EDUCATIONAL SCIENCES: THEORY & PRACTICE eISSN: 2148-7561, ISSN: 2630-5984

Received: 22 March 2021
Revision received: 2 May 2021
Accepted: 21 May 2021

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www.jestp.com

DOI 10.12738/jestp.2021.2.001 ♦ **June** 2021 ♦ 21(2) ♦ 1-12

Article

Role of Information Channels for Information Accessibility to the Deaf during COVID-19 Pandemic in Indonesia

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Abstract

Information is a human need, including of deaf individuals. Information accessibility for deaf individuals is much greater when compared to the hearing community, as the deaf need special services to fulfil their information needs. During the COVID-19 pandemic, the need for information for the deaf became much more significant. The present study aimed to explore the impact of various information accessibility channels such as social media, educational channel, international institutions, and government agencies on the information accessibility of the deaf community in the city of Banjarmasin, Indonesia. This study followed the quantitative methods of data collection, utilizing closed-ended questionnaires. Smart-PLS was used for data analysis. The results showed that information accessibility channels such as social media, educational channels, international institutions, and government agencies have a positive linkage with the information accessibility of the deaf community in the city of Banjarmasin, Indonesia. This study would guide the policymakers to design new strategies of information accessibility for the deaf in the country.

Keywords

Information accessibility channels, social media, educational channel, international institutions, COVID-19, Deaf people

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Citation: Yuwono, I., Rapisa, D. R., Damastuti, E. (2021). Role of Information Channels for Information Accessibility to the Deaf during COVID-19 Pandemic in Indonesia. *Educational Sciences: Theory and Practice*, *21*(2), 1 - 12. http://dx.doi.org/10.12738/jestp.2021.2.001

COVID-19 rapidly grew as a global pandemic caused by the new coronavirus. Public health authorities recommended physical distancing strategies, reduced individual interactions, canceled elective procedures, and limited non-essential services without a vaccine or definitive treatment. There is a need to take care of the deaf during COVID-19 and in case of future resource-limiting crises (Pattisapu et al., 2020). Indonesia is one of the countries that implemented physical distancing in very early phase of the pandemic (Djalante et al., 2020). Such large-scale social restrictions (PSBB) were implemented for long durations, for which the Indonesian government educated their citizens proactively. They were socialized with the rules and restrictions during the PSBB, such as keeping a distance, using masks when outdoors, driving rules and like (Anugerah, Muttaqin, & Purnama, 2021). The Banjarmasin city mayor held meetings to educate people about social restrictions and prohibitions. Social restrictions (PSBB) banners with messages were installed at all significant road points, offices, and public places. Written notices and banners were delivered at several points of arterial roads. Auditory socialization was made through press conferences. Press conferences and meetings by the mayor were broadcast on television and internet video platforms. Thus, social media assisted the Banjarmasin city government to reduce the COVID-19 cases.

Such socialization measures by the Indonesian government were easy to understand by normal citizens who had good vision and hearing abilities, who were able to read banners and other visuals and hear broadcast messages. However, differently abled individuals like the deaf or visually impaired experienced difficulties in understanding these socialization messages. It is even contended that COVID-19 has made detrimental effects on individuals with hearing impairments (Alqudah et al., 2021). The hearing impairment caused a greater difficulty in the access of information meant to socialize people about the implementation of PSBB restrictions at all places except at the press conference where a Sign Interpreter would assist the hearing impaired to understand the message.

Social restrictions also increase the risk of loneliness and high isolation. Individuals face the risk of depression, stress and anxiety (Aisenberg-Shafran, Bar-Tur, & Levi-Belz, 2021; Mattioli et al., 2020). Like the normal humans, the deaf also need socialization and information related to COVID-19. Unfortunately, information and resources about COVID-19 are not always easily accessible to the deaf, particularly when any piece of information is to be regularly updated on the development of COVID-19. It is very important to share the latest information related to COVID-19 with the deaf and provide them the access to information resources. For instance, the deaf face difficulties during the COVID-19 emergency at various levels and contexts of daily life (Lebrasseur et al., 2020). They have even exposed themselves to danger due to a lack of knowledge and non-availability of information as the right time (Tomasuolo et al., 2021).

