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Vaccine hesitancy toward the COVID-19 vaccine among the Malaysian population

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ABSTRACT

COVID-19 is a potentially fatal infectious disease that requires effective vaccines to keep the outbreak under control. Despite the ongoing efforts for an effective vaccine, public hesitancy towards vaccines is now one of the main concerns to the global health in containing this global pandemic. Thus, this preliminary study was carried out to assess the degree of COVID-19 vaccine hesitancy among the general public in Malaysia and to identify the underlying reasons for their hesitancy by using 5C psychological antecedents of vaccination. This study was conducted by carrying out a cross-sectional online survey for approximately two months between January to February 2021, involving 385 participants. The survey contained questions based on the 5C model proffered by WHO. The data from the survey were analyzed using Smart PLS 3 for statistical analysis, with the partial least squares structural equation modeling (PLS-SEM). According to the findings, only 62.5 percent out of the 385 participants had planned to get the COVID-19 vaccine, while the remaining 37.5 percent did not. The results also showed that confidence, calculation, collective responsibility, and constraints had a significant influence on vaccine hesitancy but not complacency. There is a degree of vaccine hesitancy towards the COVID-19 vaccines among the Malaysian population, although the data that we have obtained cannot be used to generalize for the entire Malaysian population due to the small sample size. Thus, for the vaccination campaign to be more effective, it should focus more on addressing the issue relating to confidence, calculation, collective responsibility, and constraints and less on complacency.

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1 Introduction

An outbreak of a mysterious pneumonia-like disease in Wuhan, China, devastated the world in late December 2019. On March 11, 2020, the disease was renamed as coronavirus disease 2019 (COVID-19) and declared a global pandemic by the World Health Organization (WHO 2020). COVID-19 is a deadly infectious disease caused by acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It causes a wide variety of symptoms, from mild (fever, cough, and shortness of breath) to more severe illnesses that could be fatal (CDC 2020). As of September 25, 2021, WHO had recorded over 230 million confirmed cases and over 4.7 million deaths in all countries worldwide (WHO 2021). The numbers have been steadily rising since the outbreak began even though several measures have been implemented to contain the infection. From the onset of the pandemic, there were no treatment options available against COVID-19, thus non-pharmaceutical interventions were imposed including social distancing, mass economic shutdowns, and lockdowns that aimed at avoiding human-human contact thereby reducing possible exposure to this virus (Wong et al. 2020). However, these measures have had negative impacts on the physical and psychosocial well-being of the general public, social interactions, and economic activity (Wan Mohd Yunus et al. 2021). In November 2020, PfizerBioNTech released the first vaccine against COVID-19 and since then, vaccination campaigns have progressed over the past few months globally to curb this seemingly unquenchable disease.

Nevertheless, if there is vaccine hesitancy in the general population, the presence of the COVID-19 vaccine would become less effective in preventing COVID-19 outbreaks. Vaccine hesitancy is a refusal or being hesitant to accept vaccination, which may result in the resurgence of vaccine-preventable diseases such as measles (MacDonald and Sage 2015). Since vaccine hesitancy can prevent the effective containment of vaccine-preventable diseases, such as COVID-19, WHO has named vaccine hesitancy as one of the top ten challenges to global health in 2019 (WHO 2019). Thus, this preliminary study was conducted to identify the underlying reasons for COVID-19 vaccine hesitancy among the general public in Malaysia so that strategies aimed at raising vaccine acceptance and immunization rates for COVID-19 vaccine and other vaccines in the future can be tailored.

