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Abstrak/*Abstract*

COVID-19 has forced the world to change. Indonesian government, like the rest of the global community, promptly responded to the soaring transmission rate by launching an app to cater the Indonesians' need for information. COVID19 GO.ID was launched on March 20, 2020, adding to previous chatbots built by WHO and afterwards followed by GOV UK. Using case studies method and comparing it to the four unique affordances of chatbot, this study was conducted to compare the three chatbots, and thus achieve a valuable information to improve Indonesia's chatbot under the Media Richness Theory. Indonesian government chatbot needs to add more engaging and informative topics. The availability of shareable graphics and videos would add richness to the chatbot, as well topics that provide information on myth buster or hoax revelation, mental health support and how people can donate to the society.

COVID-19 telah memaksa dunia berubah. Pemerintah Indonesia, seperti komunitas global lainnya, segera merespon tingginya angka penularan dengan meluncurkan sebuah aplikasi untuk menjawab kebutuhan informasi masyarakat Indonesia. COVID19 GO.ID diluncurkan pada 20 Maret 2020, menambah daftar chatbot yang telah dibangun oleh WHO, dan kemudian diikuti oleh GOV UK. Dengan menggunakan metode studi kasus dan membandingkannya dengan empat kemampuan chatbot, kajian ini dimaksudkan untuk membandingkan ketiga chatbot tersebut dan menghasilkan informasi berharga untuk memperbaiki chatbot pemerintah Indonesia menggunakan Teori Kekayaan Media. Chatbot pemerintah Indonesia perlu menambahkan topik yang lebih melibatkan masyarakat dan lebih informatif. Ketersediaan media infografis dan video yang mudah didesiminasikan akan menambahkan kekayaan terhadap chatbot, begitu pula topik yang membahas mitos atau mengupas tentang hoaks, dukungan kesehatan mental dan bagaimana masyarakat dapat berdonasi.

Kata kunci/*Keywords:*

chatbots, government, crisis, WhatsApp, covid19, corona, media richness

chatbot, *pemerintah, krisis, WhatsApp, COVID19, korona*, media richness

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Introduction

COVID-19 is an infectious disease attacking human respiratory system. Older people and those with underlying health conditions, such as cardiovascular, diabetes, chronic respiratory disease and cancer are more prone to it. This virus spreads primarily through droplets of saliva or when someone infected coughs or sneezes. COVID-19 was first diagnosed as a pneumonia of unknown cause detected in Wuhan, China on December 31, 2019. It got its renowned name on February 11, 2020 and by March 11, World Health Organization (WHO) has classified it as a pandemic. As of May 28, 2020, over 5,596,550 confirmed cases have been reported in more than 217 countries and regions, including 353,373 deaths (WHO, 2020). In Indonesia, the statistics are 24,538 confirmed cases with 6,929 cases found in Jakarta (Satgas Penanganan

COVID-19, 2020; Jakarta Smart City, 2020). After the announcement, governments around the world were preparing for a communication plan fits in a pandemic situation. Communication is a very important part in dealing with crisis such as a global pandemic. Bradley et al. (2016) stated that there are four stages of disaster and proper communication during crisis to reduce its impact: prevention, preparedness, response and recovery.

In times of crisis, the pressure to provide public with sufficient information is always higher in government due to public perception on its communication management performance in handling the problems. Dissemination of information is expected to be faster, more frequent and in the most effective way possible. Media will also seek information promptly and request as many data and interviews as possibly needed from related sources. Then, there are roles of new media which enable citizens to be more involved and communicative during crisis (Tuong-Minh, 2015). Government agencies must also consider heterogeneous community with many different aspects to be addressed. The bigger the community, the wider misinformation and rumors can occur (Hofeditz et al, 2019).

Since the beginning of this year, COVID-19 pandemic has forced governments to deal with a condition which combines virology and virality, rapid spread of the virus and information – and misinformation – which has caused panic to citizens (Depoux et al, 2020). Hence, governments must find a communication tool that can provide information in the simplest way and has already become a part of people's daily life.

On that note, chatbots fits both criteria. Abdul-Kader and Woods (2015) mentioned that "chatbot is a computer program that mimics intelligent conversation. The input to this program is natural language text. The response is either text or speech". It is a computer program to replace human in conversation (Mehr, 2017). It is simple to use since it came with messaging services people already aware of and use like WhatsApp.

To answer the needs to provide information in the simplest and most effective ways, the Indonesian government through the Minister of Communication and Information issued a press release on March 19, 2020 which states that the government is collaborating with local telecommunication groups and WhatsApp (Facebook) in building a message chatbot to provide information about Covid-19 and interactive tools for the public (Kominfo, 2020a). The chatbot, later known as COVID19 GO.ID, was officially launched the next day, i.e. on March 20, 2020, and has seven menu features including current COVID19 tally and symptoms of the disease (Kominfo, 2020b). As of May 30, 2020, its feature has expanded to 12 menus.

Indonesia is not the only government to collaborate with WhatsApp to create chatbot. United Kingdom, India, Singapore, and Buenos Aires are some of the countries and cities which launched a helpline chatbot, as well as World Health Organization. These chatbots provide general information about COVID19 as well as unique data about its latest development on each country or city. This service from WhatsApp is the result of Crisis Response Widget from its parent company, Facebook, starting from December 2019. This enable its users to request or offer help during a crisis or disaster. Furthermore, it has information about commute patterns which can be used by emergency response team to deliver medical supplies (Brown, 2019).

Related studies conducted on the topic included Walwema's (2020) study which specifically studied the World Health Organization's Health Alert chatbot, in which it provides latest news and information on coronavirus including global numbers and cases to travel recommendations and how people can protect themselves and others, and Rodsawang et al.'s (2020) which focuses on how to design an informative chatbot for COVID-19 pandemic that disseminates information to the general public. The current study extended the knowledge base on the topic area by outlining information on how different countries built their own chatbots to cater the needs of their people. It is also worth mentioning while other studies focus on risk communication, this article used the Media Richness Theory on how to correlate the medium and its effectiveness.

