

## THE EFFECT OF KNOWLEDGE AND PERCEPTION ON MOTIVATION TO RECEIVE COVID-19 VACCINE AMONG GENERATIONS

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### Abstract

The vaccination program has become the most anticipated intervention in minimizing the spread of COVID-19, including in Indonesia. Individual motivation to receive COVID-19 vaccination is believed to be one of the important predictors of achieving national vaccination targets. This study aims to analyze the differences, relationships, and the effect of knowledge and perceptions toward motivation to receive the COVID-19 vaccine among generations. This study used an explanatory design and voluntary sampling method with 201 respondents from generations X, Y, and Z. This study showed a significant difference in knowledge, perception, and motivation between generations. More than half of the respondents had a moderate knowledge of vaccination. Moreover, Generation X and Generation Y respondents were more likely to have poor perceptions regarding COVID-19 vaccination and lack motivation to receive the vaccine. Meanwhile, generation Z recorded a moderate level of perception and motivation regarding vaccination. The results also showed that there was a significant correlation between respondent characteristics and knowledge and perception. The regression test results showed that family income, number of dependents, ethnicity, vaccination status, and perceptions related to vaccination significantly affected motivation to vaccinate COVID-19.

Keyword: COVID-19 vaccination, intergenerational, knowledge, motivation, perception

## PENGARUH PENGETAHUAN DAN PERSEPSI TERHADAP MOTIVASI MELAKUKAN VAKSINASI COVID-19 ANTARGENERASI

### Abstrak

Program vaksinasi massal menjadi upaya utama yang dilakukan dalam mengatasi pandemi COVID-19 di Indonesia. Motivasi individu untuk melakukan vaksinasi COVID-19 penting untuk diteliti sebagai prediktor keberhasilan dalam mencapai target sasaran vaksinasi nasional. Penelitian ini bertujuan untuk menganalisis perbedaan, hubungan, serta pengaruh pengetahuan dan persepsi terhadap motivasi melakukan vaksinasi COVID-19 antargenerasi. Penelitian ini menggunakan desain *explanatory* dan metode *voluntary sampling* dengan total 201 responden yang berasal dari generasi X, Y, dan Z. Hasil penelitian menunjukkan bahwa terdapat perbedaan yang signifikan pada pengetahuan, persepsi, dan motivasi melakukan vaksinasi antargenerasi. Penelitian ini menemukan bahwa lebih dari separuh responden memiliki tingkat pengetahuan terkait vaksinasi pada Category sedang. Responden generasi X dan Y cenderung memiliki persepsi negatif terhadap vaksin serta motivasi yang rendah untuk melakukan vaksinasi. Sedangkan generasi Z memiliki persepsi dan motivasi vaksinasi yang tergolong moderat. Hasil penelitian juga menunjukkan bahwa terdapat hubungan yang signifikan antara karakteristik responden dengan pengetahuan dan persepsi. Hasil uji regresi menunjukkan bahwa pendapatan keluarga, jumlah tanggungan, suku, status vaksinasi, dan persepsi terkait vaksinasi memiliki pengaruh signifikan terhadap motivasi melakukan vaksinasi COVID-19.

Kata kunci: antargenerasi, motivasi, pengetahuan, persepsi, vaksinasi COVID-19

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## INTRODUCTION

Since its emergence in late 2019, Coronavirus disease 2019 (COVID-19) has had a devastating impact on various aspects of human life around the world. To date, there have been 230 million confirmed cases worldwide with a death toll of 4.7 million. Indonesia is the country with the highest number of confirmed COVID-19 cases in ASEAN countries. As of 23 September 2021, the number of confirmed cases of COVID-19 reached 4.1 million people with 140 thousand deaths spread across 34 provinces in Indonesia. Various efforts have been made by the government to deal with COVID-19 cases that are still increasing every day. Starting from the appeal for social distancing, work from home, Large-Scale Social Restrictions (PSBB), up to the implementation of emergency Community Activity Restrictions (PPKM) which continues every week.

Vaccination is an important effort to minimise the spread of the COVID-19 virus. Scientists from around the world have designed vaccines to build a human immune system that can safely recognise and block the virus that causes COVID-19 (World Health Organization [WHO] 2020). Vaccines work in the human body by remembering, recognising and fighting disease-carrying viruses or bacteria so as to provide specific immunity to certain diseases (Ministry of Health [MOH] 2021). Vaccinating not only protects ourselves, but also helps protect those around us. If most of the community has vaccinated, a group immunity will be formed, commonly known as herd immunity (STPC19 2021). With the formation of herd immunity, people who are not the target of vaccination will also be protected from the danger of spreading the virus. Currently, there are 5 types of vaccines that have obtained distribution permits from the Food and Drug Administration (BPOM) and have been confirmed for safety, namely Sinopharm (Gotong Royong vaccination), AstraZeneca, Moderna, Pfizer, and Sinovac. As of 6 September 2021, Indonesia has received a total of 225.4 million doses of vaccine with details of 8,25 million doses of Sinopharm, 19,5 million doses of AstraZeneca, 8 million doses of Moderna, 2,75 million doses of Pfizer, and 186.9 million doses of Sinovac (STPC19, 2021).

