

## Avoidance as an exit door for international students in dealing with information overload during the pandemic

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### Abstract

The COVID-19 pandemic has changed education systems and impacted students' mental health negatively. This condition may affect international students in a certain country. International students' problems are made more complicated by differences in culture, language, and the way local governments handle pandemics, especially upon socializing COVID-19 information. This study aims to examine international students' behavior in Indonesia in regard with COVID-19 information consumption massively spread in both local and international media. It applied PLS-SEM to evaluate measurement and structural models. The results demonstrated that Information seeking and exposure cause the information overload. Information overload leads to anxiety, and anxiety brings about avoidance from COVID-19 information. Furthermore, Information overload does not have a significant direct effect on information avoidance. However, information overload affects information avoidance mediated by information anxiety. Therefore, it is advisable for government media to provide complete and accurate information related to COVID-19, especially that for international students.

Keywords: Information anxiety; information avoidance; information exposure; information seeking; information overload.

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## 1. Introduction

COVID-19 has generated fear, concern, and anxiety among individuals worldwide (Martínez-Lorca et al., 2020). It has resulted in unprecedented changes in the education systems of various countries (Al-Okaily et al., 2020). It is expected to negatively impact students' mental health (Savage et al., 2020). There is little information about the psychological impact of COVID-19 on university students during the disease outbreak. However, this information is essential to develop services to support these students (Jiang, 2020), especially the international ones.

The entire world is heading for globalization, increasing opportunities for individuals to seek knowledge across countries, so studying abroad becomes a growing trend in higher education. Studying abroad allows students to experience an intercultural communication, participating in exchange activities. They, therefore, encounter culture shock in their new environment (Nailevna, 2017). Perceived culture shock is one of psychological distress associated with migration (Buzoianu et al., 2015).

The fact that the world is currently under pressure due to COVID-19 pandemic exacerbates the problem of international students. Indonesia is the fourth most populous country in the world and is expected to be significantly affected in the long term (Djalante et al., 2020). Given that COVID-19 is relatively new to the public, the public obviously craves for information about the virus. People are also increasingly seeking information about "what is Corona" and "what are the symptoms". Therefore, the frequency of information search about COVID-19 has increased significantly in Indonesia (Limilia & Pratamawaty, 2020).

The search for information through technology is a part of global development. One feature of global development in modern society is the transformation of the information and communication space (Railevna, 2017), so the media and styles of information retrieval and use are changing. Individuals seek information to help them decide. However, receiving too much information from too many different sources might result in information overload, which in turn causes unfavorable psychological and behavioral reactions (Soroya et al., 2021).

People among adolescents who are students also search for information about the pandemic. Students are vulnerable to mental health problems, especially those under the process of completing research. One aspect of students' mental health vulnerability is the perceived impact of government regulations about staying at home, keeping distanced in crowds, and meetings between individuals. Students require interaction and mobility to complete their studies. Gonzalez et al. (2020) found that COVID-19 confinement affects students' performance.

Although the COVID-19 confinement brings about specific mental stress on individuals, a study focusing on populations vulnerable to mental health problems stated that if familiarity on the benefits of physical distancing can reduce the negative impact of the rules (Husky et al., 2020). Once students are knowledgeable on goals behind the regulation imposed, their anxiety can decrease. However, the challenges of international students in Indonesia differ from those of local ones. Mental issues they encounter is not limited to the pandemic or the government policy but also related to classic problems, such as delays in education funds and living costs overseas, as well as the lectures loaded with assignments and targets for graduation. The classic problems and burdens have increased during

the pandemic, along with the need to adapt to a new country, environment, situation, and learning system.

Several studies have been conducted to examine the multicultural phenomena of international students. It is essential for them to adapt to the culture of the country in which they study, reduce language barriers, understand value principles, to broaden their vision of international education from a cross-cultural perspective (Y. Hu & Dai, 2021). Another research focuses on the motivation to study abroad and the factors that hinder international students' adaptation to the destination country (Vershinina et al., 2016). In addition, Vlot et al. (2020) examine the health issues of international students, including their obligation from certain study programs to visit low or middle-income countries. The visits are parts of the requirements to study in the program. A visit to low or middle-income countries is associated with a higher risk of contracting infectious diseases. Other studies focus on students' health behaviors that affect their sleep quality and health status (Pusztai et al., 2019) and their sensitivity to the crisis in making important decisions related to health issues (Nguyen et al., 2020).