Table 1 Measurement items based on the survey questions adapted from Betsch et al. (2018) and Larson et al. (2016)

Constructs	Items	Questions
Confidence (CD)	CD1	I am familiar with the term “vaccines”.
	CD2	The COVID-19 vaccines will be able to protect my body from the COVID-19 virus.
	CD3	The COVID-19 vaccine can modify my DNA.
	CD4	After vaccination, the COVID-19 vaccines pose a risk of infecting me.
	CD5	Good hygiene and proper nutrition would be a better option to reduce the spread of the COVID-19 virus, rather than taking the vaccine.
	CD6	I have previously experienced serious side effects with any of my previous vaccinations.
	CD7	If I have experienced serious side effects from previous vaccinations, this will discourage me from getting the COVID-19 vaccine.
	CD8	I have encountered a situation where my doctor has discouraged me from being vaccinated.
	CD9	I am worried about the safety of a rapidly-developed vaccine like COVID-19 vaccine.
	CD10	I am concerned about where the COVID-19 vaccine is made.
	CD11	Vaccines made in Europe or America are better than those made in other countries.
	CD12	I have refused a vaccine before because I thought it had porcine or other animal-derived ingredients (non-halal) in it.
	CD13	I am concerned about the safety and efficacy of the COVID-19 vaccines.
	CD14	Having public figures taking the COVID-19 vaccine helps in increasing my confidence to take this vaccine.
	CD15	I am willing to take the COVID-19 vaccine even when many people have not taken it yet.
	CD16	I prefer this mode of vaccine administration for the COVID-19 vaccine (you may choose more than one option)
	CD17	The delivery mode of the COVID-19 vaccine can affect my decision in getting this vaccine.
	CD18	I think the pharmaceutical companies are producing the COVID-19 vaccine solely for profit and not because they are concerned about public health.
	CD19	I have heard about the adverse effects that occurred in the volunteers of the clinical trials after taking the COVID-19 vaccine.

Constructs	Items	Questions
Complacency (CP)	CP1	I am at risk of being infected with the COVID-19 virus.
	CP2	COVID-19 is dangerous to my health and safety.
	CP3	The COVID-19 vaccine can help in overcoming the COVID-19 pandemic.
	CP4	Having the COVID-19 vaccine makes me less worried about the COVID-19 pandemic.
	CP5	There is a better way to prevent me from getting COVID-19 other than taking the vaccine.
Constraints (CT)	CT1	The price of the COVID-19 vaccine will affect my decision to take this vaccine.
	CT2	I agree with some of the global leaders and influencers on not administering the COVID-19 as circulated via social media.
	CT3	The traveling distance to the healthcare facility and the waiting period at the facility will be a hindrance to my being vaccinated.
	CT4	I plan on getting the COVID-19 vaccine when it is widely available.
	CT5	The reason I am not willing to get the COVID-19 vaccine is (Choose one or more than the following answers):
	CT6	I have previously refused a vaccine because I thought it had porcine or other animal-derived ingredients (non-halal) in it
	CT7	My religious beliefs or culture prevent me from taking the COVID-19 vaccine.
	CT8	The COVID-19 vaccines from Pfizer / BioNtech's, Astra Zenecca, and Moderna will require the recipient to take two doses to work effectively. This means that I must come to the clinic/hospital to take another shot after a few weeks. This will be a problem for me.
Calculation (CL)	CL1	I obtain information regarding the COVID-19 vaccine from (you may choose more than one)
	CL2	The information regarding the safety and efficacy of the COVID-19 vaccine on social media is reliable.
	CL3	I am aware of the reported side effects of the COVID-19 vaccines.
	CL4	I am interested in the various information regarding vaccine complications in the media.
	CL5	I am worried about the quality and validity of information being circulated in the media regarding the COVID-19 vaccine.
	CL6	The negative social media posts influence my opinion on the safety of the COVID-19 vaccine.
	CL7	I will handle the information concerning the side effects of the COVID-19 vaccines by (You may choose more than one option)
Collective responsibility (CR)	CR1	Everyone needs to be vaccinated against COVID-19.
	CR2	I know of friends/family members/others who have advised me to not take the COVID-19 vaccine.
	CR3	The opinions of my friends and family influence me against being vaccinated for COVID-19.
	CR4	I am familiar with the term "herd immunity".
	CR5	I need to proceed with vaccination even though other people around me have not been vaccinated.

