of travel risk perception on travel or visit intention. In their investigation, Khan et al. ^[38] explored the moderating effect of travel motivation on the relationship between perceived risks, travel constraints, and visit intention among young women travellers. The study revealed that travel motivation moderates the negative relationships between physical risk, structural constraints, and visit intention.

Jun ^[58] conducted a study focusing on perceived risks, brand credibility, and experience's effects on the intention to stay at Airbnb places. The research highlighted the significant moderating role of experience in the context of Airbnb. Social and psychological risks negatively affected Airbnb users' intention to stay, while performance risks had a positive impact. These findings suggested that Airbnb users consider specific risks based on their prior experiences, emphasising the importance of experience as a moderator. Hamid and Bano ^[59] incorporating the theory of planned behaviour, aimed to examine travellers' behavioural intentions during the COVID-19 pandemic. The study found that attitude, perceived behavioural control, and perceived risk significantly predicted behavioural intention. At the same time, subjective norms did not contribute to the prediction significantly. These variables collectively explained about 35% of the variance in travellers' behavioural intentions during the pandemic.

This research proposes the following hypotheses for empirical investigation based on the preceding studies.

- H₃: Travel risk perception affects attitude toward COVID-19 vaccination certificate.
- H₄: Travel risk perception affects travel intention after the pandemic subsides.

2.8. Attitude toward COVID1-9 vaccination certificate

Attitude toward COVID-19 vaccination certification refers to individuals' perspectives, beliefs, and sentiments regarding the concept of having proof or certification of COVID-19 vaccination. The emerging areas of study seek to understand how people perceive the idea of possessing documentation confirming their vaccination status in the ongoing pandemic. Here, we compare and analyse relevant studies on this novel aspect.

Gürbüz and Aydın ^[60] investigated the mediating role of trust in social media news in the impact of COVID-19 vaccine literacy on individuals' attitudes toward vaccines. While their study focuses on general attitudes toward vaccines, it sheds light on the importance of factors such as vaccine literacy and trust in shaping public opinions. However, this study did not explicitly address attitudes toward vaccination certification. Mashuri et al. ^[61] delved into the paradox of vaccine resistance, exploring Indonesians' attitudes toward the COVID-19 vaccine. Although their focus was on vaccine attitudes, the study did not directly examine perceptions of vaccination certification. The research findings highlighted factors like conspiratorial beliefs and international collaboration impacting vaccine attitudes, providing insights into potential influences on attitudes toward certifications. Göbel and Mayer ^[62] investigated the effects of the second lockdown on

various parameters, including attitudes towards vaccination. The study, conducted during a critical period of the pandemic, may indirectly reflect changes in attitudes toward vaccination certification. However, it primarily focused on broader vaccine acceptance without specific emphasis on certifications.

2.9. Attitude toward COVID-19 vaccination certificate and travel intention after the pandemic subsides

The prevailing literature underscores a distinct scarcity of studies examining the impact of attitudes toward COVID-19 vaccination certificates on travel intentions. Nevertheless, several pertinent studies can serve as a basis for formulating hypotheses in this realm. Notably, Han et al. ^[63] explored the influence of individuals' attitudes towards travelling on their intention to visit safer destinations, providing insights into the interplay between attitudes and travel intentions. Similarly, Sánchez-Cañizares et al. ^[64] utilized attitude towards travel during the COVID-19 pandemic as a metric to gauge tourists' intentions to travel amid the ongoing global health crisis.

Furthermore, Dang ^[57] investigated the impact of media credibility on sustainable travel intention, revealing a negative effect on the risk perception of COVID-19. It suggests that trusted media sources can mitigate risk perception, affecting subjective norms, attitudes, and perceived behavioural control, ultimately influencing sustainable travel intention. Akhrani et al. ^[65] examined the travel intentions of Indonesian and Taiwanese tourists, shedding light on the intricate relationships between COVID-19 risk perception, fear, vaccine attitude, and travel intentions in different socio-political contexts. Yahaghi et al. ^[66] employed the Theory of Planned behaviour (TPB) to elucidate individuals' intentions to get COVID-19 vaccinated, incorporating fear and perceived infectability into the model. The study demonstrated that TPB constructs and perceived COVID-19 infectability significantly explained the intention to get vaccinated, showcasing the multifaceted factors shaping individuals' attitudes and intentions during the pandemic.