As individuals aware of the importance of information and health, overseas students studying in Indonesia need COVID-19-related information, which has been announced to enter Indonesia on 3 March 2020. The information search about COVID-19 revolved around the news of the virus in not only their home countries but also the country where they study, Indonesia. Information about COVID-19 in Indonesia, most of which was reported in Indonesian language, few information was reported in English. Some of these international students have a non-English mother tongue and still in need of help understand Indonesian comprehensively. Once they found confusing information regarding COVID-19 through the news from local media, they came to confusion and it exhibited additional problems they faced.

Obstacles and confusion of information related to COVID-19 will be related to the information behavior shown by international students who study in Indonesia. Information behavior involves a good deal of exposure related to COVID-19 in various media. It is related to information seeking (IS), information overload (IO), and information anxiety (IAx), ultimately leading to information avoidance (IA). Therefore, this research aims to determine the effect of information exposure (IEx) and information seeking (IS) on information overload and the effect of information overload on information avoidance about COVID-19 among international students studying in Indonesia.

### *1.1. Information behavior*

During the pandemic, people face a lot of concerns about the risks and effective ways to protect themselves from disease. Under uncertain circumstances, they engage in two types of informational behavior: seeking health information to meet certain information needs or avoiding health information that may contradict their beliefs or cause unpleasant feelings (Song et al., 2021). According to Al Shboul & Abrizah (2016), information behavior obscures information-seeking behavior, which includes information-seeking behavior and other implicit aspects of information-seeking behavior. Other implicit aspects of information behavior can be information overload (IO), information anxiety (IAx), and information avoidance (IAv). It refers the study by Soroya et al. (2021) which links behavioral responses as information exploration, IO, and IAx and behavioral responses as IAv during the COVID-19 crisis.

### 1.2. Information exposure

Information exposure (IEx) opens opportunities for individuals to access new information (Shen et al., 2018). IEx from various media sources and people around can strengthen one's beliefs and perceptions about something (Fishbein & Yzer, 2003; Shen et al., 2018), including information that comes from social media (Yang & Wu, 2021), as well as other online media (Guess et al., 2020). Increasing exposure frequency and intensity can escalate the effect level (Hafiar et al., 2019).

In the era where information is wide open, several information producers seek to disseminate their information through a lot of media, so individuals have easier access to information. An increase in the distribution channels for the same information can lead to IO (Edmunds & Morris, 2000; Soroya et al., 2021). Other research reports that the frequency of IEx positively correlates with IO (Serçekuş et al., 2020; Soroya et al., 2021). Therefore, we propose the first hypothesis as follows:

**H1:** Information exposure positively affects information overload related to COVID-19.

### 1.3. Information seeking

In principle, people realize that knowledge can solve problems. They also realize that they have limited knowledge, and they need to overcome the problems they face. Efforts should be made to meet the needs, resulting in information-seeking behavior. Information seeking (IS) is an activity that a person does when feeling the need for information (Koja-Odongo & Mostert, 2013). Information search can be done through any information systems, either manual or computer-based.

Humans need information they can use to decide and take action. They should get information with certain goals and ways (Fasola & Olabode, 2014). When they feel the need for information, they search for it and find it, and thus they will solve it (Al Shboul & Abrizah, 2016).

Information search involves searching, retrieving, recognizing, and applying message content with a certain meaning (Kingrey, 2005). Individuals may not seek information if they feel the risk is too great (Al Shboul & Abrizah, 2016). In the most common information-seeking behavior model, users who need information use diverse sources of information, services, systems, or contact other people to solve problems (Koja-Odongo & Mostert, 2013). Information-seeking behavior from different user groups is related to IO in this modern era (Fasola & Olabode, 2014). Furthermore, we propose the second hypothesis:

**H2:** Information seeking positively affects information overload related to COVID-19.

### 1.4. Information overload

One of the fundamental challenges in the modern world is information overload (IO) (Olumide, 2016). IO is a dark side of information technology. IO is caused by the great amount of information produced and obtained from SNS (Cao et al., 2021).

Information overload (IO) is a condition that occurs when an individual's information processing capabilities cannot meet the information processing requirements. During the decision-making process, as well as during information analysis, IO is sometimes encountered. IO is not only about the amount of information someone gets but also about the pressure, ambiguity, stress, and anxiety he may feel when he is exposed to information. How much information a person has to deal with depends on how much they know and have done (Cao et al., 2021).