Although vaccines are available in high quantities in Indonesia, this does not guarantee the public's willingness to vaccinate. The national vaccination target set by the government to establish herd immunity in Indonesia is 208.265.720 people or about 76% of the total population of Indonesia. At the time of this study, national data showed that 84.863.899 or 40,75% of the population had received the first dose of vaccination (Ministry of Health, 2021). Currently, as of 28 September 2022, the total vaccination of the first dose reached 87,16% of the population, the second dose reached 72,93% of the population, and the third dose (booster) vaccination reached 27,03% of the population. The existence of conspiracy theories and hoaxes related to vaccination is thought to cause doubts in the community and make them reluctant to vaccinate (Mohamed et al., 2021; Hammour et al., 2021). Survey results show that this refusal and hesitation to vaccinate is still found in various countries (Barello et al., 2020; KFF, 2020; Ehde et al., 2021; Sherman et al., 2021; Lin et al., 2021).

A person's decision to vaccinate can be affected by various factors. Based on the consumer decision model, one of the main factors that affect decisions is individual differences (Sumarwan, 2017). A person's knowledge, perceptions, and motivations are part of these individual differences, resulting from psychological processes that greatly affect their decisions. All the information that individuals possess and their understanding related to a context of products and services constitute a person's knowledge that can affect decisions. Some research results show that the level of public knowledge related to COVID-19 vaccination is low (Farha et al., 2021; Ginting et al., 2021; Mohamed et al., 2021; Hammour et al., 2021). Interestingly, a low level of knowledge related to vaccination is often associated with a low motivation to vaccinate (Farha et al., 2021; Chen et al., 2021; Hammour et al., 2021).

Indeed, perception plays a crucial role in influencing a person's decision-making process, including the decision to vaccinate. Perception, as defined by Solomon (2017) and Schiffman & Wisenblit (2019), is the interpretation of meaning believed by consumers. Each individual has a unique perceptual understanding, even when exposed to the same stimulus. This is because everyone has their own needs, values, and expectations. Motivation plays a crucial role in influencing an individual's decisions, including the decision to vaccinate. As Schiffman & Wisenblit (2019) suggest, motivation reflects the reasons that encourage an individual to take a particular action. In this context, the action is vaccination. Motivation is also one of the factors that affect consumer decisions. The strength of a person's motivation is stimulated by their needs or desires. When these needs or desires are unmet, it can cause tension in a person, which in turn motivates and encourages them to take action to alleviate this tension.

Furthermore, motivation can vary for each individual depending on the needs and benefits they want to feel. This is because individuals experience different types of motivational conflicts that will effect their decisions, including their decision to purchase a product or service (Solomon, 2017).

Each age group has different needs and behaviours, which are shaped by the experiences they have throughout their lives (Solomon, 2017). Research results show that Generation X has a lower risk perception compared to other generations (Masters et al., 2020). However, Generation X is the age group with the second highest number of deaths from COVID-19 in Indonesia, after Baby Boomers (STPC19, 2021). Meanwhile, Generation Y and Generation Z, which are the age groups with the highest number of positive cases in Indonesia, were found to have lower distancing behaviours compared to other generations (Masters et al., 2020).

Individual motivation to vaccinate against COVID-19 is important to study as one of the predictors of the success of achieving national vaccination targets. However, research related to people's motivation to vaccinate against COVID-19 is still minimal in Indonesia. The researchers also found differences in research results on one variable referring to different age groups. In a study conducted by Hammour et al. (2021), knowledge related to COVID-19 vaccination is still lacking and limited to adults, even in very general aspects. Meanwhile, a survey conducted by the Ministry of Health (2020) showed that older adults have a better understanding and show a higher demand for information related to COVID-19 vaccination compared to younger age groups. In addition, research conducted by Farha et al. (2021) showed that younger age groups had higher hesitancy to get vaccinated, in contrast to the findings of Mohamed et al. (2021) who found that younger age groups had higher acceptance to get vaccinated. This difference makes researchers interested in conducting further testing related to differences between generations. Therefore, this study was conducted to compare and analyse knowledge, perceptions, and motivation to get vaccinated between generations.

Based on the above description, this study aims to (1) identify the knowledge, perceptions, and motivations to get vaccinated across generations, (2) compare the knowledge, perceptions, and motivations to get vaccinated across generations, (3) analyze the Correlation between respondent characteristics with knowledge and perceptions, and (4) analyze the effect of respondent characteristics, knowledge, and perceptions on the motivation to get vaccinated across generations.

