Jurnal Penyuluhan Vol. 20 (01) 2024 | 69-83
https://doi.org/10.25015/20202446305
E-ISSN: 2442-4110 | P-ISSN: 1858-2664

Readiness of Semarang City Agricultural Extension Officers and Influential Factors in Implementing Cyber Extension

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Received: 13 March 2023 | Revised: 11 December 2023 | Accepted: 29 December 2023 | Online Publication: 31 March 2024

ABSTRACT

The main focus of information and communication technology applications in agriculture is to fulfill farmers' information needs. Cyber extension is not only for information seeking but also for disseminating agricultural technology innovations. This study aims to examine the readiness of agricultural extension workers in Semarang City to apply cyber extension in the era of digital extension and analyze the factors that influence their readiness to use cyber extension. The research was conducted from November to December 2022 at all Agricultural Extension Centers in Semarang City. A method of census was used in this study. Data were collected by interviews, observation, and documentation and analyzed descriptively using multiple linear regression. The results showed that the readiness of extension workers in Semarang City to apply cyber extension was high. Age, formal education level, training, experience, motivation of extension agent, and environmental factors have a simultaneous influence. Training, experience and motivation of extension agents have a partial influence, while age, formal education level, and environmental factors have no partial influence.

Keywords: agriculture, cyber extension, extension, readiness

INTRODUCTION

Nowadays, information and communication technology (ICT) has developed rapidly and penetrated all aspects of human life, including agriculture. The main focus of the application of information and communication technology in agriculture is to fulfill farmers' information needs (Prayoga, 2018) However,in Indonesia, this is still dominated by the study of conventional information sources(Gultom et al., 2017). Moreover, Prayoga (2017) stated that Internet use is still not fully enjoyed by those involved in agriculture, fisheries, and livestock. This is because many farmers still have little access to information sources, so they can only rely on the capacity of extension workers to assist them. Therefore, extension workers are required to be competent in using information and communication technology in agriculture. Moreover, extension workers are one of the sources of information trusted by farmers. The availability of extension workers is indispensable for improving agricultural development programmes (Prasetyo et al., 2021)

The agricultural information technology currently being developed in the extension sector is cyber extension. Cyber extension was released by the Indonesian Ministry of Agriculture in 2010 as a platform that can be used by extension workers, both at the center and in the regions. Cyber extension is an effective and efficient agricultural extension media innovation because it implements information and communication technology, in which extension materials can be read or downloaded by users without time limitations (Dasli et al., 2015). The cyber extension system is operated using computer hardware and software by typing the address http://cybex.pertanian.go.id in the address bar of Google Chrome/Internet Explorer/Mozilla Firefox. The use of cyber extension also has advantages such as the continuous availability of information, access to international needs, user-orientedness, cost-effectiveness, and speed (Cahyono et al., 2020). In addition, cyber extension can also be utilized to disseminate agricultural technology innovations because an extension agent simply uploads the extension material to be delivered to farmers, and a few seconds later, the material can be accessed by farmers in all rural areas.

However, even though it has been launched for 13 years, not all extension workers in Indonesia have utilized online extension media to support their performance. For example, Dzakiroh et al. (2017) found that 22 out of 64 extension workers in Karanganyar Regency, Central Java (34.37%), showed an uninterested attitude toward cyber extension because it was difficult to operate. In addition, cyber-extension websites often have problems. Another study by Adriyani (2019) found that agricultural extension workers in Lampung Province utilize cyber extension agricultural extension information, which still needs to be higher. This is indicated by the findings of 1641 extension workers in Lampung Province, but only 50 extension workers in Metro City are active in using cyber extension. The research conducted by (Sabir et al., 2018) found that agricultural extension workers in the Greater Malang area still need to utilize cyber extension more. This is indicated by more than 50% of extension workers in the Greater Malang area in the category of never or rarely using cyber extension.The low utilization of cyber extension is caused by the lack of adequate Internet facilities and infrastructure in some areas, the lack of the ability of extension workers to use computers or laptops, the low skills and interest of extension workers to write extension materials, and the lack of socialization of the use of cyber extension to agricultural extension workers.

These three studies illustrate that the application of cyber extension by agricultural extension workers in Indonesia, including in Semarang City, still needs improvement. Some extension workers actively use cyber extensions, while others do not. Meanwhile, the facilities and infrastructure were adequate. Moreover, Semarang City has implemented the Strategic Command for Agricultural Development program known as Komando Strategis Pembangunan Pertanian (Kostratani) in Indonesia, which is a program to maximize the function of Agricultural Extension Offices using information and communication technology and the application of cyber extension is a part of the program.

