

Utilization Of Social Media As A Dissemination Media By Agricultural Extension Agents During The Covid-19 Pandemic

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Abstract— This study aims to analyze the use of social media during the Covid-19 pandemic. The research location was in the West Java Province which was limited to four districts, representing four agricultural ecosystem zones, namely Bogor, Sukabumi, Ciamis, and Indramayu Regencies. The research samples consisted of 216 field agricultural extension agents spread across the four districts. Data analysis used descriptive statistical analysis. The results showed that the highest level of agricultural extension agents' social media account ownership was on WhatsApp, Facebook, and Instagram. In seeking information about agriculture, the extension workers most commonly used YouTube, Facebook, and Instagram. The extension agents mostly used WhatsApp for the dissemination of agricultural information

Keywords— Social media, agricultural extension agent, Covid-19

I. INTRODUCTION

Technological developments in the world of extensions are currently evolving into technologies that provide unlimited access to information in cyberspace. The rapid development of communication technology according to Elian [1] has an impact on the number of communication media that can be used to disseminate agricultural information. One of the communication media that can be used is cyberspace communication or internet media. Advances in information technology and communication (ICT) have the potential to be a great opportunity for agricultural development actors. The use of communication technology in agricultural development requires the competence of these ICT users. Farmers are one of the parties with weak access to information sources so they may rely on the capacity of extension workers to assist them in developing the agricultural innovation learning process.

Information technology can provide extension services from various agricultural sectors and play an important role in rural development, resulting in various changes [2]. This is supported by Sumardjo [3] who stated that a convergent communication pattern is more effective as a communication paradigm in extension in facing the era of globalization. Therefore, the use of information technology to disseminate agricultural innovation is one of the appropriate solutions for the conditions of Indonesia as an archipelagic country so that information dissemination can reach all the regions in Indonesia.

The internet-based extension system is a novel paradigm that could realize this solution during the Covid-19 pandemic. The implementation of the Large-Scale Social Restrictions (PSBB) restrictions by the Government of Indonesia in May 2020 has impacted extension activities which were commonly carried out face-to-face. Extension no longer always has to be done in the field and face to face. Extension agents are expected to continue to exchange information and share problems with their target farmers or other extension workers even though they cannot meet face to face. According to Ar-Rozi [4], optimizing the use of Information and communication technology (ICT) is an alternative method of communication that can be carried out by extension

agents in the case of a limited number of extension agents and limited interaction. This is in line with Sumardjo [5] who explained that millennial extension agents who are the foundation of extension implementation must master modern empowerment processes that often use information and communication technology.

In addition, according to Sumardjo [6], an alternative agricultural extension strategy in the Covid-19 pandemic era can be done by optimizing the management of local resource potentials (community capital) through strengthening human capital, social capital, and digital communication. The roles of agricultural extension in the era of the Covid-19 pandemic are: (1) continuously educating the public to implement the new normal life in their social activities, and (2) cultivating community habits so that the community religiously adheres to health protocols. The Covid-19 pandemic has forced all community components to adapt to all forms of change. Likewise, living with the new normal may become a new cultural model in the future (post-covid-19 pandemic).

One of the forms of the Indonesian society's adaption to these changes is the increase in internet penetration during the Covid-19 pandemic. Based on the results of the latest Hootsuite and We Are Social report [7], Indonesian internet users until January 2021 reached 202.6 million or around 73.7% of the total 274.9 million people. When compared with the number of internet users in 2020, there was an increase of 15.5% or more than 27 million people in the last 12 months. The most popular internet activity for Indonesian internet users is social media. As many as 170 million Indonesians are active users of social media such as YouTube, WhatsApp, Instagram, Facebook, and Telegram.