The objective of the present study is to compare Indonesian government's chatbot for COVID-19 to other countries' or world's institution's, and thus to achieve a valuable additional information to update Indonesia's COVID-19 chatbot.

Literature Review

2.1 Media Richness Theory

Media Richness Theory was developed by Daft and Lengel (1986) in the field of business management. This theory focuses on the effective use of communication medium by matching the richness of the medium and equivocality of task. It provides a framework in describing a communication medium ability to convey the information sent without being distorted. The richness of a communication medium can be based by following factors: a) immediate feedback, b) multiple cues, c) language variety, and d) personal focus.

Daft and Lengel concluded that a communication medium which can provide a clear unambiguous understanding in a timely manner is considered richer (Daft & Lengel, 1986). Online text-based communication is said to be less rich than other media, while face to face is said to be the richest of communication medium. Based on the four factors described in the media richness theory, diffused communication media like instant messaging and social media would be considered as leaner channels than face to face communication (Ishii et al., 2019). To give a more

concrete example, these are some communication mediums ranging from the leanest to the richer, in chronological order, as explained by Za & Braccini (2012), namely: unaddressed documents such as bulk e-mails and posters; written addressed documents; two-way radio; telephone; video conferencing; and face-to-face.

However, a study proclaims that a richness of an online media could depend on the media used by the communicator (Kwak, 2012). It means, a text message, for example, can be considered a rich channel if there is an immediate feedback during communication. It highlighted the importance of face-to-face communication. However, innovation on communication field has given us digital medium which combines text, audio and video. It provides services and more effective support in communicating. Chatbots perfectly fit into this category. As Kwak (2012) mentioned, "recent advanced technology has been enriching "lean" channels that are used in relationship development". This ongoing evolving technology has transformed communication by enriching "lean" media (Ishii et al., 2019).

To calculate it, Lodhia (2006) contributed criteria in media richness, which are multiple addressability, externally recordable, computer process-able memory and concurrency. Multiple addressability refers to the ability to convey message simultaneously to multiple audience. Externally recordable criteria relates to media ability to provide communication records, as well as documenting and modifying communication process. Computer process-able memory means such information can be organized and arranged electronically. Concurrency refers to media ability to facilitate interaction among multiple users simultaneously.

2.2 Risk Communication & Crisis

According to Glik (2007), "Risk communication is information exchange about health risk caused by environmental, industrial, or agricultural processes, policies or products among individuals, groups, and institutions." Government has an obligation to communicate with citizens and inform them about any risk happened within their jurisdiction because people expect to be notified on forthcoming threats. A straightforward communication channel with neurolinguistic programming can provide solutions to this situation.

Risk communication was a one-way communication due to its top-down approaches (OECD, 2016). Today, with all advancements in communication technologies, interactive mode of risk communication arises with emergence of social media, messenger and other platforms of artificial intelligent (Glik, 2007).

Risk communication is important to create understanding of a risk. In times of crisis, people tend not to care for platforms provided by the government or any form of authorities (Potts, 2014). This is where social media, such as chatbots, is suitable to disseminate information because of its ability to build interactions.

Crisis can be defined as situations that need prompt decision making, including severe threat and uncertainty (Comfort, 1994). The condition may be caused by nature, tsunami or earthquake for examples, or man-made such as riots. Crisis can cause a rift in organizational, local, domestic and international dimensions and it also creates dangerous situations to citizens. The variety of crises is overwhelming (Rosenthal and Kouzmin, 1997). COVID19 was declared as a Public Health Emergency of International Concern on January 30, 2020. This decision was taken by the World Health Organization (WHO) soon after the virus was detected in five WHO regions, prompting a massive action of early detection, isolating and treating cases, contact tracing and physical measures to be conducted globally (WHO, 2020)

2.3 Chatbots

Chatbot refers to a chatting robot (Dahiya, 2017). It is a computer program created to replace human in conversation. Almost every study concluded that chatbots exist in a condition where an organization possesses a mass of data but not enough human resources to manage them. Numbers of technology applications in government are related to chatbots. Recent study shows that organizations using chatbots in social media also include political parties and its members and government agencies, since they are aware of its benefits in connecting stakeholders (Androutsopoulou et al., 2019).

Different terms and names have been created to address chatbots, such as machine conversational system, virtual assistant, virtual agent, dialogue system or chatterbot (Shawar & Altwell, 2015). It analyzes the environment based on information fed to them, and decides on actions which result in the best outcome (Russel & Norvig, 2009). Its operational approach is based on natural language processing (NLP), machine learning and data mining technology and continuous leverage of existing data (Gunawan & Salamah, 2018). The Natural Language Processing is a program which enables chatbots to communicate in human language. Scholars believe that chatbots were developed because people also want to use human language to communicate with computers, as opposed to programming language which only those experts in the field understand (Zadrozny et al., 2000).

Nowadays, government agencies are developing ways to improve their services for citizens, and digital representatives or also known as virtual assistants have been used to support this. Various areas have been using this virtual assistant, from handling citizens' complaints and inquiries, assisting citizen in filling administrative forms and applications, to translating information from governments' documents (Mehr, 2017). These virtual assistants embed supervised learning, which means they become more powerful with machine learning. They become smarter

with more data and information fed to them, and from their interactions with human they assisted.

The collaboration with WhatsApp as a platform for chatbot to provide information to people is one of the best things about modern and diffused communication medium. Before chatbots, risk or crisis communication was considered to be a one-way process and medium, i.e. from government to public. Advance communication technology, however, enables the communicator to be interactive via social media, respond to comments left in the social media, and other online platforms (Glik, 2007).

