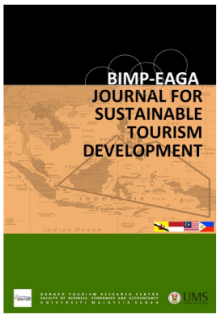

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CONSTRAINT NEGOTIATION MODEL FOR INVESTIGATING THE TRAVEL PREFERENCES IN POST-COVID19: A GSEM-BASED ANALYSIS

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Abstract

The study examines how vaccine trust affects the COVID-19 travel constraints (CTC) and changes travel confidence post-vaccination (PVTC) and travel preferences (TP). The effect of a mediator travel confidence and a moderator travel behaviour had on the correlation between CTC and TP were identified. Due to the binary trust measurement, a generalised structural equation model (GSEM) was used to analyse the complex correlations between the constructs while a structural equation model (SEM) was used for result verification. The GSEM was found to perform significantly better than the SEM. The main constraints were the vaccination status of tourism workers at the travel destination and finances. Therefore, transparency in terms of the vaccine status of tourism workers could increase PVTC while changes in TP could negotiate the financial restraints. This study provides vital theoretical and practical insights into how vaccinated individuals negotiate CTC in terms of PVTC and TP during the pandemic.

Keywords: Constraints, negotiation strategies, travel preferences, travel confidence, vaccination, GSEM and SEM.

1. Introduction

Plans to effectively revitalise the tourism industry post-COVID depend on the planner's or tourism player's understanding of the travel behaviour (TB) of tourist. Therefore, this present study provides in-depth knowledge of the effects of mediators; such as vaccine trust (VT), COVID travel constraints (CTC), and post-vaccination travel confidence (PVTC); and the effect of a moderator; namely, travel behaviour (TB); on travel preferences (TP) to develop practical methods that tourism planners can use to understand and respond to tourist needs and TP. Extant studies have predominantly used the health belief model, protection motivation theory, and theory of planned behaviour to understand vaccine uptake intention (Gursoy et al., 2022; Williams et al., 2022). While the travel reason was tested as moderator (Gursoy et al., 2022). However, these studies are not only atheoretical but hypothesise that only one correlation exists between reason for travel and vaccination, i.e., individuals opt for vaccination solely for travel reasons. Consequently, such research has neglected to investigate the travel behaviour in the diverse ways in which travel for leisure or not is a question after vaccination and is the trust in vaccine influencing tourists' travel preferences. There is a missing connection between vaccination, travel behaviour (are the vaccinated people travelling?) and travel preferences (how people travel after vaccination?).

According to Maslow's Hierarchy of Needs, tourism is not a basic physiological need (Mokhtarian et al., 2015) but a higher order need for social, self-esteem, and self-actualisation. Vaccination, on the other hand, is a 1st and

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2nd level need; which includes physiological wellbeing and safety or security. Shearley (1999) posit that immunisation is a basic physiological need that must be met concurrently with other survival needs in order to move towards higher societal needs. Health can be classified as a crucial safety need (Pauna et al., 2019). The basic premise of the theory of needs is "people are not going to be satisfied unless their needs are met" (Greenberg, 2005). Furthermore, humans are not only motivated to meet their needs but to meet their needs in a specific order. For instance, if their basic needs have not been met, humans will lack the motivation to meet needs that are considered non-basic or non-essential (Wahba & Bridwell, 1976). Therefore, in accordance with the theory of needs, this present study argues that humans will prioritise vaccination, to meet their basic needs, before they prioritise tourism activities.

Malaysia launched its National Immunisation Programme (NIP) on February 24, 2021 (Ministry of Health Malaysia, 2022). On October 10, 2021; eight months later; travel restrictions were fully lifted for vaccinated travellers (Lim, 2021). Figure 1 shows tourist arrivals in Malaysia between February 2021 and March 2022. As seen, tourist arrival figures gradually increased after the vaccination programme was launched (Tourism Malaysia, 2022). This was also in part due to the MYR 1.6 billion (USD 360 million) that the Malaysian government allocated in 2022 to revive the tourism sector (Ministry of Finance Malaysia, 2021). Multiple studies have examined the travel intentions of tourists during the COVID-19 pandemic in Malaysia (Aziz & Long, 2022). Even though it would provide more practical insight into how Malaysia could develop tourism products and services that cater to the needs of tourists in the new normal, not many studies have examined the TP of Malaysian travellers and tourists' post-vaccination.

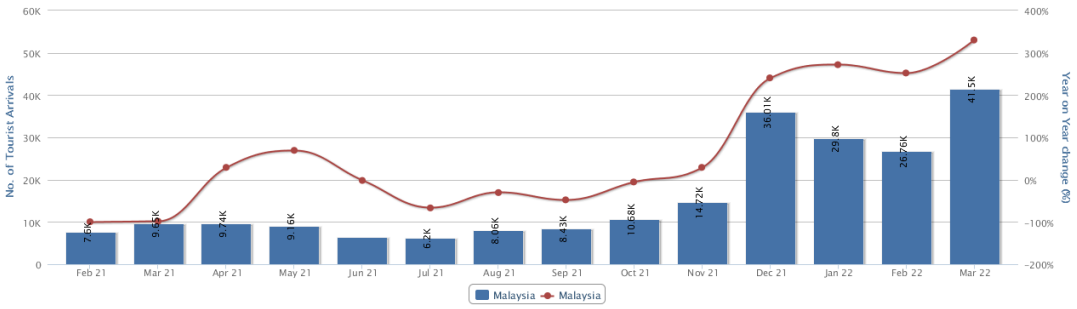

Figure 1: Tourist arrivals in Malaysia.