2 Materials and Methods

The survey was based on the 5C scale for vaccination which assesses the psychological antecedents (depicted as constructs in Table 1) as the theoretical framework (Betsch et al. 2018).

2.1 Sampling method

A web-based, cross-sectional survey using an online Google Form, was carried out from 20th January to 17th February 2021, approximately ten months after the declaration of COVID-19 as a global pandemic by WHO. A few popular social network platforms in Malaysia such as WhatsApp, Facebook, and Instagram were used to circulate and spread the survey link to the general public. The involvement criteria were Malaysian citizens who were 18 years old and above and were literate in English as the survey questionnaire was tailored in English. The survey questions were designed based on several published studies, hence content validation was not required (Larson et al. 2016; Betsch et al. 2018). A total of 385 surveys were returned but only 379 were complete hence the valid response rate was 98.4%. The survey was conducted online involving human subjects; hence ethical approval was obtained from the INTI IU Ethics Committee (INTI/UEC/2018/001). A brief explanatory statement about the aim and purpose of this survey was given to respondents in the introduction part of the survey which included a guarantee of anonymity with regards to the respondents' data. Respondents were informed that their participation was solely voluntary and they were allowed to terminate their participation at any time.

2.2 Survey instrument

This study employed the 5-point Likert scale with a grade scale ranging from 1 (Strongly agree) to 5 (Strongly disagree) (Cook and Beckman 2006). The survey was comprised of two sections, the first of which contained questions that assessed the demographic background of respondents and their health status including their experiences with COVID-19. Section 2 contained questions that assessed vaccine hesitancy among respondents which was measured using the "5C model" of psychological antecedents to vaccination–derived items as listed in Table 1 (Larson et al. 2016; Betsch et al. 2018).

2.3 Statistical analysis

For the statistical analysis, Smart PLS 3 was utilized, where the method of partial least squares structural equation modeling (PLS-SEM) was used to calculate the quantitative results (Benitez et al. 2020). This analysis enabled the determination of the relationship between vaccine hesitancy (VH), depicted by dependent variables (DV), and the factors that influence vaccine hesitancy, depicted by independent variables.

Based on the 5C model and the design of the survey, a measurement model was developed (Figure 2) to test the significance of confidence, complacency, constraints, calculation, and collective responsibility towards vaccine hesitancy based on the hypotheses listed below:

H1: Calculation has a significant effect on vaccine hesitancy

H2: Collective responsibility has a significant effect on vaccine hesitancy

H3: Complacency has a significant effect on vaccine hesitancy

H4: Confidence has a significant effect on vaccine hesitancy

H5: Constraints have a significant effect on vaccine hesitancy.

To ensure validity and reliability of constructs, the Composite Reliability (CR) and Cronbachs' Alpha (CA) were tested for each component in the analysis (Ringle and Sarsted 2016). Two types of validity tests, convergent validity and discriminant validity which used the Fornell-Larcker criterion were used in this analysis (Fornell and Larcker 1981). The resulting structural model was assessed by the significance of path co-efficient using bootstrapping technique and the R-squared (R2) to analyze the determination of the standard path coefficient of each relationship between the variables.

3 Results

The total number of Malaysians who participated in this survey were 385 individuals. However, only 379 (98.44%) respondents' surveys were complete and could be used in the PLS analysis. All

