DIGITAL EXTENSION, ITS OPPORTUNITIES AND CHALLENGES IN MATARAM MUNICIPALITY

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ABSTRACT

Currently, we are already in the era of the digital industry. The concept of the digital industry provides opportunities for extension workers to conduct counseling digitally. The Agricultural Human Resources Development and Extension Agency (BPPSDMP), Ministry of Agriculture (Kementan), continues to encourage transformation in the agricultural sector, including the transformation of extension from conventional to digital. The Ministry of Agriculture in the application of Information and Communication Technology (ICT) has implemented, among others, Smart *Feed* Agrinak, My Agri, LKP Program (Rice Consulting Service), ITani, Planting Calendar, Takesi and so on, including *a web* that provides information on extension materials from extension workers to other extension workers, namely *Cyber Extension*. On the other hand, internet users in Indonesia reached 345.3 million with the average ownership of cell phones in Indonesia is 2. Based on this data, digitization of counseling is a necessity. Then what are the knowledge, attitudes and skills of extension workers as well as the opportunities and challenges of implementing digital extension in Mataram City? This research was carried out in Mataram City by taking a sample of 6 Agricultural Extension Centers with a total of 30 extension respondents. The object of this research is the knowledge, attitudes and skills of extension workers as well as opportunities and challenges in implementing digital counseling. This study uses a qualitative descriptive method. Data was collected using in-depth interview techniques. Informants are determined purposively. The data from the research results were analyzed in a qualitative descriptive manner. The results of the study show that the opportunity to conduct counselinextension digitally in Mataram City is very open because all extension workers have and are able to access the internet well. All extension workers are already aware of the cyber extension organized by BPSDM, they also know that agricultural information and innovations are available and accessible on the internet. Extension workers feel that extension materials on cyber extension and the internet are generally good and can be useful for farmers. The challenge is that extension workers do not dare to deliver extension materials accessed from the internet to farmers before they are adapted to local conditions. On the other hand, extension workers do not have funds to adapt new innovations that are learned digitally, so counseling on new innovations to farmers is not carried out.

Keywords: digital counseling, cyber extension, opportunities and challenges, Mataram

INTRODUCTION

Currently, the world has entered the era of Industry 4.0, where digital technology is increasingly becoming an inseparable part of daily life. Digital transformation in the industry allows the automation of various systems that can interact and work together. This technology plays a role in increasing efficiency, simplifying processes, and increasing productivity in various sectors,

including agriculture. The implementation of Industry 4.0 is expected to bring wide benefits to the community (Murti, 2021).

One of the main principles of the fourth industrial revolution is interconnection, which is the interconnectedness between humans, tools, and machines that allows real-time communication. With the advent of the Internet of Things (IoT) and the Internet of People (IoP), data collection and analysis has become easier and faster. This allows for more accurate decision-making and more effective and efficient distribution of information to the wider community (Ministry of Industry, 2018).

Basically, the concept of industry 4.0 connects physical resources with digital technology. With smart manufacturing technology, resources can be converted into entities that are able to respond to the surrounding environment automatically. These smarter production systems are delivering major changes in the industry, creating a more efficient business model with an optimally integrated production chain.

Technologies such as IoT, Cyber-Physical Systems (CPS), Cloud Computing, Big Data Analytics, and Information and Communication Technology (ICT) are increasingly being applied in the agricultural sector. The concept of agriculture 4.0 is present as an answer to modern challenges by optimizing production and efficient use of resources. Through the use of data from various sources, agricultural productivity can be significantly improved. In addition, transparency in the supply chain and commodity value is also a priority, so that agricultural sector planning can be carried out in a more strategic and sustainable manner (Ministry of Agriculture, 2016).

In supporting this transformation, the Agricultural Human Resources Development and Extension Agency (BPPSDMP) of the Ministry of Agriculture (Kementan) continues to encourage digitalization in agricultural extension. The Head of BPPSDMP, Dedi Nursumasi, in a virtual discussion said that the application of digital technology in extension has given birth to various innovations, such as Smart Feed Agrinak, My Agri, Rice Consulting Services (LKP), iTani, Planting Calendar, Takesi, and Cyber Extension, a digital platform that functions as an agricultural information center (Ministry of Agriculture, 2018).

Based on the latest data, the number of internet users in Indonesia has increased to 202.6 million people, followed by a surge in the number of mobile devices connected to the internet to 345.3 million units. In addition, the number of active social media users has also increased to reach 170 million people. The majority of internet users aged 16–64 years access digital services through mobile devices (98.3%), laptops or computers (74.7%), and various other smart devices (APJII, 2020).

Seeing the growing trend of digitalization, the agricultural extension sector also needs to adapt to technology to improve the effectiveness and efficiency of services. Therefore, the readiness of

human resources who are able to adapt to these changes is needed. Technological innovation, infrastructure, and digital skills of extension workers are the main factors in increasing the competitiveness of the agricultural sector. Extension workers are expected to master information technology and use it in the extension process to support farmer productivity and strengthen the agribusiness system.

