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The Perception of Health Belief and Vaccine Valence Towards Domestic Tourist Intention to Travel during COVID-19 Pandemic

Rozilawati Shaari[1], *Wan Rusni Wan Ismail[2], Nor Hafizah Mazlan[2], Wan Ilinajwa Wan Mustaffa[2], Norliana Hashim[2]
[1]Tourism and Hospitality Department, Politeknik Tuanku Syed Sirajuddin, Malaysia
[2]Faculty of Hotel and Tourism Management, Universiti Teknologi MARA Cawangan Pulau Pinang, Malaysia
rozilawati@ptss.edu.my, *rusni.wi@uitm.edu.my, hafizahmazlan@uitm.edu.my, wanilinajwa@gmail.com, norli1974@uitm.edu.my
Correspondence Author: Wan Rusni Wan Ismail

Abstract: This research investigates health risk perception and vaccine valence as factors that affect Malaysian intention to engage in domestic vacations. An online survey was created with Google Forms and distributed to a sample of 265 domestic travellers at least 18 years of age in May and June 2021; this is when the nationwide vaccine program started in Malaysia. The result indicates that vaccine valence risk perception was a significant factor in affecting domestic vacation intention. Only perceived behavioural control and subjective norms mediated the relationship between health risk perception and domestic vacation intention. Overall, vaccine valence risk perception tested significantly with all constructs in this study due to the various factors, especially the timing of data collection where the data collection was carried out amid the national vaccination program. Hence, the vaccine is now perceived as a hope for many as the solution to the current pandemic problem. It indicates that domestic vacationers will return once vaccinated and when tourism sectors are open for business and resume their regular operation. These findings extend the body of knowledge for the theory of health belief and theory of planned behaviour in predicting tourist intention to travel during a pandemic. Findings also indicate the positive impact of vaccine valence on the tourist's intention to travel, which provides a glimpse of future tourist behaviour when facing similar uncertainties.

Keywords: *COVID-19, Health risk perception, domestic vacation intention, vaccine valence*

1. Introduction

Recently, the tourism industry has been affected by the pandemic. The fluctuation in COVID-19 cases throughout the year has created unrest feelings among locals; coupled with the movement control orders, the growth of Malaysia's tourism and hospitality industry has reached a screeching halt (Foo et al., 2020). Such development will only create more problems for the industry, which is struggling to survive. Consequently, the COVID-19 pandemic significantly influences domestic tourists' psychology in this study's scope in Malaysia (Khan & Hashim, 2020).

According to the Department of Statistics Malaysia (2020), Malaysia's domestic tourism expenditure experienced a significant drop, RM 40.4 billion. As a result, 131.7 million domestic visitors were recorded in 2020, with a decrease of 44.9 per cent compared to the previous year in 2019. Consequently, this domestic travelling trend caused unprecedented negative disruption to the tourism economy due to the travel restrictions in the country. Understanding tourist behaviour and the intention to vacation, especially domestic tourism, is essential for tourism management.

This research is a replication of a previous study by Bae & Chang (2020), using the Health Belief Model (HBM) and Theory of Planned Behaviour (TPB) as mediators to investigate travel intention during the pandemic. This study also has integrated vaccine valence as a new dimension into this study to investigate how the introduction of vaccines will change the perception of risk and intention to travel. Currently, Malaysia received the first vaccine in February 2021. The vaccination implementation process under the National COVID-19 Immunisation Program encompasses enrolling target individuals according to the phase's priorities.

2. Literature Review

The Theory of Planned Behaviour (TPB): evolved from the Theory of Reasoned Action (Fishbein & Azjen, 1975). Specifically, the main objective of this theory is to try to understand and predict factors that influence

individual behaviour by looking at people's intentions (Ajzen & Madden, 1986). This theory was applied to the present study to investigate factors contributing to travel intention during a pandemic. In TPB, intention acts as the direct behavioural determinant, and with an accurate measurement, the intention may serve as the best predictor of behaviour (Girish & Lee, 2020).

The TPB has been widely used in different areas, including psychology, nursing, marketing, physical education, and tourism (Gstaettner et al., 2017; Sánchez-Cañizares et al., 2020a). However, researchers tried incorporating additional variables in the TPB to improve their explanatory capacity to predict actions more accurately. For example, variables such as authenticity, the picture of the destination, travel restrictions, the location, and the features of tourists have been introduced to increase understanding of tourism behaviours (Girish & Lee, 2020). In addition, risk-related variables have recently been added to improve the TPB. For example, Quintal et al. (2010b) addressed the effect of perceived danger and perceptive ambiguity on the intention of Korean, Chinese, and Japanese tourists to visit Australia. They have reported that perceived danger affects visitors' attitudes in Korea and Japan. In contrast, perceived uncertainty affects visitors' attitudes in Korea and China and Chinese and Japanese tourists' behavioural management. TPB have three main variables namely attitude, subjective norms, and perceived behavioural control.

Attitude (ATT)

The TBP is one of the most prevalent psychological models for understanding and predicting human behaviour (Chaulagain et al., 2020) and is widely used and tried in various contexts, disciplines, and countries. For example, Ajzen (1991) found that a person's intention to participate in behaviour is decided by their attitude (personal belief and feelings towards that conduct) and the subjective norm (perception of the individual of the success of their prominent references). However, the action largely depends on willpower, which refers to the willingness of the individual to conduct the behaviour. Attitude is the effect of feeling (scary or valence) for the overall evaluation of behaviour. Previous studies have identified several factors that influence tourist attitudes towards travel intention. Besides, the studies of traveller's health risk perception and their protective attitude involved in decision-making for travelling and the researcher found that the level of attitude plays a significant role in determining travel perception and behaviour (Chien et al., 2017) was widely discussed, only a few scholars have studied the effects of COVID-19 on domestic travel intention.

Subjective Norms (SN)

Subjective norm is the perceived social pressure to engage or not to engage in behaviour; it results from how the person perceives the pressures placed on them to perform or not to perform the behaviour (Ajzen & Fishbein, 1975). The crucial role of subjective norms as a predictor of intention has been well recognised (Bae & Chang, 2020; Han et al., 2020; Quintal et al., 2010a). Furthermore, these studies showed that adding a causal association between the normative and attitudinal factors into the TPB made the system more parsimonious, ultimately reinforcing the theory. Based on these findings, the researchers found that today's travellers appear to believe more in peer reviews when choosing tourism products and services rather than business knowledge. With the rise of communication technologies such as the internet, various views on hotels, tourist destinations, and even travel services are shared on the internet from customer usage.