After building upon the studies outlined above, formulating a testable hypothesis is as follows.

- H₄: Attitude toward COVID-19 vaccination certificate positively affects travel intention after the pandemic subsides.

Figure 1 demonstrates a research model to test. This study relates motivation to vaccination, perception of COVID-19, and travel risk perception to the COVID-19 vaccination certificate. Furthermore, travel risk perception and attitude toward the COVID-19 vaccination certificate were linked to travel intention after the pandemic subsided.

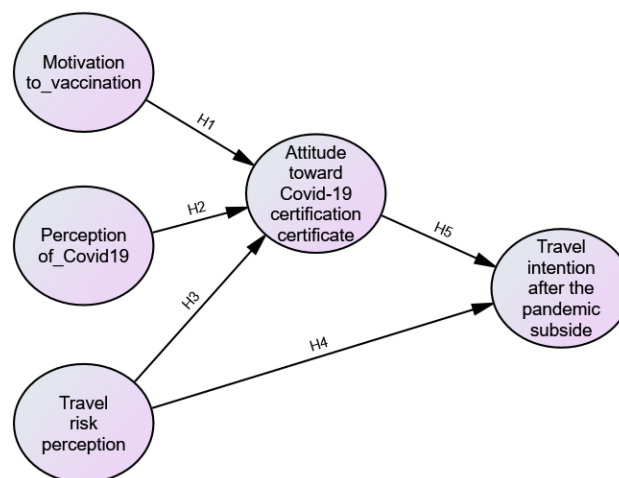


Figure 1. Theoretical framework.

3. Methods

3.1. Measures

This study employs five variables and indicators adapted from previous studies to measure each variable. It used indicators from Moon et al. [67] to examine the motivation for COVID-19 vaccination. Indicators from the studies of Neuburger and Egger [47] would measure perception of COVID-19 and travel risk perception. Furthermore, indicators from de Figueiredo [68] measured attitudes toward COVID-19 while measuring travel intention after the pandemic subsided using indicators from Das and Tiwari [69]. All indicators were measured using a six-point Likert-type scale, ranging from 1 for ‘strongly disagree’ to 6 for ‘strongly agree’.

3.2. Data analysis

The authors processed the data in four phases. The first phase was processing descriptive data about participant profiles. This phase calculates the profile by looking at the frequency using SPSS software. The second phase is to test the validity of the data using the exploratory factor analysis (EFA) method. The third phase is to test the reliability of the data. Both validity and reliability tests and both used SPSS software. A valid indicator has a loading value of 0.4 or greater, while a reliable construct has an alpha value of 0.7 or greater. The fourth phase was testing confirmatory factor analysis (CFA), which aimed to streamline the data. This article did not present the results of the CFA test. The fifth phase was to test the hypothesis using the structural equation model (SEM) method. CFA and SEM testing using AMOS software. In this study, the authors selected several criteria to show that the structural model fit, as shown in **Table 1**. This study declares a hypothesis can be accepted if it obtains a critical ratio score (C.R.) of 1.98 or greater.

Table 1. Criteria for a fitted structural model.

Criteria	Rule of thumb	Resources
Probability	$0.05 < p < 1.00$	[70]
CMIN/DF	$0 \leq CMIN/DF \leq 2$	[71]
CFI	$0.95 \leq CFI \leq 1.00$	[72]
RMSEA	$0 \leq RMSEA \leq 0.06$	[73]

4. Results

4.1. Participants

The participants in the study were those who had travelled from one city to another during the COVID-19 pandemic. The authors offered the participants to contribute to this study. Once they agreed, the authors distributed an online questionnaire link to them. Thus, the participants were selected using the convention sampling method.