Based on this background, the topic of discussion was the readiness of agricultural extension workers in Semarang City to apply cyber extension. Readiness refers to willingness, encouragement, and ability to engage in certain activities. Slameto (2010) stated that readiness can be indicated by maturity, a process that causes behavioral changes, and intelligence, a condition in which intellect is fully developed to think, understand, and so on. Extension readiness is seen in the mastery of cyber extension, innovation communication competencies, and training management competencies.

The mastery of the use of cyber extension is seen from the behavior of extension workers in understanding the use of cyber extension, where behavior can describe the maturity of extension

workers, which is a sign that extension workers are ready to use cyber extension. Communication of innovations is seen in how extension workers can communicate innovations to assisted farmers, such as publications on cyber extensions. Training management is seen in how extensionists can design farmer training and courses, where they can use cyber extension as a reference for designing farmer training and classes. Communication between innovation and training management can illustrate the intelligence of the extension agent through his extension activities, where intelligence is also a sign that an individual is ready for something (Zulfikar et al., 2018).

This research is necessary because its output will provide an overview of whether agricultural extension workers in Semarang City are ready to apply cyber extension and the various factors that influence it. This study differs from the previous studies. Previous studies by Adriyani (2019); Cahyono et al. (2020); Yulianti (2020) only discussed the utilization of cyber extension by extension workers and the influencing factors, barriers, and unwillingness of extension workers to use cyber extension. This study examines whether extension workers in Semarang City are ready to apply cyber extension and the factors that influence it. This is because, before seeing the utilization, the readiness of extension workers to apply cyber extension is first observed. Therefore, when extension workers are active or inactive when applying for a cyber extension, at least the basics can be known before applying, whether they are ready.

In another study conducted byDlamini and Worth (2019), they discussed the readiness of extension workers in Swaziland to implement ICT for information dissemination. They found that the ownership of personal smartphones, and all of them have gone through higher education, makes them ready to integrate technology into their extension programs.This study also discusses the readiness of extension workers to apply cyber extension and examines whether formal education and ICT ownership affect their readiness.In addition to looking at formal education and ICT ownership, the novelty of this research is that it also looks at other factors such as age, training, experience as an extension agent, and extension agent motivation on the readiness of extension agents to apply cyber extension.

Discussing the factors that influence the readiness of extension workers, this study focuses on age, formal education level, training, experience as an extension worker, motivation of extension workers, and environmental factors. The selection of these factors was adopted from research conducted by Owolabi and Yekinni (2022),who found that extension workers' readiness to use ICT for extension activities was influenced by age, higher professional experience, and educational qualifications up to bachelor's level. However, this study added other factors such as training, motivation, and environmental factors. This study used Haryono (2020) theory on the characteristics of extension workers.

(Haryono, 2020) said that the characteristics that can affect the readiness of extension workers consist of several things. First, age refers to an extension worker's life from birth to serving as an extension worker. Older agricultural extension workers and younger agricultural extension workers need more capacity to capture and remember information. Second, the formal education level refers to the last formal education provided by the extension worker.A higher level of formal education affects work efficiency.Training refers to the number of cyber extension-related training sessions attended by the extension worker.A high intensity of training will increase the knowledge and skills of extension workers.Fourth, experience refers to the period in which the extension worker worked as an extension worker from the beginning until this study was conducted. More experience will increase the understanding of extension workers in seeing and analyzing the needs of farmers. Fifth, motivation was chosen because it is believed to be the driving force for extension workers to carry out extension activities, which consists of intrinsic and extrinsic motivation.Sixth, environmental factors refer to the facilities and infrastructure that apply for cyber extension. The availability of facilities and infrastructure, and an extension agent's environmental factors, will support the extension agent in applying cyber extension.

This study aims to describe the readiness of extension workers in Semarang City to apply cyber extension and to analyze the factors that influence their readiness. Extension workers and related agencies can use the study results as evaluation material for the latest extension methods.

METHODS

The research was structured as quantitative research by analyzing primary and secondary data. The primary data in this study were obtained directly from the research location related to age, formal

education level, experience as an extension agent, extension agent motivation, and environmental factors. Secondary data in this research were obtained through literature studies related to the utilization of cyber extension in Indonesia from research journals that can be a reference, as well as documentation related to the concept of extension.