Perceived Behavioural Control (PBC)

The last factor influencing behavioural intention in TPB is perceived behavioural Control (PBC). Perceived behavioural control (PBC) is the degree to which a person believes in controlling personal or external influences that can support or hinder a particular behaviour (Ajzen & Madden, 1986). Ajzen (1986) applied the 'perceived behavioural regulation' construct to his theory of everyday actions as a determinant for both behavioural and behavioural purposes. On a conceptual basis, the perceived behavioural regulation has similar effects for both mechanisms apply to the person's perception that behaviour is governed by it. However, sometimes the ease or complexity of the behaviour is assessed operationally as perceived behavioural control (e.g., 'three times a week I find it difficult to exercise'), and the self-efficiency is operationalised. Like Ajzen's expected behaviour theory, such as Schwarzer et al., (1999) have incorporated perceived behavioural control as a central deciding factor in the motivation and the determining factor for health behaviour.

Health Risk Perception Theory and Tourism: Health risk perception theory consists of environmental risks and cognitive factors (Janmaimool & Watanabe, 2014). While cognitive factors concern the impact of the

surroundings or the environment towards health, cognitive factors, on the other hand, are more focused on the internal conflict individuals face when deciding whether to engage in certain activities. In tourism research, health risk perception is found to be one of the most common predictors of vacation intention as it reflects on how health risk is viewed as a threat to the travellers and whether the exposure to the danger is according to the appropriate level of risk tolerance (Bae & Chang, 2020). Furthermore, the application of health risk theory can be seen in a recent study by Huang et al. (2020), where tourists' health risk perception significantly influences their intention to travel to Tibet and China due to the threat of the COVID-19 pandemic. Other than an intention to travel, this theory is also commonly found in many destination image studies, as perceived safety is one of the common indicators of overall destination image measure (Albattat et al., 2018; Zhu & Deng, 2020).

From the cognitive and internal evaluation standpoint, previous scholars have divided travel risk into two dimensions: overall cognitive and affective risk (Bae & Chang, 2020; Li et al., 2020). For instance, Bae and Chang (2020) investigated the relationship between COVID-19 health risk perception and behavioural intention and suggested that health risk perception is the antecedent of attitude. The pandemic has caused dramatic changes in how tourists view travel and vacation due to the potential exposure to the pandemic and the rapid spread of the disease. A new term such as "intact tourism", for instance, has been introduced in previous research and has become another extension in the health belief model to explain the need for social distancing during vacation, hence leading to an increase in "travel fear" and reduce in intention to engaged in travel vacation and future travel (Zheng et al., 2021).

Risk perception is crucial in shaping protective behaviours, particularly in travel contexts. Studies underscore that health risk perception is a crucial concern for travellers, influencing their decisions. Research by Maulana et al. (2022) identifies health risk perception as the second-highest priority concern for travellers. This perception encompasses worries about potential dangers like terrorism, political instability, or health risks at a travel destination.

The impact of health risk perception on travel behaviour was notably heightened during the pandemic, as evidenced by research in Brazil, which found a negative influence on travel intentions. Conversely, studies in European and Asian contexts have shown that health risk-related variables strongly predict travel intentions (Golets et al., 2023). Study by Zhou et al. (2024) further detail that while perceived susceptibility had minimal impact, health risk perception and risk aversion significantly affected travel intentions. Thus, it indicates that health risks are a significant factor in tourism engagement, with travellers' perceptions of risk playing a pivotal role in their travel decisions.

Vaccine Valence Risk Perception and Vacation Intention: The world is anxiously awaiting a COVID-19 vaccine, the best option for reverting to a "normal" state before the pandemic hits. The use of vaccines to overcome illnesses known to modern medicine has become part of the strategy used to eradicate most of the modern known illnesses. Hence, introducing a vaccine can be seen as a game-changer for international and domestic travellers as it ensures the travellers' safety (Radic et al., 2021). Therefore, the attitude of the travellers towards vaccines will significantly determine the speed of recovery for the hospitality and tourism industry (Akarsu et al., 2020). Valence refers to the level of attractiveness and the averseness of a particular situation, event, or object (Cancino-Montecinos et al., 2018). A previous study on tourist valence suggests that positive valence is associated with the perceived benefits received by tourists exceeding their expectations (Xuefeng et al., 2021). In the case of vaccine valence risk perception, the emotion related to whether the vaccine taken will help to protect tourists and travellers against the pandemic will determine their intention to engage in future travel and vacation. The valence towards the vaccine recently introduced is quite unclear due to various issues surrounding the pandemic. For instance, despite the world's reliance on the vaccine in the past, which has proven to be effective, many uncertainties surround the current situation due to the magnitude of the infection and the rapid evolution of the virus that can potentially lead to the ineffective vaccine (World et al. Office for Europe, 2017). Apart from that, ongoing input about the pandemic from social media has created travel anxiety, potentially leading to negative valence and avoidance towards future travels (Radic et al., 2021). A study by Golets et al. (2020) has presented evidence suggesting that individuals with high or positive valence will respond more strongly to threats regarding COVID-19 and engage more with prosocial self-isolation to prevent the spread of this virus.

Vaccination in post-pandemic plays a pivotal role in meeting health standards and addressing the Health Minister's requirements in Malaysia. Before the pandemic, factors such as perceived vaccine levels and the intention to travel were significant considerations. Further, according to a study by Tay & Chan (2023) Vaccination can play a decisive role in reducing travel risk and rebuilding travel confidence. The study revealed that elements like vaccine trust, travel confidence post-vaccination, travel intention, and actual travel behaviour did not significantly influence travel behaviour. This finding indicates that although vaccination can boost travel confidence, it alone cannot revive the tourism industry in its early stages.

Conversely, the study's findings indicate that subjective norms and perceived risk are critical predictors of attitudes toward COVID-19 vaccines. The results reveal that individuals with a greater desire to travel experience a more substantial influence of their attitudes toward COVID-19 vaccines on their vaccination intentions. The study's findings indicate that travel desire can encourage COVID-19 vaccination intentions (Ekinci et al., 2022). Therefore, it can be argued that vaccination completeness might give them lower pandemic-related risk perception and might significantly alleviate their negative emotions, such as anxiety toward the destination (Nie et al., 2022) A study conducted in Iran found that the effectiveness of Covid-19 vaccination has a significant impact on travel intentions. The study showed that vulnerable vaccination leads to more extreme problem-focused coping, influencing tourists' adaptive behaviours during crises, highlighting the importance of COVID-19 vaccination on travel intention (Qezelbash et al., 2024).