The abundance of information about COVID-19 in various media results IO. The perceived IO on social media not only has a negative impact on individuals' well-being but also increases the likelihood of a negative response (Bermes, 2021). A study stated that it relates IO to IAx (Soroya et al., 2021), ultimately leading to IAv. The finding reinforces that IAv is related to IO (Khaleel et al., 2020).

A previous study examines IO about the COVID-19 vaccine, which affects individuals' vaccination intentions. The finding suggested that public vaccine skepticism is shaped by cyberchondria (affective aspect) and perceived risks from vaccines (cognitive aspect) because of IO in the COVID-19 pandemic (Honora et al., 2022). It means that IO causes IAv and can bring about avoidance attitudes and behavior. Hence, the next hypothesis is:

**H3:** Information overload positively affects information anxiety related to COVID-19.

**H4:** Information overload positively affects information avoidance related to COVID-19.

### *1.5. Information anxiety*

Information anxiety (IAx) may come up when the quantity of information input surpasses the individual's information processing capabilities (Olumide, 2016). IAx can also occur when there found a gap between what is understood and what should be understood (Soroya et al., 2021). Attempts to address information requirements can encourage individuals to do IS. However, if the information obtained is excessive. It will be at risk of not being appropriately controlled.

A continuous inflow of information causes IO. IO can interfere with decision-making, cause confusion, and create anxiety (Khaleel et al., 2020). IO can lead to several effects, such as stress, fatigue, anxiety, decreased performance, and other negative effects (Matthes et al., 2020). IO has a relationship with IAx because it is caused by communication technology which is currently considered to have a disturbing effect and cause feelings of displeasure in individuals because they have the impression that information on COVID-19 is an attempt to invade their private life (Bermes, 2021), which can lead to IAx.

During the COVID-19 pandemic, individuals most exposed to ambiguous information exhibited an increase in acute stress and depressed symptoms. Hence, they go to great lengths to avoid bad news (Sadish et al., 2021). Based on the findings, the next hypothesis is:

**H5:** Information anxiety positively affects information avoidance related to COVID-19.

### *1.6. Information avoidance*

Information avoidance (IAv) is an action that deliberately avoids or delays getting available information (Kim et al., 2020). An individual will struggle for some information when he or she feels the need or gap between the need and fulfillment of information regarding a particular matter. It can belong to avoiding information to ignore the gap in information needs (Al Shboul & Abrizah, 2016).

From the perspective of information selection, a lack of evaluation in information exchange can exacerbate emotions and lead to IAv behavior (Xiang et al., 2021). IAv does not always have a negative connotation because avoiding amplified information can help individuals avoid false health information (Kanekar & Thombre, 2019), which may bring about negative impact.

Studies on IAv behavior in COVID-19 noted that the stimulus effect of IO causes anxiety and cognitive dissonance, which leads to a response to IAv behavior (Cao et al., 2021; Song et al., 2021). It reinforces that a person takes steps to avoid receiving more information if he feels the information is beyond his ability to navigate (Al Shboul & Abrizah, 2016). In sum, IEx is perceived to exert a direct or

indirect effect on other information behavior, including IAv and information sharing (Kim et al., 2020). Therefore, IEx is used as a moderating factor for IAv, with the following hypothesis:

**H6:** Information anxiety mediates the effect of information overload on information avoidance related to COVID-19.

## 2. Method and Materials

### 2.1. Research instrument and measurement

Response options for the variables of IS, IO, IAx, and IAv were measured on a scale of 1 to 5, from "strongly disagree" to "strongly agree". IS constructs were assessed using a 5-item measure (Soroya et al., 2021); IO was assessed using a 3-item measure (Soto-Acosta et al., 2014) and three other items (Farooq et al., 2020). The assessment for IAx adopted a 6-item measure (López-Bonilla & López-Bonilla, 2012); and that of IAv employed 4-item measure (Miles et al., 2008). Meanwhile, IEx was assessed in the frequency of respondents' exposure to information related to COVID-19 from social media (Shen et al., 2018).

### 2.2. Data collection and analysis

We gathered the data from international students studying in Indonesia from January to March 2022 via a Google form-based questionnaire distributed through groups of an online platform. Collecting data from these populations makes it possible to collect data from diverse populations regarding age, sex, and living conditions. This study determined the minimum sample size using G\*Power with an effect size of .15, alpha error of .05, and statistical power of .80, so the minimum sample size required was 77. During the questionnaire distribution, 83 respondents filled it out completely. This study applied PLS-SEM by evaluating the measurement and structural models using SmartPLS Software. The evaluation of the measurement model aimed to assess the validity and reliability, while the evaluation of the structural model was intended to assess the overall significance of the model and answer the formulated hypotheses.