The census method is used in this study. A census is a study that considers one population group as the whole sample (Ibrahim, 2020). This study used the census method because the total number of respondents was only 31 agricultural extension workers in Semarang. Interviews, observations, and documentation were used for data collection. The interviews were conducted by considering the research objectives and topics to be discussed, creating interview guidelines, meeting the interviewees, conducting interviews, and analyzing the data. The interviews were conducted with agricultural extension workers in Semarang City. Observations were conducted by determining the object to be studied, preparing for observation, observing the process, and then recording the observation results. The object observed in this study was the culture of extension services provided by agricultural extension workers in Semarang City. Documentation was conducted by collecting the data needed for this research, such as photographs.

A questionnaire was used as the research instrument. Before the research instrument was used in the research, the research instrument was first tested to assess the feasibility of the instrument used for research. The instrument trial was conducted on extension workers in Semarang Regency because they had characteristics similar to those of the primary respondents. They began to recognize the use of digital media in extensions, such as cyber extensions. Based on the results of the instrument trial, the questionnaire used in this study passed validity and reliability tests (instrument feasibility tests).

This study was conducted between November and December 2022. This study was conducted at the Agricultural Extension Centers (AECs) in Semarang City, consisting of the AECs of Ngaliyan, Gunungpati, Banyumanik, and Mijen. Semarang City was selected because it is a major city in Indonesia with good facilities and infrastructure. In addition, Semarang City has implemented the Strategic Command for Agricultural Development program known as Komando Strategis Pembangunan Pertanian (Kostratani) in Indonesia, which is a cyber extension that is part of the program. The existence of this program also makes it easier for extension workers to access and implement cyber extension. Thus, this study examines whether agricultural extension workers in Semarang City are ready to implement cyber extension in the digital era.Based on these findings, the study's results can be used to evaluate extension workers regarding the use of cyber extension, and as a reference for extension workers in the regions.

The population in this study comprised of all agricultural extension workers in Semarang City. This study used a saturated sampling technique that used all people from the population (Sudibyo et al., 2019). This is because the total population comprises only 31 agricultural extension workers.In addition, Dwiastuti (2017) suggested that if the total population is less than 100 people, all samples can be reached and used as research respondents.Therefore, the sample in this study comprised of 31 agricultural extension workers. This study consists of independent variables, such as age (X1), formal education level (X2), training (X3), experience as an extension agent (X4), extension agent motivation, and environmental factors (X6). Age (X1) is measured in years, formal education level (X2) in years, training (X3) in number of meetings, and experience as an extension agent (X4) in years.Extension motivation (X5) was measured using three Likert scales with 11 questions on the questionnaire.Environmental factors (X6) were measured using three Likert scales from ten questions on the questionnaire.The dependent variable in this study is the readiness of extension workers (Y), measured using three Likert scales with eight questions on the questionnaire.Descriptive and multiple linear regression analyses were used for data analysis.

Descriptive analysis was conducted using a Likert scale. The research questionnaire in this study used a 1 - 3 scoring system that included the answer options "disagree," "less agree," and "agree." The scoring variable was based on the formula from Purnasari (2021).

$$r = Xt - Xr \quad \text{..... (1)}$$

The description for equation (1) are: r for range, Xt for highest observation value, and Xr for lowers observation value.

$$I = r/k \quad \text{.....(2)}$$

The description for equation (2) are: I for in-class interval, r for range, and k for number of class.

1. Scoring of extension workers' motivation variables

   The motivation variable score is obtained by finding the value of r. The value of r is obtained by subtracting the highest value from the lowest value, which is 33 - 11, and the result is 22. Then, the class interval is determined by dividing the value of r by the number of classes (k), which is 22 divided by 3, and the result is 7.3.

   The class interval size used was 7.3; therefore, it can be determined that the class used was three classes consisting of low, medium, and high. Therefore:

   a. Low extension motivation category = 11 - 18.3

   b. Moderate category of motivation = 18.4 - 25.7

   c. High extension workers motivation category = 25.8 - 33

2. Scoring of environmental variables.

   The environmental variable score is obtained by finding the value of r. The value of r is obtained by subtracting the highest value from the lowest value, which is 30 - 10, and the result is 20. Then, the class interval is determined by dividing the value of r by the number of classes (k), which is 20 divided by 3, and the result is6.6.

   The class interval size used was 6.6; therefore, it can be determined that the class used was three classes consisting of low, medium, and high. Therefore:

   a. Low environmental factor category = 10 - 16.6

   b. Medium environmental factor category = 16.7 - 23.3

   c. High environmental factor category = 23.4 - 30

3. Scoring of extension workers' readiness variables

   The extension workers' readiness variable score is obtained by finding the value of r. The value of r is obtained by subtracting the highest value from the lowest value, which is 24–8, and the result is16. Then, the class interval is determined by dividing the value of r by the number of classes (k), which is 16 divided by 3, and the result is5.3.