Domestic Vacation Intention: Domestic tourism has also been significantly affected by the COVID-19 pandemic, as the restriction is not only confined by the international borders, but the activities within the domestic has also stopped abruptly. Vacation intentions can be described as the subjective likelihood that a client will or will not take certain tourist-related acts or activities that people want to do or plan during the holiday (Altinay Özdemir, 2020). Previous tourism research in the context of pandemic crises has primarily focused on analysing the impact of infectious disease impact on international travel intention (Altinay Özdemir, 2020) and psychological changes (Li et al., 2020), determining the relative willingness of people to engage in rural tourism in the context of the epidemic (Zhu & Deng, 2020). However, there is minimal information on vacation intention in the coronavirus crisis for domestic tourism-related travel risks.

The spread of the COVID-19 virus, safety concerns, and global travel restrictions led to a change in travel during this time. The results show that the respondents resigned, especially from going abroad for security reasons, choosing to instead stay in the country and other places that, from their point of view, were safer places to rest on a case study in Poland (Jęczmyk et al., 2023). In the same vein, Fan et al. (2023) found that constructs from the Theory of Planned Behavior (TPB) positively impacted respondents' intentions and actions regarding domestic travel. This research highlighted that TPB can provide insights into why people travel. Positive attitudes, motivation, social norms, and perceived behavioural control were linked to increased travel behaviours or intentions in China during the COVID-19 recovery period. Hence, it implies that attitudes towards travel, perceived behavioural control, and subjective norms all had a significant influence on promoting domestic travel. The research discovered that plans to travel within the country were inversely linked to risk perception. Therefore, if people believe that there are more significant risks involved in travelling, they are less likely to be willing to travel within their own country.

Research by Mohamed et al. (2023) indicates that, following the COVID-19 pandemic, university students in Malaysia are much more inclined to travel, both locally and internationally, in the upcoming year. Similarly, a study on Chinese residents' outbound travel intentions after the pandemic, grounded in the Theory of Planned Behavior (TPB), found that attitudes, subjective norms, perceived behavioural control, and previous travel experiences significantly boost their intention to travel (Liu et al., 2021). Thus, the intention to take domestic vacations plays a crucial role in shaping tourist behaviour.

Relationship Between Health Risk Perception and Vacation Intention: Even though perceived health risks have been used in various vacation intention studies, the COVID-19 pandemic is unique due to its impact on the worldwide tourism industry. Hence, current information about vacation intention does not reflect the current situation as previous studies focus more on infectious diseases on tourist arrivals and movements. However, the focus is more on the specific region than the worldwide threat (Wasiul Karim et al., 2020). Given the magnitude of this pandemic and its spreadability, it is still unclear how the attitude and behaviour of future

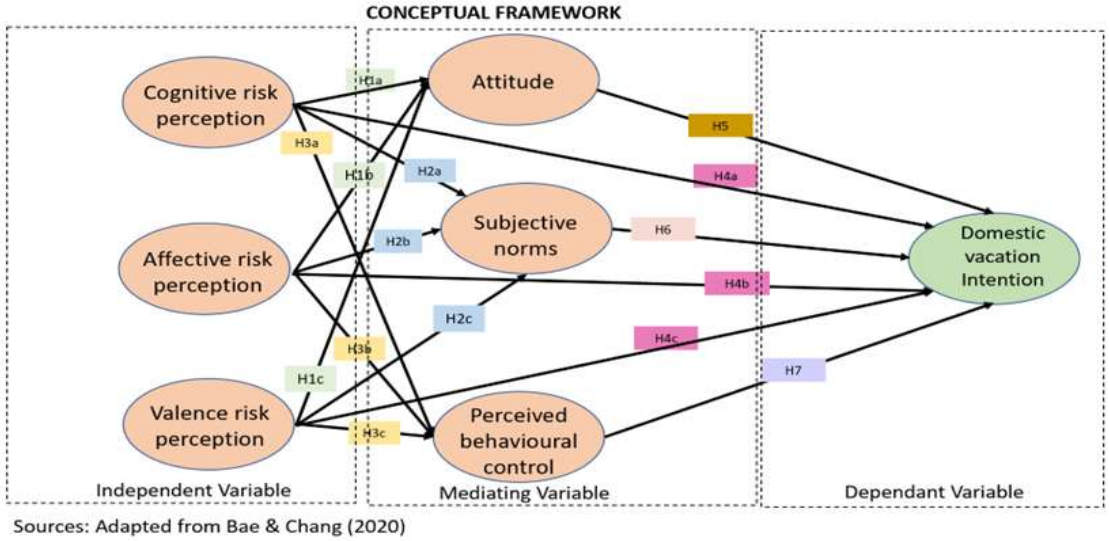
tourists are affected by these issues. Apart from that, strict lockdowns imposed on worldwide and domestic travellers should also significantly impact future travellers' behaviour. The restriction may cause deepened fear towards the pandemic, leading to reluctance to travel, or the strict lockdown can fuel the extreme need to go out or travel even more than ever. At this point, only speculation can be made, as a worldwide pandemic such as this is considered unprecedented and has never been encountered before in this modern time. Thus, when it comes to intention, it is still vague whether tourist trust can be fully restored, as in the pre-pandemic state, due to the self-protection behaviour found among tourists (Essam Janahi, 2011). The literature review section must be analysed and address relevant previous and current studies related to the focus of the research.

Health risk perception can influence individuals' vacation intentions during the post-pandemic era. A study found that COVID-19 has affected tourists' travel habits in the post-pandemic period. Hanafiah et al. (2022) revealed that perceived health risks can negatively impact travel attitudes and decrease future travel intentions in Malaysia. Conversely, Susanto et al. (2021) found that cognitive and affective perceived risks do not significantly influence travellers' attitudes towards post-pandemic travel. Thus, this indicates that contrary to expectations, these perceived risks might not be crucial in shaping travellers' post-pandemic travel attitudes. Similarly, a case study in Vietnam, conducted in the post-COVID-19 context, suggests that once the pandemic is under control, perceived risks, although present, have an insignificant effect on the public's travel intentions (Nguyen et al., 2021). Therefore, it is believed that the perception of health risks influences tourists' behaviour when considering vacation intentions.