Table 2 shows the profile of the participants. The total participants in this study were 212 participants, consisting of 113 women (53%) and 99 men (46.7%). One hundred twenty-nine participants were between 21 and 24 years old, and 37 were between 17 and 20. Furthermore, 26 participants (12.3%) were between 25 and 29 years old, and 20 (9.4%) were over 29. Regarding the education level they had completed, 123 participants (58%) stated they had a high school diploma, while 70 participants claimed they had a bachelor’s degree. Ten participants said they had less than a high school certificate, seven participants (3.3%) had a diploma, and two participants (0.9%) had a postgraduate degree. The next question posed to the participant was regarding employment status. There were 123 participants (58%) who indicated that they were unemployed, 59 participants (27.8) were employed, and 30 participants (14.2%) claimed to have their own business. The

following profile is marital status. There were 179 participants (84.4%) indicating that they were unmarried, 30 participants (14.2%) were married, two participants were widowed (0.9%), and one participant (0.5%) was separated/divorced.

Table 2. Profile of participants.

Profile		Frequency	Percent
Sex	Male	99	46.7
	Female	113	53.3
	Total	212	100.0
Age	17–20	37	17.5
	21–24	129	60.8
	25–29	26	12.3
	30–34	13	6.1
	35–39	4	1.9
	40–44	2	0.9
	45–49	1	0.5
Educational level has been completed	Less than high school	10	4.7
	High school	123	58.0
	Diploma	7	3.3
	Undergraduate	70	33.0
	Graduate	2	0.9
Occupational status	Unemployed	123	58.0
	Employed	59	27.8
	Self-employed	30	14.2
Marital status	Unmarried	179	84.4
	Married	30	14.2
	Separated/divorced	1	0.5
	Widowed	2	0.9

Table 3 presents the participants’ experiences related to COVID-19 infection and the pandemic. A total of 212 participants responded to the questionnaire. Regarding COVID-19 infection, 14.2% of participants reported being infected with the virus, while the majority (85.8%) indicated they had not contracted COVID-19. Regarding travel behaviour during the pandemic, 56.1% of respondents stated that they had travelled at least once, whereas 43.9% reported not having travelled during the COVID-19 pandemic. Furthermore, when asked about health insurance coverage for COVID-19 infection, only 9.9% of participants reported having health insurance that covers COVID-19, while the remaining 90.1% indicated that they did not have such coverage. These findings provide insights into the experiences and circumstances of the participants regarding COVID-19 infection, travel activities, and health insurance coverage during the ongoing pandemic.

Table 4 provides information regarding the readiness of participants to carry out the COVID-19 vaccination. In the first stage, 93 participants (43.9%) said they had never received the COVID-19 vaccine, and 49 participants (23.1%) stated that they had been vaccinated against COVID-19 once in the second stage. Furthermore, 31 participants (14.6%) indicated they had been vaccinated against COVID-19 twice in the third stage. In the last stage, 39 participants said they did not want to vaccinate against COVID-19.

Table 3. Participants' experience related to COVID-19 infection and the pandemic.

Questions	Answers	Frequency	Percent
Have you ever been infected with COVID-19?	Yes	30	14.2
	No	182	85.8
Have you ever travelled during the COVID-19 pandemic?	Yes	119	56.1
	No	93	43.9
Do you have health insurance that covers COVID-19 infection?	Yes	21	9.9
	No	191	90.1

Table 4. Vaccination stage of readiness.