   The class interval size used was 5.3; therefore, it can be determined that the class used was three classes consisting of low, medium, and high. Therefore:

   a. Low extension readiness category = 8 - 13.3

   b. Moderate extension readiness category = 13.4 - 18.7

   c. High extension worker readiness category = 18.8 - 24

The formula for multiple linear regression analysis is as follows:

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + e \quad \text{.....(3)}$$

Description:

Y : Extension worker readiness
a : Constant
b_1 - b_6 : Regression coefficient of each variable
x_1 : Age (year)
x_2 : Formal education level (years)
x_3 : Training (meeting times)
x_4 : Experience as an Extension Worker (years)
x_5 : Motivation of Extension Workers
x_6 : Environmental Factors
e : Error term

The description for equation (3) are: b1 – b6 for regression coefficient of each variable, x1 for age (years), x2 for formal education level (years), x3 for training (years), x4 for experience as an extension worker (years), x5 for motivation of extension workers, x6 for environmental factors, and e for error term.

RESULTS AND DISCUSSION

Respondents Characteristics

First, based on Figure 1, the age range of extension workers is mostly 41-50 years old, with a percentage of 45.2%. This means that older extension workers were the dominant extension workers.Based on observations, there is no significant difference between extension workers aged 21-30 years, 31-40 years, and 41-50 years in their readiness to apply for cyber extension.This is due to their similar extension activities.Regardless of age, they already used ICT, such as computers and smartphones, in their work.This similarity occurs because extension workers are now required to be able to operate computers and smartphones, so all extension workers learn the same things, including the application of cyber extensions.This is also supported by the opinion of Jimenez et al. (2021), who state that age has no significant effect on technology adoption by agricultural extension workers.

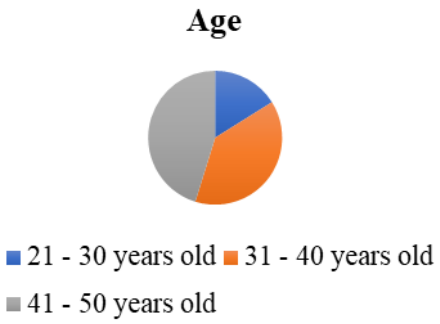

Figure 1. Respondent characteristics based on age

Figure 2. Respondent characteristics based on gender

Second, the percentage of male extension workers was one person higher than that of female extension workers. Male and female extension workers in Semarang City have the same duties and responsibilities as the extension activities. In terms of the application of cyber extension, they are the same. Both female and male extension workers can operate ICT and have the same adaptability to cyber extensions. This is because, when observations were taken, both female and male agricultural extension workers were equally able to use cyber extension to find the latest agricultural information. Male and female agricultural extension workers are equally involved in writing articles on cyber extensions. During the interview, the extension worker also argued that men are seen as more proficient in operating ICT in the outside world, but in the extension field, this does not happen.Men and women have the same ability to apply cyber extensions.

Based on Figure 3, the formal education of extension workers in Semarang City has mostly been taken up to bachelor's degree (S1). This means that the formal education level of the extension workers is relatively high. However, the formal education level of the extension workers was the same. Whether the extension workers have the last education of senior high school/vocational high school, bachelor's degree, or master's degree, they can all operate computers and smartphones. Cyber extensions can be used to obtain agricultural information. This is because, whatever the last education of extension workers, they must continue to learn and adapt to the development of the existing era.The opinion of Nyarko and Kozari (2021) states that extension workers with high formal education must still actively learn and practice the adoption of information technology to facilitate farmers in extension.

Based on Figure 4, agricultural extension workers who attended training 0 to 1 time (87.1%) dominate. This shows that the average agricultural extension worker in Semarang City still needs more training, especially training related to cyber extensions. This has an impact on their expertise in the application of cyber extensions. Those who had participated in ICT or cyber extension training were more proficient than those who had never participated in training.

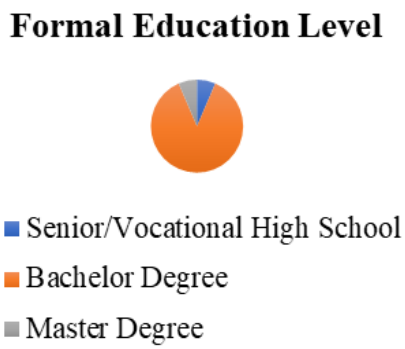

Figure 3. Respondent characteristics based on formal education level

Figure 4. Respondent characteristics based on training

For example, extension workers who have received training can become administrators for cyber extension in Semarang City. The admin's job is to hold the cyber extension password and select the editor for articles to be published on the cyber extension. More training will increase the students' knowledge and skills(Yulida et al., 2018).