With the high rise in COVID-19 cases in Indonesia, the pertinent problem was to make health related information accessible to the deaf individuals; some of whom may be infected with this disease themselves. An easy and convenient method to make the information related to the development of COVID-19 cases accessible to the deaf individuals is to first facilitate the access of various news about COVID-19 presented on internet platforms, social media, educational institutions, information disseminated by international institutions like world health organization (WHO) and centers of disease control (CDC) and government agencies. The problem is that not all deaf individuals have a good level of reading and understanding the information available at various places; nor do all the information platforms provide Sign Interpreters. The absence of support is one of the toughest challenges that the deaf have faced during the pandemic. This makes the deaf feel isolated and neglected. It seems that policymakers and academics have forgotten the importance of equality impact assessment while sharing the information such as importance of masks and sanitization, social distancing, and were regardless of making such information accessible to the deaf communities (Rotondi, Zuddas, & Rosati, 2018).

When the COVID-19 pandemic engulfed Indonesia, all the social and economic activities got affected. There occurred a gap between social and economic activities because all transportation systems were banned. People were mostly confined to their houses. However, the basic needs of life urged people to create and invent

and add to the existing technology or techniques to facilitate them to carry on their usual activities. In such a critical situation, everyone needed to remain updated about all such inventions and creations; the deaf were not an exception (Swanwick et al., 2020). There was a need to find out the ways how the updated knowledge or information can be enhanced for the greater outreach, including the deaf community.

This study was designed with the view to meet this need of people, especially of the deaf during the COVID-19 pandemic. The study aimed to present sources of information and analyze the relationship between social media, educational channels, international institutions, government agencies, and informational accessibility during crises like the COVID-19 pandemic. There is no dearth of studies that describe the contribution of social media, educational channels, international institutions, and government agencies to informational accessibility; but these studies were either dealt with individual source of information such as social media, educational channels, international institutions, and government agencies or did not attempt to study any relationship between all these sources. Hence, this study is perhaps the first research carried out to address all four sources of information viz., social media, educational channels, international institutions, and government agencies. This study has elaborated all four different sources of information with great details particularly keeping in mind the information accessibility needs of the deaf community in Indonesia.

This paper consists of five sections. After the introduction, the second section presents the previous studies showing the relationship between social media, educational channels, international institutions, government agencies, and informational accessibility. The emphasis is given on their relevance during the period of crises like the COVID-19 pandemic. The review of literature also assisted in establishing the hypotheses of this study. The third section contains research design, research methodology, data collection methods and procedures to analyze the data. The fourth section presents the findings and results of the study and discusses the data collected about the relationship between social media, educational channels, international institutions, government agencies, and informational accessibility during the COVID-19 pandemic. The last section is the conclusion that discusses implications, and future directions of this study.

Literature Review

i. Social media

Social media is a modern source of information and communication. It comprises the use of websites and applications through smart technology like smartphones, computers, laptops, tablets, and many other digital devices, to connect and communicate with many people across the world when needed. The study of Hussain (2020), defines social media as the use of applications and websites like Instagram, Facebook, WhatsApp and Twitter etc. on digital devices (the devices which can access internet service connection). Social media played a major role in creating and sharing the content as well as in participating in social networking events during a critical situation like the COVID-19. Besides normal human beings, social media is also an excellent source of information and communication for the deaf. The social media provides the facility of communication through video technology with natural visual language and a sign language. The sign language-based videos allow individuals of the deaf community to keep in touch with many people, friends, and extended family. Deaf people thus can also use social media to access information relevant to their field, subject, discipline, or profession during COVID-19, which had put a ban on physical transportation (Yu et al., 2020).

