The comparison between cyber extension and traditional interaction in the farmers environment during pandemic

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Abstract. Data from the Indonesian Seed and Farmers Technology Association data shows that 22 percent of Indonesian farmers have used smartphones to obtain agricultural information. But many farmers still struggle to get information especially in the pandemic era. This research is to find out how the comparison of information delivery patterns between traditional media and cyber media on farmers in Bangil. Indonesia. This research theory uses the theory of cyber extensions. This research method by, observe online media, interviewing several farmers in Bangil and supported by survey data to 85 farmers in Bangil. The results showed that although cyber media began to enter as one of the sources of information for farmers, only a few were dependent on online, while the rest still relied on information from extension methods. Counselling still needed as a connection between farmers and Internet.

1. Introduction
The communication and information technology are developing in the agricultural. A lot of people are getting connected and needing the internet to fulfill their individual needs. According wearesocial.com research, the number of internet users worldwide continues to rise from 3.7 billion in 2017 to 4.5 billion in 2019. While social media users increasing 470.5 million from a total of 4.5 billion internet users in the year 2019 [1].

The number of internet users are known that as many as 150 million people of Indonesia out of 268.2 million people have been actively surfing the internet or 50 percent more than the total population of Indonesia based on data around the world [2]. Based on the Indonesian internet service provider association (APJII) reports that the number of internet users in Indonesia increases from 132.7 million in 2016 to 254.16 million users in 2018. The percentage of internet penetration in Indonesia reached 64.8 percent from a total of 264.16 million population in Indonesia [3].

The Indonesian Association of Seed and Farmer Technology Banks (AB3TI) survey a farmer in 14 districts in Indonesia in 2019 to get data on industrial era 4.0 agricultural innovators. The result shows that the number of farmers who using an Android-based mobile phone is 22.35 percent. In addition, 14.38 farmers use mobile phones to obtain agricultural information [4]. Farmers need the information technology useful for communication, gain knowledge about agricultural production and technology and as a tool to expand the promotion of agricultural products according Mulyandari's research [5].

However, farmers still do not feel how great the benefits of using online media in the several agricultural locations in Indonesia. Research Nurhayati et al. found that rice farmers in Sidrap Regency,
South Sulawesi, had never used the internet as a means of communication and seeking information [6]. While research Oktavia figure out that the internet began to be used as a source of supporting information from the main sources of information namely radio, print media, direct discussions with resource persons in the agribusiness entrepreneurs of freshwater fisheries in Padang [7].

Not yet the maximum use of online media by farmers is unfortunate in the era of the industrial revolution 4.0 because internet technology provides new opportunities for farmers to obtain knowledge and information about agriculture that is beneficial for agricultural development [8] and help equalize perceptions when there are differences in receipt of different information between farmer groups [9]. Based on the description that has been explained in the background, this research formulates the problem: 1) how does the implementation of traditional information and cyber extension farmers in Bangil? 2) What is the different between traditional information and cyber extension farmers in Bangil?

2. Materials and methods
According research from World Bank in 2007 revealed that capacity of large-scale farmers changed become more commercially oriented to benefit because the development of information and communication technology. [1]. Resulting in the term modern farmers, which means farmers with mastery of information and communication technology [2]. For farmers, the development of technology and information provides benefits with the ease and speed of obtaining information so that it provides a great opportunity to seize the market when compared to farmers who are less concerned about technology, especially social media, so that farmers only carry out routine activities in farming.

The implementation of information and communication technology in agriculture is one of the mechanisms to develop a model of empowerment and dissemination of agricultural innovation information in a planned, timely and relevant manner in supporting the decision-making process of farmers and extension workers. [3]. The future of the world of digital agriculture is not only a media for spreading technology in the form of innovation but also must be able to become a forum for farmers to form group networks that connect farmers with various parties such as consumers or the government. In addition, technology can also change extension through virtual methods so that Indonesian farmers become digital farmers by utilizing the internet to meet agricultural needs [4].

The shift in changing information seeking for farmer communities from conventional media to online media is due to the convenience of online media in supporting community and farmer activities. Palmer and Koenig's research found that people shift their use of media from newspapers, television and radio to online media. [5]. These changes can occur because online media are able to manage information and communication with other parties quickly and without the constraints of space and distance [6]. Then, the online media technology provides new opportunities for farmers to facilitate agricultural activities by not only farming regularly but also being able to expand the marketing of their agricultural products.