As shown in Figure 5, most agricultural extension workers in Semarang City have 11-15 years of experience as extension workers. This means that most extension workers have a lot of experience. Experience can be a provision for extension workers in the extension activities. Based on observations, extension workers with more extended work experience can better analyze farmers' needs.

For example, during observations at the Banyumanik Agricultural Extension Center. The extension worker prepared fertilizer-related extension materials through cyber extensions and university journals. Armed with ten years of experience as an extension worker, the extension worker sorted out which fertilizers were easy to teach to farmers and applied to the plants grown by farmers.

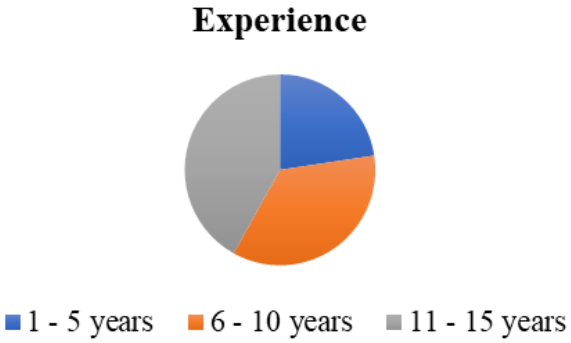

Figure 5. Respondent characteristics based on experience

Figures 6 and 7 show that smartphone ownership is dominated by agricultural extension workers who own one smartphone unit and one computer unit. Cyber extension should be easy for them because their ICT ownership already supports it. The request for ICT by agricultural extension workers can be utilized to implement an information technology-based agricultural extension system that aims to serve the farming community by providing accurate, fast, and reliable information. Extension workers who own computers/laptops prefer to use computers/laptops for work, not least for cyber extension applications. Extension workers who do not have a computer/laptop usually use a computer owned by the office for work purposes or borrow friends from other extension workers.

However, agricultural extension workers use smartphones for cyber extension, although they are less massive than laptops. Smartphones are typically used to search for information on cyber extensions when it is not possible to operate a computer, such as when in the field. In addition, extension workers also use smartphones to share information from cyber extensions with farmers through WhatsApp groups.

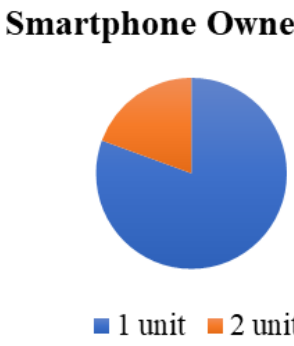

Figure 6. Responden characteristics based on smartphone ownership

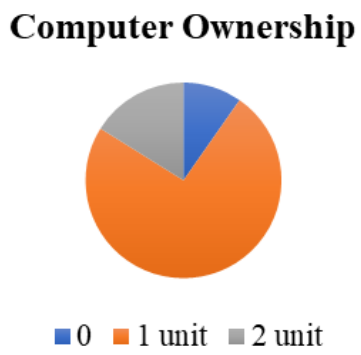

Figure 7. Responden characteristics based on computer ownership

The Readiness of Agricultural Extension Workers to Implement Cyber Extension

Readiness can be interpreted as the overall condition of an individual who is practicing an activity. These conditions include the mentality, attitudes, and skills that must be possessed during certain activities. Balafoutis et al. (2020)also suggest that readiness is a condition in which a person is ready to do something. The readiness level was relatively high. This can be seen from the calculation of the extension workers' answers, which reached an average of 20.1, where this figure is classified in the high category based on the estimates of variable scoring.

The high readiness of extension workers is seen in the research data, which shows that 22 out of 31 extension workers (70.9%) have applied for cyber extension for their extension activities. This means that extension workers have mastered cyber extension, indicating their maturity, which is part of readiness. In terms of innovation communication competency, 21 out of 31 extension workers (67.7%) had published at least one article on agricultural extension material on cyber extension in the past year. Moreover, 28 out of 31 extension workers (90.3%) can manage training for farmers from the application of cyber extension because cyber extension contains much of the latest agricultural information, which can also be a new idea for farmers. The existence of innovation communication competence and training management indicates intelligence, which is part of readiness.

The first readiness is seen from the mastery of extension workers in applying cyber extension, which will reveal the behavior of extension workers in using cyber extension. Most extension workers agreed that the application of cyber extension for agricultural extension activities is easy to implement. For example, extension workers use cyber extensions during observation to search for extension materials. In addition, several Semarang City agricultural extension workers have published articles on cyber extension. This means that extension workers in Semarang City have mastered cyber extension because they also understand how to apply it for agricultural extension.