A study was recently conducted by Chan et al. (2020), to explore the benefits of social media for general users as well as deaf users. This study elaborated that deaf people could use social media platforms like Instagram, Facebook, WhatsApp, YouTube, and Twitter etc., to establish a network and can benefit from opportunities across the world. Social media provides a lot of career opportunities through which people can connect with many employers across the globe with like-minded interests, and avail the opportunity to share their knowledge, insights, experience, and abilities online. Many individuals, groups of people, or institutions present content like

pictures, descriptive material, or videos to introduce their products, services, culture, events, and job or career opportunities on these social media sites. Last, but not the least, these social media sites have also assisted people in carrying on their businesses even during contingent circumstances like the COVID-19 pandemic (Kaya, 2020). Hence, the following hypothesis can be established:

H1: social media has a positive impact on information accessibility.

ii. Educational channels

Educational channels are the electronic methods to provide education to students or individuals when the traditional methods of teaching are not taking place. Such electronic education channels are not restricted to time, age, or region of people. Learners of all age groups, belonging to any region, and at any time of the day can access the information available on these educational channels at their own pace and convenience. These educational channels also act as partners to educators and provide them knowledge and information to share with students and guide them at various stages of education. An education channel is also a helpful resource for parents, which enables them to get their children informed and educated. A leading education channel is just like a treasure of knowledge or information for the students, which facilitates to get the education goals. A few educational channels are specially launched to educate the hearing-impaired people. These education channels have experts who can use natural visual language or sign language, which the deaf can easily understand (Ahmed, Zimba, & Gasparyan, 2020).

During COVID-19, a lot of restrictions were placed on educational activities. Since all transportation means were stopped and institutions were closed, regular education classes were also stopped. In fact, overall education sector was disturbed. In such a situation, there was a need to turn to such ways which can maintain continuity in the process of learning to receive education. Educational channels, in such circumstances, proved to be a major source of information. On online education channels, not only tutors presented notes and delivered lectures, all other information related to educational activities like admission, exams, and results were also available online. Students would get information related to their syllabus and courses of study without going outside (Szmuda et al., 2020). In traditional classes, students gained limited knowledge since the time span of face-to-face classes was limited. Even the number of tutors was also limited.

The educational channels transformed the whole scenario. Now students can learn more than what is prescribed in the syllabus. There are audio-video lectures and other material available on the electronic or online educational channel which are accessible to students at any time and for multiple times. There are online channels that provide the same knowledge or information in different methods. Thus, students can attain knowledge on the same topic from different channels and compare the information to clarify their concepts. These channels also arrange to provide information for deaf people so that they can continue their study even during COVID-19 (Bagoly-Simó, Hartmann, & Reinke, 2020). Thus, it can be hypothesized:

H2: Education channels have a positive association with information accessibility.

iii. International institutions

International institutions, also known as international organizations or intergovernmental organizations, are institutions whose objective is to govern the conduct of individuals, groups, and government agencies which participate in global systems. International institutions may be established by a treaty or may be created as a tool governed by international law. It has its own legal entity like the World Health Organization (WHO), NATO, and the United Nations. International organizations are of different nature like legal organizations, healthcare organizations, news organizations, or financial organizations. These organizations are considered a significant source of information as they provide all types of information according to the relevant field.

A research was conducted by Obergassel, Hermwille, and Oberthür (2020) to investigate the role of international institutions in providing information on COVID-19 and its impact on relevant fields across the

world. The study stated that when COVID-19 pandemic broke out, all international institutions had become alert. They got engaged in sharing the information about COVID-19 prevalence, its severity, and the issues related to the disease. These international organizations made states and general population aware of the information related to the COVID-19 through different communication channels such as televisions, radios, or smart technology, which used online websites or applications for communication. They provided information so that people can handle the situation and deal with the COVID-19 pandemic more smoothly and conveniently. They shared with them what necessary measures should be used to secure them from the health and economic point of view.

In another research, Guimón and Narula (2020) highlight that international organization prove to be one of the significant sources of knowledge and information as they help build communication among different states and individuals and disseminate necessary and useful information across the world. When COVID-19 engulfed the world without the distinction of gender, age, sector, creed, region, or national boundaries, there was a need to have per-minute awareness about the COVID-19 disease, its causes, influences and precautions for every living being, including the people with disabilities like the deaf. Thus, it can be hypothesized that:
H3: International institutions have a positive association with information accessibility.

iv. Government agencies

A government agency, also known as a state agency or an appointed commission, is a permanent or semi-permanent organization in the machinery of the state which has the responsibility to oversee and administrate specific functions, like management. There are different types of government agencies, based on usage, function and activity. A government agency is different from a department or ministry and any other public body built by a state. The functions of government agencies are mostly executive in nature; the purpose is to execute the government agenda. The mission of state agencies is to understand the public issues, creates awareness in public about the government intentions, actions, or objectives, and influence their thinking and actions to promote the national interest. The objective of the government agencies is also to build communication networks among different organizations, government and public, national and foreign public (Bunker, 2020).