The COVID-19 pandemic has undeniably changed the TB of tourists; from one of leisure-oriented travel to concerns over health risks as a travel constraint (Zenker & Kock, 2020). Multiple studies have investigated the effect of CTC on TB during the pandemic (Aziz & Long, 2022). Humagain and Singleton (2021) and Karl et al. (2021) used the constraints negotiation theory to cope with the CTC as well as explore and examine tourist reactions and TB during the pandemic. However, these studies solely examined the effect of CTC on TB and did not examine the effect of vaccination on TB, which would affect their TP. Therefore, this present study hypothesised and empirically tested the correlations between VT, CTC, TB, cognitive negotiation (i.e., PVTC), and behavioural negotiation (i.e., TP) in Malaysia.

2. Literature Review

2.1. Travel Constraint Negotiation Theory

Since the 1980s, numerous scholars from multiple different social science disciplines have studied the effect of travel barriers or constraints (Iso-Ahola, 1981; Iso-Ahola & Mannell, 1985). Travel constraints originated from the concept of leisure barriers and later extended to participation in family activities (Crawford et al., 1991; Crawford & Godbey, 1987). Crawford and Godbey (1987) propose three types of leisure barriers: (1) intrapersonal barriers, i.e., individual psychological states, attributes, and characteristics that interact with leisure preferences, (2) interpersonal barriers; i.e., interactions between individual characteristics, and (3) structural barriers; i.e., commonly conceptualised intervening factors such as time or financial constraints. Crawford et al. (1991) then redefined these leisure barriers as constraints that are encountered hierarchically; whereby intrapersonal constraints are more proximal and structural constraints are more distant. However, having empirically tested the model, Kay and Jackson (1991) concluded that these constraints do not always impede participation as some of these constraints can be overcome. This gave rise to the concept of constraint negotiation (Jackson & Rucks, 1995).

Constraint negotiation suggests that people can find ways of mitigating the impact of their constraints to participate in the recreational activities of their choosing (Jackson & Rucks, 1995). Negotiation can be divided into two parts: cognitive and behavioural. Inspired by the social cognitive theory, extant studies proposed and measured cognitive negotiation using: (1) negotiation-efficacy; i.e., the successful negotiation of leisure constraints builds confidence in the ability to negotiate future constraints (Jackson et al., 1993) and (2) aspiration; e.g., self-encouragement (i.e., endeavour to negotiate the constraints), avoidance (i.e., ignore the constraints), and persistence (i.e., endeavour to negotiate the constraints) (Xie & Ritchie, 2019). However, Hutchinson et al. (1999) provides insight into cognitive negotiation, in which broad cultural ideologies and hegemonic structures can be used to identify the cognitive values of a person that can then be enacted and reinforced, as well as negotiated and changed, via the environment and daily interactions. Figure 2 provides the theoretical framework of this present study.

Although multiple studies have examined travel constraints during the pandemic (Aziz & Long, 2022; Karl et al., 2021; Shin et al., 2021), none of them examined the effect of vaccination. This present study posits that CTC continues to affect PVTC. This includes interpersonal constraints; e.g., concerns regarding the vaccination status of tourism workers at the travel destination (Williams et al., 2022) intrapersonal constraints; e.g., the need to maintain social distancing (Kim & Liu, 2022), and structural constraints; e.g., financial constraints (Karl et al., 2021; Shin et al., 2021). Therefore, the following hypotheses were developed:

H1. Interpersonal constraints affect travel confidence post-vaccination.

H2. Intrapersonal constraints affect travel confidence post-vaccination.

H3. Structural constraints affect travel confidence post-vaccination.

Behavioural negotiation strategies include assimilation; where an environment is transformed according to personal preferences; and accommodation, such as adjusting personal preferences to adapt, accept, and positively interpret the environment (Brandtstädter & Renner, 1990). In this present study, the TP of tourists had to be adjusted to the COVID-19 pandemic instead of trying to change the pandemic situation. The pandemic and subsequent CTC brought tourism to a near-standstill. In Malaysia, the government enforced a movement control order (MCO) for 21 months; from March 18, 2020 to December 31, 2021 (Borneo Post Online, 2021). Therefore, vaccination is most definitely the key negotiator to travel restrictions during the COVID-19 pandemic. However, nearly two years of lockdown could have changed the TP of tourists when tourism resumes. This may manifest as xenophobia; i.e., prejudice against people from other countries; or a perceived risk of uncertainty (Navarrete & Fessler, 2006), which could lead to a reluctance to travel abroad and a preference to travel domestically (Kock et al., 2020). According to Cai (2003), the SARS outbreak affected TP in terms of choice of travel companion as people preferred to travel with people they were familiar with (i.e., family and relatives) and choice of travel mode as people preferred private vehicles over public transport to avoid crowds. Therefore, the following hypotheses were developed:

H4. Interpersonal constraints affect travel preferences.
H5. Intrapersonal constraints affect travel preferences.
H6. Structural constraints affect travel preferences.
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2.2. Vaccine Trust

A vaccine is a specific agent that is administered to prevent individuals from developing communicable diseases which, in turn, prevents the spread of disease (Milošević Đorđević et al., 2021). Vaccine trust (VT) is defined as a belief in the safety and efficacy of vaccination, in the individuals administering the vaccines, the advice of health expert on vaccination, and macro-health systems; such as the government, vaccine producers, and the WHO (Larson et al., 2018). Trust in vaccination is a vital and influential factor that affects vaccine uptake intention (Milošević Đorđević et al., 2021; Vergara et al., 2021). Vaccine hesitancy (VH) negatively affects VT (Vergara et al., 2021). The three components or 3C's of VH include: (1) confidence; i.e., VT, (2) complacency; i.e., believing it is unnecessary to get vaccinated, and (3) convenience; i.e., ease of access to vaccines (Quinn et al., 2019).