## METHOD

The research design used in this study is explanatory research with the aim of testing a hypothesis. The quantitative research method used is a survey containing a questionnaire that has been prepared by the researcher. The population in this study is Indonesian citizens (WNI) who are the target of national vaccination. The criteria for respondents who become the sample of the study are WNI who come from three subculture generations, namely generation X born in 1965-1979, generation Y born in 1980-1996, and generation Z born in 1997-2010. Sample drawing uses non-probability sampling techniques with voluntary sampling methods based on the willingness of respondents to fill out an online survey. The questionnaire was distributed online through various social media from March to May 2022 and was filled out by as many as 210 respondents. After screening and cleaning the data, there were 201 respondents left who were selected according to the research criteria. Of this number, the number of respondents from generation X is as many as 70 people, generation Y respondents as many as 40 people, and generation Z respondents as many as 91 people.

The independent variable in this study is the knowledge and perception of consumer vaccination, while the dependent variable is consumer motivation in carrying out COVID-19 vaccination. The knowledge instrument has 10 question items modified from the research of Mohamed et al. (2021) and Hammour et al. (2021). The perception instrument refers to the research of Mohamed et al. (2021) which modifies the Health Belief Model (HBM) measurement tool and the research of Ansari-moghaddam et al. (2021). The vaccination perception instrument is divided into 4 dimensions, namely perceived susceptibilities, perceived severity, perceived barriers, and perceived benefits with a total of 13 statement items. The motivation instrument contains 8 statement items that refer to the research of Dodd et al. (2020) and Lin et al. (2021). Before measuring the three main variables, there is a vaccination status indicator that has two main objectives, namely to find out the distribution of people who have been vaccinated and to identify factors related to vaccine acceptance for people who have not been vaccinated. In addition, the indicator is also used to see the public's motivation to carry out further vaccinations. Because this vaccination is suspected to be like a flu vaccine that becomes a routine vaccination in the future.

The reliability test results for the variable instruments used in this study are as follows: the knowledge variable instrument obtained a Cronbach's alpha value of 0,650, the perception variable obtained a Cronbach's alpha value of 0,865, and the vaccination motivation variable obtained a Cronbach's alpha value of 0,915. The validity test results for all statement indicators used showed that the correlation coefficient value is above 0,3. Thus, all indicators in this study are valid and reliable for use.

Measurement of each perception variable and motivation to vaccinate uses a Likert scale of one to four, namely score one if strongly disagree, score two if disagree, score three if agree, and score four if strongly agree. In the knowledge variable, respondents who answer correctly will get a score of 1, while respondents' answers that are wrong and answer "Don't know" will get a score of 0. Each variable is grouped into three categories, namely low (<60), medium (60-80), and high (>80). Processing and data analysis conducted in this study using Microsoft Excel software and Statistical Package for Social Science (SPSS) 25. The analysis carried out includes descriptive analysis, difference test, correlation test, and multiple linear regression test.

## RESULTS

### Respondent Characteristics

In this study, the characteristics of the respondents include gender, age, generation, domicile, geographical origin, education, occupation, income, marital status, religion, number of dependents, and ethnicity. The respondents in this study come from three different generations, with Generation Z having the highest number at 45,3 percent, followed by Generation X at 34,8 percent, and Generation Y at 19,9 percent. Out of a total of 201 respondents, the percentage of female respondents (72,1%) dominates compared to male respondents (27,9%). Respondents are spread across 33 provinces in Indonesia, with West Java being the province most inhabited by respondents (81,6%) and the majority are located in urban areas (84,1%). The results show that the majority of respondents are of Javanese ethnicity, accounting for 41,8 percent.

The highest distribution in terms of respondents' education level is high school graduates (41,8%) and bachelor's degree holders (30,3%). The highest percentage of respondents' occupations is as students, accounting for 36,8 percent. The average monthly income of respondents is IDR3.893.532,34 and the total average family income per month is IDR11.751.492,54. As many as 38,8 percent of respondents do not have dependents, while the largest number of dependents is as many as 5 people, which is found in 5 percent of respondents. The percentage of respondents who are married and not married is almost the same, which is 48,8 percent and 47,8 percent, respectively. Meanwhile, only a few respondents are divorced and widowed.

The research results show that the majority of respondents (80,1%) do not have a history of chronic or comorbid diseases. Respondents who have never been infected with COVID-19 and those who have been infected have almost the same number. As many as 46,3 percent of respondents stated that they had never been infected with COVID-19, while the rest, 46,8 percent of respondents, had been infected with COVID-19. Most respondents were infected with mild symptoms (35,8%), while only a few respondents experienced it without symptoms (2,5%) and with severe symptoms (8,5%). Almost two-thirds of respondents have been vaccinated against COVID-19 (62,7%), while one-third have not yet received the COVID-19 vaccine (37,3%). Based on the answers of respondents who have been vaccinated, the type of vaccine most used by respondents is the Sinovac vaccine. Almost half of the respondents have received the required two doses of vaccine (46,8%), and some others have received a booster (50,8%). Meanwhile, 53,3 percent of respondents who have not been vaccinated claim that they have no intention of getting vaccinated. The reasons respondents have not been vaccinated are largely affected by disbelief that COVID-19 is a serious disease (65,3%), concerns about vaccination side effects (53,3%), and disbelief in the benefits of COVID-19 vaccination (40%).