Social media is one type of online media that is most often used by the public. Good management of social media management by farmers raises the hope of creating a new marketing place for farmer products [7]. In addition, social media becomes a media liaison between farmers and consumers so that they can cut the middlemen's path which has been one of the causes of the lack of welfare for farmers by cutting the price of agricultural products far below the market price [8]. The results of the Ministry of Communication and Information Technology research showed that as many as 55.4 percent of farmers' mobile use activities were used to access social media [9].

However, there are differences in the ability of farmers to access more information due to the lack of education that each farmer has according to the results of the Tamba research analysis [7]. Highly educated farmers will easily access information from social media, but if the level of education is low, access to information will be difficult to obtain because they only rely on agricultural extension. According to Andriaty and Endang, various problems such as limited information technology, all agricultural stakeholders have not been able to utilize information technology, the lack of interest from actors involved in the agro-complex sector and the utilization of information that has not yet developed has made the position of farmers, fishermen and breeders weak. [10].
To overcome the lack of understanding of farmers in knowledge and management of information and technology, a cyber extension model is needed. Cyber extension is a mechanism for exchanging agricultural information through the cyber world, a virtual imaginary space behind the interconnection of computer networks through communication equipment. [11]. Cyber extensions utilize the power of networks, computer communication and interactive multimedia to facilitate the mechanism of sharing information or knowledge. The cyber extension system provides support to overall agricultural development including production, management, marketing, and other agricultural development activities. The cyber extension model collects information received by farmers from different and similar sources and is simplified in the local language accompanied by text and audio visual illustrations [12].

This research uses a descriptive qualitative approach. According to Bachri, data in descriptive qualitative were collected in the form of words, behavior, actions, pictures and not numbers [13]. Then the research report will contain a description of the data that has been collected in the field. Neergaard et.al states that descriptive qualitative is more suitable for use when the information needed can be obtained directly from those involved in the phenomena under study, while time and other resources are limited, or as part of the design phase of a quantitative-qualitative combination method [14]. Because it is not too far from the data, QD is still possible to use statistical analysis even at a simple level (quasi-statistical).

In several descriptive qualitative research studies, the survey method was chosen by several researchers using the open-ended questionnaire instrument. This is possible as long as the data set must be interpreted based on qualitative rules leading to non-mathematical interpretation in accordance with the theoretical explanation scheme. [15].

This study conducted observations and interviews with three farmers in Bangil. Survey collection techniques are used to support the results of observation and interview data. As many as 85 farmers in Bangil became respondents in the survey and three persons become as interviewees. Researcher also observe mobile application from farmer which is Petani and agricultural ministry account YouTube.

3. Results and discussion
Most farmers in the productive age are between 60-20 years while the rest range from 60 years and over in Bangil. Based on research from the Central Statistics Agency, the productive age is between 15 to 64 years. Most farmers lack welfare, so it is rare for young people who are interested in becoming farmers. Even if there are interested because they continue the inheritance from their parents. Agriculture in Bangil plant a variety of crops in their land. One hectare of land can be planted with manga, rice, corn, and nightly flowers according to the season of the crop. This is called the overlapping system because of the minimal area of rice fields. In terms of income, most farmers still live below welfare with an average monthly income of under 2 million rupiah while the rest are above two million rupiah with the highest income reaching 5 million rupiah. The cause of the small problem of income because farmers only have land less than 0.5 hectares. In addition, the costs of land cultivation, agricultural labor, and medicine have increased.

One source of information about agriculture obtained by farmers comes from social media. Most farmers get social media information from YouTube, WhatsApp groups and mobile applications. Their goal in opening online media is to look for ways to plant well and produce. Farmers feel that both extension services from the ministry and social media provide information that is easy to understand, clear and comfortable. The types of information most often displayed are how to plant using technology and how to cultivate land properly.