2.4 Chatbots in Government Institution

Cities and national governments around the world have been introducing this AI technology. Los Angeles has LA CHIP or City Hall Internet Personality that helps citizen to roam around LA's website and better understand administration processes (Microsoft in Business Team, 2017). Open Data Kansas City chatbots assists and makes sure all data are accessible for non-technical users. Australia uses Alex (Australian Taxation Office) to assist citizens in tax-related inquiries. Citibot of North Charleston responds to citizens' report on city services, like potholes and street lamps. It also answers citizens' topic by giving them relevant links. In 2017, Rajkot Municipal in India created chatbots which allow citizens to apply for birth or death certificates, pay property tax and water charges online, etc. (Flatboat Team, 2018). Meanwhile, Jakarta City in collaboration with Botika is still developing Javira (Jakarta Virtual Assistant). Javira was initiated to support Jakarta's vision of smart city. It is a platform to further connect citizens to the city government, and make sure that every report is responded promptly.

From the examples above, we can say that most chatbots are used or prepared by government agencies because they are covering several points. They provide citizen with quick access to public data, respond to public reports and complaints online for 24/7, assist citizen in administrative applications and some even provide other languages assistance. This is a nod to survey conducted in 2018 and involved 1,051 respondents in USA which shows their affirmation towards chatbot because it gives them around-the-clock services, instant responses and answers to simple questions (Drift, 2018). These applications can make government works more efficient so employees can make a real connection to citizens.

One particular example of AI benefit in emergency situation is Japan's special bot which produces earthquake warnings. Japan's Disaster Medical Assistant Teams (DMATs) use hashtags to convey their messages in different channels (Kawai et al, 2018).

Today, in relation to the COVID-19 pandemic, many governments collaborate with WhatsApp to create a special chatbot to cater their citizens' needs of information. The World Health Organization (WHO) chatbot can serve people who speaks Arabic, English, French, Hindi, Italian, Spanish and Portuguese. Indonesian government chatbot's COVID19 GO.ID has 11 menus to better understand about the virus. Bueno Aires chatbot's Boti has handled 170,000 queries related to COVID-19 by April 28, 2020 (Andrews, 2020). United Kingdom's chatbot was launched in April andIndia has MyGov. Singapore's chatbot by March only has answered more than 75,000 people's inquiry, and even West Java, a province of Indonesia, has Pikobar (Pusat Informasi dan Koordinasi COVID-19 Jawa Barat).

Research Methodology

This paper is a conceptual article which applied case studies as a method by gathering data through literature studies and comparing them to the four unique affordances of chatbot. Case study would allow the researcher to examine data within specific context. Many researchers who are interested in qualitative field have used this method (Baškarada, 2014). To conduct this study, data were gathered through literature study from journals, books, online articles, newspaper, online news (Setyorini & Irwansyah, 2018). The data were of the same topic or within the same area of studies. The data gathered were then analyzed descriptively to provide explanation and understanding of the issue. The existing data were used when the researcher has limited time and resources (Johnston, 2014). To provide a better understanding as to what would have been a betterment to the menus' application, a comparison to other chatbots' performances was conducted in this paper.

3.1 Research Framework

This research was conducted by comparing COVID19.GO.ID, the Indonesian central government's chatbot, to the WHO's and GOV.UK's Chatbot. The WHO's chatbot was chosen by being the first ever chatbot created in response to the novel COVID-19 pandemic, and thus its content has been a stepping stone to other institutions or countries. GOV.UK was one of the countries which responded immediately and intensely to the pandemic. The first government statement on the virus was released on February 3, 2020 by NHS England and NHS Improvement London (National Health Service, 2020). It has since published numbers of regulations on, among others, containment and isolation strategies, employment and support allowance and Health Protection Regulations. On March 25, 2020, the GOV.UK was launched. GOV.UK has many specific menus which may enrich chatbot run by the Indonesian government.

The functionality of chatbot would then be defined on how communicative it is by complying to the four unique affordances of chatbot (Miner et al, 2020) as follows: information dissemination, symptom monitoring, behavior change support and mental health support.

Information Dissemination

During crisis, dissemination of information is expected to be faster, more frequent and in the most effective way possible. The pressure to provide public with sufficient information also always runs higher in the government during a crisis due to public perception on its communication management performance in handling the problems. Thus, the government needs a new media which enables citizens to be more involved and communicative during crisis (Tuong-Minh, 2015). Government agencies also must consider the heterogeneous community with many different aspects to be addressed. The bigger the community, the wider misinformation and rumors can occur (Hofeditz et al, 2019). Chatbot will be able to provide concise, credible, single answer to most questions compared to social media or web search engine's overwhelming results (Vosoughi et al, 2018).

Symptom Monitoring

The disclosure of COVID-19 status of an individual is still an issue due to fear that it may detriment to his/her professional and social lives (Mak, 2009). Self-screened symptom menu is suitable because it is easier for people to disclose personal health information to a machine (Lucas et al, 2014).

Behavior Change Support

To affect behavior, information must be actionable (Miner et al, 2020). Positive information provided by chatbot is likely to change behavior and correct misperceptions occurring during crisis. In a community where health is considered essential, such as during pandemic, accurate information which is provided by chatbot will surely receive attention from the public.

Mental Health Support

COVID-19 pandemic has raised global concerns and anxiety. Xiang et al. (2020) also mentioned that it has created a new form of stress or trauma for mental health professionals. A chatbot menu which support mental health and promote lifestyle associated with it will be very beneficial for the public.

Figure 1. Research framework

Results

4.1 COVID19 GO.ID Chatbot

When COVID9 GO.ID was first launched, it only had seven sections for people to examine and learn from, i.e.: (1) Latest news of COVID-19 in Indonesia; (2) Description of COVID-19; (3) Symptoms of COVID-19; (4) Routines to Protect Ourselves; (5) Ways to Protect Other People; (6) Benefits of Face Masks; and (7) Designated Hospitals for COVID-19 (Figure 2). These were the basic menus that the Indonesian people would generally ask and what the government thought would be the simplest and promptest a citizen could do to protect himself. In the days after its launching, the chatbot had four additional sections, including (8) Description of COVID-19 Rapid Test; (9) Details on COVID-19 Rapid Test; (10) Self-Isolation Procedure; and (11) Description and Procedure of Physical Distancing (Figure 3).