### Knowledge

The knowledge variable is measured by how far the respondents understand about COVID-19 vaccination. Table 1 shows that more than half of the respondents have moderate knowledge that tends towards low. When compared across generations, Generation X has a lower level of knowledge compared to other generations. The level of knowledge about COVID-19 vaccination in Generation Z is categorized as moderate leaning towards high, while Generation X and Y have moderate knowledge but tend to be low. Most respondents are mistaken about the mechanism of the vaccine and the provision of vaccination to people with comorbid diseases. Based on the Anova test, there is a significant difference in COVID-19 vaccination knowledge (p-value = 0,000) owned across generations. There is a significant difference in vaccination knowledge between Generation X, Generation Y, and Generation Z. In general, the average

knowledge of Generation Z is higher than Generation X and Y. Thus, hypothesis one a (H1a) can be accepted.

Table 1 Distribution of respondents and Anova test of knowledge variables

Category	Gen X	Gen Y	Gen Z	Total	<i>p-value</i>
Low	42,9	27,5	6,6	23,4	0,000*
Medium	44,3	60,0	70,3	59,2	
High	12,9	12,5	23,1	17,4	
Average ± St. Deviation	58,29±21,19	66,25±18,354	75,16±13,85	67,51±19,07	
Min – max	0-100	30-90	30-100	0-100	

Notes: \*Significant at  $p$ -value  $<0,05$ ; min-mx = minimum to maximum

### Perception

Table 2 shows that most respondents have a poor perception of COVID-19 vaccination. The research results show that almost all respondents of Generation X and Generation Y have a bad perception related to COVID-19 vaccination. In Generation Z, only some have a bad perception, while almost the rest are categorized as moderate. In the vulnerability dimension, most respondents view that they are at risk of contracting COVID-19 and spreading it to others. Based on the severity dimension, the majority of Generation Y and Generation Z respondents perceive that COVID-19 can cause serious problems even death. In the barrier dimension, Generation X and Generation Y tend to believe that there are many barriers that hold them back from getting the COVID-19 vaccination. Whereas Generation Z does not agree with most beliefs that can hinder them in getting the COVID-19 vaccination. Meanwhile, the perceived benefits of Generation Z respondents also tend to be better compared to other generations. Based on the Anova test, there is a significant difference in COVID-19 vaccination perception across generations. The average perception of COVID-19 vaccination owned by Generation X is lower than other generations and has a fairly large average difference compared to Generation Z. Based on the test results, hypothesis one b (H1b) is accepted.

Table 2 Distribution of respondents and Anova test of perception variables

Category	Gen X	Gen Y	Gen Z	Total	<i>p-value</i>
Bad	91,4	92,5	49,5	72,6	0,000*
Medium	7,1	7,5	47,3	25,4	
Good	1,4	0,0	3,3	2,0	
Average ± St. Deviation	39,55±13,83	44,90±10,86	60,42±9,33	50,06±14,86	
Min - max	14,58-89,58	25,00-68,75	37,50-83,33	14,58-89,58	

Notes: \*Significant at  $p$ -value  $<0,05$ ; min-mx = minimum to maximum

### Motivation

Table 3 shows that the average achievement of the index of motivation to get the COVID-19 vaccination owned by respondents is categorized as moderate. The highest percentage of respondents from Generation X and Generation Y have a low motivation to get vaccinated. Whereas Generation Z has a moderate and tends to high motivation. The research results show that most respondents agree to get vaccinated because they want to return to normal life (89,1%) and end the pandemic (87,6%). The thing that most motivates Generation X and Y to get vaccinated is because of their desire to return to normal life, while for Generation Z it is the need to feel safe and their desire to stop the spread of the virus and end the pandemic. However, almost half of the respondents disagree to get vaccinated because of its positive impact on health. Based on the Anova test, there is a significant difference in motivation to get vaccinated across generations. The average motivation of Generation X has a significant difference with the average motivation of Generation Z, but does not differ significantly with Generation Y. Generation Y has a significantly different average motivation with Generation Z's motivation. Overall, the average motivation to get the COVID-19 vaccination owned by Generation Z is higher than Generation X and Y. Based on the test results, hypothesis one c (H1c) is accepted.

Table 3 Distribution of respondents and Anova test of motivation variables

Category	Gen X	Gen Y	Gen Z	Total	p-value
Low	81,4	60,0	7,7	43,8	0,000*
Medium	15,7	35,0	56,0	37,8	
High	2,9	5,0	36,3	18,4	
Average $\pm$ St. Deviation	46,67 $\pm$ 15,19	50,62 $\pm$ 18,38	76,88 $\pm$ 13,82	61,13 $\pm$ 20,97	
Min – max	20,83-100	16,67-91,67	41,67-100	16,67-100	

Notes: \*Significant at p-value <0,05; min-mx = minimum to maximum

### The Correlation of Respondents' Characteristics with Knowledge and Perception

The results of the analysis of the Correlation of respondent characteristics with the knowledge variable show that the indicators of age, domicile, marital status, number of dependents, and vaccination status have a probability value below 0,05 and 0,1 (Table 4). Age, domicile, geographical location, marital status, and number of dependents have a significant negative Correlation with knowledge. Meanwhile, education and vaccination status have a significant positive Correlation with vaccination knowledge. This means that someone who has good knowledge related to vaccination tends to be younger, lives in urban areas of Java, has a higher level of education, is not married, does not have dependents, and has been vaccinated.