Table 2 Summary of respondents' demographic characteristics

Characteristics	Number (n=)	Percentage (%)
Gender		
Male	122	31.66
Female	259	68.33
Age group		
>60	57	15.03
50-59	66	17.41
40-49	61	16.09
30-39	66	17.41
25-29	57	15.04
18-24	72	18.99
Ethnicity		
Indian	180	47.50
Malay	140	36.90
Chinese	52	13.70
Others	7	1.80
Religion		
Islam	140	36.90
Hindu	146	38.50
Christian	46	12.13
Buddhist	34	9.00
Others	13	3.43
Locality (State of residence in Malaysia)		
Selangor	113	29.80
Kuala Lumpur	43	11.30
Johor	26	6.90
Negeri Sembilan	16	4.20
Melaka	16	4.20
Penang	14	3.69
Perak	14	3.69
Kedah	11	2.90
Pahang	7	1.85
Terengganu	6	1.58
Sabah	4	1.05
Sarawak	3	0.79
Occupation		
Employed in the medical line	57	15.03
Employed in the non-medical line	189	49.90
Homemaker	65	17.10
Self-employed	68	17.90
Education level		
Tertiary (Science)	161	42.48
Tertiary (Non-Science)	151	39.84
Secondary (Science/Non-Science)	67	17.64

demographic characteristics such as religion, age, ethnicity, and gender, were varied (Table 2). From the obtained results, there were more female respondents (n=259; 68.33%) compared to males (n=120; 31.66%). All 6 age groups were almost represented equally with most of the respondents aged between 18 to 24 years of age (n=72, 18.99%). The majority of the respondents were Indian (n=180, %=47.50%), followed by Malay (n=140, %=36.90%), Chinese (n=52, %=13.70%) and others (n=7, %=1.80%). In the context of the respondents' religions, the number of Hindu respondents were the highest (n=146; %=38.50%) which could correlate with the majority of the respondents being Indian. Most of the states in Malaysia were represented with the highest number of respondents being from Selangor (n=113, %=29.80%). With regards to employment, it was found that a majority of the respondents were employed in the non-medical sector (n=189, %=49.90%), followed by those who were self-employed (n=68, %=17.90%), homemaker (n=65, %=17.01%), and employed in the medical line (n=57, %=15.03%). In terms of education level, most of the respondents had at least a tertiary education level whereby a large number of them were from a science-related background (n=161; %=42.48%).

Analysis of the data also indicated that there were only 62.5% of Malaysians expressed their intentions to get the COVID-19 vaccination once it became widely available while the 13.4% did not have any intentions of doing so (Figure 1). The data was subsequently analyzed by the PLS-SEM software to determine the measurement model's reliability and validity, indicator reliability, convergent validity, internal consistency reliability, and discriminant validity (Figure 2).