Question	Vaccination stage of readiness	Frequency	Percent
Of the following statements, which one best fit you?	Never been vaccinated against COVID-19.	93	43.9
	Been vaccinated against COVID-19 once.	49	23.1
	Been vaccinated against COVID-19 twice.	31	14.6
	Do not want to vaccinate against COVID-19.	39	18.4
	Total	212	100.0

4.2. Validity and reliability tests

Table 5 displays the data validity and reliability test results for various constructs related to COVID-19 vaccination, perception of COVID-19, travel risk perception, attitude toward COVID-19 vaccination certificate, and travel intentions. The factor loadings, average variance extracted (AVE), and Cronbach's alpha coefficients indicate the reliability and validity of the measurement model. For the motivation for the COVID-19 vaccination construct, all indicators exhibit high factor loadings above 0.9, indicating strong convergent validity. Similarly, the perception of the COVID-19 construct demonstrates satisfactory reliability and validity with factor loadings exceeding 0.9. The travel risk perception construct exhibits acceptable reliability, with factor loadings ranging from 0.697 to 0.856 and an AVE of 0.867.

Table 5. Results of data validity and reliability tests.

Variable and indicators	Factor loadings	AVE	Cronbach's alpha
Motivation for COVID-19 vaccination	-	0.923	0.957
Mv5 It is imperative to get vaccinated against COVID-19 to protect family and others from the Coronavirus.	0.960	-	-
Mv4 I have thought carefully about the COVID-19 vaccination and believe it is the right thing to do.	0.953	-	-
Mv1 It is essential to be vaccinated to protect yourself from the Coronavirus.	0.945	-	-
Perception of COVID-19	-	0.901	0.766
Pc1 The current situation regarding the Coronavirus worries me.	0.901	-	-
Pc3 I think there is a lot of fear around the Coronavirus.	0.880	-	-
Travel risk perception	-	0.718	0.867
Tr3 Staying in a hotel is risky because many people from different cities and countries can carry the virus.	0.856	-	-
Tr2 Tourism will be significantly affected by the Coronavirus.	0.853	-	-
Tr4 I am afraid that tourists will carry the virus into my neighbourhood.	0.839	-	-
Tr1 Tourism is responsible for the spread of the Coronavirus.	0.697	-	-
Attitude toward COVID-19 vaccination certificate	-	0.760	0.894

As7	Requiring a vaccine certificate/passport to travel is the same as requiring me to be vaccinated.	0.878	-	-
As6	Overall, I think a vaccine certificate/passport is a good idea.	0.871	-	-
As5	The tourism industry should have the right not to employ unvaccinated staff.	0.870	-	-
As3	Individuals who refuse the vaccine should not travel.	0.833	-	-
Travel intentions		-	0.819	0.925
Ti2	I plan to travel once the COVID-19 pandemic subsides.	0.948	-	-
Ti3	I will try to travel once the COVID-19 pandemic subsides.	0.933	-	-
Ti1	I intend to travel once the COVID-19 pandemic subsides.	0.897	-	-
Ti4	I will invest time and money in travelling once the COVID-19 pandemic subsides.	0.837	-	-

Moreover, the attitude toward the COVID-19 vaccination certificate construct demonstrates adequate reliability and validity, with factor loadings ranging from 0.833 to 0.878 and an AVE of 0.894. Lastly, the travel intentions construct displays robust reliability and validity, with factor loadings ranging from 0.837 to 0.948 and an AVE of 0.925. Overall, these results indicate the soundness of the measurement model for assessing various factors related to COVID-19 vaccination, perceptions, and travel intentions.

4.3. Hypotheses testing

The structural model depicted in **Figure 2** encapsulates the hypotheses under examination. With a probability score of 0.085, a CMIN/DF score of 1.221, a CFI score of 0.992, and an RMSEA score of 0.032, the model-fitting statistics reveal valuable insights into the structural relationships posited in the study. These indices collectively contribute to assessing model adequacy and provide indications of its compatibility with the observed data. The probability score suggests a degree of uncertainty inherent in the model, albeit relatively low. Meanwhile, the CMIN/DF score, standing at 1.221, indicates a satisfactory level of model fit, as values close to or below 3 are generally deemed acceptable. Furthermore, the high CFI score of 0.992 signifies a robust fit between the proposed model and the observed data, reinforcing its validity and reliability. Additionally, the RMSEA score, registering at 0.032, falls below the conventional threshold of 0.05, indicative of a good fit between the model and the observed covariance structure.