The results of the analysis of the Correlation of respondent characteristics with the perception variable show that the indicators of gender, age, domicile, education, occupation, family income, marital status, number of dependents, and vaccination status have a probability value below 0,05 and 0,1. Thus, respondent characteristics such as gender, age, domicile, occupation, family income, marital status, number of dependents, and vaccination status have a significant Correlation with perception related to COVID-19 vaccination. Gender, age, domicile, occupation, employment status, and number of dependents owned by respondents have a significant negative Correlation with vaccination perception. Meanwhile, education, family income, and vaccination status have a significant positive Correlation with perception. This indicates that male respondents, younger age, domiciled in Java, highly educated, not working, have a high family income, are not married, do not have dependents, and have been vaccinated tend to have a better perception related to COVID-19 vaccination. Based on the test results, hypothesis two (H2) and hypothesis three (H3) are accepted.

Table 4 Correlation coefficient between respondent characteristics and knowledge and perception of vaccination

Variable	Knowledge	Perception
Gender (0=female, 1=male)	0,046	<b>0,108*</b>
Age (years)	<b>-0,369**</b>	<b>-0,591**</b>
Domicile (0=Java, 1=other)	<b>-0,108*</b>	<b>-0,195**</b>
Geographical location (0=urban, 1=rural)	<b>-0,114*</b>	-0,068
Education (years)	<b>0,131**</b>	<b>0,247**</b>
Occupation (0=not working, 1=working)	-0,042	<b>-0,212**</b>
Income (IDR)	0,094	0,003
Family income (IDR)	0,113	<b>0,178**</b>
Marital status (0=not married, 1=married)	<b>-0,332**</b>	<b>-0,526**</b>
Religion (0=islam, 1=other)	0,062	-0,001
Number of dependents (people)	<b>-0,210**</b>	<b>-0,274**</b>
Tribe (0=Java, 1=other)	-0,047	-0,060
Vaccination status (0=not vaccinated, 1=vaccinated)	<b>0,367**</b>	<b>0,599**</b>

Notes: \*Significant at p-value <0,1, \*\*Significant at p-value <0,05

### The Effect of Respondent Characteristics, Knowledge, and Perception on Motivation to Vaccinate

Table 5 shows the results of multiple linear regression tests to determine the effect of respondent characteristics, knowledge, and perception on the motivation to get the COVID-19 vaccination. The results show that the overall Adjusted R2 value in this study is 0,731. This indicates that 73,1 percent of the respondents' motivation to get vaccinated can be explained by the independent variables studied, while the other 26,9 percent is caused by other variables not studied.

Table 5 Effect of respondent characteristics, knowledge, perception on motivation to vaccinate

Variable	Gen X	Gen Y	Gen Z	Total
Gender (0=female, 1=male)	0,142	0,447	0,516	0,398
Domicile (0=Java, 1=other)	0,118	0,781	0,456	0,473
Geographical location (0=urban, 1=rural)	0,745	<b>0,052*</b>	0,343	0,907
Education (year)	0,560	0,453	0,296	0,405
Occupation (0=not working, 1=working)	0,552	0,553	0,942	0,574
Income (IDR)	0,687	0,112	0,243	0,775
Family income (IDR)	0,592	0,376	0,438	<b>0,070*</b>
Marital status (0=not married, 1=married)	0,251	0,407	<b>0,060*</b>	0,120
Religion (0=Islam, 1=other)	0,189	0,241	0,885	0,505
Number of dependents (people)	<b>0,039**</b>	0,909	<b>0,011**</b>	<b>0,003**</b>
Tribe (0=Java, 1=other)	0,687	0,308	<b>0,083*</b>	<b>0,063*</b>
Vaccination status (0=not vaccinated, 1=vaccinated)	<b>0,000**</b>	0,287	0,706	<b>0,000**</b>
Knowledge (index)	<b>0,017**</b>	0,976	<b>0,016**</b>	0,538
Perception (index)	<b>0,029**</b>	<b>0,001**</b>	<b>0,000**</b>	<b>0,000**</b>
R <sup>2</sup>	0,759	0,743	0,442	0,753
Adjusted R <sup>2</sup>	0,697	0,599	0,340	0,731
Sig	0,000**	0,000**	0,000**	0,000**