> *"Using cyber extension is easy. The display is also relatively easy for beginners who may be opening the cyber extension for the first time because the latest agricultural information is immediately presented, as well as the choice of information that can be accessed."* (Vahri, 5/12/2022)

The second readiness is seen in how extension workers can communicate innovations regarding cyber extensions to the farming community. Innovation communication informs the discovery of new ideas in a group so that social change occurs Dharmawan et al. (2019). Most extension workers only apply for cyber extension because the application of cyber extension by extension workers depends on their needs. However, when extension workers use cyber extensions, they are encouraged and better prepared to apply innovations to their farmers. During the interview, the extension workers stated that the information presented in cyber extension was diverse and came from various regions. Information from other areas in cyber extension has never been applied to fostered farmers, so it can be an innovation for extension workers and boost farmers' sensitivity to change.

The third readiness of extension workers is seen in how they manage their training. Training management effectively uses resources to achieve goals through training activities (Dharmawan et al., 2019). Most extension workers agreed that the application of cyber extension makes it easier for them

to give ideas to farmers to advance their farms. Readiness here is seen in how extension workers can manage the information they receive from cyber extension to be used as a reference in training activities or farmer courses. Other readiness can be seen from extension workers who also actively access cyber extension to read agricultural articles and publish articles or videos containing agricultural information on cyber extensions.

However, although agricultural extension workers in Semarang City are highly prepared to apply cyber extension, it is undeniable that they also experience various obstacles in using cyber extension. The most common impediment experienced by extension workers in applying cyber extension is from the farmers.This is because many farmers still need smartphones and only their administrators or some farmer group members have smartphones.This condition is undoubtedly an obstacle because ICT ownership can support extension workers in implementing cyber extensions for their performance.

Factors that Influencing Agricultural Extension Officers in Applying Cyber Extension

R Square

The coefficient of determination was 0.812 or 81.2%. This means that all independent variables (age, formal education level, training, experience as an extension worker, motivation of extension workers, and environmental factors) simultaneously influenced 81.2% of extension workers' readiness. The remaining 18.8% (1–0.812) were controlled by variables other than the independent variables in this study. According toKhasanah (2021), the coefficient of determination ranges from zero to one. There was a more significant correlation between the dependent and independent variables when the coefficient of determination was closer to 1.

F test

Based on the test results that have been carried out, a significance value of 0.000 is obtained. A value of 0.000 was obtained, which was smaller than 0.05. This means that the independent variables, including age (X1), formal education level (X2), training (X3), experience as an extension worker (X4), motivation of extension workers (X5), and environmental factors (X6), simultaneously have a natural effect on the dependent variable, namely extension worker readiness (Y). Wahyudin (2022) stated that the significance value <0.05 means that the independent and dependent variables are simultaneously influenced.

Table 1. The F-test results regarding age, formal education level, training, experience, motivation, and environmental factors on the readiness of extension workers to apply cyber extension.

Model	F	Sig.
Regression	17.329	0,000

The simultaneous influences of age, formal education level, training, experience as an extension worker, extension motivation, and environmental factors on the readiness of extension workers have a relationship. With a productive age, a relatively high level of formal education, attending training, and experience as an extension agent, which indicates the flight hours of the extension agent, driven by the motivation of the extension agent and supported by environmental factors, will have a positive influence on the readiness of extension workers to apply cyber extension. This is supported by (Wijaya et al., 2021), who stated that the use of cyber extension by agricultural extension workers is supported by age, experience, motivation, environmental factors, and media usage.

t test

Based on Table 2, age (X1), formal education level (X2), and environmental factors (X6) have no partial influence on extension workers' readiness. This was because the significance value of age (X1) was 0.702, formal education level (X2) was 0.161, and environmental factors (X6) were 0.236, which was greater than 0.05. Training (X3), experience as an extension worker (X4), and the motivation of extension workers (X5) have a partial influence on extension workers' readiness. This is because the significance value of training (X3) is 0.000, experience as an extension agent (X4) is 0.001, and the extension agent motivation (X5) is 0.000, which is less than 0.05.

Table 2. The t-test results regarding age, formal education level, training, experience, motivation, and environmental factors on the readiness of extension workers to apply cyber extensions.