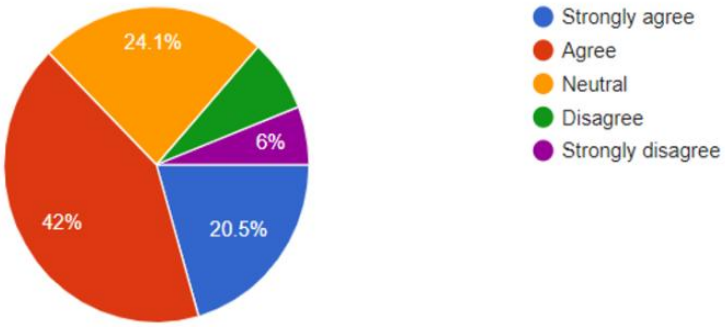

Figure 1 Respondents' willingness to take the COVID-19 vaccine

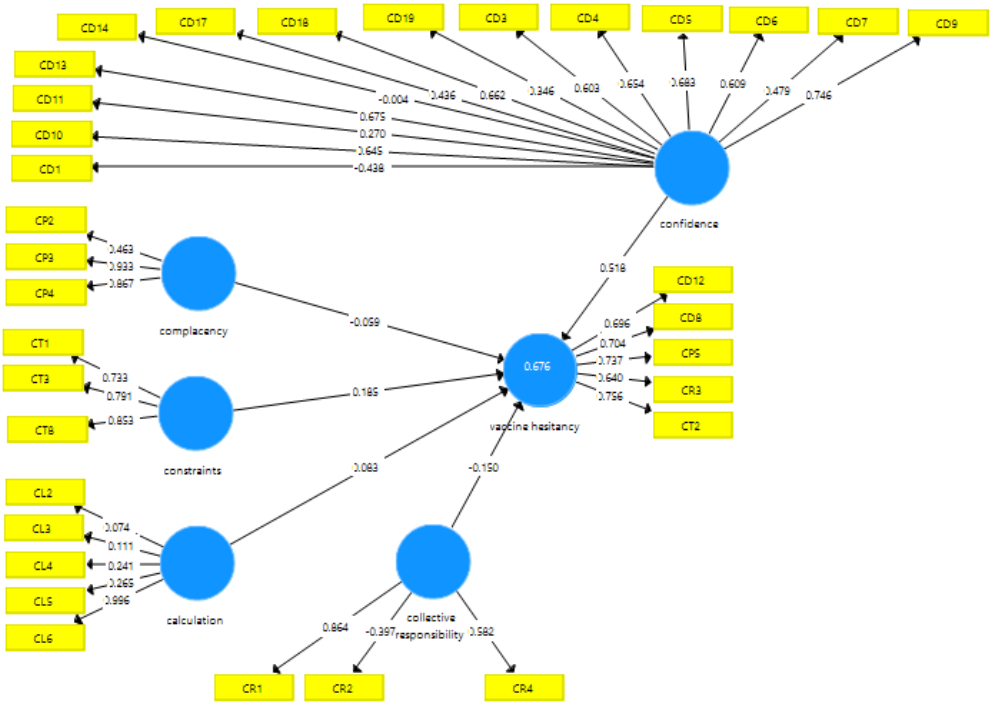

Figure 2 Measurement model showing factor loading values.

As shown in Table 3, Cronbach's alpha values of confidence and constraints variables exceeded the 0.70 thresholds and were considered reliable, while the values for calculation, collective responsibility, and complacency did not exceed the threshold. This indicated that some constructs in this research did not have internal consistency. However, according to the Fornell and Larcker criterion, the average variance extracted (AVE) was higher than the squared correlation between each pair of constructs in Table 4 suggests that discriminant validity was present (values in bold font).

The structural model was assessed after the measurement model had been determined to be accurate and reliable. Figure 3 depicts the structural model generated after bootstrapping.

Table 3 Criterion used to test for internal reliability, construct reliability and convergent validity

Parameters	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Calculation	0.415	0.425	0.228
Collective responsibility	0.156	0.386	0.415
Complacency	0.664	0.815	0.612
Confidence	0.738	0.807	0.307
Constraints	0.710	0.836	0.630
Vaccine hesitancy	0.751	0.834	0.501

Table 4 Fornell and Larcker criterion to test for discriminant validity

Parameters	Calculation	Collective responsibility	Complacency	Confidence	Constraints	vaccine hesitancy
Calculation	**0.477**					
Collective responsibility	-0.314	**0.644**				
Complacency	-0.221	0.583	**0.783**			
Confidence	0.473	-0.643	-0.574	**0.554**		
Constraints	0.407	-0.385	-0.219	0.548	**0.794**	
Vaccine hesitancy	0.464	-0.615	-0.503	0.789	0.573	**0.708**