Notes: \*Significant at p-value <0,1, \*\*Significant at p-value <0,05

Correlation of Respondent Characteristics with Knowledge and Perception. The Adjusted R<sup>2</sup> in the regression test of characteristics against the motivation to vaccinate for Generation X is 0,697, which means that the independent variables studied can explain 69,7 percent of the motivation in Generation X, while the remaining 30,3 percent is explained by other causes not studied. In Generation X, the characteristics that effect are the number of dependents, vaccination status, knowledge, and perception. Vaccination status ( $\beta=19,118$ ;  $p=0,000$ ), knowledge ( $\beta=0,153$ ;  $p=0,017$ ), and perception related to vaccination ( $\beta=0,245$ ;  $p=0,029$ ) have a significant positive effect on the motivation to vaccinate in Generation X. This means that Generation X respondents who have been vaccinated have a motivation to get vaccinated again 19,118 times higher than respondents who have not been vaccinated. Meanwhile, every increase of one unit of knowledge and perception index related to vaccination will each increase the motivation to vaccinate Generation X by 0,153 and 0,245 points. Meanwhile, the number of dependents ( $\beta=-2,018$ ;  $p=0,039$ ) has a significant negative effect on the motivation to vaccinate Generation X. This means that every addition of one person to the number of dependents owned by Generation X respondents will decrease the motivation to vaccinate by 2,018 points.

The Adjusted R<sup>2</sup> in the regression test of characteristics against the motivation to vaccinate for Generation Y is 0,599, which means that the independent variables studied can explain 59,9 percent of the motivation in Generation Y, while the remaining 40,1 percent is explained by other causes not studied. Geographical origin ( $\beta=13,983$ ;  $p=0,052$ ) and perception related to vaccination ( $\beta=1,002$ ;  $p=0,001$ ) have a significant positive effect on the motivation to vaccinate COVID-19 in Generation Y. This means that Generation Y respondents who live in rural areas have a chance to have a motivation to get vaccinated 13,983 times higher than those who live in urban areas, while an increase of one unit of perception index related to vaccination owned will increase the motivation to vaccinate Generation Y by 1,002 points.

The Adjusted R<sup>2</sup> in the regression test of characteristics against the motivation to vaccinate for Generation Z is 0,340, which means that the independent variables studied can explain 34 percent of the motivation in Generation Z, while the remaining 66 percent is explained by other causes not studied. Ethnicity ( $\beta=1,007$ ;  $p=0,083$ ), knowledge ( $\beta=0,232$ ;  $p=0,083$ ), and perception related to vaccination ( $\beta=0,738$ ;  $p=0,000$ ) have a significant positive effect on the motivation to vaccinate in Generation Z. This means that respondents who are not from the Javanese tribe have a chance to have a motivation to get vaccinated 1,007 times compared to Generation Z respondents who are from the Javanese tribe. Meanwhile, every increase of one unit of knowledge and perception index related to vaccination will each increase the motivation to vaccinate Generation Z by 0,232 and 0,738 points. Meanwhile, the number of dependents ( $\beta=-2,225$ ;  $p=0,011$ ) and marital status ( $\beta=-16,438$ ;  $p=0,060$ ) have a significant negative effect on the motivation to vaccinate in Generation Z. This means that every addition of one person to the number of dependents of Generation Z respondents will decrease the motivation to vaccinate by 2,225 points. In addition, Generation Z respondents

who are married have a chance to have a vaccination motivation 16,438 times lower than respondents who are not married.

The test results for all generations show an Adjusted R2 value of 0,731, which means that the independent variables studied can explain 73,1 percent of the motivation to vaccinate. Monthly family income ( $\beta = 1,602$ ;  $p=0,070$ ), ethnicity ( $\beta = 0,605$ ;  $p=0,063$ ), vaccination status ( $\beta = 15,182$ ;  $p=0,000$ ), and perception related to vaccination ( $\beta = 0,604$ ;  $p=0,000$ ) have a significant positive Correlation with respondents' motivation to vaccinate. This means that every increase of Rp1 in income will increase the motivation to vaccinate by 1,602 times. Respondents who are not from the Javanese tribe have a chance to have a motivation to vaccinate 0,063 times higher than respondents who are from the Javanese tribe. Respondents who have been vaccinated have a motivation to get vaccinated again 15,182 times higher than respondents who have not been vaccinated. In addition, every increase of one unit point in the perception index related to vaccination will increase the motivation to vaccinate by 0,604 points. Meanwhile, the number of dependents ( $\beta = -1,750$ ;  $p=0,003$ ) was found to have a significant negative effect on the motivation to vaccinate. This means that every addition of one person to the number of dependents has a chance to decrease the motivation of respondents to vaccinate by 1,750 points. Based on these test results, hypothesis four (H4) and hypothesis six (H6) are accepted, while hypothesis five (H5) is rejected.

## DISCUSSION

This study aims to analyze the effect of respondents' knowledge and perception related to COVID-19 vaccination on the motivation to vaccinate for Generation X, Generation Y, and Generation Z. Knowledge and perception are cognitive components of a person through the information obtained as their belief in a product (Schiffman and Wisenblit, 2019). Descriptive analysis results found that the average index value of knowledge owned by respondents is moderate. Generation Z has the highest average score and Generation X has low knowledge scores. According to Schiffman and Wisenblit (2019), when facing a choice, a person has a strong need to understand the object they are facing. Thus, a lack of knowledge may have a negative impact on the decision to vaccinate for COVID-19. This is supported by research that found that respondents with low vaccination knowledge tend to have low vaccination motivation as well (Chen et al., 2021).