Model	B	t	Sig.
(Constant)	6,900	1,637	0,115
Age (X_1)	0,019	0,388	0,702
Formal Education Level (X_2)	0,285	1,446	0,161
Training (X_3)	1,028	4,652	0,000
Experience as an extension worker (X_4)	-0,257	-3,703	0,001
Motivation of Extension Workers (X_5)	0,450	5,416	0,000
Environmental Factors (X_6)	-0,127	-1,217	0,236

Age (X1)

Older agricultural extension workers are allegedly not as good as younger agricultural extension workers, and their willingness to learn is lower than younger agricultural extension workers (Lubis, 2016). However, in the field, regardless of the age of the extension workers, they must keep up with the time, both young and old.

When observations were made, extension workers aged 21–30 years, 31–40 years, and 41–50 years were able to operate computers and smartphones. In addition, they understood how to use cyber extensions. Extension workers in the 41-50 age range can still operate computers and apply cyber extensions for counseling. Anang et al. (2020) also confirmed that there is no connection between age and technology adoption by agricultural extension workers.

Formal Education Level (X2)

The higher the formal education, the more efficient the work will be and the better and more profitable the ways and techniques will be (Lubis, 2016). However, in the conditions in the field, although most extension workers have received formal education up to the bachelor's degree level, they feel that the theory they have received in formal education, if not accompanied by learning habits or adaptation after a career as an extension worker, will be useless.Extension workers must adopt the habit of learning-by-doing to apply efficient work and know how to work better and more profitably.All extension workers in Semarang City have formal education relevant to their current careers as agricultural extension workers.

There is no significant difference between those with high school, bachelor's, or master's degrees in their readiness to apply cyber extension. All agricultural extension workers in Semarang City, whether they have a high school, bachelor's degree, or master's degree, can operate computers and smartphones. There was no significant difference between extension workers with the last formal education level of senior/vocational high school, bachelor's degree, and master's degree. This is because they learn again after a career as extension workers and are willing to adapt. This is reinforced by the opinion of Komives et al. (2019), who stated that formal educational institutions can participate in the lifelong learning process.

Training (X3)

The higher the intensity of extension training, the greater the knowledge and skills of agricultural extension workers in applying cyber extension (Tamba et al., 2022). Training attended by agricultural extension workers can further encourage them to apply for cyber extension. Extension workers who have attended training are more intensive in applying cyber extensions. For example, an extension worker at an Agricultural Extension Center in Semarang City, who had attended training related to the application of cyber extension, eventually became the admin of the Agricultural Extension Center for cyber extension. His job is to help other extension workers when they want to publish articles on cyber extension or to help them when they need clarification about the application of cyber extension. Based on this explanation, training helps extension workers apply to cyber extensions. According to Saleh et al. (2016), the need for training plays a vital role in the efficient performance of jobs for agricultural workers.

Experience as an extension worker (X4)

The experience possessed by the extension agent will make it more understandable to see and analyze the needs of farmers (Haryono, 2020). Agricultural extension workers with more experience as extension workers (more than five years) are better able to make decisions, for example, using cyber extension to find agricultural information as needed. Extension workers with experience have a fixed reference to obtain information. Experience helps them understand the needs of farmers, which can be associated with cyber extension. According to Sadiq et al. (2019), armed with experience, we are more aware of the needs and implementation of the strategy.

Motivation of Extension Workers (X5)

Motivation is a valuable driver for extension workers to carry out extension activities such as cyber extension (Haryono, 2020). The motivation of agricultural extension workers in Semarang City to apply for cyber extension was high. They are motivated to apply cyber extension to improve their skills in using digital media. In addition, they are motivated to gain agricultural information from the experiences of farmers and extension agents in other areas through cyber extension to be practiced in their areas.

The application of cyber extension also motivates extension agents for their promotion, because the points earned when publishing articles on cyber extension are high. The impetus for the application of cyber extension by extension workers also arises from where they work, such as other extension workers who actively publish articles on cyber extension, agencies that recommend cyber extension use, and fostered farmers who already have gadgets. The various jobs carried out by extension workers must require a reason of their own to encourage them, according to Anesukanjanakul et al. (2019), which states that the level of achievement can be increased through motivation.

Environmental Factors (X6)

The availability of facilities and infrastructure in the extension environment affects extension workers in the application of cyber extension (Dharmawan et al., 2019). The place where the extension workers work and the area where their fostered farmers are already covered by electricity and Internet networks. The agencies where the extension workers work only provide computers/laptops and technology maintenance to apply for cyber extensions. However, institutions where extension workers work are equipped with WiFi. The institutions where they work provide freedom in electricity, computers/smartphones, and the internet.