Conceptual Framework and Research Hypothesis

This conceptual model tested in this study is adopted from Bae and Chang's (2020) work with the extension of vaccine valence risk perception to investigate whether tourist behaviour has shifted favourably towards vacation intention after vaccination. It is imperative to study the importance of vaccine valence due to the success rate of vaccines in treating other diseases before the COVID-19 pandemic. Thus, the proposed conceptual framework for this study is as follows:

Figure 1: Conceptual Framework



Sources: Adapted from Bae & Chang (2020)

Based on the research framework, seven hypotheses have been developed in this study:

H1a: There is a relationship between cognitive risk perception (CRP) influence on attitude (ATT) towards domestic vacation intention (DVI).
H1b: There is a relationship between affective risk perception (ARP) influence on attitude (ATT) towards domestic vacation intention (DVI).
H1c: There is a relationship between vaccine valence risk perception (VVRP) influence on attitude (ATT) control towards domestic vacation intention (DVI).
H2a: There is a relationship between cognitive risk perception (CRP) influence on the subjective norm (SN)

towards domestic vacation intention (DVI).
H2b: There is a relationship between affective risk perception (ARP) influence on the subjective norm (SN) towards domestic vacation intention (DVI).
H2c: There is a relationship between vaccine valence risk perception (VVRP) influence on the subjective norm (SN) towards domestic vacation intention.
H3a: There is a relationship between cognitive risk perception (CRP) influence on perceived behavioural control (PBC) towards domestic vacation intention (DVI).
H3b: There is a relationship between affective risk perception (ARP) influence on perceived behavioural control (PBC) towards domestic vacation intention (DVI).
H3c: There is a relationship between vaccine valence risk perception (VVRP) influencing perceived behavioural control (PBC) towards domestic vacation intention (DVI).
H4a: Cognitive risk perception (CRP) will exert an influence on behavioural intention.
H4b: Affective risk perception (ARP) will exert an influence on behavioural intention.
H4c: Vaccine valence risk perception (VVRP) will exert an influence on behavioural intention.
H5: Attitude (ATT) will exert a significant relationship to behavioural intention.
H6: Subjective norm (SN) will exert a significant relationship on behavioural intention.
H7: Perceived behavioural control (PBC) will exert a significant relationship to behavioural intention

3. Research Methodology

This study adopts a quantitative research design that aligns with the positivist point of view. The present study employs an online survey method of data collection based on the purposive sampling method. An online survey questionnaire created with Google Forms was distributed to Facebook Groups for travel interests, namely 'Cuti-Cuti Malaysia with 66,160 followers, Kaki Travel Malaysia with 77,000 members and Travel Budget and Backpacker Malaysia with 75,000 members. The target population for this study is domestic travellers in Malaysia. A total of 265 usable responses were obtained. The survey questionnaire was composed of four sections: (a) demographic profile, (b) domestic vacation intention, (c) health risk perception and (d) behaviour. In the four sections, responses were collected using a five-point Likert-type scale. The constructs used in this scale are based on previous research (Bae & Chang, 2020; Watson & Clark, 1985). This study utilised a content expert panel to verify all the items in terms of validity.

Meanwhile, Cronbach's Alpha coefficient was used to measure reliability. Cronbach's alpha coefficient results showed that all items were reliable, ranging from $\alpha = 0.753$ to $\alpha = 0.971$. More specifically, the value of domestic vacation intention was $\alpha = 0.937$; cognitive risk perception was $\alpha = 0.913$; affective risk perception was $\alpha = 0.893$, positive valence risk was $\alpha = 0.831$, negative valence risk was $\alpha = 0.902$, the attitude was $\alpha = 0.941$, the subjective norm was $\alpha = 0.971$, and perceived behavioural control was $\alpha = 0.753$. The current study employed SPSS (v.20) for primary data screening and preliminary analysis and SmartPLS (v.3.2.6) for measurement model and structural model mediation analysis for data analysis. The non-response bias test is covered in this chapter after the response rate. The following section provides a descriptive analysis of the discussed latent constructs. The current study's preliminary analytical results using PLS path modelling are then reported. The first section covers convergent validity and discriminant validity to examine measurement model dependability. Next, the following section describes the structural model assessment, which includes assessing the endogenous latent construct's variance explained, effect size, and predictive significance. Finally, the whole model PLS-SEM analysis was provided for the mediating influence between independent and dependent variables.

4. Results

Demographic Profile: The sample (n=261) comprised 36.8 per cent of the respondents who were male compared to female (63.2%). Most respondents were aged 31 to 35 (22.2%) and 36 to 40-year-old (23.0). Most respondents were Malays (88.9%) and married (67.8%). Regarding academic qualifications, most respondents (33.7%) had a bachelor's degree and worked in government sectors (52.1%). Most respondents were also from the B40 group, with an income of less than RM5000 a month.

Measurement Model: In this study, the research model that has been developed was tested using the partial least square (PLS) technique. The software that has been used to analyse the data is Smart PLS software version 3.2.6 (Hussain et al., 2018). Figure 2 portrays the assessment of the structural model using the SmartPLS 3.2.6.

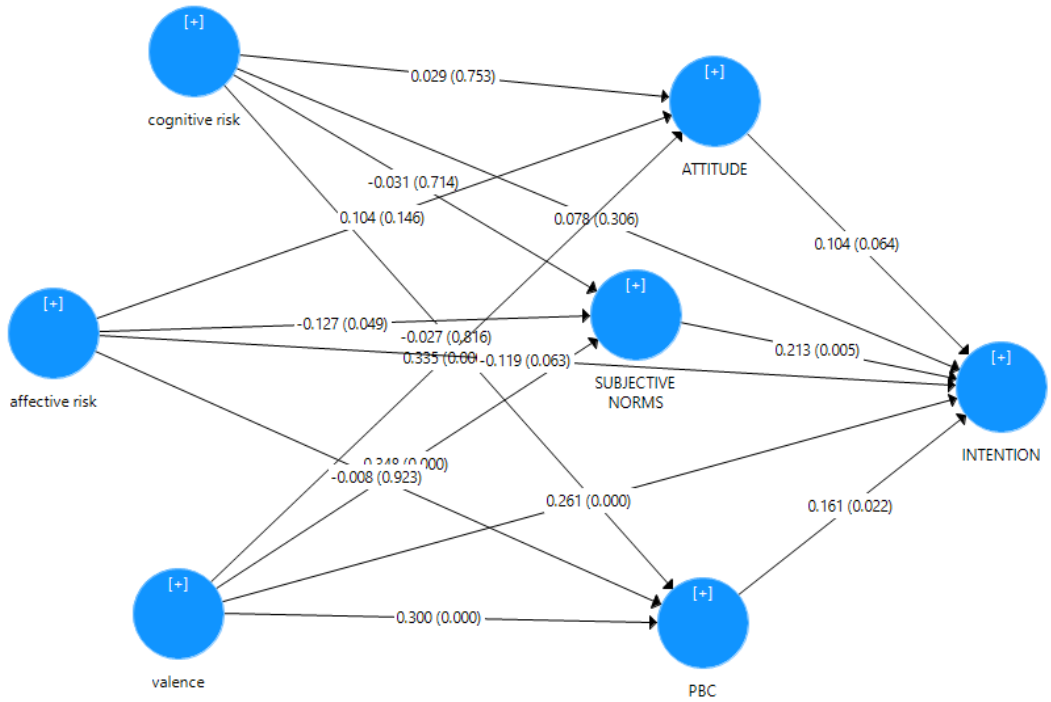
Table 1: Loadings, Composite Reliability and Average Variance Extracted