Carter and May (2020) state that a government agency is a group of different people established by the government to perform or execute some specific tasks or help the public to get the government agenda executed. The government agenda may be related to any field such as environment, economy, or society. While executing the government agenda, the agencies try to create awareness of situations or descriptions about their services in public. They are liable to provide all necessities on-demand and guide the public to lead a civilian life.

Lokhandwala and Gautam (2020) showed the role of government agencies, especially medical agencies, in dealing with the plague of COVID-19. The government agencies provided information on COVID-19 prevalence across the world to the public. The government healthcare agencies particularly created awareness in the public about the causes of the prevalence of COVID-19, its severity, symptoms, and precautions to be taken to prevent the disease. In such a critical situation where not only, the normal people need assistance of the government agencies, the deaf also need urgent information for health safety and continuity in economic activities. The government agencies arrange for sign interpreters who provide information to deaf people in their own language and prepare them to deal with the disease. Based on the above discussion, we can hypothesize:
H4: Government agencies have a positive association with information accessibility.

Method

Participants

The sample was selected through purposive sampling method, i.e., with specific criteria. These criteria included that the deaf individuals should have good reading ability to provide answers to every given question. The respondents in the study were 420 deaf people with excellent reading ability, and who could understand and

give their point of view on every statement available. However, only 290 valid questionnaires were used for analysis which represented about 69.07 percent response rate.

Instruments

Data collection was carried out by disseminating questionnaires online to find out the point of view of each deaf individual against each statement listed. Online questionnaires were particularly helpful and feasible because the whole of Banjarmasin city was facing large-scale social restrictions.

Procedure

This article examines the role of social media, educational channels, international institutions, and government agencies in the information accessibility of the deaf community. This study followed quantitative methods of data collection using a questionnaire.

Data analysis

This study used the smart-PLS application for the analysis of the data and examined the nexus among the variables. This smart-PLS was adopted due to the model complexity and large sample size (Hair et al., 2017). This study took four predictors namely social media (SM) with eight items, educational channels (EC) with eight items, international institutions (II) with seven items and government agencies (GA) with six items. In addition, this study took informational accessibility (IA) as the predictive variable with ten items. These variables are shown in Figure 1.