However, environmental factors do not affect the readiness of extension workers because these facilities are not solely for cyber extension. This is because of the many tasks of extension workers, so these facilities are also used for other purposes. This is supported by the research of Eksanika and Sutisna (2017), where extension workers utilized electricity and the Internet for various purposes such as sending electronic mail, transferring data, and discussion and communication forums. In addition, an extension worker stated that

> *"the Internet, electricity, ICT are only the medium, but what determines whether we are ready or not for cyber extension is our knowledge, our understanding, and also our experience related to cyber extension."* (Swasono, 15/12/2022)

Multiple Linear Regression Analysis

Based on Table 2, the regression equation is as follows:

$$Y = 6.900 + 0.019x_1 + 0.285x_2 + 1.028x_3 - 0.257x_4 + 0.450x_5 - 0.127x_6 + e \quad \ldots\ldots(4)$$

The positive value of the constant was 6.900. This means that the independent and dependent variables were similarly influenced. This shows that if all independent variables, including age (X1), formal education level (X2), training (X3), experience as an extension worker (X4), motivation of extension workers (X5), and environmental factors (X6), are 0 percent or have not changed, then the value of extension worker readiness is 6,900.

The regression coefficient for the age variable (X1) was positive at 0.019. This shows that if age (X1) increases by one unit, it implies nothing. This is because in reality, regardless of the age of the extension workers, they must keep up with the times, both young and old.

The regression coefficient for the formal education level variable (X2) was positive at 0.285. This shows that if formal education (X2) increases by one unit, this means nothing. This is because, in reality, all agricultural extension workers in Semarang City, whether high school, vocational high school, bachelor's degree, or master's degree graduates, can operate computers and smartphones and can apply cyber extension.

The regression coefficient for the training variable (X3) was positive at 1.028. A positive sign indicates that the influence of the independent and dependent variables is in the same direction. This shows that if the level of training (X3) increases by one unit, the readiness of extension workers will increase by 1.028, assuming that other variables do not change. The more training attended by extension workers, the more it will positively impact their readiness.

The regression coefficient value for the experience variable as an extension agent (X4) was negative at 0.257. This value shows a negative influence (in the opposite direction) between the independent and dependent variables. This shows that if the training variable (X4) increases by one unit, it reduces the readiness of extension workers by 0.257, assuming that other variables do not change. Experience can reduce extension workers' enthusiasm in applying cyber extension because some experience from extension workers makes extension workers reluctant to use cyber extension to reduce their readiness; for example, the experience of being rejected during editorial selection for article publication makes extension workers unwilling to write articles again.

The regression coefficient for the extension agent motivation variable (X5) was positive at 0.450. A positive sign indicates that the influence of the independent and dependent variables is in the same direction. This shows that if the motivation of extension workers (X5) increases by one unit, the readiness of extension workers will increase by 0.450, assuming that other variables do not change. For example, based on observations by researchers, an extension worker at the Mijen Agricultural Extension Center applied for cyber extension to increase knowledge, because the information contained in cyber extension is always up to date. An extension worker at the Gunungpati Agricultural Extension Center set a target to consistently publish articles on cyber extension at least once a year with the motivation to increase the number of credits that can be obtained in one year with the push to increase the number of credits that can support promotion. Motivation can increase the readiness of extension workers to apply for a cyber extension because agricultural extension workers in Semarang City must have their cause when using cyber extension.

The regression coefficient for the environmental factor variable (X6) was negative at 0.127. This value indicates a negative influence (in the opposite direction) between the independent and dependent variables. This shows that if the environmental factor variable (X6) increases by one unit, it reduces extension workers' readiness by 0.127, assuming that other variables do not change. Environmental factors can reduce extension workers' readiness, because the average farmer assisted by extension workers is still less enthusiastic about cyber extension.

CONCLUSION

Based on this research, it can be concluded that the readiness of extension workers to apply cyber extensions is high. The high readiness of extension workers is seen from their mastery of the use of cyber extension, communication and innovation competencies, and training management competencies. The high readiness of extension workers can be supported by the training provided to make them more proficient in using cyber extension, experience in understanding and being open to the needs of farmers, and strong motivation that can encourage extension workers to implement cyber extension. Although the readiness of extension workers is high, they still need to be inspired by related agencies to be more active in applying cyber extension provided by the Ministry of Agriculture. For example, they are encouraged to be more involved in publishing articles on cyber extension by providing a lot of training so that extension workers also better understand how to write good articles.

ACKNOWLEDGEMENT

We thank the Faculty of Animal and Agricultural Sciences, Diponegoro University for supporting this research. Thank you to the Semarang City Agriculture Office, especially the extension workers, who

acted as resource persons and provided a lot of information. Thank you to all those who helped with the course of this research.

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