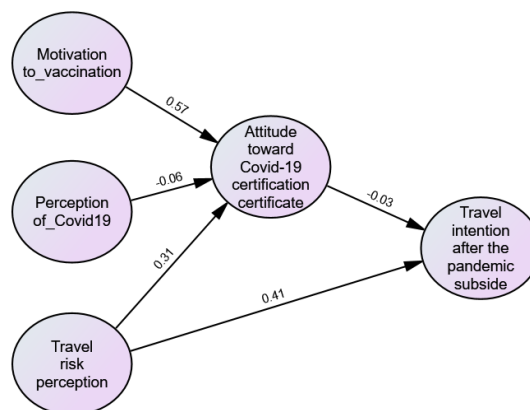


Figure 2. The structural model of the theoretical framework testing.

Table 6 demonstrates the results of the hypotheses testing. Three hypotheses (H_1 , H_3 , and H_4) had a C.R. score greater than 1.98. It indicates that these hypotheses were significant. However, two hypotheses (H_2 and H_5) had a C.R. score of less than 1.98. These show that they were insignificant.

Table 6. Results of the hypotheses testing.

Hypotheses	Paths	C.R.	P	Results
H ₁	Motivation to vaccination → Attitude toward COVID-19 vaccination certificate	5.966	***	Significant
H ₂	Perception of COVID-19 → Attitude toward COVID19 vaccination certificate	-0.445	0.657	Insignificant
H ₃	Travel risk perception → Attitude toward COVID-19 vaccination certificate	3.267	0.001	Significant
H ₄	Travel risk perception → Travel intention after the pandemic subsides	4.308	***	Significant
H ₅	Attitude toward COVID-19 vaccination certificate → Travel intention after the pandemic subsides	-0.383	0.702	Insignificant

5. Discussion

The first hypothesis is accepted, indicating that motivation for vaccination significantly influences the attitude toward COVID-19 vaccination certificates, with a CR score of 5.966. This aligns with research findings in studies conducted by Happ et al. ^[17], Dodd et al. ^[18], Li et al. ^[19], and Hsu et al. ^[20]. The substantial impact of motivation to vaccination on attitudes toward COVID-19 vaccination certificates can attach several interconnected factors. Firstly, it is likely that highly motivated individuals perceive vaccination certificates as a positive and necessary step in promoting public health. In this context, motivation may stem from various sources, including a desire to protect oneself and others from the virus, a commitment to community well-being, or a belief in the efficacy of vaccination as a preventive measure.

Furthermore, individuals motivated to get vaccinated may view vaccination certificates as a tangible representation of their commitment to responsible and health-conscious behaviour. The possession of a vaccination certificate can serve as a symbol of social responsibility and contribute to a sense of collective effort in controlling the spread of COVID-19. This positive association can enhance the overall attitude toward vaccination certificates.

A sense of personal efficacy and control may also mediate the influence of motivation to vaccination on attitudes. Individuals motivated to get vaccinated may perceive vaccination certificates as a tool that empowers them to make informed choices about their interactions in post-pandemic scenarios. This sense of control can positively shape their attitudes towards vaccination certificates.

The second hypothesis faces rejection as the data indicates that the perception of COVID-19 does not significantly influence the attitude toward COVID-19 vaccination certificates, as reflected by a CR score of -0.445. This outcome contradicts the research findings in studies conducted by Rzymiski et al. ^[30], Islam et al. ^[31], and Adane et al. ^[32]. Several factors could contribute to the non-significant impact of the perception of Covid-19 on attitudes toward vaccination certificates. Firstly, the intricate relationship between individual perceptions of the virus and their willingness to embrace vaccination certificates may be affected by varying degrees of awareness, understanding, and trust in public health information. Discrepancies in information sources, misinformation, or differing levels of health literacy among diverse populations might lead to incongruent findings across studies.