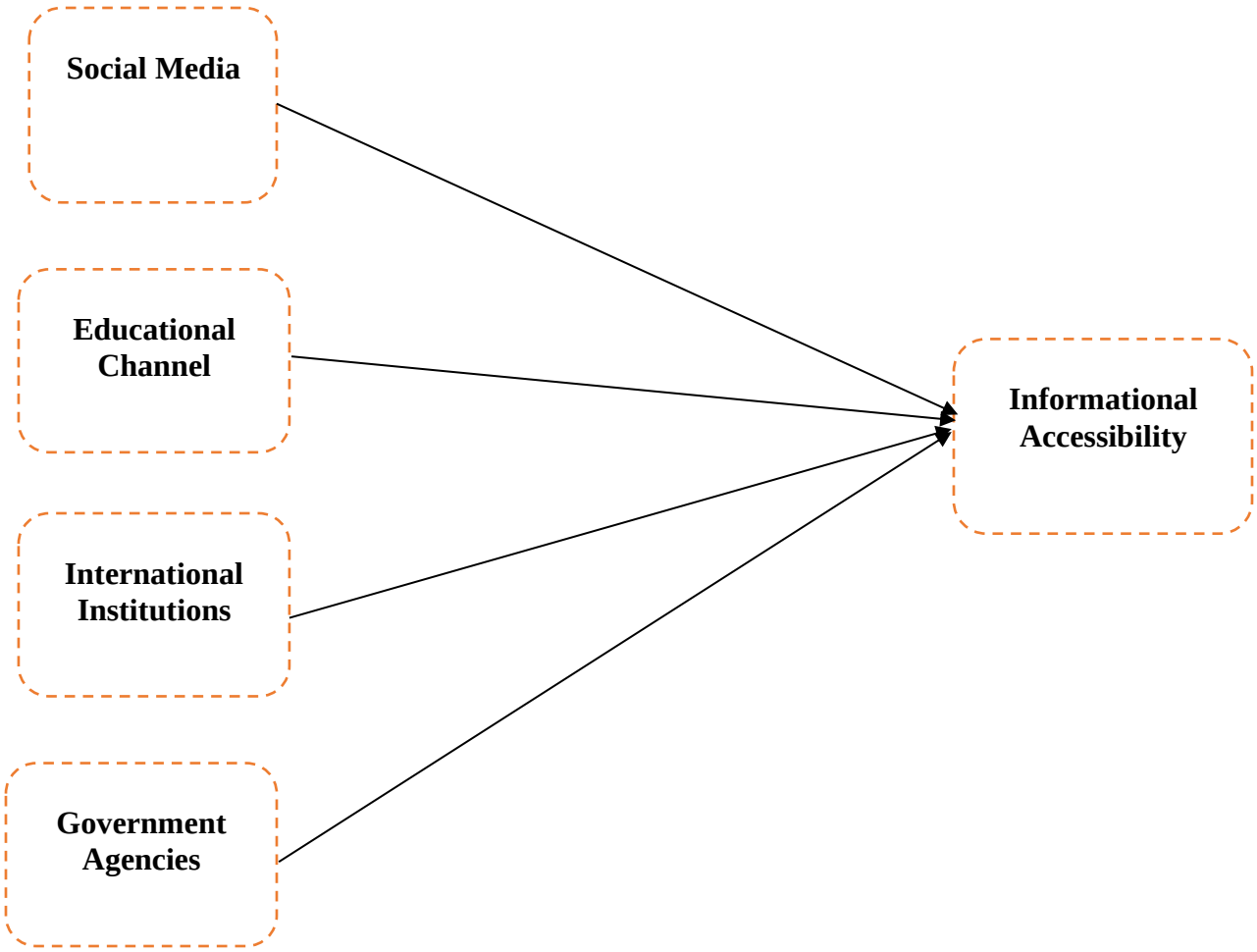

Figure 1. Theoretical Model of the study

Results

The following are the results obtained from the questionnaires administered online about the perspective of the deaf individuals on informational accessibility for the deaf during COVID-19. The study began by checking the convergent validity of the questionnaire that showed the relationship among the items. The results indicated high relations among items and valid convergent validity because Alpha and CR values were not smaller than 0.70, and AVE and loading values were higher than 0.50. These values are presented in Table 1.

Table 1. *Convergent Validity*

Constructs	*Items*	*Loadings*	*Alpha*	*CR*	*AVE*
Educational Channel	EC1	0.921	0.978	0.981	0.865
	EC2	0.943			
	EC3	0.924			
	EC4	0.930			
	EC5	0.931			
	EC6	0.939			
	EC7	0.925			
	EC8	0.928			
Government Agencies	GA1	0.953	0.959	0.968	0.834
	GA2	0.829			
	GA3	0.952			
	GA4	0.954			
	GA5	0.827			
	GA6	0.954			
Informational Accessibility	IA1	0.571	0.907	0.924	0.579
	IA10	0.808			
	IA2	0.790			
	IA3	0.772			
	IA4	0.637			
	IA5	0.797			
	IA6	0.811			
	IA7	0.796			
	IA8	0.824			
International Institutions	II1	0.849	0.936	0.948	0.722
	II2	0.859			
	II3	0.854			
	II4	0.866			
	II5	0.867			
	II6	0.852			
	II7	0.799			
Social Media	SM1	0.802	0.919	0.934	0.639
	SM2	0.814			
	SM3	0.758			
	SM4	0.819			
	SM5	0.805			
	SM6	0.815			
	SM7	0.760			
	SM8	0.819			

Next, the discriminant validity was checked using the Heterotrait Monotrait (HTMT) ratio which explained the relationship among the variables. The results indicated low relations among variables and valid discriminant validity because the HTMT ratios were lower than 0.90. These values are presented in Table 2.