Main Variable	Indicator	Loading	Cronbach's Alpha	Composite Reliability	AVE
Travel Intention			0.942	0.958	0.852
	B1	0.846			
	B2	0.938			
	B3	0.957			
Cognitive Risk (CRF)			0.893	0.913	0.725
	CRP1	0.869			
	CRP2	0.906			
	CRP3	0.869			
	CRP4	0.753			
Affective Risk (ARF)			0.864	0.902	0.697
	ARP1	0.821			
	ARP2	0.758			
	ARP3	0.861			
	ARP4	0.894			
Negative Valence (NVR)			0.902	0.919	0.535
	NVR1	0.86			
	NVR10	0.628			
	NVR2	0.692			
	NVR3	0.623			
	NVR4	0.81			
	NVR5	0.746			
	NVR6	0.739			
	NVR7	0.765			
	NVR8	0.695			
	NVR9	0.722			
Positive Valence (PVR)			0.939	0.951	0.670
	PVR1	0.86			
	PVR10	0.878			
	PVR2	0.475			
	PVR3	0.564			
	PVR4	0.939			
	PVR5	0.927			
	PVR6	0.917			
	PVR7	0.935			
	PVR8	0.794			
	PVR9	0.655			
Attitude (ATT)			0.932	0.952	0.832
	A1	0.911			
	A2	0.944			
	A3	0.933			
	A4	0.858			
Subjective Norm (SN)	SN1	0.925	0.962	0.973	0.899

	SN2	0.964			
	SN3	0.948			
	SN4	0.955			
Perceived Behavioral Control (PBC)	PBC1	0.683	0.871	0.911	0.720
	PBC2	0.894			
	PBC3	0.918			
	PBC4	0.879			

Convergent Validity: To ascertain the convergent validity, the researcher used the average variance extracted (AVE) of each latent construct per the recommendation of Fornell and Larcker (2016). In comparison, Chin (1998) specified that the AVE value of 0.50 or greater indicates the convergent validity of a latent construct. Table 1 indicated that the AVE values of all latent constructs AVE values had exceeded the minimum criteria of 0.50.

Figure 2: Assessment of Structural Model with Mediation Effect (Full-Model)



After the assessment of the structural model path coefficients, the most widely used measure to assess the structural model is the coefficient of determination, also called the R-squared value (R2 value) (Sarstedt et al., 2020; Hair et al., 2014; Henseler et al., 2009), however, Falk and Miller (1992) suggest 0.10 as a minimum acceptable level of R-squared value. Chin (1998) recommended that PLS-SEM's R-squared values (R2 values) of 0.67, 0.33, and 0.19 can be measured as substantial, moderate, and weak. Table 4.2 provides the R-squared values of the endogenous latent construct of the current study.

Convergent Validity: To ascertain the convergent validity, the researcher used the average variance extracted (AVE) of each latent construct per the recommendation of Fornell and Larcker (2016). In comparison, Chin (1998) specified that the AVE value of 0.50 or greater indicates the convergent validity of a latent construct. Table 4.3 indicated that the AVE values of all latent constructs AVE values had exceeded the minimum criteria of 0.50. Thus, the current study exhibits the adequate convergent validity of the latent constructs (Chin, 1998).

Table 2: Variance Explained in the Endogenous Latent Variable

Latent Variable	R Square	R Square Adjusted
Attitude	0.119	0.109
Intention	0.324	0.308
PBC	0.093	0.083
Subjective Norms	0.150	0.14

As shown in Table 2, the current study research model explained 11.9 per cent of the total variance in the attitude, 9.3 per cent of PBC and 15.0 per cent of subjective norms. Later, the model also explained the 32.4 per cent variance of domestic vacation intention. Therefore, this recommends that the sets of exogenous latent and mediating variables of the current study collectively explain 32.4 per cent of the domestic vacation intention. Therefore, based on the recommendations of Falk and Miller (1992) and Chin (1998), the endogenous latent variable of the current study showed an acceptable level of R-squared value, which was also considered moderate. The construct cross-validated redundancy (Q2) statistics for the four endogenous latent variables of the current study were more significant than zero, signifying the model's predictive relevance.

Discriminant Validity: The current study used these two approaches to ascertain the discriminant validity issues. First, Fornell and Larcker (2016) used the AVE values to determine the discriminant validity. Table 3 exhibits that the AVE values should be greater than the square root between pair constructs. The square root of the AVE is not greater than the correlation among latent constructs, signifying adequate construct discriminant validity (Fornell & Larcker, 1981). Second, the heterotrait-monotrait ratio of correlations (HTMT) criterion was used in the current study to assess the discriminant validity proposed by Henseler et al. (2015).