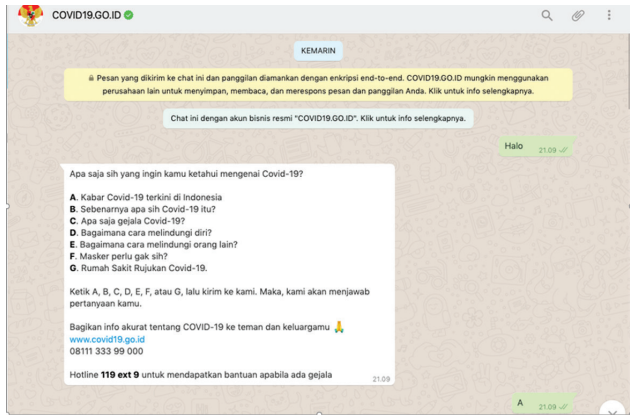

Figure 2. Indonesian government's chatbot COVID-19 GO.ID when it was first launched on March 20, 2020

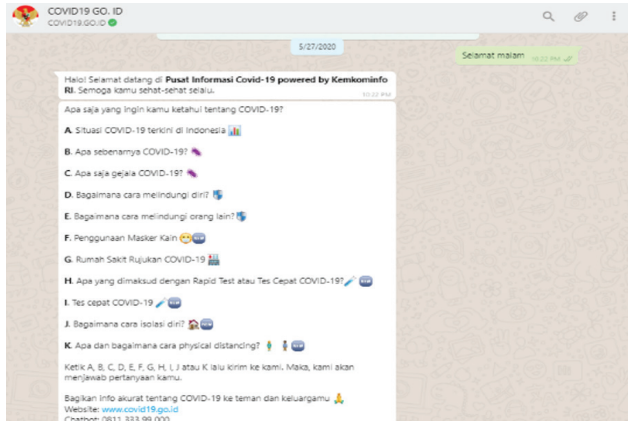

Figure 3. Indonesian government's chatbot COVID-19 GO.ID today

Indonesian's COVID-19.GO.ID chatbot provided 11 information which could be accessed by typing the letter or icon's question. Section A, "Latest news of CoVID-19 in Indonesia", provided an updated daily data on global information, such as number of countries affected to date, confirmed cases to date and most recent mortality number. It also gave information on the numbers of people who were COVID-19 positive, had recovered from the disease and died from this virus. A link on how we could see the spreading of COVID-19 was also put there too (Figure 4).

Figure 4. Response A

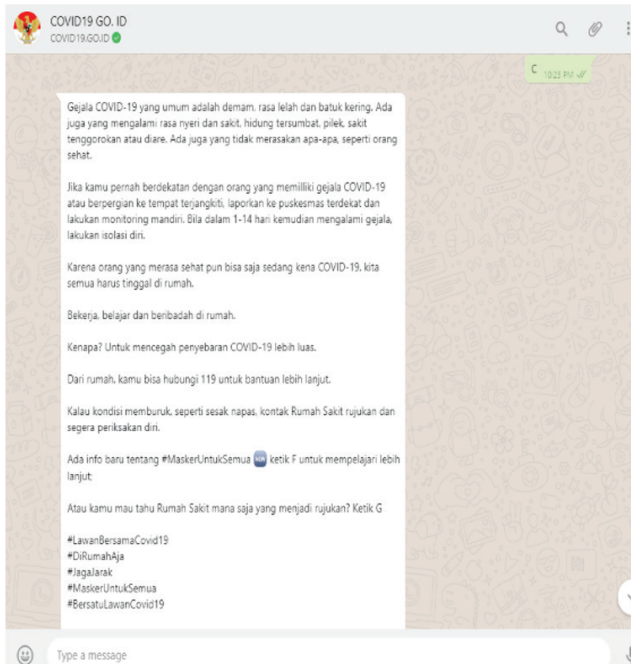

Figure 5. Section C

Information as below on symptoms of COVID-19 could be accessed when letter C was typed, but it had no self-assessment feature:

Common symptoms of COVID-19 are fever, fatigue and dry cough. There are also those who experience pain and ache, nasal congestion, runny nose, sore throat or diarrhea. There are also those who don't experience any symptoms. If you have come to close contact with people who have symptoms of COVID-19 or have traveled to an infected area, please report to the nearest health center and do self-monitoring. If within 1-14 days you experience any symptoms, please do self-isolation. Because healthy people can even get infected by COVID-19, we all must stay at home. Work, study, and worship at home. Why? To prevent the wider spread of COVID-19. You can also call 119 from home, when you need further assistances. If your condition worsens, such as shortness of breath, please contact the designated hospitals (Figure 6).

To promote behavioural change, this chatbot provided topics, such as "Routines to Protect Ourselves" in section D, which consisted of