Moreover, the specific aspects of COVID-19 perception considered in the studies may differ. Some investigations focus on the severity of the virus, while others examine perceptions related to its transmission, long-term effects, or the effectiveness of preventive measures. The nuanced nature of these perceptions could result in diverse outcomes, further complicating the establishment of a consistent relationship with attitudes toward vaccination certificates.

Cultural and contextual variations may also be pivotal in shaping the connection between COVID-19 perception and attitudes toward vaccination certificates. Cultural attitudes towards public health interventions,

government communication strategies, and historical experiences with infectious diseases can vary significantly, contributing to divergent research outcomes.

The temporal dimension is crucial in understanding these dynamics. As the pandemic progresses and new information emerges, individuals' perceptions may evolve, influencing their attitudes toward vaccination certificates. Studies capturing different pandemic phases may yield contrasting results based on the prevailing circumstances and public sentiments during data collection.

The acceptance of the third hypothesis, indicating that travel risk perception does not significantly influence attitudes toward Covid-19 vaccination certificates, aligns with the research findings from studies by Rather^[54], Lebrun et al.^[55], Quan et al.^[56], and Dang^[57]. Several factors may contribute to the non-significant relationship between travel risk perception and attitude toward COVID-19 vaccination certificates. Firstly, factors beyond perceived risk during travel may shape individuals' attitudes towards vaccination. Personal beliefs, cultural influences, and information sources can play pivotal roles in influencing attitudes, potentially overshadowing the impact of travel-related risk perception.

Moreover, the dynamic nature of the pandemic and the continuous influx of information might contribute to the non-significant association. Individuals may form their attitudes towards vaccination certificates based on a broader understanding of the pandemic rather than specific perceptions of risk during travel. In addition, the effectiveness and availability of vaccines and government policies could be significant factors influencing attitudes towards vaccination certificates.

Furthermore, individual differences in risk perception thresholds and the diverse nature of travel experiences might contribute to the non-significant relationship. People may perceive different levels of risk associated with travel, and this subjective assessment may not necessarily align with their attitudes towards vaccination certificates.

Contrary to the expectations set by the fifth hypothesis, the data does not substantiate the significant influence of the attitude toward COVID-19 vaccination certificates on travel intention after the pandemic subsides, as denoted by a CR score of -0.383 . This result stands in contrast to the outcomes reported in studies conducted by Han et al.^[63], Yahaghi et al.^[66], Quan et al.^[56], and Kesgin et al.^[74].

Several reasons may explain why the attitude toward COVID-19 vaccination certificates does not significantly impact travel intention post-pandemic. Firstly, individuals' travel decisions are likely influenced by many factors, with vaccination certificates being just one of many considerations. Other elements, such as perceived health risks, travel restrictions, and economic concerns, may overshadow the perceived importance of vaccination certificates in shaping travel intentions. In addition, the effectiveness and widespread acceptance of COVID-19 vaccination certificates may vary, contributing to their influence on travel intention insignificance. Disparities in vaccination rates, new variants, and evolving public attitudes towards vaccination certificates could diminish their perceived value in facilitating safer travel.

Furthermore, the inconclusive impact of attitudes toward COVID-19 vaccination certificates on travel intention may stem from varying levels of trust and confidence in the vaccination process. If individuals doubt the reliability or authenticity of vaccination certificates, their influence on travel decisions may diminish.

6. Conclusion

In conclusion, this research explored factors influencing travel intention after the COVID-19 pandemic, revealing several noteworthy outcomes. Firstly, the first hypothesis was accepted, signifying that motivation for vaccination significantly influences individuals' attitudes toward COVID-19 vaccination certificates. It underscores the importance of understanding individuals' motivations for getting vaccinated in shaping their

perceptions of vaccination certificates. However, this study rejected the second hypothesis, suggesting that the perception of COVID-19 does not significantly impact attitudes toward COVID-19 vaccination certificates. It implies that individuals' general perceptions of the ongoing pandemic may not strongly influence their specific attitudes towards vaccination certificates for travel purposes.