Table 3: Latent Variable Correlations and Square roots of Average Variance Extracted

	ARF	ATT	CRF	DVI	NVR	PBC	PVR	SN
Attitude	**0.835**							
Intention	0.096	**0.912**						
PBC	0.401	0.028	**0.851**					
Subjective norms	-0.133	0.33	-0.039	**0.923**				
Affective risk	-0.067	0.21	-0.122	0.302	**0.731**			
Cognitive risk	-0.037	0.495	-0.07	0.434	0.201	**0.849**		
Valence	-0.05	0.349	-0.121	0.431	0.686	0.323	**0.819**	

According to Henseler et al. (2016), the HTMT estimates the factor correlation, and to discriminate between two factors (constructs), the HTMT value should be lower than 1. Therefore, if the HTMT value is lower than 1, the correlation between the two factors (constructs) is different; hence it should have differed. Moreover, if the HTMT value is more significant than this threshold, there is a lack of discriminant validity. In addition, some scholars recommended a threshold of 0.85 (Clark & Watson, 2019; Kline, 2015), while others suggested a threshold of 0.90 (Gold et al., 2001; THS Teo et al., 2015). Table 4.4 exhibits the HTMT values for the discriminant validity of the current study constructs. According to Henseler et al. (2016), the HTMT estimates the factor correlation, and to discriminate between two factors (constructs), the HTMT value should be lower than 1. Therefore, if the HTMT value is lower than 1, the correlation between the two factors (constructs) is different; hence it should have differed. Moreover, if the HTMT value is more significant than this threshold, there is a lack of discriminant validity. In addition, some scholars recommended a threshold of 0.85 (Clark & Watson, 2019; Kline, 2015), while others suggested a threshold of 0.90 (Gold et al., 2001). Table 4.4 exhibits the HTMT values for the discriminant validity of the current study constructs.

Table 4: HTMT Correlation Matrix for Discriminant Validity

	ARF	ATT	CRF	DVI	NVR	PBC	PVR
Attitude							
Intention	0.118						
PBC	0.501	0.094					
Subjective norms	0.133	0.349	0.053				
Affective risk	0.082	0.224	0.15	0.318			
Cognitive risk	0.079	0.552	0.114	0.454	0.208		
Valence	0.124	0.382	0.137	0.439	0.738	0.345	

Lastly, the Chin (1998) criterion was used to determine the discriminant validity by comparing the indicator's loadings of each construct with the cross-loadings of other constructs of the current study. Based on the recommendation of Chin (1998), the indicator's loadings should be greater than cross-loadings to achieve adequate discriminant validity (Grégoire & Fisher, 2006). Table 5 compares the indicator's loadings with other construct loadings. Each construct indicator's loadings were more significant than the cross-loadings, thus representing the suitable construct's discriminant validity.

Table 5: Cross Loadings

	ARF	ATT	CRF	DVI	NVR	PBC	PVR	SN
ARF1	**0.822**	0.078	0.432	-0.044	-0.077	0.012	-0.032	-0.133
ARF2	**0.758**	0.144	0.397	0.008	-0.021	0.065	0.017	-0.08
ARF3	**0.861**	0.044	0.278	-0.158	-0.07	-0.06	-0.075	-0.153
ARF4	**0.894**	0.092	0.319	-0.163	-0.047	-0.069	-0.042	-0.147
ATT1	0.09	**0.912**	0.107	0.329	0.184	0.492	0.338	0.329
ATT2	0.09	**0.945**	0.017	0.316	0.173	0.479	0.32	0.324
ATT3	0.094	**0.931**	0.009	0.276	0.227	0.447	0.325	0.284
ATT4	0.074	**0.857**	-0.047	0.28	0.184	0.38	0.286	0.28
CRF1	0.429	0.094	**0.869**	-0.027	-0.092	-0.035	-0.137	-0.108
CRF2	0.288	-0.052	**0.906**	-0.05	-0.138	-0.142	-0.118	-0.133
CRF3	0.354	0.051	**0.869**	-0.007	-0.121	0.005	-0.088	-0.107
CRF4	0.357	0.07	**0.753**	-0.053	0.009	0.041	0.007	-0.044
DVI1	-0.158	0.259	-0.083	**0.846**	0.233	0.311	0.315	0.354
DVI2	-0.117	0.295	-0.035	**0.938**	0.301	0.412	0.422	0.392
DVI3	-0.113	0.291	0.001	**0.957**	0.266	0.405	0.41	0.467
DVI4	-0.115	0.365	-0.039	**0.948**	0.307	0.459	0.431	0.474
NVR1	-0.09	0.158	-0.129	0.257	**0.86**	0.195	0.612	0.223
NVR10	-0.05	0.173	-0.017	0.212	**0.628**	0.168	0.416	0.183
NVR2	-0.011	0.085	0.042	0.145	**0.692**	0.115	0.394	0.187
NVR3	-0.002	0.082	-0.009	0.218	**0.623**	0.094	0.431	0.173
NVR4	-0.056	0.137	-0.079	0.189	**0.81**	0.156	0.527	0.189
NVR5	-0.105	0.15	-0.177	0.233	**0.746**	0.14	0.555	0.22
NVR6	-0.028	0.161	-0.174	0.241	**0.739**	0.211	0.52	0.212
NVR7	-0.012	0.149	-0.04	0.165	**0.765**	0.083	0.471	0.205
NVR8	-0.106	0.215	-0.201	0.283	**0.695**	0.16	0.54	0.219
NVR9	0.024	0.18	0.008	0.208	**0.722**	0.096	0.471	0.132
PBC1	0.026	0.392	-0.12	0.19	0.079	**0.688**	0.177	0.345
PBC2	-0.063	0.448	-0.102	0.407	0.198	**0.894**	0.319	0.742
PBC3	-0.007	0.436	-0.07	0.38	0.164	**0.918**	0.264	0.579
PBC4	-0.051	0.42	0.018	0.433	0.207	**0.877**	0.305	0.564
PVR1	-0.073	0.326	-0.124	0.394	0.509	0.298	**0.878**	0.31
PVR10	0.211	0.332	0.106	0.073	0.302	0.191	**0.475**	0.144
PVR2	0.058	0.263	0.005	0.152	0.361	0.148	**0.564**	0.161
PVR3	-0.141	0.272	-0.167	0.434	0.572	0.288	**0.939**	0.328
PVR4	-0.049	0.311	-0.12	0.405	0.564	0.292	**0.927**	0.344

PVR5	0.069	0.372	-0.063	0.377	0.544	0.313	**0.917**	0.314
PVR6	-0.13	0.266	-0.157	0.409	0.577	0.266	**0.935**	0.323
PVR7	-0.066	0.28	-0.14	0.355	0.91	0.283	**0.794**	0.347
PVR8	-0.069	0.165	-0.078	0.294	0.58	0.183	**0.655**	0.263
PVR9	-0.073	0.297	-0.122	0.458	0.619	0.317	**0.934**	0.376
SN1	-0.141	0.304	-0.103	0.407	0.259	0.581	0.327	**0.924**
SN2	-0.147	0.334	-0.113	0.44	0.276	0.644	0.37	**0.964**
SN3	-0.152	0.314	-0.123	0.465	0.229	0.67	0.335	**0.948**
SN4	-0.168	0.318	-0.144	0.432	0.258	0.677	0.356	**0.955**

Assessment of Significance of the Structural (Inner) Model: After the measurement (outer) model assessment, the current study evaluated the structural model, also called the inner model. The current study used the standard bootstrapping procedure with 5000 bootstrap samples and 261 cases to estimate the significance of the path coefficients, as per the guiding principles of (Hair et al., 2017; Hair et al., 2014; Henseler et al., 2009).