## 3. Results

### 3.1. Respondent's characteristic

The following study displays a frequency table about the characteristics of the 83 research samples. In Table 1, most international students in this study have been living in Indonesia for 2-3 years, so they can quite feel the dynamics of the situation during the COVID-19 pandemic in Indonesia.

### 3.2. Measurement Model

This study does not have a problem with reliability because all the observed constructs show values that meet the threshold above .70, both Cronbach's alpha and composite reliability (Table 2). This study also shows no problem with convergent and discriminant validity. The evaluation results of the measurement model show that the loading factor value meets the threshold above .70 and the AVE value of .50, so the measurement items and constructs meet convergent validity. In terms of discriminant validity, the HTMT value between constructs is below 0.85, which proved its validity. Therefore, all the observed constructs are declared valid (Table 3).

Table 1. Respondent's characteristic

Demography	Frequency (n=83)
Age (Years, %)	

Less than 20	8.43
21 – 25	36.14
26 – 30	34.93
31 – 35	18.10
More than 35	2.40
Gender (%; F/M)	15.66 / 84.34
Education Level (%)	
Bachelors	57.83
Masters	32.53
Licentiate/Ph.D	9.64
Length of Stay in Indonesia (Years, %)	
Less than 1	13.25
2 – 3	65.07
4 – 5	10.84
More than 5	10.84
Residence	
Boarding house	24.11
Dormitory	65.07
With family (fellow country of origin)	6.00
With family (Indonesians)	4.82

Table 2. The reliability of measurement

Variable	M(SD)	$\alpha$	CR
IEx	2.38 (1.01)	.909	.936
IS	3.39 (1.02)	.910	.932
IO	4.80 (1.64)	.945	.957
IAx	2.67 (0.74)	.781	.850
IAv	3.28 (0.91)	.845	.896

Table 3. AVE value and Heterotrait-Monotrait Ratio

Variable	AVE	1	2	3	4	5
1) IEx	.784	-				
2) IS	.732	.285	-			
3) IO	.786	.574	.330	-		
4) IAx	.531	.223	.114	.341	-	
5) IAv	.683	.149	.118	.327	.690	-

### 3.3. Structural Model

The estimated value of the model fit in this study shows that the model has a fairly good fit with the SRMR value = .08 < .10 (L. Hu & Bentler, 1998). Next, bootstrapping feature in SmartPLS with replication of 5000 samples was performed to evaluate the entire model and answer the study hypotheses (Table 4). Regarding the direct effect, the result of this study indicated that IO is significantly and positively predicted by IS ( $\beta = .503$ ,  $p < .001$ ) and IEx ( $\beta = .185$ ,  $p < .01$ ). Therefore, H1 and H2 are accepted. This study also suggested that IO positively predicts IAx ( $\beta = .300$ ,  $p < .001$ ) but does not significantly predict IAv ( $\beta = .122$ ,  $p > .05$ ), so H3 is accepted, yet H4 is rejected. Meanwhile, it also demonstrated that IAx significantly and positively predicts IAv ( $\beta = .555$ ,  $p < .001$ ). Therefore, H5 is accepted. Regarding the indirect effect, this study found that IAx significantly mediates the effect of IO on IAv ( $\beta = .166$ ,  $p < .010$ ), so H6 is accepted. To facilitate reading the evaluation results, we display Figure 1 to show the coefficients of each path among constructs.

Table 4. The results of the structural model evaluation

Path Coefficients				
Direct Effect	$\beta$	$f^2$	$R^2$	Decision
H1: IS $\rightarrow$ IO	.503***	.353		Supported
H2: IEx $\rightarrow$ IO	.185**	.048		Supported
H3: IO $\rightarrow$ IAx	.300***	.099		Supported
H4: IO $\rightarrow$ IAv	.122	.021	.336	Rejected
H5: IAx $\rightarrow$ IAv	.555***	.439		Supported
Indirect Effect	$\beta$			
H6: IO $\rightarrow$ IAx $\rightarrow$ IAv	.166**			Supported

\* Statistically significant in  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