The third hypothesis was accepted, indicating that travel risk perception significantly influences attitudes toward COVID-19 vaccination certificates. It emphasises the interconnectedness of individuals' perceptions of travel risks with their attitudes towards vaccination certificates, highlighting the need for a comprehensive approach to address concerns. Furthermore, the fourth hypothesis was accepted, signifying that travel risk perception significantly impacts travel intention after the pandemic subsides. It underscores the role of perceived risks in shaping individuals' intentions to travel post-pandemic, thereby influencing their decision-making.

However, this study rejected the fifth hypothesis, indicating that attitudes toward COVID-19 vaccination certificates do not significantly influence travel intention after the pandemic subsides. This unexpected finding suggests that despite the importance of attitudes towards vaccination certificates, they may not substantially shape individuals' overall travel intentions post-pandemic.

This research makes several theoretical contributions to understanding factors influencing travel intention in the aftermath of the COVID-19 pandemic. Firstly, the acceptance of the first hypothesis, indicating that motivation for vaccination significantly influences attitudes toward COVID-19 vaccination certificates, contributes to the evolving discourse on the intersection of health-related motivations and travel-related perceptions. This finding highlights the intricate link between individual motivations for vaccination and their acceptance of certification for travel purposes.

Contrastingly, rejecting the second hypothesis challenges prevailing assumptions about the direct influence of general pandemic perceptions on specific travel-related attitudes. It suggests that individuals may compartmentalise their viewpoints on the pandemic when considering the utility of vaccination certificates for travel, providing a nuanced perspective for researchers and practitioners.

The acceptance of the third hypothesis contributes to understanding the interconnectedness of risk perceptions in the context of travel and health certification. It underscores the importance of considering broader travel risk perceptions when assessing attitudes towards specific measures like vaccination certificates.

Furthermore, accepting the fourth hypothesis extends the existing knowledge on the multifaceted influences shaping individuals' post-pandemic travel decisions. This finding underscores the enduring significance of perceived risks in determining future travel intentions, even as the immediate threat of the pandemic diminishes.

The rejection of the fifth hypothesis challenges assumptions about the direct link between positive attitudes towards health-related certifications and actual travel intentions. This unexpected finding prompts a re-evaluation of such attitudes' role in the broader context of post-pandemic travel decision-making.

Despite the valuable insights gained from this study, it acknowledges several limitations. Firstly, the research focused on a sequence of predictors: motivation for vaccination, perception of COVID-19, and travel risk perception. Future studies may benefit from exploring additional factors contributing to a more comprehensive understanding of travel intention post-COVID-19, such as socio-economic variables, cultural influences, or individual differences.

Secondly, the study relied on self-reported data, which may be subject to response bias and social desirability. Future research could incorporate more diverse and objective measures, such as observational data

or physiological indicators, to enhance the robustness of the research findings.

In addition, the research primarily examined the influence of individual factors on travel intention, neglecting potential contextual and environmental influences. Future studies could consider incorporating external variables, such as government policies, destination-specific factors, or global events, to provide a more holistic understanding of the factors shaping travel intentions in the post-pandemic era.

Furthermore, the study predominantly focused on the Western cultural context, limiting the generalisability of findings to other cultural settings. Future research should strive for cross-cultural investigations to identify potential variations in the impact of predictors on travel intention, considering the diverse ways in which different cultures respond to health crises.

In terms of the rejected hypotheses, particularly the fifth hypothesis indicating a lack of significant influence of attitude toward COVID-19 vaccination certificates on travel intention, future research could delve deeper into the nuances of this relationship. Exploring potential moderating factors or mediating variables could shed light on the complexities underlying the interplay between attitudes towards vaccination certificates and actual travel intentions.

Author contributions

Conceptualization, US and VG; data collection, EE and RD; data analysis, US and VIN; writing—original draft preparation, US and VIN; writing—review and editing, VG and RD. All authors have read and agreed to the published version of the manuscript.

Conflict of interest

The author(s) declare(s) no conflict of interest.

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