On the mobile application Farmers provide a variety of features with a variety of information. Among these features are forums, articles, videos, information stores and personal settings. In addition, there is also information through short messenger messages (SMS) by providing interactive services between farmers and agricultural experts from Gajah Mada University (see figure 1).
The farmer mobile application has a national price feature containing the latest info on the current prices of necessities (see figure 2). However, this application does not provide the latest seeds and fertilizer prices, nor does it provide information on local marketing and agricultural support equipment. While YouTube also does not display renewable prices both from seed prices and farmer prices. Some farmers feel that by watching YouTube they know how to market their sales so they can make a profit while some others feel that there is no information on how to market their sales so that they do not get the profit as expected.

Information from social media and mobile applications often provide information about technological developments in agriculture, but both do not provide information on how to manage agriculture properly and easily applied. Instead through counseling, information about technological developments is only known by some farmers while agricultural management can be easily understood by many farmers through counseling by the ministry. Most young people are currently reluctant to engage in agriculture so that the information content in social media is minimal. While relying on mobile applications, not many farmers know about mobile applications for farmers and what are the benefits of
the application. In addition, the limited means and knowledge of farmers also adds to the lack of mobile applications for developing farmers.

Most farmers rely heavily on extension services from the ministry as the main source of information to develop their agriculture. But some farmers are still hesitant to rely on social media as their main source of information. For small farmers, agricultural information is very easy to obtain when disseminated through television rather than counseling or online media such as social media and mobile applications. However, television today is difficult to display agricultural information needed and the lack of knowledge information about the use of technology for farmers causes agricultural applications and social media are rarely used as the main source of information to advance their agriculture.

Cyber extension is a mechanism of information exchange that occurs in cyberspace for agricultural purposes. Connection between computer networks through communication equipment [10]. The pattern of cyber extensions on farmers in Bangil is still heavily influenced by social media such as YouTube and WhatsApp groups while mobile applications have not been so widely used by farmers. Distribution of information to the virtual world occurs both sending from one user and interaction between users. Usually the user will send information in the form of audio, visuals, charts, and articles. Interaction between users occurs when the question in the forum or QA features. In addition, interactions can also occur through SMS messages and comments in the column provided by the manager in each article or audio-visual display to give farmers the opportunity to ask questions.

Apart from mobile applications, cyber extension model patterns can also be used through social media. On YouTube social media, not so many shows about agriculture are published because of the relatively old age of farmers while young farmers are minimal resulting in a lack of content creators from farmers. In addition, there is a lack of knowledge from farmers themselves regarding the use of social media as users or content creators.

Both the farmer mobile application and YouTube provide information on easy and profitable marketing for farmers. The farmer application itself has marketing features that make it easy for farmers to pass through middlemen because they are in cyberspace by directly bringing farmers together with buyers. But most farmers still like the marketing system through the real world because the income they get is directly obtained without having to go through complicated mechanisms. Another case if through a mobile application or the type of marketing suggested by YouTube, according to farmers the mechanism from the sale up to the purchase stage is very complicated besides, the money from the sale is not directly received in the hands when they sell their crops. The cyber extension system supports overall development including production, management, marketing and other agricultural development activities [11]. In Bangil society, the system only supports the level of knowledge, but its implementation only reaches production practices. But at the marketing and management level, small farmers are still difficult to implement in daily practice. Limited education and age factors are some of the causes of the difficulty of social media such as YouTube and farmers’ mobile applications to be the main source of information for farmers in Bangil.

4. Conclusions

The pattern of cyber extension in the farming community in Bangil occurs through social media and mobile applications of farmers. Young farmers are easy to receive and implement information from cyberspace while farmers who are not young prefer communication through counseling. Most of the features of farmers and information add information to farmers in adding to their farming skills. But it is different with the product marketing feature, farmers feel the sales and revenue system is still difficult to implement. Arifiyani and Guntur's research results show that the exchange of information through the cyber world can be done if the application or content of YouTube matches the user experience of the farmers [16]. But this research also shows that user experience is not enough, there needs to be a source of information that brings farmers closer to cyber agriculture information. The source comes from the real world such as counseling or peers. In 2007, India conducted cyber extension research by conducting a two-phase trial, namely the first phase through digital / wireless strategy and the second phase with the internet. The result is the lack of farmers' attention is still a major problem even though
farmers are familiar with software and the internet [11]. While the research results in Bangil show how communication through counseling can be a bridge to connect between farmers and the Internet.

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