Although this present study does not examine VH, it does investigate one of its elements; confidence or trust. This is because, in Malaysia, COVID-19 vaccines are regulated and all government employees must be vaccinated (Anand, 2021). Despite the easing of COVID-19 standard operation procedures (SOPs) and restrictions for those who are fully vaccinated, there are 4 phases in the National Recovery Plan (NRP). In phases 1, 2, and 3, residents are required to show proof of COVID-19 vaccination prior to travelling, dining at a restaurant, and entering their place of work (Lim, 2021). According to the Ministry of Health Malaysia, at least 70,274,130 doses of the COVID-19 vaccines have been administered thus far and 81.7% of the population has been vaccinated as of 30 April 2022 (Ministry of Health Malaysia, 2022). Therefore, VT, not tourism revitalisation, was the primary cause of vaccine acceptance in Malaysia; e.g., I believe that the COVID-19 vaccine reduces my risk of getting infected and, so, I travel or I do not believe that the vaccine reduces my risk of getting infected and, so, I do not travel even though I have been vaccinated.

It is noteworthy that travel intention does not entirely depend on the vaccination status of the tourist but their VT. The decision to travel or not to travel post-vaccination involves multiple levels of trust: for instance, VT and vaccine brands such as Pfizer or Sinovac, the healthcare professional or administrative staff who provided and administered the vaccine, and the healthcare system, government, and the public health researchers who approved and recommended vaccination, which was the Minister of Health in this case (Larson et al., 2018). According to Golbeck and Hendler (2006), it is a challenge to combine trust with algorithms and mathematical analyses as "human trust" is difficult to define let alone quantify. Although several studies have used a Likert scale to measure trust (Milošević Đorđević et al., 2021; Williams et al., 2022), it is not applicable in this present study as it investigates PVTC and TP. The phrase ‘trust in a person is a commitment to an action based on a belief that the future actions of that person will lead to a good outcome’ (Golbeck & Hendler, 2006, p. 501) implies that two components of trust; belief and commitment; are integral to forming a trust. In this present study, the term "trust" refers to a belief that the vaccine allows one to travel confidently and affects their TP (commitment). Therefore, it is more suitable to obtain binary data instead of a greater or lesser measurement of trust. This present study utilised questions that explicitly investigated if Malaysians trusted or did not trust vaccines, information, and the role of the government. Therefore, the following hypotheses were developed:

H7. Vaccine trust affects travel confidence post-vaccination.
H8. Vaccine trust affects travel preferences.
H9. Travel confidence post-vaccination affects travel preferences.

2.3 The mediating effect of travel confidence

Trip decision making is based on a process. As such, Schmoll (1977) proposed a travel decision making model that outlines the constraints (CTC) that affect the rationality of tourists (PVTC) and form their trip decisions or

outcomes (TP). Hung and Petrick (2012) found that travel constraints affect the constraint negotiations of two groups very differently; high and low VT. Travel constraints were found to negatively affect the high VT group; i.e., individuals with high confidence in their ability to face travel constraints; but positively affect the low VT group. In addition, although vaccination is considered as a risk-reduction, but perceived risk and VT strongly depend on individual perception (Williams et al., 2022). Hung and Petrick (2012) also concluded that travel constraints adversely affect the intention to travel on cruises. However, the study did not discover a correlation between travel constraints and constraint negotiation strategies. Meanwhile, Karl et al. (2021) reported that cognitive negotiation had a direct and indirect effect on behavioural negotiation strategies, more specifically, an indirect or mediating correlation between constraints and behavioural negotiation strategies. Similarly, Xie and Ritchie (2019) consider cognitive negotiation a counterpart of behavioural negotiation strategies rather than a direct causal correlation. Therefore, the following hypotheses were developed:

H10. Travel confidence post-vaccination mediates vaccine trust and travel preferences

H11. Travel confidence post-vaccination mediates the correlation between interpersonal constraints and travel preferences.

H12. Travel confidence post-vaccination mediates the correlation between intrapersonal constraints and travel preferences.

H13. Travel confidence post-vaccination mediates the correlation between structural constraints and travel preferences.

2.4 The moderating effect of travel behaviour

Numerous studies have suggested situational variables with which to better understand and examine TP (Suess et al., 2022). Extant studies have also found that frequent travellers have different demands and motivations than those who have never travelled (Lehto et al., 2004). The pandemic has changed tourist preferences. This present study posits that the TB developed while travelling post-vaccination, be it for leisure or other purposes, raises demands and provides travellers with unique experiences that further shape their TP. As such, it is improper to assume that a universal travel constraint negotiation process can be used as not all travellers will use the same constraint negotiation strategy for a constraint. Therefore, the following hypotheses were developed:

H14. The correlation of the model will significantly differ between those who have and have not travelled for leisure post-vaccination during the pandemic.