Table 2. *Discriminant Validity*

	EC	*GA*	*IA*	*II*	*SM*
EC	0.509				
GA	0.515	0.456			
IA	0.497	0.531	0.468		
II	0.446	0.412	0.452	0.540	
SM	0.510	0.861	0.539	0.473	

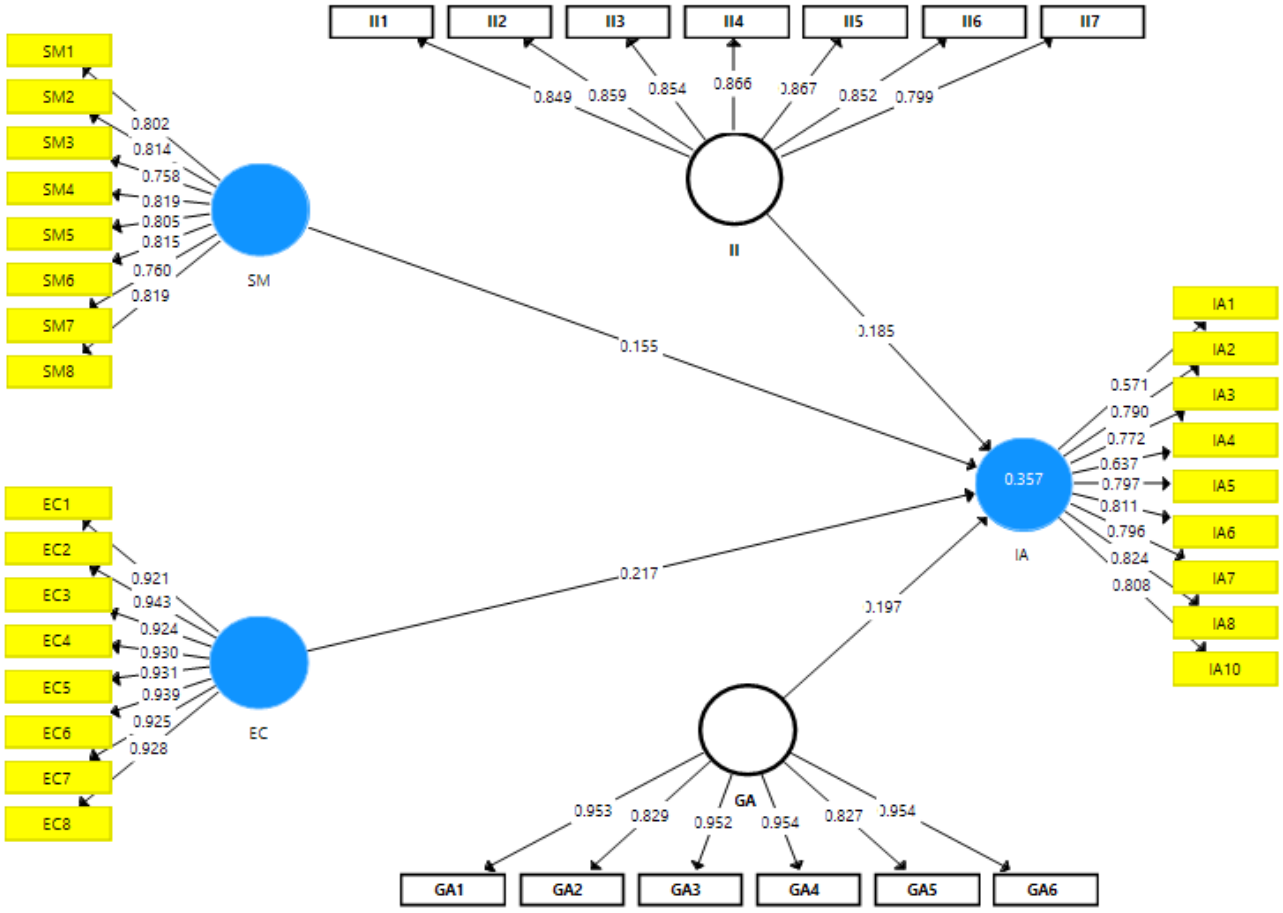

Figure 2. Measurement Model Assessment

Finally, the path analysis was shown to signify the relationship among the variables under study. The results showed that information channels such as social media, educational channels, international institutions, and government agencies have a positive and significant linkage with information accessibility of the deaf community in the city of Banjarmasin, Indonesia and thus H1, H2, H3 and H4 are accepted.
These relationships are mentioned in Table 3.