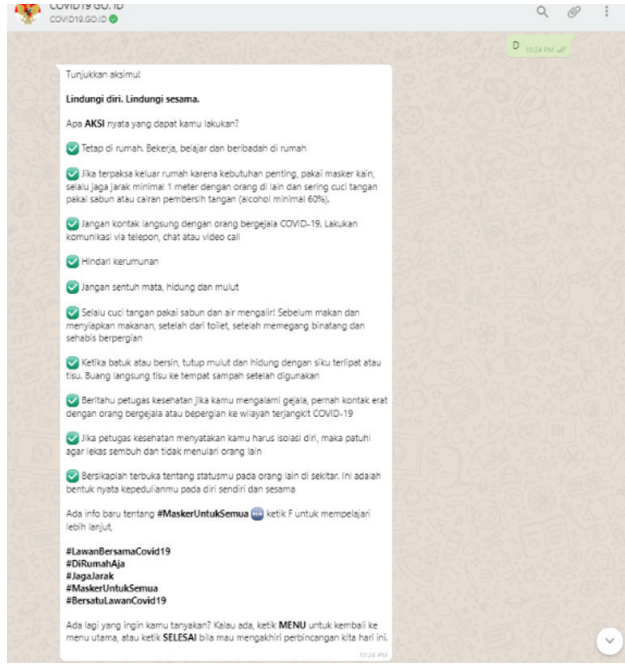

Figure 6. Section C

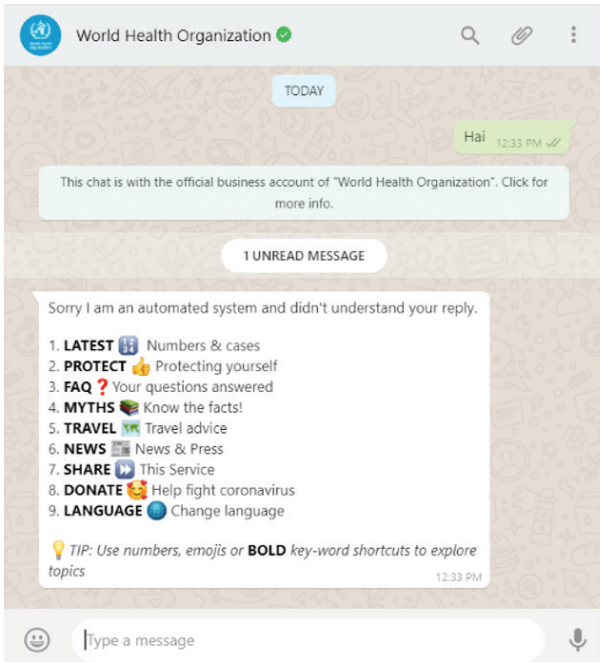

Figure 7. WHO's Chatbot on COVID-19

government's call for the public to *stay at home, conduct physical distancing, wash hands, wear mask, etc.;* topic E "Ways to Protect Other People" which consisted of eight points, and technical tips in topic J on "Self-Isolation Procedure" and topic K "Description and Procedure of Physical Distancing". COVID.GO.ID had no topic on how to maintain mental health or how government could help when someone was suffering from mental health problems.

4.2 World Health Organization's Chatbot

One striking difference to the World Health Organization's (WHO) chatbot is such chatbot had

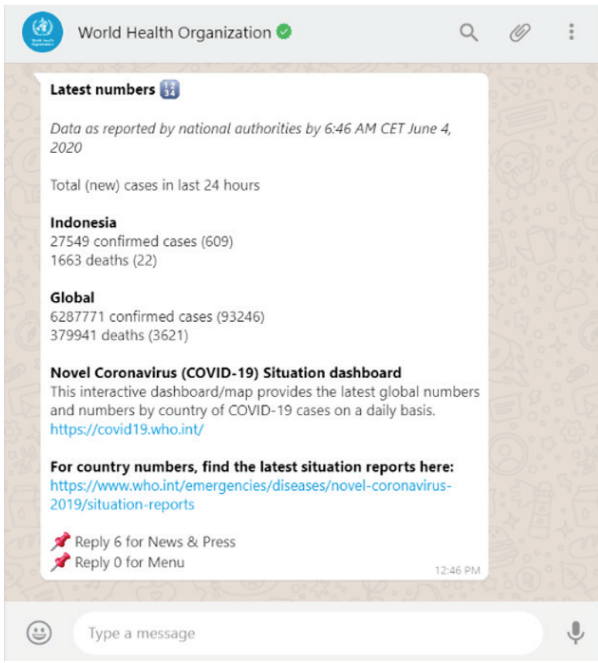

Figure 8. Latest Section

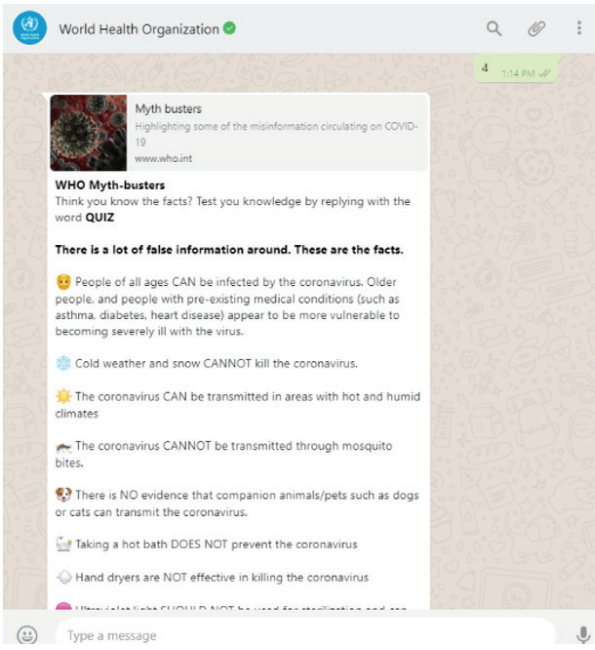

Figure 9. in the Myths section

less topic, although that does not necessarily mean less information. Compared to the COVID19 GO.ID which presented11 sections, this chatbot only had 9 sections (Figure 7).

On the Latest section, users would find the latest updated numbers of confirmed global cases and deaths and numbers of the country where s/he lives. There was also a link to COVID-19 situation board from the WHO's website to monitor the latest situation around the globe or your specific country, and to support the data, there was an option on the bottom to directly go to News and Press section (Figure 8).