During the current Covid-19 pandemic, optimizing the use of technology through social media is one way the agricultural communication process has continued to be conducted well. Through social media, agricultural extension agents can disseminate agricultural extension materials more easily and quickly both to farmers and the community in general. Farmers can also easily and quickly access information regarding agriculture. Kipkurgat [8] revealed that social media has become so popular because it takes advantage of one of the most basic human needs, namely forming groups and sharing information as well as providing entertainment and communicating. Everyone in a group has the opportunity to stories or to share their point of view.

Social media is online media where users can communicate, interact, share and build networks. Kaplan and Haenlein [9] defined social media as a group of internet-based applications that build on the ideological and technological foundations of Web 2.0 that allow the creation and exchange of user-generated content. Cyberspace such as social media is a huge revolution that has changed the present human behavior, where friendship relations are all done through digital media – using novel media (internet) operated through social networking sites [10].

The power of social media according to Chui [11] lies in the features that allow them to be applied to all applications that involve interactions between people. Social media has also erased the geographical distance from its users, gives can share knowledge and culture, and play a role in economic and political power. Kipkurgat [8] discovered that social media plays an important role in establishing feedback mechanisms and allows for monitoring and evaluating the impact of agricultural projects. Social media can also be used more because it is cheap to access so it could be profitable for organizations that wish to disseminate agricultural information. According to Suratini [12], most extension agents look for agricultural information on social media in order to complement existing information. Based on this, the purpose of this article is to analyze the use of social media included the level of account ownership, information access, and the uploading of agricultural extension information in five social media, namely Youtube, Facebook, Instagram, WhatsApp, and Telegram used by agricultural extension agents during the Covid-19 pandemic.

II. RESEARCH METHOD

The research locations were selected in West Java Province because it is one of the regions that produce several agricultural commodities which is quite large nationally and has been committed to becoming an advanced province and systemically based on science and technology. According to the APJII survey data [13], the Java Region dominates internet users in Indonesia at 56.4 percent and the highest percentage of users are in West Java, 17.9 percent. The research locations were limited to four districts in West Java Province which represent four zones of agricultural ecosystems. The four regencies were Bogor Regency (the agricultural ecosystem that supports Jakarta in the western zone), Sukabumi (the horticultural ecosystem in the southern zone), Ciamis (the lowland rice field and the horticultural ecosystem in the eastern zone), and Indramayu (the rice field ecosystem in the northern coastal zone). The population of agricultural extension agents is extension agents spread across the four locations and actively access digital information (have an email account) numbering 470 people. The first stage of the location selection technique was the selection of four districts (Bogor, Sukabumi, Ciamis, and Indramayu) which was carried out

purposely, namely based on regional division considerations. The next stage was the selection of the Agricultural Extension Center (Balai Penyuluhan Pertanian, BPP) which was carried out using stratified random sampling based on the BPP's level of activity. Determination of the samples in this study was carried out using the Slovin formula, which resulted in 216 respondents. The parameters observed included the level of account ownership, information access, and the uploading of agricultural extension information in five social media, namely Youtube, Facebook, Instagram, WhatsApp, and Telegram. Data were analyzed using descriptive statistical analysis to explain phenomena occurring in the field.

III. RESULTS AND DISCUSSION

Communication is an important factor that can support the achievement of agricultural extension goals. Changes in target behavior could occur if there is an interaction between the extension agent and the target through good communication. According to Leeuwis [14], extension is very interesting in communication as a strategy towards further aspirations. Extension is an activity that is enhanced towards cognitive change and emphasizes communication as a marker of the shift between an educational focus to learning.

The need for innovation is supported by information technology in various ways, and in the modern world, it is hard to separate innovation and technology as it has tremendous contributions in all kinds of industries and sectors. One such innovation is social networking and social media [15]. Kaplan and Haenlein [9] classify social media into six types, namely: (a) Collaboration Projects, which are sites that issue authority permits to its users to change, add, or reduce the content on the site. (b) Blogs and Microblogs, namely sites that function as a medium for documenting various personal notes. Users can personally freely express their thoughts in writing on these sites. (c) Content Share, which is a site that provides content sharing services with fellow users in various formats such as video, image, and text formats. (d) Social Networks Sites, which are sites or applications that can bring users together and connect them. The form of connection (sharing) between users is in the form of photos, text, and personal information. (e) Virtual Game Worlds, which are digital worldwide sites that replicate the environment (in 3 dimensions) in the form of avatars. Users can interact with each other as in real life. (f) Virtual Social Worlds, which are digital worldwide sites that replicate real human life. Its users can interact with each other as in real life.