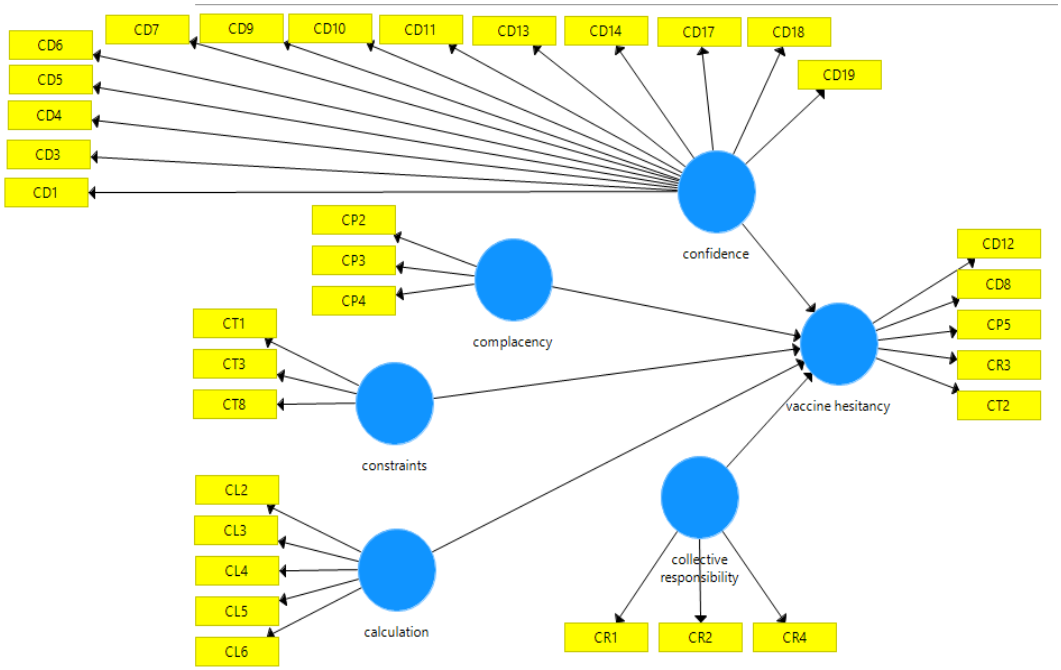

Figure 3 Structural model

Table 5 Hypothesis, Relationships, Original sample (O), Sample mean (M), Standard deviation (STDEV), T-statistics, P-values, and Decisions.

Hypothesis	Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-statistics	P-values	Decision
H_1	Calculation-> VH	0.083	0.089	0.042	1.982	0.048	Supported
H_2	Collective responsibility -> VH	-0.150	-0.150	0.040	3.732	0.000	Supported
H_3	Complacency -> VH	-0.059	-0.059	0.043	1.369	0.171	Not Supported
H_4	Confidence -> VH	0.518	0.519	0.046	11.281	0.000	Supported
H_5	Constraints -> VH	0.185	0.183	0.043	4.259	0.000	Supported

*Significant at $p<0.05$

The coefficient of determination (R^2) and direction coefficient that was subsequently generated was used to evaluate the structural model. To determine the collinearity problem, the structural model was evaluated for a coefficient of determination (R^2) as well as the statistical significance and relevance of path coefficients. The R^2 value is the coefficient of determination that is used to calculate the percentage of the overall variance. R^2 value in this research was 0.676 which was more than the threshold value of 0.5, therefore it was considered to be a strong and reliable value.

The significance of the route coefficient was determined using bootstrapping. Table 5 shows the T-statistics value and P-values for all the constructs after bootstrapping. T-statistics value must be 1.645 and above at a 0.05 alpha level for a path coefficient to be significant. From Table 5, it was concluded that calculation (H1)(t=1.982; p=0.048), collective responsibility (H2) (t=3.732; p=0.000), confidence (H4)(t=11.281; p=0.000), and constraints (H5)(t=4.259; p=0.00) had a significant positive influence on vaccine hesitancy as the hypotheses H1, H2, H4 and H5 were supported. However, complacency (H3) (t=1.369, p=0.171) was concluded to not have a significant positive influence on vaccine hesitancy as the hypothesis H3, was not supported with its T-values being less than 1.645.