Table 3. *Path Analysis*

Relationships	*Beta*	*S.D.*	*T Statistics*	*P Values*	*L.L.*	*U.L.*
EC -> IA	0.217	0.077	2.806	0.003	0.069	0.319
GA -> IA	0.197	0.078	2.513	0.007	0.058	0.314
II -> IA	0.185	0.066	2.794	0.003	0.069	0.285
SM -> IA	0.155	0.076	2.040	0.022	0.048	0.298

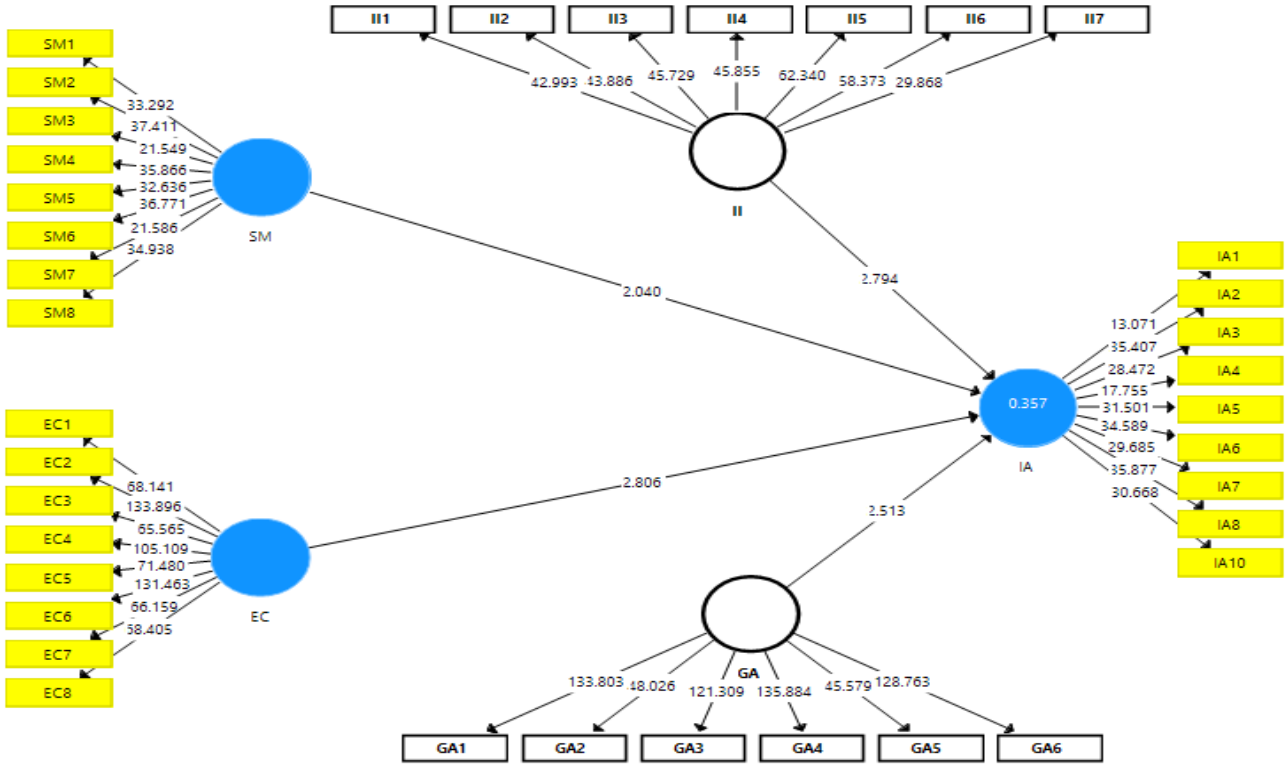

Figure 3. Structural Model Assessment

Discussion

The study results have indicated that social media plays a positive role in information accessibility during health and economic crises like the COVID-19 pandemic. One of the important information that is currently of utmost need of the public is information about COVID-19. The availability of information about COVID-19 is very easy to find because there are many providers of information/news on the internet like Facebook, Google, YouTube, and various social media applications as (Budhwani & Sun, 2020). The study thus revealed that the information was the need of the community. This fact is consistent with the study (Pennycook et al., 2020). The study results also indicated that the interaction with education channels is positively linked with information accessibility for deaf people during COVID-19. These results agree with the arguments of Udoudoh (2017), who also stated that he had difficulty obtaining information about COVID-19, and therefore had to find a TV station which could provide a sign interpreter (JBI) or running text. Unfortunately, not all TV channel broadcasts provided an interpreter (Yıldırım, 2021).

Each deaf individual has different listening, speaking, and reading abilities. Among the deaf individuals who lost hearing at moderate, heavy, and very heavy levels, and who lack lip-reading, as well as who are not able to read, find it difficult to receive and understand both the oral and written information. The existence of a Sign Interpreter in education channels proved to be a good solution to overcome such challenges. This facilitated the deaf to access various information that was aired on television and YouTube (Nayak et al., 2021).

The study results also showed that government institutions have a positive impact on information accessibility during COVID-19. These results agree with Alon (2020), who stated that government was one of the sources of information that generally disseminated policies or programs and provided important information that the public needed and government institutions assured its availability. The information related to COVID-19 was made available through different information/news providers on the internet and platforms like Facebook Google, YouTube, and other social media applications (Velde et al., 2021). This study also revealed that

international institutions had positive influence on information accessibility during COVID-19 prevalence. These results are in line with the study of Shah et al. (2020), which shows that for the sake of communication, international institutions hire special persons who can speak in any language, including code words or sign language, so that they can convey their messages to foreigners effectively. The study implies that during COVID-19, the international institutions played a significant role to provide information on COVID-19 to create awareness in people across the world.