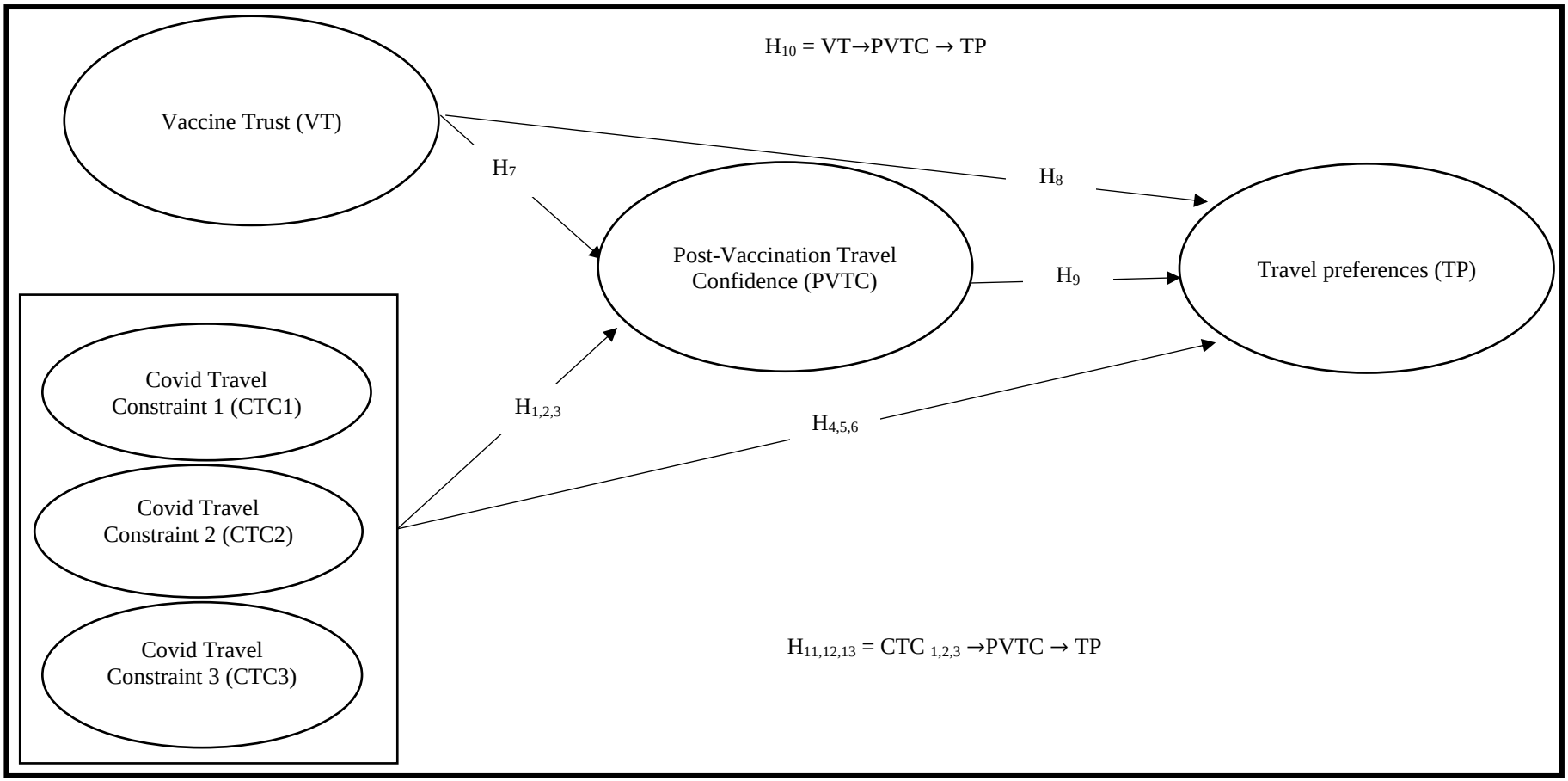


Figure 2: Conceptual framework.

3. Methodology

The data was collected online using a snowball sampling technique which is commonly used to locate hidden populations (Johnson 2014), particularly during the pandemic. Despite limitations; such as non-random screening, correlation between a respondent group and selection probabilities, confidence in the subjective judgements of the respondents, and confidentiality concerns (Johnson, 2014); this approach helped this present study cope with financial, time, and situational constraints; such as social distancing, MCOs, and the risk of infection. Two questions were posed to the respondents prior to survey commencement: (1) Are you a resident of Malaysia? and (2) Are you vaccinated? The questionnaire was conducted in three languages; English, Malay, and Mandarin. The survey was first developed in English before two professional translators (native speakers) translated it to Malay and Mandarin. The reason for these three languages were chosen due to the native language in Malaysia is Malay, and Mandarin is the second main language in Malaysia. Once the survey had been verified and confirmed, a pilot test was conducted with 40 respondents to validate their comprehension of the questions.

The survey was sent via e-mail to academia at several Malaysian universities as well as students who continued to promote the survey on their social network. The invitation e-mail included a link to the online survey, the purpose of which was to encourage the recipient to share the link with their friends and acquaintances. The data was collected between mid-March and late April, six months after Malaysia lifted its interstate and international travel restrictions for fully vaccinated individuals on October 10, 2021, (Lim, 2021). A total of 432 survey responses were received. However, 18 surveys were excluded as the respondents were not fully vaccinated or residents of Malaysia. Therefore, the data analysis was conducted using 414 responses. Table 2 shows the demographic characteristics of the respondents.

Table 1: Demographic characteristics.

Demographic	Sample size (n = 414)	%
Gender		
Male	149	35.99
Female	265	64.01
Age		
18-34	273	65.94
35-49	121	29.23
Older than 50	20	4.83
Citizenship		
Malaysian	381	92.03
Non-Malaysian	33	7.97
Education		
Primary and secondary school	31	7.49
Undergraduate degree	294	71.01
Postgraduate degree	89	21.50
Status		
Study	212	51.21
Working	189	45.65
Unemployed	11	2.66
Retired	2	.48

A quantitative research method was used to empirically test the 14 abovementioned hypotheses. The questionnaire consisted of 6 sections: (1) demographics, (2) VT, (3) CTC, (4) PVTC, (5) TP post-vaccination, and

(6) TB. Section 1 compiled demographic data; such as gender, age, citizenship, education, and vaccination status while the second section contained five dichotomous Yes or No questions (Table 1) that examined VT using constructs inspired by prior studies (Latkin et al., 2021; Vergara et al., 2021). The reliability coefficient of the construct, as measured using the Kuder–Richardson Formula 20 (KR-20) (Kuder & Richardson, 1937), was 0.4, with an average interitem correlation 0.15-0.26. According to Clark and Watson (1995), as the KR20 and alpha coefficients measure internal consistency rather than homogeneity, they are, therefore, limited to the established one-dimensional scale. According to Briggs and Cheek (1986), a range of average interitem correlation (0.15-0.20) is desirable if measuring a broad higher order construct (specificity), i.e., VT. As a result, the VT construct was in the acceptance range. However, VT4 was removed as its interitem correlation exceeded the accepted range 0.15-0.20.