4 Discussion

Vaccine hesitancy is a global issue and has been made more apparent during this COVID-19 pandemic. From January 28 to 31, 2021, a survey about global attitudes on the COVID-19 vaccine was conducted by Ipsos using the online Global Advisor platform for The World Economic Forum (Ipsos 2021; Coronavirus 2021). With a base sample of more than 500 participants, the survey was conducted among adults aged 16 to 74 from 15 different countries spanning Europe, Asia, Africa, Australia, and the United States. The survey showed that the vaccination intent in the United Kingdom was the highest at 89% where 9 out of 10 British adults agreed that they would get the COVID-19 vaccine once it was available. Brazil (88 percent), China (85 percent), Mexico (85 percent), Italy (80 percent), Spain (80 percent), Canada (79 percent), and South Korea (78 percent) were among the other countries with high vaccination intent. The result of these surveys showed that there was increasing demand for COVID-19 vaccine in each of these countries compared to December 2020 when a similar survey was conducted and at that time the vaccines had not yet been approved for use in many of the countries. Besides the vaccination intent, the survey also determined that one of the factors that caused vaccine hesitancy among individuals was that they were worried about the side effects as well as the speed at which the clinical trials of the COVID-19 vaccine were conducted. Other factors that contributed to the vaccine hesitancy included that they doubted the effectiveness of the vaccine which was also reflected by the findings in this study.

In addition to the PLS-SEM analysis, the raw data was also reviewed and it was found that, as of February 17th, 2021, there were only 62.5% of Malaysians who expressed their intentions to get the COVID-19 vaccination once it became widely available while the 13.4% did not have any intentions of doing so. This is concerning as the data indicated that this number does not reach the herd-immunity threshold which is around 70% to 85% of a population (McDermott 2021). Thus, there is a need to carry out intervention to cater to the 24.1% of Malaysians with vaccine hesitancy so we can increase the vaccine uptake and achieve herd immunity against COVID-19.

From the 5C model, five main reasons can lead to vaccine hesitancy which are calculation, collective responsibility, confidence, constraints, and complacency. From the data obtained in this study, it was shown that one of the significant reasons that cause vaccine hesitancy among the Malaysian population is a calculation that was linked to an individual's efforts in searching for validated information regarding COVID-19 vaccines and vaccination. Theoretically, a high level of calculation can have a positive impact on vaccine uptake as they have enough knowledge on the risk of disease as well as knowledge about the importance of the vaccine. However, it is also depending on the source of information. It is a problem if the respondents obtain information regarding vaccines against COVID-19 from social media like Facebook which could be a source of inaccurate information in the form of fake news regarding COVID-19, as was found in the study by Puri et al. (2020). Collective responsibility (H2) which is the desire to protect others by herd immunity by vaccinating oneself,

also had a significant positive influence on vaccine hesitancy. The findings of this study revealed that there was a lack of collective responsibility among the respondents, as they did not seem to understand the importance of each individual to be vaccinated so that we can achieve herd immunity in the efforts to stop the spread of COVID-19 infection in the community (Table 5). Thus, to prevent vaccine hesitancy, the government should also focus on providing knowledge on herd immunity and its importance in combating COVID-19 (Kwok et al. 2021).

Confidence can be described as confidence in the vaccine's safety and effectiveness, as well as the delivery system such as health services and the policymakers, where lack of confidence may reduce the vaccination rate. In this study, it is found that there is a significant positive relationship between confidence (H3) and vaccine hesitancy indicating that there were respondents who lacked confidence in the safety of the COVID-19 vaccine (Table 5). This could have been because it was rapidly developed and only took approximately one year to be produced, unlike any other vaccine which can take up to 10 years (Dror et al. 2020).

Furthermore, constraints (H5), which included any obstacle that can restrict an individual's ability to access a vaccine service, had a significant positive relationship with vaccine hesitancy. From this study, it was found that two main structural barriers can cause vaccine hesitancy among the public. The first was money and the second one was time taken and traveling distance to the vaccination centers (indicated by CT1 and CT3 respectively in Table 1 and Figure 2). These constraints could prevent individuals from getting vaccinated even though they want it. However, the cost is not an issue as the vaccines are provided free by the government. Furthermore, several employers are initiating workplace vaccination programs as has been successfully done in other countries (Zhang and Fisk 2021).