Conclusion, Implications and Limitations

The results of this study were based on various agencies involved with the deaf community, such as social media, government agencies, education channels, international institutions, and various other fields. All these agencies cooperate and work together to fulfil the rights of deaf people. For example, they showed concern towards the deaf and increased the number of sign interpreters. It became easier to provide the provision of language in various aspects such as health, education, business sustainability, and home job opportunities. The information was made accessible to the deaf people during the prevalence of COVID-19 even through social media, government agencies, education channels, international institutions agencies. All of them worked with language institutions who certainly had Sign Interpreters, who were quite helpful when any deaf individual suffered from COVID-19 or had a specific need related to education, health, or job. The deaf were served properly in accordance with their rights.

The current study faced certain limitations too which future studies can deal with. First, the current study highlighted the role of four information sources such as social media, government agencies, education channels, and international institutions in providing information to the deaf during COVID-19; but it could not provide any description of other dimensions of these agencies. Thus, the scope of the study was limited to the COVID situation only. The authors in future may elaborate all such dimensions of the sources of information and make a comprehensive study. The COVID-19 pandemic attack is a worldwide issue, and the deaf are found in almost all countries, but the current study dealt with the social media, government agencies, education channels, and international institutions as a source of information for the deaf during COVID-19 only in Indonesia. Future studies can focus on other countries or regions.

The current study has special theoretical implications because of its contribution to the literature. It has examined social media, government agencies, education channel, international institutions, and their contribution to information accessibility, especially for deaf people during any health or economic crises like the prevalence of COVID-19. The study highlighted such strategic aspects about these sources of information that it could act as a guideline for individuals, groups, and a government of any country, where a certain number of people are deaf, and which is exposed to any pandemic like COVID-19. The study also implies that to create an awareness of COVID-19 for the deaf people, necessary improvement needs to be made in social media, education channels, government agencies, and international institutions. These sources should become more resilient, flexible, and willing to take initiative to work towards information accessibility for the deaf in the time of COVID-19.

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