The main noticeable difference from COVID19. GO.ID is the WHO's Chatbot had a section on Myths which let users know about common false

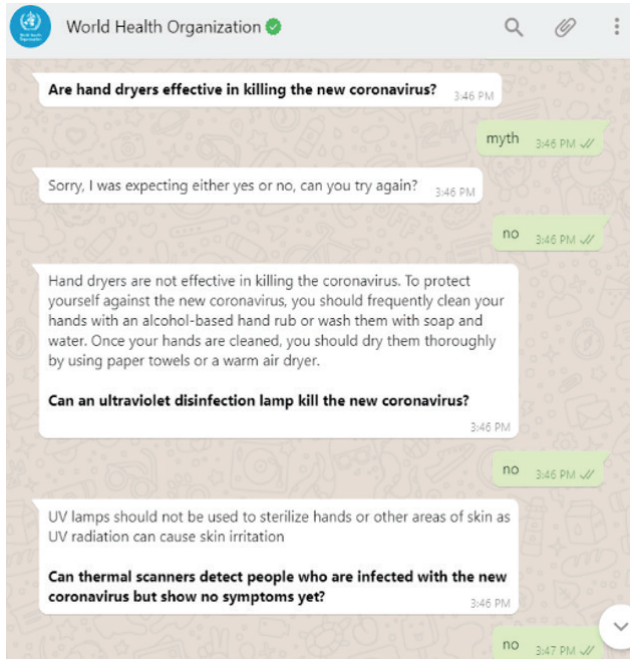

Figure 10. Deeper understanding on COVID-19 myths

information (Figure 9). It also provided quiz that gave a deeper understanding about the myths (Figure 10). Then, it had Travel section which emphasized the WHO's warning on no travel to countries experiencing COVID-19 outbreaks, as well as general recommendations for all travelers.

Meanwhile, the Donate section could be used by the chatbot's users to donate to the WHO-led initiatives which responded to the pandemic (Figure 11). In order to cater for people who do not speak English, this chatbot provided the Language section which could change the language used in this AI to six different languages, including Arabic, Spanish, France, Hindi, Italian and Portuguese with more languages to be expected soon. This chatbot also did not have self-assessment section in its menu.

While the WHO's Chatbot did not provide direct mental health support, the FAQ or Frequently Asked Questions section did give us 13 most frequently asked questions about COVID-19, including one on "How do I cope with the stress during COVID-19?" and the answer (Figure 12) gave user some tips including "Don't smoke, drink alcohol or take drugs to deal with your emotions,"

4.3 GOV.UK Chatbot

United Kingdom's chatbot for COVID-19 which is called GOV.UK had nine sections for users (Figure 13). It also had a section on myth buster although the content was quite different from the WHO's since it had a twist of local common myth (Figure 14).

In the Testing section, the chatbot asked user to fill in a form should they thought they had the symptoms, but it did not have a self-assessment section as well. One of the most interesting and different about UK's chatbots is they had a Section which specifically presented informa-

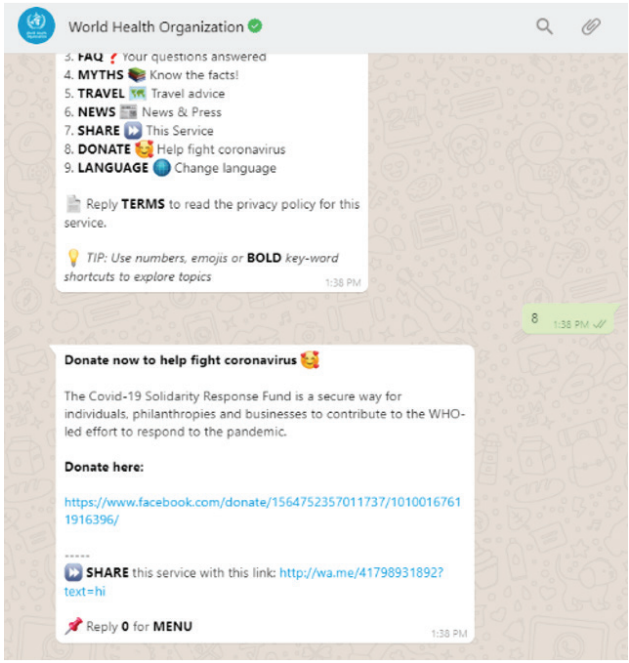

Figure 11. Response in Donate

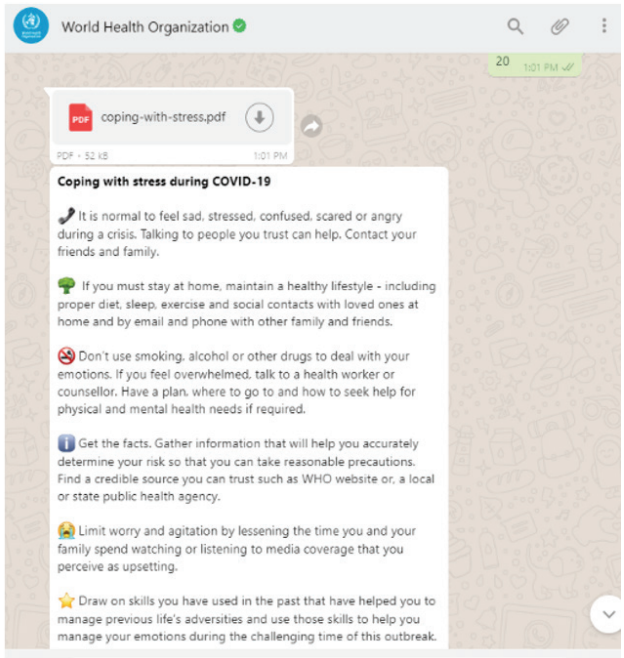

Figure 12. in Latest section

tion about financial support for individuals, i.e. who and how could receive it (Figure 15). This financial support was dedicated to people who were forced to leave their work because of the COVID-19, have lost their jobs or in terms of self-employed persons, got less or no work (GOV.UK, 2020)

In the Traveling section, the message was clear, namely the UK Government recommended people to avoid traveling abroad unless it was an essential trip and it also provided a link to the latest advice on traveler's departure options. For the topic of Mental Wellbeing, GOV.UK provided some tips on how to take care of one's mind and body while staying at home (Figure 16).