Assessment of Variance Explained in the Endogenous Latent Variable: Table 6 provides the R-squared values of the endogenous latent construct of the current study. As shown in Table 6, the current study research model explained 13.6 per cent of the total variance in the attitude, 10.6 per cent of PBC and 15.6 per cent of subjective norms. Later, the model also explained a 32.8 per cent variance in travel intention. Thus, the sets of exogenous latent and mediating variables of the current study are recommended to explain 32.8 per cent of the travel intention. Therefore, based on the recommendations of Falk and Miller (1992) and Chin (1998), the endogenous latent variable of the current study showed an acceptable level of R-squared value, which was also considered moderate.

Table 6: Variance Explained in the Endogenous Latent Variable

Latent Variable	R Square	R Square Adjusted
Attitude	0.136	0.123
Intention	0.328	0.309
PBC	0.106	0.092
Subjective Norms	0.156	0.143

Relationship between Predictors and Mediating Variables: The assessment of the structural model revealed the structural model path coefficients for the relationships of the current study. The findings presented in Table 7 and Figure 2 disclosed that affective risk (B = 0.104, t = 1.457, p>0.05) and cognitive risk (B = 0.029, t = 0.315, p>0.05) failed to display a significant relationship with attitude. However, vaccine valence risk perception (VVRP) significantly predicted attitude (B = 0.335, t = 5.934, p<0.01), supporting H1c. Likewise, the results, as shown in Table 6 and Figure 2, indicated a significant effect of affective risk (B = -0.127, t = 1.974, p<0.05) and vaccine valence risk perception (B = 0.0.348, t = 5.957, p<0.01) on subjective norms and successfully support H2a and H2c. Lastly, only vaccine valence risk perception showed a significant relationship with PBC (B = 0.300. t = 5.222, p<0.01) and supported H3c.

Table 7: Assessment of Structural Model Direct Relationships and Travel Intention

Hypothesis		B	T Statistic	Sig.	Decision
H1b	ARP -> ATT	0.104	1.457	0.146	Not Supported
H1a	CRP -> ATT	0.029	0.315	0.753	Not Supported
H1c	VVRP-> ATT	0.335	5.934	0.000	Supported
H2b	ARP -> SN	-0.127	1.974	0.049	Supported
H2a	CRP -> SN	-0.031	0.367	0.714	Not Supported
H2c	VVRP-> SN	0.348	5.957	0.000	Supported
H3b	ARP -> PBC	-0.008	0.097	0.923	Not Supported
H3a	CRP -> PBC	-0.027	0.233	0.816	Not Supported
H3c	VVRP -> PBC	0.3	5.222	0.000	Supported

Testing of Mediation Effect: The assessment of the structural model revealed the structural model path coefficients for the relationships of the current study. The findings presented in Table 7 and Figure 2 disclosed that affective risk perception (ARP) (B = 0.104, t = 1.457, p>0.05) and cognitive risk perception (CRP) (B = 0.029, t = 0.315, p>0.05) failed to display a significant relationship with attitude (ATT). However, vaccine valence risk perception (VVRP) significantly predicted attitude (B = 0.335, t = 5.934, p<0.01), supporting H1c.

Table 8: Assessment of Structural Model Direct Relationship and Travel Intention

	Relationship	Beta	T statistic	Sig.	
H4a	ARP -> DVI	-0.119	1.864	0.063	Not Supported
H4b	CRP -> DVI	0.078	1.025	0.306	Not Supported
H4c	VVRP -> DVI	0.261	4.279	0.000	Supported
H5	ATT -> DVI	0.104	1.856	0.064	Not Supported
H6	PBC -> DVI	0.161	2.302	0.022	Supported
H7	SN -> DVI	0.213	2.805	0.005	Supported

Likewise, the results, as shown in Table 4.8 and Figure 2, indicated a significant effect of ARP (B = -0.127, t = 1.974, p<0.05) and VVRP (B = 0.0.348, t = 5.957, p<0.01) on SN and successfully support H2a and H2c. Lastly, only VVRP showed a significant relationship with PBC (B = 0.300. t = 5.222, p<0.01) and supported H3c. Furthermore, the structural model was also assessed, including the mediating variable (value and satisfaction) using the SmartPLS 3.2.6 (Ringle et al., 2015), as shown in Figure 2. According to Table 8, only three predictors showed a significant relationship with travel intention. The significant predictors were vaccine valence (B = 0.261, t = 4.279, p<0.01), PBC (B = 0.161, t = 2.302, p<0.05) and subjective norms (B = 0.213, t = 2.805, p<0.01). These findings only supported H4c, H6 and H7. Besides that, Figure 2 showed that vaccine valence significantly predicted PBC (B = 0.300, p<0.01), fulfilling path 'a' (IV to MV). PBC also significantly correlated with intention (B = 0.161, p<0.05) in path 'b'. In path 'c', vaccine valence had a significant relationship with intention (B = 0.261, p<0.01). The insertion of PBC as a mediation variable in the equation decreased the relationship between vaccine valence and intention (B = 0.048, p<0.05). These results have indicated that PBC partially mediated the relationship between vaccine valence and intention.

To assess the PLS path model's predictive relevance, Stone Geisser's Q2 was estimated (Hair et al., 2017). Estimates were employed using the blindfolding technique to supplant actual data points recursively at an omission distance of 7 (the default omission distance in SmartPLS). Furthermore, the Q2 values were obtained using the cross-validated redundancy approach as per the recommendation of Hair *et al*. (2017). According to Hair *et al*. (2017), "the cross-validated redundancy approach builds on the path model estimates of both the structural model and the measurement model of data prediction" (p. 207). Thus, prediction via cross-validated redundancy fits the PLS-SEM approach perfectly (Hair *et al*., 2017). Furthermore, according to Henseler *et al*. (2009) and Chin (1998), in a structural model, the Q2 values greater than zero for an endogenous latent variable indicate the path model's predictive relevance. Table 9 presents the construct cross-validated redundancy (Q2) test results of the current study.