A 5-point Likert-type scale was used to measure the level of agreement or disagreement with the items listed in Sections 3, 4, and 5, where 1 = strongly disagreed and 5 = strongly agreed. Three individual items were adopted from existing studies and used to create the questions in Section 3 (CTC): CTC1; interpersonal constraints in terms of concerns regarding the vaccination status of tourism workers at the travel destination (Williams et al., 2022), CTC2; intrapersonal constraints in terms of the need to maintain social distancing while travelling even post-vaccination (Kim & Liu, 2022), and CTC3; structural constraints in terms of finances affecting travel decisions (Karl et al., 2021). Section 6 examined if the respondents had travelled for leisure post-vaccination using dichotomous Yes or No questions (Aziz & Long, 2022). This was tested as the moderator. Table1 shows the measurement items and the results of the reliability test.

The data was analysed using Stata (version 14.2). The analytical techniques used include descriptive analysis, generalised structural equation modelling (GSEM) for binary data, and structural education modelling (SEM) to verify the results. SEM is commonly used to test the complicated cause-effect correlation between latent variables (Yin et al., 2020). However, SEM can only be used to analyse continuous data, driven by Gaussian error, but not generalised responses (Zhang & Zhang, 2018). For example, in the case of this present study, four VT measurement items contained non-continuous data; i.e., dichotomous questions where 0 = No and 1 = Yes; therefore, the dummy variable only had two values; 0 and 1. Figure 1 shows the four VT factors, each of which was a binary trust or does not trust outcome. As latent factors only relate to binary measurements, which have different properties than a model based on the continuous measurement (SEM), a GSEM was used as the errors were presumed to follow a Bernoulli family or distribution and a generalised linear model (GLM) link function was the logit. Although GSEM facilitates the direct use of all types of data, it cannot perform goodness of fit indices (Yin et al., 2020). Therefore, in order to confirm the effectiveness of the GSEM, an SEM was used for comparison. The Akaike information criterion (AIC) and the Bayesian information criterion (BIC) of SEM and GSEM were used to measure the performance of the two models in this dataset. Models with the smallest AIC and BIC are preferred as they provide a better fit (Yin et al., 2020).

Table 2: Measurement Item and Reliability Test

Variables	**Label**	**Freq./mean**	**%/SD**	**β/α**
Vaccination Trust (VT)				0.4*
I trust COVID-19 vaccine helps to prevent me from getting Covid-19.	VT1	292	70.53 %	
I trust COVID-19 vaccine will not be harmful to my health.	VT2	347	83.82 %	
I trust the information about the safety of COVID-19 vaccines that I received.	VT3	349	84.30 %	
I trust the COVID-19 vaccine that introduced by government.	VT4	254	61.35 %	***Removed***
I trust self-vaccination helps protect other people from being infected with COVID-19.	VT5	305	73.67 %	
Covid Travel Constraint (CTC)				
Interpersonal constraint: I am concerned about the vaccination rate of tourism workers at the destination.	CTC1	4.39	.88	
Intrapersonal constraint: It is necessary to keep social distancing when travelling even vaccination.	CTC2	4.06	1.25	
Structural constraint: Financial factor is my concern during travelling even vaccination.	CTC3	4.50	.84	
Cognitive constraint negotiation				
Post-Vaccination Travel Confidence (PVTC)				0.7**
I am confident to travel after vaccination.	PVTC1	3.82	1.14	
I perceived low risk of being infected with COVID-19 during travelling after vaccination.	PVTC2	3.83	1.14	
I am confident to travel to the destination with a high vaccination rate.	PVTC3	3.85	1.11	
Behavioural constraint negotiation				
Travel preferences (TP) (Formative construct)				0.6**
I prefer to travel abroad.	TP1	3.26	1.37	
I prefer to travel with others.	TP2	3.54	1.24	
I prefer public transport when travelling.	TP3	3.47	1.13	
Travel Behaviour				
I have travelled for leisure after vaccination.	TB	171	41.3%	

4. Findings

Table 3 presents the results of the confirmatory factor analysis (CFA), which used factor loading to validate the convergence of the items within the construct while Table 4 presents the fit of the CFA model to the data. The loading of the items onto the constructs were significant as the p-value was less than 0.05 for standardised factor loadings of 0.7 to 0.9, implying convergent validity (LoBiondo-Wood & Haber, 2014). The composite reliability of CTC and TP were 0.836 and 0.801, respectively, both of which met the acceptable level more than 0.60 that Fornell and Larcker (1981) suggest. The average variance extracted (AVE) of both constructs are .63 and .57. These items displayed a high degree of reliability and the average variance extracted reflected the amount of variance in the items, which was accounted for by the latent constructs, as the constructs met the 0.50 acceptance level (Fornell & Larcker, 1981). Therefore, the constructs were analysed using SEM and GSEM (Table 4).