4.4 What's New for COVID19 GO.ID

Results from the analysis and comparison of the three chatbots show that an improvement can be delivered for COVID19 GO.ID. Several topics which are important for users/society should be added to the service in order to improve the users' experience. Many studies and articles on how chatbots can perform in times of crises portray them in a general view. They provide citizens with quick answers to their questions, accept complaints, guide them to an article or documents. Furthermore, chatbots embedded to social media are used to fight misinformation, rumors or hoax as we call it, black campaign which

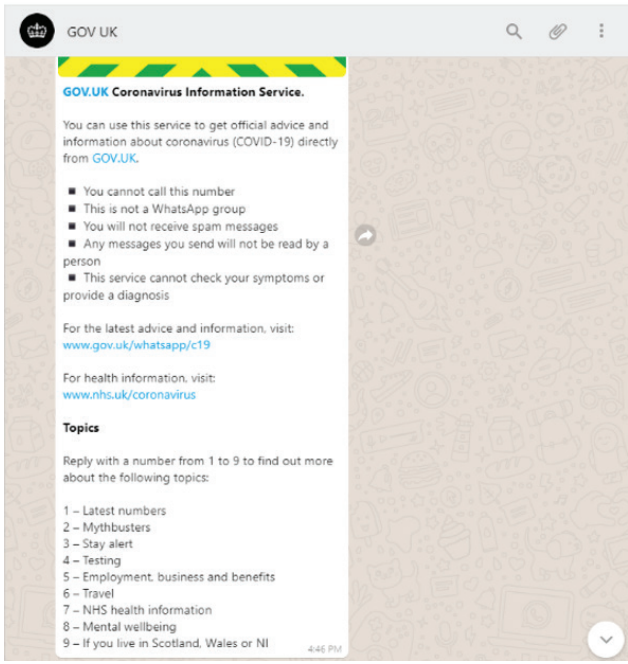

Figure 13. UK's Chatbot

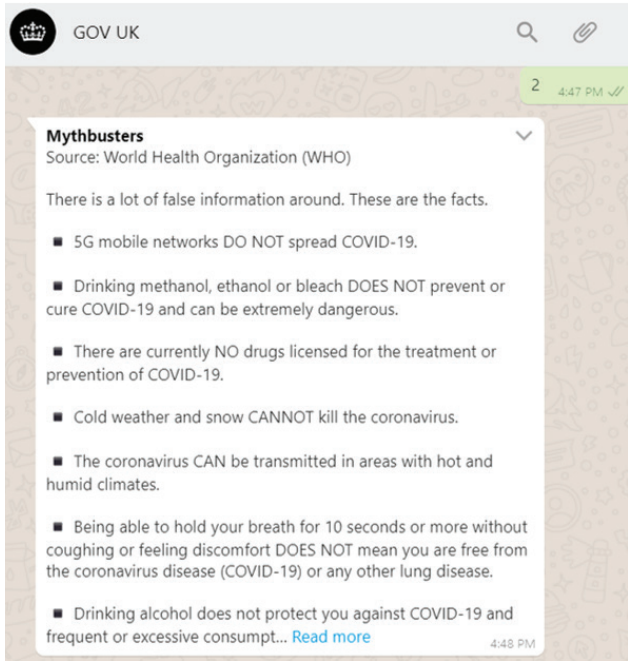

Figure 14. on Mythbusters

Table 1. Comparison of MRT factors in chatbots

Chatbot's Factor	COVID GO.ID	WHO	GOV.UK
1. Information dissemination	11 (eleven) COVID-19-related information including list of government's referenced hospitals	9 (nine) COVID-19-related information which are quite interactive with YouTube videos and easy-to-share graphics. COVID-19 "Myth" and quiz on the myth is a good engagement effort, as well as the "Donate" topic. It is also accessible to some people speaking other language than English.	9 (nine) COVID-19-related information including local "Myth Buster" topic create a good public engagement. Chatbot also provided information in "Financial Support for Individual"
2. Symptom monitoring	Self-assessment menu was not available, but the "Symptoms of COVID-19" Section provided a narration of the symptoms.	Self-assessment menu was not available.	Self-assessment menu was not available, but it gave information on a category of people to be tested and provided link if one would need a test.
3. Behavioural change	Sections on "How to Protect Ourselves, Other People and Do We Need Cloth Mask" were health protocols to prevent COVID-19 spreading.	"Protect" section provided seven ways to protect oneself from COVID-19.	"NHS Health Information" section provided information on COVID-19 prevention by social distancing, hand washing, using hand sanitizer, etc. as well as graphics on proper hand washing and such.
4. Mental health support	Did not have any section supporting mental health	Provided tips on "How do I cope with the stress during COVID-19" question in the FAQ topic	Provided information on how to care for mind and body while staying at home by giving tips and advices to create new routine, stay connected with others, manage worrying thoughts, etc.

unfortunately comes with every information the governments disseminating. This purpose was also targeted by WHO and GOV.UK which addressed the most common misconception in the society. Between the two, the Myth Buster section of WHO is the most thorough with an option to a deeper understanding on why it's wrong. WHO also used a fun way, namely quiz to attract more users to read it.

From the usability point of view, the three chatbot are quite user friendly although the requirement to go back to the main menu (by typing 0) is not very practical. The display of COVID19 GO.ID and GOV.UK can be described as straightforward, plain and very much government-like, compare to WHO's with colorful emoticons. In terms of interactivity, WHO's chatbot is also more superior, with videos of public service announcement (PSA) or infographic to better explain the topics.

WHO and GOV.UK has a creative way to teach people about myth or false information regarding news about COVID-19, i.e. through fun quizzes. COVID19 GO.ID, however, do not have this function although the government noted that there were 554 false information spread out in 1,209 platforms as recorded in April 2020 (Kominfo, 2020c).

Foreign language menu will also be beneficial in COVID19 GO.ID since Indonesia has approximately 35,781 foreign workers, and to push people's engagement and collaboration, a new topic on how to give donations can also be added.

COVID GO.ID also misses a topic on how people can maintain their mental health. Since people will response emotionally during an uncertainty condition such as pandemic (Glik, 2007), government must provide a medium so users/citizens can take better care of themselves.