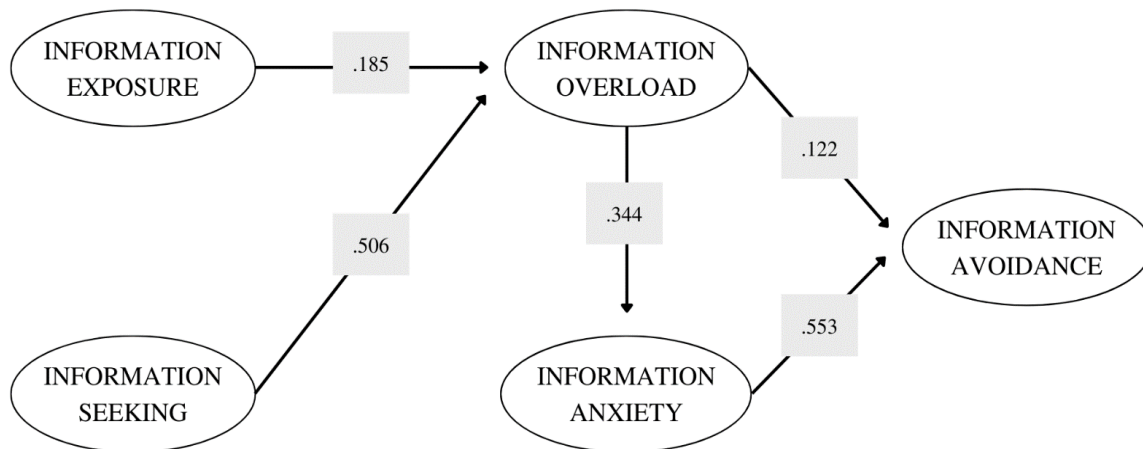


Figure 1. The structural model with path coefficients

## 4. Discussion

During the outbreak of the COVID-19 pandemic, information sources helped people find information to understand the situation and take steps to struggle against the virus that has grabbed millions of human lives around the world. Some research has advised that topics of information that are of interest to and hit by many students during the pandemic include the development of COVID-19



at home country and abroad and information about mental health. They are also concerned with government policy issues related to Covid-19 (Nurfalah et al., 2022). A lot of information media massively distributed information related to COVID-19. Everyone connected to the media will be exposed to information about COVID-19 and its development. Despite the fact that it is useful, the massive amount of information they receive can create additional problems. Besides being passive recipients of information presented by several information sources, such as printed mass media and internet-based sources, some individuals still feel deprived and want more information, so they actively search more and more information. The content available from these sources can cause IO. IO causes IAX, especially if they cannot determine whether the information is worth consuming. IAX can bring about a negative impact on mental health, especially for those with other life burdens while living in the pandemic era, for example, students who are studying abroad.

The results of this study show a similar phenomenon. It suggested that the IEX received influences the IO perceived by international students in Indonesia. This finding agrees with that of other research that the frequency of IEX is positively correlated with IO (Serçekuş et al., 2020; Soroya et al., 2021). It is related to the conditions of information production and distribution at the global level, which is characterized by the proliferation of media that present similar information with diverse styles and perspectives. In fact, the increase in the number of various distribution channels for the same information can cause IO (Edmunds & Morris, 2000; Soroya et al., 2021).

During the pandemic, individuals experience concerns about the risk of being affected by the deadly virus. Perceived concerns can affect one's information-seeking (van der Meer & Jin, 2020). For example, the rise of insecurity in the form of anxiety and fear is caused by information uncertainty. Furthermore, this study revealed that IS affects the IO among international students in Indonesia.

Occasionally, IS is undertaken to prevent cognitive dissonance by seeking information congruent with the user's views (Melki et al., 2021; Witzling et al., 2015), for example, the rise of insecurity due to information uncertainty. In other words, people tend to seek information that is pro and avoid that contradictory to their attitudes (Guess et al., 2020). Therefore, if they do not find information under their beliefs or unsatisfied with the information, they will continue seeking for information from other sources. The negative result of multiple sources of information is IO. This situation can occur when they handle and process a lot of information from various information sources, thus leading to a cumbersome situation, which causes IO (Beaudoin, 2008).

in terms of information overload, social media plays an equal role, or even stronger, to that of the mainstream media in enlightening or misinforming the public about COVID-19 (Melki et al., 2021). People feel anxious when exposed to misinformation (van der Meer & Jin, 2020). Research on misinformation identifies IO, which leads to the emergence of confusion from excessive information (van der Meer & Jin, 2020). Further, people with high online social anxiety encounter high levels of perceived IO (Hwang et al., 2020). IO triggers IAX, a condition where the information received exceeds the one's capacity and ability to process. The anticipatory step for this problem is to improve information literacy skills (Olumide, 2016). It corresponds to the finding of this study that IO affects the IAX of international students in Indonesia.