The Utilization of Youtube by Extension agents

One alternative learning resource that can be used in learning activities is Open Resources Education (OER). Open Resources Education is one of the alternatives highly recommended by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) as an open learning resource that can be utilized both by students and educators in the teaching and learning process. According to D'Antoni [16], OER is defined as digitized materials that are freely and openly offered to educators, students, and independent learners that facilitate access to knowledge. Therefore, YouTube is part of the OER movement because it makes educational resources accessible through information and communication technology.

YouTube is the most popular social media with the people of Indonesia because it is the most frequently visited [7]. YouTube was founded by Chad Hurley, Steve Chen, and Jawed Karim in 2005 in the United States. According to Mullen and Wedwick [17], anyone who accesses YouTube can search for information in the largest video database according to their needs. Users can even manage and save the videos they choose into their accounts. Based on the results of the Hootsuite and We Are Social report [7], up to January 2021 Facebook users in Indonesia reached 93.8 percent. The use of YouTube by agricultural extension agents can be seen in Figure 1.

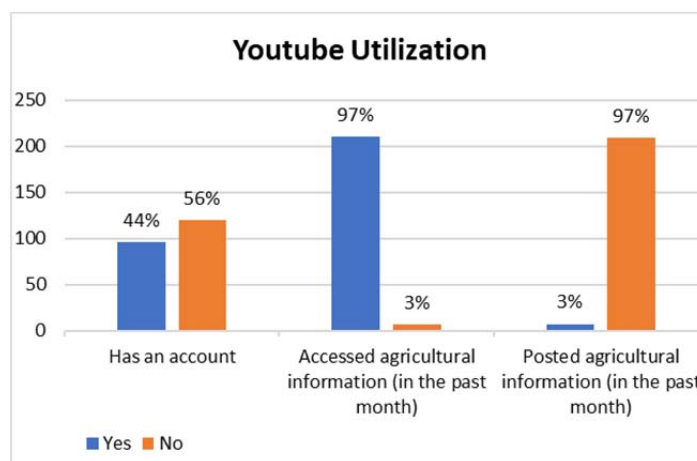


Figure 1. The Utilization of YouTube by Extension Agents

In Figure 1 it can be seen that as many as 96 respondents or 44 percent already own a Youtube account. The reason for having a YouTube account is so that they can access a lot of information both work-related and general information, as a medium for self-actualization, and the desire to upload regarding agricultural activities. Their access to agricultural materials during the last month was very large; numbering 210 respondents (97%). Some of the materials most sought after by extension agents include the cultivation of food crops and horticulture, plant pests and diseases, environmentally friendly agriculture, composting, agricultural technology, and the latest information about the world of agriculture. These material searches were conducted to support their extension activities. The extension agents' need for finding information about agriculture on YouTube is very high because the information on YouTube is very diverse and complete.

Meanwhile, uploading agricultural materials on YouTube in the last month was still very low with only 7 respondents or 3 percent. The extension agents do not yet have a good ability to present materials in video form. However, extension agents who have uploaded agricultural activities on their own YouTube channel will usually share the link with the assisted farmers or other people.

The Utilization of Facebook by Extension Agents

Facebook (FB) is a popular social networking website launched in 2004 founded by Mark Zuckerberg. Facebook's mission is to give people the power to build community and bring the world closer together. People use Facebook to stay connected with friends and family, to discover what is happening in the world, and to share and express what matters to them [18]. Based on the results of the Hootsuite and We Are Social report [7], Facebook users in Indonesia until January 2021 reached 85.5 percent. This indicates this social media is very popular with the people of Indonesia. The findings regarding the use of Facebook by agricultural extension agents can be seen in Figure 2.