With the increase in extension workers' understanding of digital technology, the capacity of farmer groups (Poktan) can also increase to the level of corporations or Farmer-Owned Enterprises (BUMP). Farmers are also encouraged to adapt to technology-based business models in order to increase productivity and efficiency. Cyber Extension is expected to be the main medium in the dissemination of extension information, so that the knowledge transfer process can be carried out faster and wider. If all extension workers have been connected to the internet and use digital systems such as Simluhtan, the effectiveness of counseling will increase significantly.

As part of its digital transformation initiative, the Ministry of Agriculture has developed the Cyber Extension program by presenting a special portal that can be accessed by extension workers and farmers. Supporting infrastructure such as computers, printers, modems, and other devices have also been provided to support the implementation of this system. With the Cyber Extension, the dissemination of agricultural information becomes easier and more efficient, allowing farmers to access extension materials anytime and anywhere (Agricultural Extension Center, 2012).

Cyber Extension is an innovation in the world of counseling that utilizes the internet network as the main medium for sharing information. This technology allows extension workers and farmers to connect with various sources of up-to-date information in real-time. By utilizing information and communication technology, the transformation of agricultural science and technology can be carried out faster and on target. Conceptually, Cyber Extension functions as a liaison between research institutions, extension workers, farmers, and other related parties, so that all actors in the agricultural system can work synergistically and complementarly (Wijekoon, 2009).

With the ease of access to information offered by Cyber Extension, extension workers are expected to be more active in adopting and using digital technology in the extension process. The question is how are the knowledge, attitudes and skills of extension workers in using digital technology, what are the opportunities and challenges faced in applying digital technology in carrying out education in Mataram City?

RESEARCH METHODS

This study uses a qualitative descriptive method. This research was carried out in Mataram City by taking a sample of 6 Agricultural Extension Centers with a total of 30 extension respondents. Extension informants are determined by purposive sampling. The object of this research is the knowledge, attitudes and skills of extension workers as well as opportunities and challenges in

implementing digital counseling. Data was collected using in-depth interview techniques. Informants are determined by purposive sampling. The data from the research results were analyzed in a qualitative descriptive manner.

RESULTS AND DISCUSSION

The results of the study show that extension workers know that the government through the Ministry of Agriculture has operated digital extension through website cyber extension. Agricultural extension workers have known about digital extension, have a positive attitude towards digital extension and have good skills in accessing information on the cyber extension page.

Based on the results of the research on several knowledge indicators such as: extension knowledge about the *cyber extension* website, knowledge of the content on the website, knowledge about the features of the website, knowledge of how to use the website and extension knowledge of the outline of the material contained in the *cyber extension* website namely production facility materials, cultivation materials, agricultural activity materials, and post-harvest maters are known to all extension workers.

The results of the study show that agricultural extension workers in Mataram City have high knowledge of *cyber extension* websites. Based on field data, most extension workers in Mataram City make cyber *extension* websites as one of the places to get information related to agriculture. This makes extension workers know what content is presented on the website such as national gate content, regional gate content, technology dissemination content, extension material content, and locality-specific material content. Extension workers also know what features are contained in the *cyber extension* website and extension workers also know what materials are contained in the *cyber extension* website such as plant cultivation materials, post-harvest materials or agricultural product processing, technology dissemination materials and also the latest agricultural news in Indonesia. In line with Suartika's (2020) research which states that all extension workers or as many as 100% of extension workers know and use *cyber extensions* to find information related to agriculture that they need.

From the results of the study, it was also known that as many as 28 people consisting of 11 male extension workers and 17 female extension workers had a positive attitude towards digital counseling. According to Azwar (2015), the positive attitude of extension workers arises because the technology introduced according to him can be used in counseling. A total of 3 extension workers consisting of 1 male extension worker and 2 female extension workers are still hesitant. The attitude of extension workers towards the existence of *a cyber extension* website as a new digital platform used as a source of information related to agriculture is quite high, meaning that extension workers have a positive attitude or are willing to use digital extension platforms in

carrying out extension activities. Or in other words, there is no problem in making the website one of the main platforms as a place to find information related to agricultural issues. Meanwhile, two extension workers who are included in the medium category still seem to be hesitant and do not agree if the *cyber extension website* is used as the main place for extension workers to find agricultural information. According to them, website cyber extensions still seem to be quite difficult to use as a reference for information compared to other platforms with free search or search engines such as google and youtube. According to the extension workers, the information contained in the *cyber extension* website is extension material such as cultivation materials, post-harvest, production facilities and agricultural news, but in terms of appearance it is still inferior to other sources. The results of the research carried out by Suryantini (2004) found that information obtained by extension workers through the internet (cyber extension) can actually be used to compile materials, make technical guidelines, prepare work plans, and many other general needs. But sometimes the materials needed are not available and are not obtained through *cyber extensions*. So that this causes a decrease in interest in utilizing *cyber extension* by field agricultural extension workers. In line with these conditions, some extension workers argue that cyber extensions are incomplete so they have to find other sources that require more time to access them. In line with these conditions, extension workers actually have a positive attitude in the use of counseling materials that are explored and obtained from internet media or by using digital media.