Consumer perception is subjective and very individual for each respondent. If there is information that does not match consumer beliefs, then consumers tend to withhold perception by rejecting and distorting any information that is considered contrary to the values they believe (Solomon, 2017; Schiffman & Wisenblit, 2019). The research results show that the average perception owned by respondents is negative. Generation X and Generation Y have a bad perception related to COVID-19 vaccination, while Generation Z has a moderate perception. Descriptive analysis results on each dimension of perception owned tend to vary between generations. This is in line with Schiffman and Wisenblit's (2019) statement, even though given the same stimulus, each consumer will have different perceptions depending on how they interpret stimuli based on their own needs, values, and expectations.

Motivation is a drive experienced by a person to take a certain action. Consumer motivation is researched to find out why consumers take action (Solomon, 2017), in this study it is consumer motivation to vaccinate for COVID-19. The research results show that the total average motivation owned by respondents is moderate. Generation Z has a higher motivation to vaccinate for COVID-19 compared to Generation X and Generation Y. According to Solomon (2017), motivation can vary in each individual depending on the needs and benefits they want to feel. This is because each individual experiences different types of motivational conflicts that will affect their decisions. In this study, the thing that most motivates respondents to vaccinate is so that they can return to normal life, end the COVID-19 pandemic, and the need to feel safe.

Differences in knowledge, perception, and motivation to vaccinate between generations (H1a, H1b, H1c). The difference test results using One Way Anova show that there are significant differences in knowledge, perception, and motivation to vaccinate for COVID-19 between generations. This is in line with Sumarwan's (2017) statement that understanding the differences in consumer age is important, because age differences tend to result in differences in consumer behavior. In the knowledge variable, there are significant differences in each Generation X, Generation Y, and Generation Z. Generation X is the generation with the lowest average vaccination knowledge among other generations, while Generation Z is the generation that has the highest vaccination knowledge scores. This is in line with the research of Hammour et al. (2021) which found that knowledge related to vaccination is still limited in older generations, even related to some basic aspects.

Significant differences were also found in the perception variable for each generation. Similar to knowledge, the perception related to COVID-19 vaccination owned by Generation X is relatively worse, while

Generation Z has a better perception compared to other generations. This is in line with the research of Lin et al. (2021) which found that older age groups tend to have a poor perception of vaccination. The research results of Romer and Jamieson (2020) found that most of Generation X believe in conspiracy theories and can hinder the control of COVID-19 vaccination.

The motivation variable shows that significant differences only occur between Generation X and Generation Z and Generation Y and Generation Z. From the results, it can be seen that Generation X and Generation Y have a lower motivation to vaccinate compared to the motivation owned by Generation Z. This is in line with the research results of Mohamed et al. (2021) which states that younger age groups tend to have higher acceptance and willingness to vaccinate. In addition, the research results of Nguyen et al. (2021) also found that older age groups tend not to intend to vaccinate.

The Correlation between respondent characteristics with knowledge and perception (H2 and H3). The research results show that respondent characteristics are related to vaccination knowledge, vaccination perception, and motivation to vaccinate for COVID-19. Respondents who are younger, live on Java Island, are in urban areas, have a higher education, are not married, do not have dependents, and have been vaccinated tend to have better vaccination knowledge compared to other respondents. This is in line with other research that found that younger respondents, highly educated, and have been vaccinated have better vaccination knowledge (Hammour et al., 2021). In addition, other research also found that respondents who are older have low knowledge and tend not to intend to vaccinate (Nguyen et al., 2021). According to Lin et al. (2021), older age and having a low level of education can limit their opportunities to receive knowledge related to vaccination.

Meanwhile, male respondents, younger generation groups, living on Java Island, having a high education, working, having a high family income, not being married, not having dependents, and having been vaccinated tend to have a better perception related to COVID-19 vaccination. This is in line with other research that found that female respondents (Nguyen et al., 2021; Ishimaru et al., 2021; Al-Qerem & Jarab, 2021), low-educated (Nguyen et al., 2021; Baack et al., 2021; Qerem & Jarab, 2021), already married (Al-Qerem & Jarab, 2021), and having less income (Nguyen et al., 2021, Baack et al., 2021) tend to have a rejection of vaccination.

The Effect of Respondent Characteristics on Vaccination Motivation (H4). Regression test results show that respondent characteristics such as family income, number of dependents, ethnicity, and vaccination status effect the motivation to vaccinate across all generations. Monthly family income, ethnicity, and vaccination status have a significant positive effect on the motivation to vaccinate for COVID-19. Thus, respondents with high family income, not from the Javanese tribe, and have been vaccinated are likely to have a higher motivation to vaccinate compared to other respondents. However, the number of dependents was found to have a significant negative effect on vaccination motivation, so the more dependents a respondent has, the more likely it is to decrease the respondent's motivation to vaccinate. This is in line with research that found that a person's desire to vaccinate varies and is affected by income (Nguyen et al., 2021; Ishimaru et al., 2021), ethnicity (Nguyen et al., 2021), and vaccination status (Kecojevic et al., 2021). Schiffman and Wisenblit (2019) wrote that demographic characteristics such as age, gender, ethnicity, family structure, income, and geographical location are fundamental factors that shape consumer behavior in making decisions.