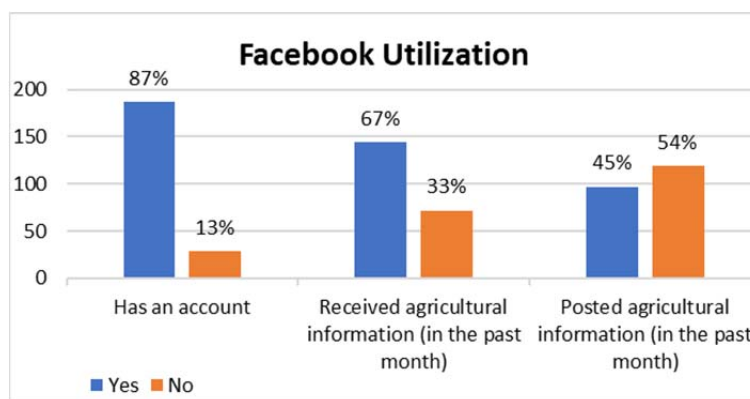


Figure 2. The Utilization of Facebook by Extension Agents

Based on Figure 2, as many as 187 respondents or 87% have a Facebook account. The reasons for extension agents to have a Facebook account include Facebook as a medium of communication, social mediaization and self-actualization, seeking and disseminating agricultural information, seeking market information, and uploading various extension activities. The extension agents consider Facebook as a social media that is quite important to have and very easy to access. This is in line with the opinion of Sasmito [19] who said that Facebook has the advantage of being easily accessible either through computers, laptops, tablets, or cellphones.

The extension agents' activeness in accessing information on Facebook was 144 respondents or 67 percent seeking information to support agricultural activities. They participate in groups to support their work as extension agents, including the extension agents group at the BPP, district, or all levels of Indonesia, farmer association groups, certain plant cultivation groups such as chili, corn, tomatoes, coffee, and the like, and crop marketing groups.

The activity of uploading agricultural information was carried out by 97 respondents or 45 percent in the last month. The agricultural information uploaded on Facebook was related to food crop cultivation, horticultural crop cultivation, plant pests and diseases, harvest handling, farmer card information, early planting season extensions, as well as sharing photos and videos about the implementation of agricultural activities that have been carried out.

Utilization of Instagram by Extension Agents

One of the most popular social media besides YouTube and Facebook is Instagram. Instagram (IG) can simply be defined as a mobile application based on iOS, Android, and Windows Phone where users can shoot, edit, and post photos or videos to the main page of Instagram and other social networks [20]. This principle is different from social media applications such as Facebook which emphasizes the use of words or status to be shared with the public. Winarso [20] explained that Instagram was originally developed by a startup called Burbn, Inc, which was driven by Kevin Systrom and Mike Krieger. Instagram succeeded in creating a social networking giant which was later acquired by Facebook in 2012. Based on the results of the latest Hootsuite and We Are Social report Social [7], as of January 2021, Instagram is ranked third in Indonesia, reaching 86.6 percent of users. The following is the use of Instagram by agricultural extension agents.