The results of research related to the level of digital skills of extension workers in Mataram City show that most of the extension workers are skilled in accessing digital media online to obtain agricultural information. The level of skill of extension workers in using digital extension shows that as many as 26 extension workers consisting of 13 male extension workers and 13 female extension workers are included in the high category and as many as seven extension workers consisting of 1 male extension worker and 6 female extension workers are included in the medium category. This number shows that the skills of extension workers in using cyber *extension websites* or digital counseling are quite good. This condition can occur because most extension workers are used to using the internet in accessing agricultural information digitally. This situation is also supported by the fact that retired senior extension workers also help Junior Extension to be able to use and access cyber *extension* websites and other platforms on the internet digitally. Extension workers as a whole have skills in utilizing digital extensions, especially website *cyber extensions.* Extension workers usually access cyber outreach to get counseling materials and then download them for further use. Usually the material obtained is studied first and if the material is useful and is expected to be useful for farmers and extension workers, then the material is copied and used as extension material in their respective areas

Some extension workers have also tried to apply the information obtained through the *cyber extension website* such as the use of new types of seeds, better cultivation methods or also trying to apply organic fertilizer and organic pesticide manufacturing methods to help farmers in maximizing the agricultural yield of the farmers they are guided by. However, the results achieved

have not been maximized and extension workers are not confident enough to widely disseminate this information to farmers. This is due to the understanding of those who think that agricultural innovations must be tested or adapted first before being disseminated to farmers. But in reality, extension workers do not have enough data to conduct trials, so they do not dare to disseminate this information or innovation to farmers. Extension workers who are included in the medium category in terms of skills mean that extension workers are also still having difficulty in using the *cyber extension* website as a source of information due to the lack of training and socialization related to this website so that extension workers still use it very rarely and more often use other platforms such as Youtube in looking for agricultural information.

Based on the results of the overall study, agricultural extension workers in Mataram City have a high category of behavior, meaning that the use of *cyber extension* by extension workers in Mataram City can be said to be good, even reaching the level of trying to implement even on a limited scale. As additional information, it can also be seen that more female extension workers have higher knowledge and attitude compared to male extension websites towards the use of cyber extension websites. However, in terms of skills, more male extension workers have higher skills compared to female extension workers. This is due to the frequent access of female extension websites compared to men, but rarely follow up in the form of trying to apply innovations that have been learned or already known. The reason is a lack of funds and unwilling to spend their own money to conduct experiments. This is in line with the opinion of Suryantini (2004). In addition, because most of the female extension workers foster groups of women farmers who focus more on processing agricultural products. Information related to the processing of the products of the farmer women's group is still relatively minimal so that women extension workers use the *cyber extension* website more as a source of information but not to the stage of creating special media that will be used in agricultural extension activities. Utilization of Cyber Extension. in line with the research of Kadhung Prayoga (2017) which states that the existence of women extension workers can be partners for women farmers to voice their opinions. Women extension workers have the task of building more human resources so that women extension workers are more focused on making information on the website to do extension directly to women farmers rather than making other special media in conducting extension.

According to agricultural extension workers in Mataram City, the opportunity to conduct digital extension at the farmer level is very high. This is supported by the fact that most farmers already have mobile phones that can be used to access the internet. The farmers are actually ready to take part in digital counseling. However, the obstacle is that sometimes farmers do not have enough money to buy credit, so access to the internet is also constrained. Farmers are familiar with the internet so that if they have access, they can use the internet to participate in counseling.

Extension workers face various challenges to be able to implement digital extension at the farmer level. These challenges include that extension workers do not dare to complain about the material

obtained from cyber extension to farmers without first adapting to it. Then the next challenge is to carry out an adaptation test for extension workers who are constrained by funds. They do not have the budget allocation to conduct adaptation tests to the new technology they acquire on the internet.

CONCLUSIONS AND SUGGESTIONS

CONCLUSION

From the results and discussions, it can be concluded that extension workers in Mataram City are ready to conduct counseling digitally. Extension workers already know and are skilled in using digital media in accessing agricultural information. The opportunity to conduct digital counseling in Mataram City is quite open, considering that extension workers are ready and farmers have mobile devices that they can use to participate in counseling digitally. The challenge faced by extension workers is that they do not dare to complain about agricultural innovations obtained digitally to farmers before being tested for adaptation first. For the adaptation test, the extension workers do not have a budget allocation. Besides that, farmers also sometimes do not have money to buy fulsa so they do not have internet access.

SUGGESTION

It is recommended for extension workers to provide information or innovations they obtain on the internet to farmers and to allow farmers to make decisions to adopt innovations without advice or recommendations from extension workers. All innovations obtained by extension workers and considered beneficial for farmers to be given to farmers without a specific recommendation to adopt.

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