Table 3: Factor loadings

Factor	β/ Sig	loading	CR	AVE
PVTC			.836	.630
PVTC1	.751/***	.874		
PVTC2	.631/***	.732		
PVTC3	.627/***	.769		
TP			.801	.574
TP1	.540/***	.739		
TP2	.549/***	.698		
TP3	.723/***	.830		

As seen in Table 4, the GSEM performed better than the SEM as its AIC and BIC were smaller. However, due to the limitations of the CFA in the GSEM, the results of the SEM were also presented. Based on the CFA of the SEM, the model fit the data. Table 4 also provides the parameter estimates of the hypothesised model. The GSEM and SEM had similar statistical results. The interpersonal constraint H1 (CTC1) was statistically significant with PVTC while that of the others was insignificant. Two of the structural constraints H4 and H6 (CTC 1 and CTC3) correlated with TP. Furthermore, VT and PVTC were also found to significantly affect TP. More specifically, H1, H4, H6, H8, H9, and H11 were accepted in the GSEM.

4.1 The mediating effects of post-vaccination travel confidence and the moderating effects of travel behaviour

Appendices A & B present the paths of the mediator of PVTC and moderator of TB for changes in PVTC while Table 4 presents the indirect and total effects of these paths. The indirect effect (IE) of H10 was statistically significant in the SEM but not in the GSEM. However, the total effect was deemed significant, indicating that if a person has high confidence in the vaccine, it would indirectly affect TP (VT → TP) as well as boost PVTC and, ultimately, further develop their TP. H11 was found significant in both SEM and GSEM. However, H12 were deemed insignificant. Meanwhile the total effects of H13 were found to be statistically significant in both GSEM and SEM.

The moderator of TB was also examined. Three datasets: (1) without a moderator (AIC = 9109, BIC = 9250), (2) those who had travelled (AIC = 3723, BIC = 3833), and (3) those who had not travelled (AIC = 54.18, BIC = 5541) for leisure post-vaccination were compared. The goodness of fit of the SEM was also tested and proven good. The model fit results indicate that the moderator dataset fit better and supported H14: The model relationship will significantly differ between those who have and have not travelled for leisure post-vaccination during the pandemic.

Table 4: GSEM and SEM results and moderation

	GSEM			SEM		
		H14 (TB)			H14 (TB)	
		Travel	Never		Travel	Never
Structured Path	β^{Sig}	β^{Sig}	β^{Sig}	β^{Sig}	β^{Sig}	β^{Sig}
H_1 = CTC1 → PVTC	.21***	.12	.28***	.21***	.12	.28***
H_2 = CTC2 → PVTC	-.00	.02	-.02	-.00	.02	-.02
H_3 = CTC3 → PVTC	.04	.07	.01	.04	.06	.01
H_4 = CTC1 → TP	-.11***	-.22***	-.02	.23***	-.22***	-.01
H_5 = CTC2 → TP	.04	.02	.06	-.05	.02	.06
H_6 = CTC3 → TP	.24***	.23***	.26***	.24***	.22***	.26***
H_7 = VT → PVTC	.09	.35	.04	.64	2.2	.32
H_8 = VT → TP	.21***	.48	.17	.24***	2.7***	1.3***
H_9 = PVTC → TP	.23***	-.02	.32***	1.4***	-.01	.32***
IE(H_{10}) = VT → PVTC + (VT → TP)	.02	-.01	.01	.15***	-.02	.10
TE(H_{10}) = VT → TP + (VT → PVTC → TP)	.23***	.48	.19***	1.5***	2.7***	1.4***
IE (H_{11}) = CTC1 → PVTC + (VT → TP)	.05***	-.00	.09***	.05***	-.00	.09***
TE(H_{11}) = CTC1 → TP + (CTC1 → PVTC → TP)	-.06	-.22***	.07	-.06	-.22***	.07
IE (H_{12}) = CTC2 → PVTC + (VT → TP)	-.00	-.00	-.01	-.00	-.00	-.01
TE(H_{12}) = CTC2 → TP + (CTC2 → PVTC → TP)	.04	.02	.05	.04	.02	.05
IE (H_{13}) = CTC3 → PVTC + (VT → TP)	.01	-.00	.00	.00	-.00	.00
TE(H_{13}) = CTC3 → TP + (CTC3 → PVTC → TP)	.25***	.23***	.26***	.25***	.22***	.26***
AIC	9109.57	3723.83	5418.78	13145.6	5177.4	7386.17
BIC	9250.47	3833.79	5541.04	13314.7	5399.9	7522.40
RMSEA /Pclose				.044	.02	.038
CFI				.908	.979	.948
TLI				.881	.972	.931
SEMR				.046	.057	.05

5. Discussion and Conclusions

This present study demonstrates the importance of replacing the commonly used SEM with better methods of testing different types of data, binary in this case; to better understand the complex correlations between mediating and moderating effects. The GSEM was found to outperform the SEM as evidenced by a comparison of their AICs and BICs. However, the GSEM has limited CFA. Therefore, the SEM results were used to verify if the data fit the model. The results of both models differed slightly, whereby the SEM deemed the binary data of the VT construct to be statistically significant, but the GSEM did not. Therefore, the method of data analysis plays an important role in determining the path coefficient when dealing with different types of data.

5.1 Direct correlations

The travel constraints negotiation theory was empirically tested to identify changes in TP post-vaccination. The three types of constraints were interpersonal, intrapersonal, and structural. Interpersonal constraints refer to the vaccination status of tourism workers at the travel destination and intrapersonal constraint refer to personal behaviours while travelling (i.e., maintaining social distancing) while structural constraints alluded to financial reasons. According to Karl et al. (2021), these constraints significantly affect the changes in cognitive (i.e., changes in perceptions and aspiration) and behavioural (i.e., changes in life and travel) negotiating strategies during the COVID-19 pandemic, but not in the vaccination context of this study.