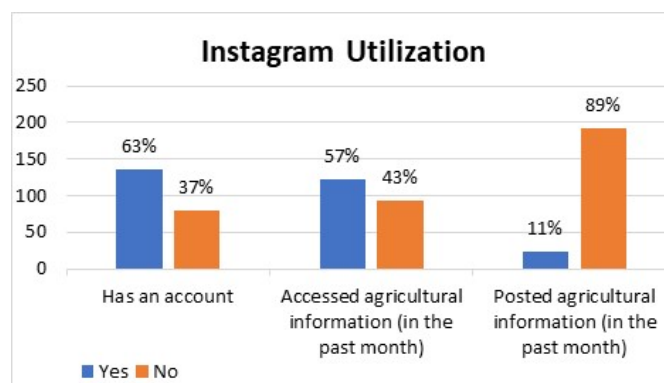


Figure 3. The Utilization of Instagram by Extension Agents

In Figure 3 it can be seen that as many as 136 respondents or 63 percent already have an Instagram account. The reason the extension agents have Instagram accounts is to expose the activities they have carried out, both work-related and non-work-related, social mediaization and communication, and to know the latest developments in agricultural activities. Instagram states that Instagram is a social media that focuses on photo sharing which is also used as a medium for promotion, introduction, and information sharing [21].

Accessing agricultural information was done by 123 respondents (57 percent). Agricultural information they sought was about extension activities, agricultural infographics, the latest technology information, other Agricultural Extension Center information. Only 23 respondents (11 percent) uploaded agricultural information in the last month. Not many extension agents use Instagram as a means of disseminating agricultural information because they have not used it too intensively in their field of work.

Utilization of WhatsApp by Extension Agents

WhatsApp is a free application that provides a simple, secure, and reliable messaging and calling service and is available on various phones around the world. According to [22], more than 2 billion people in more than 180 countries use WhatsApp to stay connected with friends and family, anytime and anywhere. WhatsApp was founded by Jan Koum and Brian Acton who had spent 20 years at Yahoo. WhatsApp merged with Facebook in 2014 but continues to operate as a separate application with a focus on building a fast and reliable messaging service anywhere in the world. Based on data from Hootsuite and We Are Social [7], WhatsApp users in Indonesia until January 2021 reached 87.7 percent. The use of WhatsApp by agricultural extension agents can be seen in Figure 4.

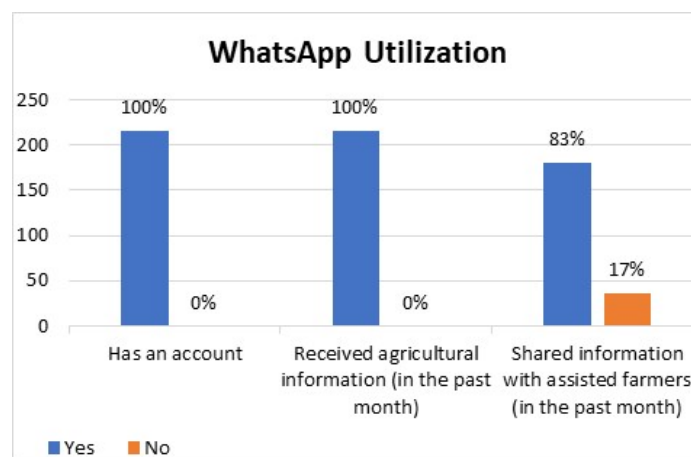


Figure 4. The Utilization of WhatsApp by Extension agents

Based on Figure 4, it can be seen that as many as 216 respondents (100 percent of extension agents) have a WhatsApp account and use it to support their work. Based on the findings in the field, it was also revealed that all the respondents have at least two groups to support their work. The groups they have were very diverse, both for coordination with extension agents and with farmers. The groups they have included the extension agents group at the sub-district and district level. This is because the use of WhatsApp is very practical, simple, and very fast in sending messages both for coordinating activities and disseminating information to farmers. In their study, Church and de Oliveira [23] state that WhatsApp has grown in popularity due to its benefits such as being able to send real-time messages to an individual or groups of friends simultaneously, low-cost, and privacy. This is also in line with the research by Sartika [24] who stated that the use of WhatsApp as an information medium plays a very important role in providing and disseminating information to others.