Regarding this excessive information, several studies have stated that anxiety can produce IAV (Soroya et al., 2021). The equivalent findings mention that IO can create stress, anxiety, and even discontinuation of using information sources (Fu et al., 2020; Guo et al., 2020). Discontinuation of information sources can be associated with IAV when individuals know that information is available but deliberately do not access it even though they are capable and have free access to it (Golman et al., 2017). IAX that leads to stopping the use of information sources shows IAV. This study reinforced that IAX among international students in Indonesia affects IAV regarding COVID-19 information.

The implications of this research go to the phenomenon of IS concerning continuous and uncontrollable COVID-19 information, which ultimately leads to IO. However, IS and processing are driven by the motivation to reduce uncertainty (Kim et al., 2020). Therefore, if an information media (for example, government-run media) can provide complete and accurate information, the anxiety of public can be minimized, and symptoms of IO and IAx can be avoided. According to Prastowo et al. (2021), to handle the Covid-19 pandemic successfully, all government departments and organizations must work together. Additionally, transparency must be prioritized while managing the diverse Covid-19 information. Planning must be thorough and organized in government communication management. Several factors must be considered for the community to accept the policies that an institution submits.

Another implication is that there is a potential to stop using information sources because of IAV even though accurate information related to COVID-19 disseminated by the authorities (for example, the government) is important and public needs. The behavior of people who show symptoms of IAV will hinder the creation of healthy IEx. Though, exposure to health information through social media can affect user attitudes and self-efficacy towards certain health behaviors (Yang & Wu, 2021). Exposure and search for health information from information and communication technology have a relationship with health behavior (Shen et al., 2018), to lead a healthier lifestyle. Health information-seeking behavior (HISB), which explains how to search for, locate, and utilize information on health, health-threatening variables, and health promotion activities, is formed when health information needs are met (Musarezaie et al., 2019). Therefore, a lot of health information media platforms are recommended to promote and provide more accurate IEx (Guess et al., 2020) and get comprehensive supervision to prevent the public from information confusion. Regarding information confusion, exacerbated by misinformation and false information, efforts can be made to increase information literacy to reduce excessive and misleading information (Edmunds & Morris, 2000). In addition, correcting misinformation can be pursued as it effectively counters against the increasing spread of misinformation (van der Meer & Jin, 2020).

This study has not measured the comparative level of effect based on genders. In regards of the gender difference in news consumption, a research indicated that women are marginally more likely to avoid COVID-19 and misleading information than males (Melki et al., 2021). Therefore, future studies may measure the level of effect in terms of gender or other aspects of individual differences, such as age, education level, culture, and others that play a role in health information processing (Kim et al., 2020).

Besides, the predecessor study focuses on information channels and places IEx incorporated into a Theory of Planned Behavior Model (Fishbein & Yzer, 2003) and associated with behavior intention (Witzling et al., 2015). The study findings that also examined the same concept resulted that IEx significantly and positively influences behavioral intention (Rizzi et al., 2020). This finding is in line with that of other studies that exposure to information from the government can predict behavioral intentions. However, exposure to information from the media and neighbors is insignificant (Witzling et al., 2015). Therefore, it is highly advisable to conduct further studies on IEx by considering different information sources and channels.

## **5. Conclusion and Recommendations**

This study concluded that IS and IEx received through social media affect IO among international students in Indonesia. Those who have been exposed to information related to COVID-19 in the country where they study keep searching information developments related to COVID-19 in their home country. The massive IEx received from various sources, especially information from social media, from different countries has resulted in IO. Subsequently, IO does not have a significant direct effect on IAV. However, IO influences IAV mediated by IAx. This finding suggested that even though the

students experience IO, as long as they do not reach the stage of feeling IAx, they do not feel the need to do IAv. Finally, IO affects IAx, and IAx affects IAv. Besides, differences in information development and confusion cause perceived IAx and lead to IAv concerning COVID-19 information. Further study may compare the level of effect based on gender differences, as they differ in information consumption behavior. Besides, a study on IEx in different information sources and channels is also novel to conduct.

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