As only interpersonal constraints were found to significantly and positively affect PVTC, it suggests that the more an individual is concerned about the vaccination status of tourism workers at the travel destination, the more confidence they have in the trip. Therefore, this should motivate tourism stakeholders to ensure that their employees are vaccinated. It also supports the suggestions of Williams et al. (2022) who, upon learning that Italian tourism workers were reluctant to be vaccinated, suggested that decision-makers and destination marketers encourage them to be vaccinated. In term of empirical evidence, this present study discovered that the vaccination status of tourism workers had a positive impact on PVTC. However, interpersonal constraint was negatively correlated to the travel preferences to travel abroad, travel in group and using public transport. This indicates that one's who is more concerned about the tourism workers vaccination status would be more likely to refuse to travel abroad, be the solo traveller, as well as not to take public transport.

Financial constraints were found to be one of the factors affecting TP. This is in line with the findings of Karl et al. (2021) and Tay et al. (2022). In this context, financial constraints may include additional travel expenses such as special travel insurance for COVID-19 coverage (Naseeb et al., 2020). This present study also found that maintaining social distancing did not significantly affect PVTC and TP. This was unlike the findings from Humagain and Singleton (2021) and Kim and Liu (2022). Although it is an effective method of preventing the spread of COVID-19, social distancing has been proven to negatively affect the travel intention of tourists (Kim & Liu, 2022). However, this present study found no correlation between social distancing and PVTC and TP. This may be because vaccinated individuals need not continue social distancing or Malaysians have become accustomed to social distancing over the past two years.

This present study also found that vaccine confidence does not correlate with PVTC; therefore, VT does not translate to PVTC. Numerous studies posit that the level of VT would affect perceptions of voluntary health behaviours; such as the uptake of COVID-19 vaccines (Latkin et al., 2021; Williams et al., 2022). However, other studies have concluded that vaccine confidence does not increase PVTC but positively influences TP. Therefore, PVTC has a positive effect on TP. This partially supports the presumption that vaccination is the key to revitalising tourism.

5.1 Mediating effects

The mediating correlation between the three constructs was analysed and found to contribute to the travel constraints negotiation model by expanding CTC that have added VT and affecting cognitive negotiation, which in turn affects behavioural negotiation. The indirect effect analysis revealed that correlations exist between CTC1 and PVTC as well as changed TP (H11) and the total effects of structural constructs (VT and CTC3) and PVTC towards TP (H10 and 13). This was in line with the findings of extant studies who reported that those who experience more travel constraints are more likely to change their behaviours and cognition to negotiate the constraints (Karl et al., 2021; Xie & Ritchie, 2019).

The results also indicate that individuals rely on cognitive processing strategies (PVTC) when faced with financial constraints, which would impact their TP as they may prefer to travel abroad, to travel in group and use the public transport. This was making sense that travel in group and using the public transport in other country can be considered as budget traveling (Gross & Grimm, 2018). The same positive total effect was discovered for VT. This contradicted the findings of Karl et al. (2021) and Xie and Ritchie (2019), who reported a negative mediating effect. Travel constraints are considered a counterpart of behavioural strategies rather than a direct or indirect influence on behaviour (Karl et al., 2021). This may be because this present study focuses vaccination and changing PVTC and TP. It was interesting to note an indirect correlation between interpersonal constraints; such as PVTC and TP. More specifically, the vaccination status of tourism workers at the travel destination was the key to boosting PVTC and TP, with an intermediate effect between PVTC and TP in the model.

5.3 Moderating effects

The TB was tested as moderator in the model. It indicated a difference in the TP of individuals who had and had not travelled for leisure post-vaccination as well as a direct and mediating correlation between the constructs. The vaccination status of tourism workers at the travel destination was found to affect the PVTC of those who had never travelled for leisure post-vaccination. Those who were never travelled care about the tourism workers' vaccination rate at the destination, and that was one of the constraints to PVTC. They would be more likely to exhibit health-seeking behaviours prior to travel This includes vaccination (Suess et al., 2022) and searching for more information prior to travel (Li et al., 2020). However, for people who have travelled in post-vaccination, concerned about the workers' vaccination status at the destination would cause to be less likely to travel abroad, travel in group and using public transport. Financial constraints were found to be the primary concern of both groups when determining their TP. This has been corroborated by multiple extant studies (Kay & Jackson, 1991; Naseeb et al., 2020; Xie & Ritchie, 2019). Vaccinated persons who have not travelled for leisure post-vaccination can be considered conservative travellers (Li et al., 2020). Therefore, it is unsurprising that vaccination rates positively affect their TP as well as mediate the correlation between PVTC and TP.

5.4 Implications

This present study expanded upon the findings of the travel constraint negotiation model proposed by Karl et al. (2021) by incorporating both CTC and vaccine confidence for cognitive and behavioural negotiation strategies in post-COVID-19 vaccinated Malaysia. This study outlined how CTC and VT influence PVTC and the formation of TP. Three main factors were found to evoke PVTC; namely, the vaccination status of tourism workers at the travel destination, financial constraints, and VT. Therefore, this may be of particular interest to stakeholders in the tourism industry. It is recommended that destination marketers ensure that tourism workers and residents are vaccinated and provide proof of vaccination status on their official websites as well as physical banners or signboards that highlight the vaccination rate. This would increase visitor confidence about visiting the destination. Moreover, the vaccination rate should be emphasised when advertising the destination via vlog, storytelling, or experience promotional videos to name a few.