WhatsApp as one of the most popular media in Indonesia also has the advantage of being able to accommodate 250 people in one group. A total of 180 respondents (83 percent) shared agricultural information with their assisted farmers. This information was mostly disseminated through these groups. According to the extension agents, having a group with farmers would make it easier for them to coordinate when there are activities and to disseminate agricultural information. This is supported by the findings of Suratini [12] who found that extension agents considered WhatsApp to provide easy access to information. In addition, the information accessed from WhatsApp is also in accordance with the needs of extension agents, especially in obtaining new information in the agricultural sector. According to Humaidi [25], WhatsApp was the highest-ranking compared to Facebook, YouTube, and Instagram in the intensity of social media utilization. In their study, Church and de Oliveira [23] stated that WhatsApp has grown in popularity due to its benefits such as it allows sending real-time messages to an individual or groups of friends simultaneously, is low-cost, and maintains privacy. This is also supported by Wibowo [26] who concluded that the use of information technology tools can be used as a medium for agricultural extension activities supported by personal communication.

Utilization of Telegram by Extension Agents

Telegram is a messaging application with a focus on speed and security, very fast, simple, and free. According to [27], telegram is supported by Pavel Durov and his brother Nikolai. Pavel supports Telegram financially and ideologically while Nikolai's input is technological. To make Telegram possible, Nikolai developed a unique custom data protocol, which is open,

secure, and optimized for work with multiple data centers. As a result, Telegram combines security, reliability, and speed on any network. The following is the utilization of Telegram by agricultural extension agents.

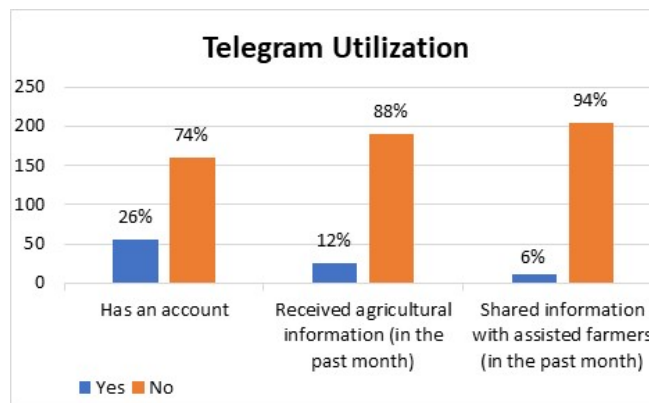


Figure 5. The Utilization of Telegram by Extension Agents

In Figure 5 it can be seen that as many as 56 respondents (26 percent) already have a Telegram account. However, this is not as numerous as the use of other social media because Telegram is not very popular in Indonesia. Based on data from Hootsuite and We Are Social [7], Telegram users in Indonesia until January 2021 reached 28.5 percent. This figure is quite small when compared to other social media such as YouTube, Facebook, Instagram, and WhatsApp.

Obtaining information through Telegram was only conducted by 26 people (12 percent), of which more information was obtained from groups. Meanwhile, in distributing information to farmers, only 12 extension agents (6 percent) used this application. This is because the extension agents and farmers were not very familiar with Telegram. The advantages of Telegram which include being able to accommodate more group members than WhatsApp were not widely known to them. Unlike WhatsApp, Telegram is a cloud-based messenger with seamless sync. As a result, messages can be accessed from several devices at once, including tablets and computers, and an unlimited number of photos, videos, and files can be shared. According to Anwas [28], the low intensity of media use is caused by the number of media ownership. Elian [1] also revealed that one of the factors related to the use of the internet is the availability of technological tools, in this case including ownership of technological tools. This also applies to the use of social media in this study. Listiana's [29] research finding shows that the dissemination of agricultural information by extension agent by utilizing the internet was still very low since not all farmers can access the internet, in addition, there were many extension agent use the internet only to communicate among them or just delivering the schedule and extension activities.

IV. CONCLUSION

Based on the findings and their discussion above, several conclusions can be made as follows. First, the highest level of agricultural extension agent social media account ownership is WhatsApp, Facebook, and Instagram. Second, in seeking information about agriculture, the extension agents used YouTube, Facebook, and Instagram more. Third, the extension agents predominantly distributed agricultural information by means of WhatsApp social media.

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