Table 9: Construct Cross-Validated Redundancy

Total	SSO	SSE	Q2 Statistics (1-SSE/SSO)
Attitude	1,044.00	948.688	0.091
Intention	1,044.00	778.881	0.254
PBC	1,044.00	984.681	0.057
Subjective Norms	1,044.00	916.776	0.122

As indicated in Table 9, the construct cross-validated redundancy (Q2) statistics for the four endogenous latent variables of the current study were more significant than zero, signifying the model's predictive relevance in line with Henseler *et al*. (2009) and Chin (1998).

Discussion

The findings revealed that only perceived behavioural control and subjective norms mediated the relationship between health risk perception and domestic vacation intention. In the tourism industry, COVID-19 is a disruptive factor that influences how travellers perceive the safety of their trip. Therefore, domestic travellers might not perceive travel during the pandemic as a risky decision and a vital decision-making activity in this study. Vaccine valence risk perception is the internal factor, and domestic tourists perceive the benefit of the vaccination program. The decision to travel might change despite the threat of pandemics as the vaccines are viewed as hopeful future travellers travel safely without contracting this disease. Tourists with high vaccine valence risk perception tend to make the decision confidently. Based on the participants' characteristics, they were adult tourists. In this way, the perceived risk did not influence the judgments taken. In this case, decisions were taken considering their maturity, experience, and high vaccine valence risk perception in decision-making, among other factors.

Besides that, attitude in this study was related to social risk and did not capture the whole dimension of risk. The findings differed if the full dimensions of risk, such as security, finance, privacy, performance, time and psychology, were used. Perceived attitude was not an issue for tourists because travel, such as visiting family, has become necessary. It can be concluded that if the domestic vacation tourist perceives the behaviour as risky, there will be hesitation when deciding to travel. Theoretically, if the resisting behaviour were high, the domestic tourist would depend on their vaccine valance decision-making sources. The study showed that PBC and subjective norms influence the relationship between vaccine valance and domestic vaccine travel intention. Theoretically, PBC and subjective norms strongly influenced domestic vacation intention. In this study, if the tourists perceive the decision as risky, it may lead to less confusion. It showed that when the PBC and subjective norms are more significant, vaccine valance dependence on intention is high.

This study sheds light on the impact of COVID-19 on the behaviour of tourists during this unprecedented pandemic. Based on timely data collection and analysis, tourist behaviour has shifted favourably toward vacation intention after vaccination. This study offers several theoretical implications. First and foremost, this study is an academic effort to contribute to tourist literature by evaluating the current worldwide issue that has created significant upheaval in global society and the lives of individuals. It considers the COVID-19 vaccine the best option for reverting to a "normal" state before the pandemic. The findings of this study will be helpful for future longitudinal studies monitoring tourists' short- and long-term behaviour changes, as Bae and Chang (2020) suggested. Secondly, this study applied the extension of vaccine valence risk perception, the emotion related to whether the vaccine taken that helps to protect tourists and travellers against the pandemic has determined their intention to engage in future travel and vacation. However, prior research has focused on vaccine valence risk perception, a protective behaviour based on the health belief model. This study discussed vacation intention after vaccination to indicate a 'new normal' tourism behaviour, allowing people to travel even during a pandemic while reducing perceived health risks. Vaccine valence risk perception significantly predicted tourists' attitudes, subjective norms, and perceived behavioural control toward vacation intention. This health-protective behaviour could be an avenue for future research in post-corona. Third, this study expanded the health risk perception theory with the vaccine valence risk perception variable. In addition, it confirmed the mediating role of attitude, subjective norm and perceived behaviour control between health risk perception and domestic vacation intention. The findings might have differed if the study had been conducted before or after the MCO and the COVID-19 situation had relaxed. Although not all tourists' behaviour factors did not mediate the effect of health belief on vaccine travel intention, it was found to be a significant mediator in the equation. Finally, the issue of safety and risk will be continuously argued. More research on travel intention is expected to be carried out by considering different factors, such as environment, situation, and context.

5. Conclusion

This study offers practical implications for the tourism industry in Malaysia and the global tourism market. From a manager's perspective, this research offers valuable insight; tourism agencies should concentrate on the causes of travel intention, such as information about the risks of travelling. Tourism agencies and the government should refrain from giving unnecessary information or using jargon when introducing a travel spot as some of the technical terms may not be understood by tourism. Therefore, travel agencies must learn to

convey information about their products or brands more straightforwardly and effectively to tourists. Travel agencies and Tourism Malaysia also need to consider vaccine valence risk perception, subjective norms, and perceived behaviour control in travellers' decision-making during travel. The ability to influence the vaccine travellers may help them market the spot and increase travel intention during the pandemic. Tourists may refer to a risk assessment for advice or information hence, travel agencies should provide a convenient and conducive atmosphere to attract tourists and their friends/peers to travel and visit the place and search for the correct information about the services offered. One of the strategies to reduce the tourist fear of travelling was to narrow down the risk of infection from COVID-19 by providing a hygienic and safe travelling spot. Also, travel agencies must explain the function and the importance of each attribute of safety measures taken for the traveller. Besides that, travel agencies can also create a website that provides information to address travellers' risks. If the travel agent fails to take any measure to address the issue of safety and risk, domestic vaccine travellers might experience confusion about the risks and dangers of travel. Addressing domestic travellers' may be time-consuming, but it could be a fruitful approach in the long run.

Limitation of study: This study has several limitations, one of which is that the study was correlational and not causal. As a result, a genuine cause-effect relationship could not be established. Future research should use an experimental design to establish causality, where data can be collected multiple times during the research period. In this way, changes in perception and behaviour related to decision-making can be better understood. Another limitation relates to the generalisability of the results due to the setting and sample selection. Since this study was conducted online, the results may need to be generalisable to other respondent groups in Malaysia. Using the online survey could also compromise the validity of the results. For one, the halo effect could occur. Also, the study could suffer from agreement bias, where participants tend to agree with the questions asked. As this study focused on domestic vacation intention, demographic factors were not highlighted. Future research should consider demographic factors, especially when incorporating a new environment. Previous studies on vacation intention indicated that demographic factors influence vacation intention. Therefore, this study should use these factors as controlled variables. The type of participants is another limitation of this study. The participants of this study were from various industries and backgrounds. Their responses could have been different if the study had been conducted on tourists from the specific industry. Future researchers may study other industries, such as health services, education, agriculture, and airlines. Also, future research should include other ethnic groups to understand how different ethnicities address tourist valence and vacation intention. Other ethnic groups should be considered to reflect the diversity of the Malaysian population.

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