The Effect of Vaccination Knowledge on Vaccination Motivation (H5). The research results show that overall, knowledge does not have a significant effect on the motivation to vaccinate. However, if tested further, knowledge related to vaccination has a significant positive effect on the motivation to vaccinate for Generation X and Generation Z. Respondents who have not been vaccinated tend to have lower knowledge compared to those who have been vaccinated. This is in line with a survey conducted by the Kaiser Family Foundation (2021) which states that people who have not been vaccinated admit that they do not have enough knowledge related to vaccination and find it difficult to find it. In the survey, only a small portion of respondents tried to find information related to COVID-19 vaccination (KFF 2021). This lack of information also becomes one of the factors why respondents have not been vaccinated and have less motivation to vaccinate. Other research results found that information related to COVID-19 vaccination is difficult to understand and becomes a barrier to getting COVID-19 vaccination (Adams et al., 2021; Kecojevic et al., 2021).

The Effect of Vaccination Perception on Vaccination Motivation (H6). Based on the results of the regression test that has been conducted, the perception related to vaccination has a positive and significant effect on the motivation to vaccinate respondents overall and from each generation. This indicates that the better the respondents' perception related to COVID-19 vaccination, the higher the motivation to vaccinate. This is in

line with the research of Zaid and Pratondo (2021) which found that the perception of vulnerability and perceived benefits have a significant positive effect on the desire to vaccinate.

The results show that more than half of the respondents perceive that they are vulnerable to COVID-19 infection and feel that COVID-19 is a serious threat. The perception of vulnerability and severity owned by Generation Z is higher compared to other generations. The perception of barriers owned varies between generations. Generation X and Generation Y tend to believe that there are many barriers that prevent them from getting the COVID-19 vaccination. Meanwhile, Generation Z does not agree with most beliefs that can hinder them from getting the COVID-19 vaccination. Meanwhile, the perceived benefits of Generation Z respondents also tend to be better compared to other generations. Generation Z respondents believe that vaccination can protect them and those around them from the COVID-19 virus and believe that life can return to normal after vaccination. On the contrary, most Generation X respondents are not sure about the benefits to be gained from getting the COVID-19 vaccination. Thus, the high belief related to vulnerability and severity of COVID-19, belief about the benefits of COVID-19 vaccination, and not believing in vaccination barriers make Generation Z have a higher motivation to vaccinate compared to other generations. This is in line with research findings that state that Generation X and Generation Y have a higher rejection of vaccination compared to Generation Z (Shih et al., 2021).

This study has several limitations, including that data collection online and through social media may result in response bias and may not reflect the actual population. In addition, this study has not been able to find some references supporting the research results.

## CONCLUSIONS AND SUGGESTIONS

This study found that more than half of the respondents have moderate knowledge related to vaccination. Most respondents from Generation X and Generation Y have a poor perception of vaccination and have a relatively low motivation to vaccinate. Meanwhile, Generation Z has a moderate perception and motivation to vaccinate. The difference test results show that there are significant differences in knowledge, perception, and motivation to vaccinate between generations. The correlation test results show that generation, occupation, marital status, and vaccination status are related to vaccination knowledge. In addition, indicators such as gender, generation, domicile, education, occupation, income, marital status, number of dependents, and vaccination status are significantly related to respondents' perception related to vaccination. Based on the regression test results, variables that significantly effect respondents' motivation to vaccinate are family income, number of dependents, ethnicity, vaccination status, and perception of vaccination.

Based on the research results, knowledge and perception related to vaccination are still relatively low in Generation X and Generation Y. The low perception of motivation owned by respondents in this study indicates the need for urgent action to increase vaccination acceptance for the community, especially Generation X and Y. Based on these study results, there is still a need for more intensive dissemination of education related to vaccination that can reach all circles to straighten out any misinformation and provide understanding related to vaccination. Information related to the benefits and safety of vaccination is needed to overcome public concerns. The results of this study can be input to the government to increase public trust related to the dangers of the COVID-19 virus and the benefits of vaccination.

This study shows that most respondents from Generation X and Generation Y have a negative perception related to COVID-19 vaccination, especially on the perceived barriers to the COVID-19 vaccination program. Both generations view that COVID-19 vaccination can cause infection, has the possibility of being ineffective and has side effects, and worries about frightening information related to COVID-19 vaccination. Based on these results, some perceptions that are suspected to hinder the community in vaccinating need to be straightened out, so the community is advised to increase and seek information and build awareness related to vaccination from a trusted source. The government needs to approach community groups that reject vaccination by conducting campaigns that discuss public concerns related to vaccination. Specifically, interventions need to emphasize the benefits of vaccination, for example in terms of protecting oneself, safety issues such as the effectiveness and side effects of vaccination, and common misperceptions related to the COVID-19 vaccine.

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