Discussion

From the Media Richness Theory (MRT) per-

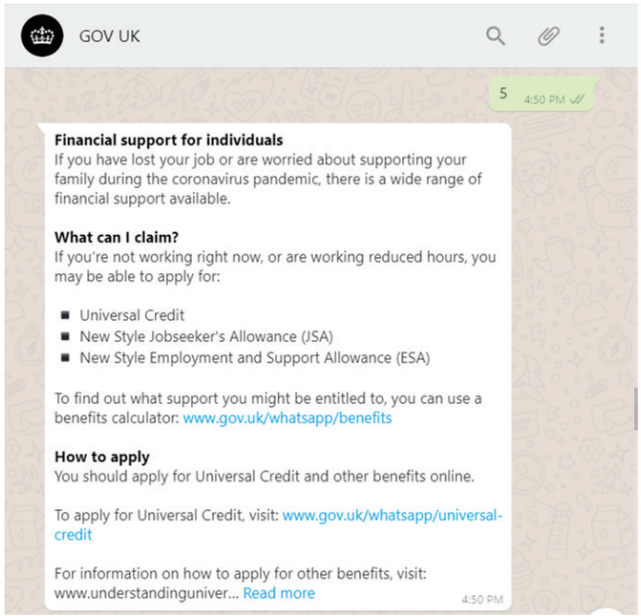

Figure 15. Response on Employment, Business and Benefits

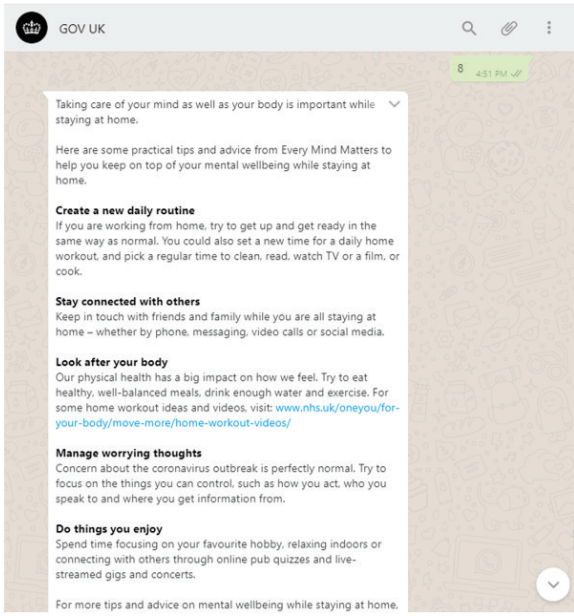

Figure 16. Response on Mental Wellbeing

spective, chatbot can be utilized by countries as a communication tool in facing national and global health issues, such as COVID-19 pandemic, as shown in Table 1. By the advancement of technology, chatbot can be programmed or made to respond according to certain keywords included in queries (Maniou & Veglis, 2020).

In information dissemination dimension, these three chatbots in comparison are able to disseminate information by responding to certain words or numbers in queries. Most topics presented by three chatbots are almost similar including the basic health protocols, among others, orders to always wash hands under running water or use hand sanitizer, or how we should always avoid crowded places and do social distancing. However, WHO had a topic which addressed people in six different languages and tips on travelling during the pandemic, and GOV.UK had a topic on how citizen can apply for employment and business benefits.

The three chatbots did not provide menu where user could carry out COVID-19 symptom self-assessment. GOV.UK, however, provided a direct link on necessary requirements to get a test.

In behavioural change support, each chatbot provided sufficient information on how important it was to wear a mask, stay out of crowded places and maintain social distancing, constantly keep our hands clean by always washing them under running water or using hand sanitizer, and most importantly, stay at home following government's instruction.

In mental health support dimension, WHO and GOV.UK's addressed people's concern by providing tips and simple guidance on how to avoid things which could create tension during times we had to stay at home. GOV.UK were balancing mind and body care by providing a workout video, direct link to 'Every Mind Matters' which provided complete information including phone numbers and message center people can contact when they felt despair or needed someone to talk to.

As shown in Table 1, our findings note that COVID19 GO.ID chatbot has a full potential to be developed by adding some important topics, such as Myth Buster where users can find common false information; upgrading the layout to be more colorful and less-government in order to have a friendlier chatbot. A more interactive layout will also be a plus, for example, one with a link to a PSA video or infographic which can encourage more understanding to whatever explained in the topic. A bilingual chatbot will also be beneficial for foreigners who live in Indonesia and rely on the Indonesian government for basic needs and rights. COVID19 GO.ID can also add a section which contains a link on how to donate or collaborate to help each other.

As previous studies show, chatbots were not only useful to enhance and assist in daily and administrative task of government, but also in times of crisis. In each situation, the task of public relations and AI is essential since it needs a bigger effort for disseminating information, addressing hoax and rumors, and issuing warnings and instructions (Ehnis & Bunker, 2012).

Conclusion

In this study, we examined the inside of COVID19 GO.ID, WHO and GOV.UK. We compared the three chatbots to find some inputs which are prominent to the development of COVID19 GO.ID. Therefore, it may be beneficial for Indonesians. Although COVID19 GO.ID has more sections, it is necessary to add several additional sections to have important information needed by Indonesians. Since hoax is also an

issue, a myth buster section, like the one in the WHO and GOV UK's chatbots, will be a valuable addition, especially if it shows shareable graphics. Graphics or videos will have also added to the richness of information provided since they are easier to understand. It will also be beneficial to provide tips and encouragement to take care one's mind and body health. Special sections can also be added in which they provide links about any exercises or physical activities people can do in their house, and links for professional helps to combat depression. Collaboration by adding links to a website or contact numbers where people can donate is also an important section cto be provided. Future researchers should consider to combine literature study and survey to find out opinions from people who use the chatbots. Regardless, our results may have positive outcomes for COVID19 GO.ID creator(s) or future researchers.

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