Complacency is when someone perceives the risk of such diseases, in this case, the risk of contracting COVID-19 is low and thus vaccination is not considered mandatory and relevant to be taken. However, in the case of this study, results obtained have shown that there was no significant positive relationship between complacency and vaccine hesitancy (Table 5). This study indicates the Malaysian respondents were already well aware of the danger and seriousness of COVID-19 and believe that preventive measures should be taken, including vaccination. It is just that there are other factors, like what has been mentioned above, that have led to vaccine hesitancy.

There were limitations to this study, the first and most important being the sample size, which was only 379 respondents who could be included in the data analysis. Although this is an indication of vaccine hesitancy and it was sufficient to carry out PLS analysis, it cannot be a true measure of vaccine hesitancy in Malaysia. Furthermore, there should be more even participation from other states to have a better view of the level of understanding on COVID-19 vaccination among Malaysians. There should also be a more targeted effort to broach a wider range of individuals in different walks of life as this would certainly have an impact on their understanding and perceptions of the COVID-19 vaccines. Furthermore, the study was carried out early in the year when the COVID-19 vaccines were still a novelty to the world. Since then, the Malaysian government has been making considerably more efforts in using social media to disseminate accurate vaccine-related information to build public trust in the COVID-19 vaccines and this has helped with the issue of vaccine hesitancy as is evident by the current vaccination status in Malaysia that has achieved more than 78.3% of the population as of 10th November 2021 (COVIDNOW 2021). In addition, the escalating number of COVID-19 cases and fatalities due to this pandemic has spurred a majority of the general public into seeking the only therapeutic alternative available – COVID-19 vaccination. However, vaccine hesitancy is still an issue as the number of deaths due to COVID-19 in unvaccinated individuals was higher than in vaccinated individuals. Recently, it was reported in the Star newspaper that up to 70% of the COVID-19 admissions to a government hospital in Klang were unvaccinated individuals, out of which 80% of them succumbed to the disease (TheStar 2021). This makes vaccine hesitancy a very real issue with threats to the health and safety of the Malaysian public. With the emergence of the Delta variant which has driven the tremendous increase in COVID-19 positive cases and fatalities globally, it is even more crucial to be vaccinated against the COVID-19 virus. Scobie et al. (2021) reported that vaccination protected individuals from more severe illnesses due to COVID-19 including the Delta variant. Despite the tremendous efforts by the Malaysian government to achieve herd immunity among the population with the vaccination initiatives, vaccine hesitancy will continue to impede the progress of the vaccination drive and the fight against the COVID-19 pandemic.

Conclusion and Recommendations for Future Research

In conclusion, there is vaccine hesitancy toward the COVID-19 vaccines among the Malaysian population. The main issues that contribute to vaccine hesitancy could include calculation which is the misinformation regarding the COVID-19 vaccines and vaccination. Another factor is a collective responsibility, which is the lack of willingness to be vaccinated to protect others from COVID-19. Confidence is also the main issue contributing to vaccine hesitancy as many respondents did not seem to trust the speed at which the COVID-19 vaccines were produced.

This study should be carried out with a bigger sample size and should be more effectively carried out using online platforms, and perhaps collaborating with governmental agencies such as the Ministry of Health (MOH) and Ministry of Science, Technology,

and Innovation (MOSTI) as well as the mainstream newspapers such as News Straits Tines and the STAR to reach more respondents. In addition, the survey should be done in Bahasa Malaysia to encourage better participation from Malaysians from all the states in Malaysia which would help to paint a more accurate image of the current state of vaccine hesitancy against the COVID-19 vaccine in Malaysia.

Conflict of Interest Statement

The authors declare no conflict of interest. This paper has not been submitted for publication in any other journal.

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