Financial constraints may be due to unexpected travel expenses; such as the medical cost of contracting a new COVID-19 variant (Naseeb et al., 2020). Although several insurance companies offer insurance packages that cover this unexpected cost, it still increases the cost of travelling. Meanwhile, although the cognitive negotiating strategy and PVTC cannot overcome financial constraints, they can be used to shift TP from international to domestic, solo to group, and the use of low-cost public transport to reduce the cost of travel.

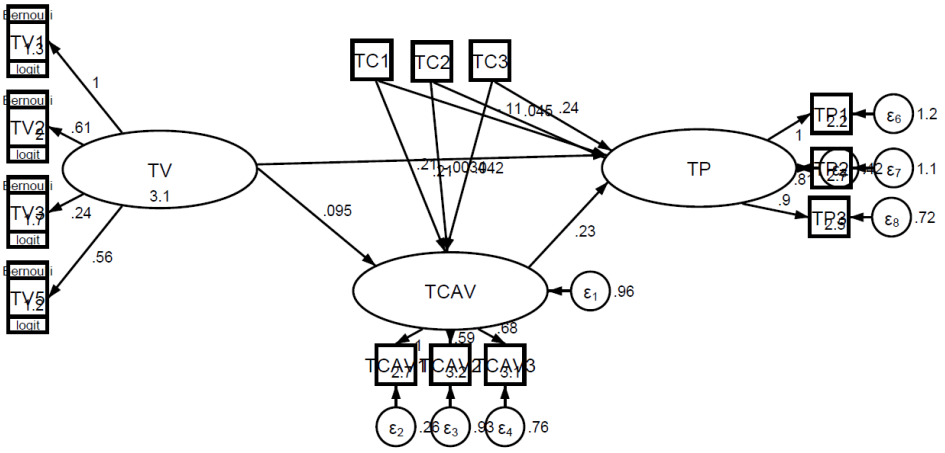
Trust has been extensively studied in relation to vaccine uptake intention (Latkin et al., 2021; Milošević Đorđević et al., 2021; Vergara et al., 2021) but limited in terms of PVTC and changing TP. The present study is close to bridging this gap as VT was found to create PVTC and shape TP. Furthermore, as different countries administered different vaccine brands, tourism operators may benefit by providing information on the type of vaccine administered to residents at the travel destination.

5.5 Limitations and Future Research

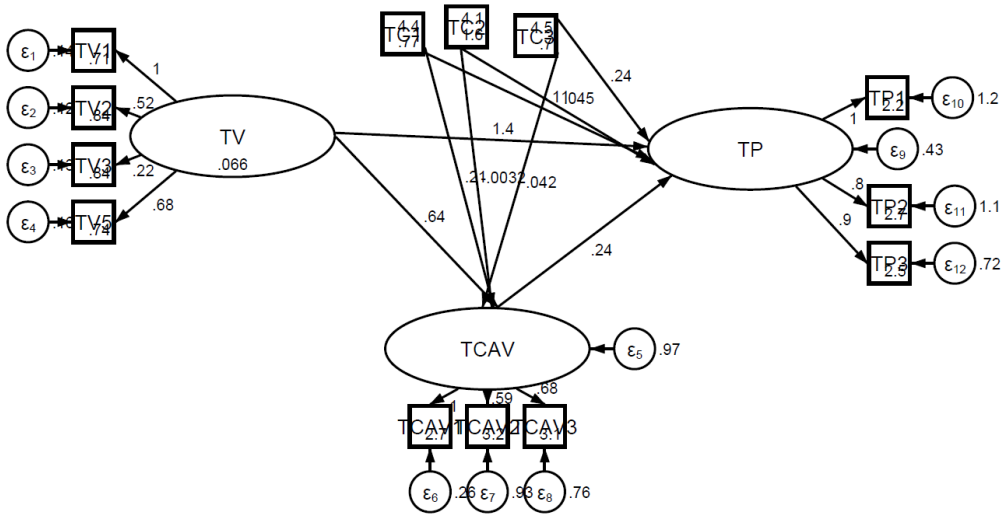
The constructs used in the constraint negotiation framework of the present study (Figure 2) were developed in a Malaysian context. The data was collected a year after the launch of the Malaysian COVID-19 vaccination drive. This model may also have limited generalizability to other countries and time periods. Although many of the CTC elements outlined in this present study; financial constraints and vaccination rate; as well as the cognitive and behavioural negotiation strategies are common in all countries, there may be differences in vaccine confidence as it heavily relies on the actions of the government, e.g., the dissemination of vaccine-related information. Future studies may use the findings of this present study to compare the nature of the constraints as well as cognitive and behavioural negotiation strategies across different geographies and time periods. Future studies should also take into consideration the timeframe as it allows longitudinal studies to be conducted to depict the temporariness of CTC negotiation.

Furthermore, as the sample size was only 414 respondents, albeit with a 95% confidence level, it is still considered a small sample size. Therefore, future research may endeavour to capture a larger sample size for greater coverage. As this present study refrains from sharing the demographic data its respondents, which may be essential in forming TP post-vaccination, it is recommended that future studies examine these demographics. As seen from the results, the different groups (travelled or untraveled) faced different CTC and used different negotiating strategies. This may also be found in multigenerational cohorts; i.e., youth, adults, and seniors (Mohamed et al., 2016; Tay, 2018), as to their lifestyle constraints during the COVID-19 pandemic (Humagain & Singleton, 2021a). Therefore, in the future, multigenerational cohorts should be used to test the constraint negotiation model. As this present study also did not explore these concepts in depth, it provides limited effective and practical management for the tourism industry. Therefore, the constraint negotiation model should be qualitatively examined as it could provide recommendations with which to revitalise the tourism industry post-COVID-19 pandemic.

Appendix A: GSEM results



Appendix B: SEM results



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