

Factors Influencing the Use of Cyber Extension by Gender-Based Extensioners in Supporting Artificial Intelligence in Agriculture in NTB (Case Study of Mataram City)

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Abstract: This study aims to (1) understand the aspects that affect the use of Cyber Extension, and (2) to analyze the use of Cyber Extension. This study uses a descriptive approach. The object in the context of this research is field agricultural extension. The sample was then determined using a purposive sampling approach, namely the City of Mataram. Determining the number of respondents using a census technique by taking the total population of agricultural field extension agents in the city of Mataram with a total of 36 extension agents, with a total of 16 male extension agents and 20 female extension agents. The type of data collected includes qualitative data and quantitative data. originating from primary and secondary sources. In the implementation of interviews and observations were selected to collect data in the field, with the variables studied in the form of aspects that influence the use of Cyber Extension and the use of Cyber Extension. The data obtained were then analyzed by involving descriptive analysis with a scoring system and multiple linear regression analysis using SPSS software. The results of the study illustrate that: (1) The utilization of the Cyber Extension website from the aspect of utilization as a source of information is in the high category and utilization as a medium for disseminating information is included in the low category; (2) the last education variable is an aspect that has a significant effect on increasing Cyber Extension. While the variables of age, gender, income level, work experience, experience using the internet, ownership of information technology, training opportunities, perceptions, and motivation are not related to reducing the use of Cyber Extension.

Keywords: Extension; Factors; Cyber Extension; Gender; Utilization

Introduction

The Cyber Extension website is a new breakthrough in agriculture from the Indonesian Ministry of Agriculture which has been developed since 2010 (Fangohoi et al., 2018). The existence of Cyber Extension is an effort to develop sustainable extension (Madonna et al., 2022; Sääksjärvi & Samiee, 2011). This development is very dependent on the capacity and ability of agricultural extension workers. This is because extension workers are agents of change in the agricultural sector who act as intermediaries between policy makers (government) and the main actors in the field, namely farmers. Agricultural extension workers are required to have qualified self-competence in order to encourage farmers to carry out their farming business so that farmers will always easily adapt to developments

in agricultural technology (Zainal & Prakoso, 2019; Wijaya et al., 2019).

The development of Cyber Extension utilizes artificial intelligence (AI) or artificial intelligence. AI is a technology that is known to be able to help solve complex problems (Sääksjärvi & Samiee, 2007; Dacipta & Putra, 2022). The use of AI in Cyber Extension includes data grouping and data searching in digital catalogs. This section is an application form of narrow AI which is the result of a simulation of human intelligence and can perform simple tasks. The aim of the Cyber Extension website is to accelerate the delivery of information from extension agents throughout Indonesia to farmers and other general public who are end users (Wijaya et al., 2019).

The use of the Cyber Extension website can be classified into two, first as a source of information for

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both extension agents and farmers, and secondly as a medium for disseminating information by extension agents to other extension workers as well as to farmers and the general public throughout Indonesia (Wijaya et al., 2019). The use of Cyber Extension can be influenced by gender differences which are one of the determining factors influencing decision making (Islam et al., 2017; Winasis et al., 2017). This study aims to analyze the factors that influence the use of the Cyber Extension website by gender-based extension workers.

Method

This study used a descriptive approach with agricultural extension workers as the object of study. The sampling location was determined by purposive sampling, namely Mataram City. Determining the number of respondents used a census approach by taking the entire population of agricultural field extension agents in the city of Mataram, totaling 36 extension agents consisting of 16 male extension agents and 20 female extension workers. The data in this study included qualitative and quantitative data obtained from primary and secondary sources. The techniques used to obtain data are interviews and observation. The variables of this study are the factors that determine the use of Cyber Extension and the utilization of Cyber Extension. The data obtained were then analyzed descriptively using a scoring system and using SPSS software to see the relationship between variables through multiple linear regression analysis.

Result and Discussion

Utilization of Cyber Extension

The use of Cyber Extension by male and female extension workers is divided into two, namely as a source of information and a medium for disseminating information. The discussion on sources of information is divided into; 1) Media used in seeking information; 2) Content that is frequently accessed on the Cyber Extension website; 3) Intensity of utilization of Cyber Extension in a week; 4) The intensity of using Cyber Extension in a day; 5) Information sought through Cyber Extension. Then, the discussion regarding information dissemination media is broken down into: 1) Information dissemination targets; 2) Information dissemination media; 3) Frequency of uploading material through Cyber Extension. The following is a description of the discussion.

a. Resources

1) *The media used in searching for information.*

Figure 1 explains the research findings regarding information centers accessed by agricultural extension workers, which are quite diverse, where apart from the Cyber Extension website, extension agents also use other media such as YouTube, WhatsApp, Google, and agricultural magazines.

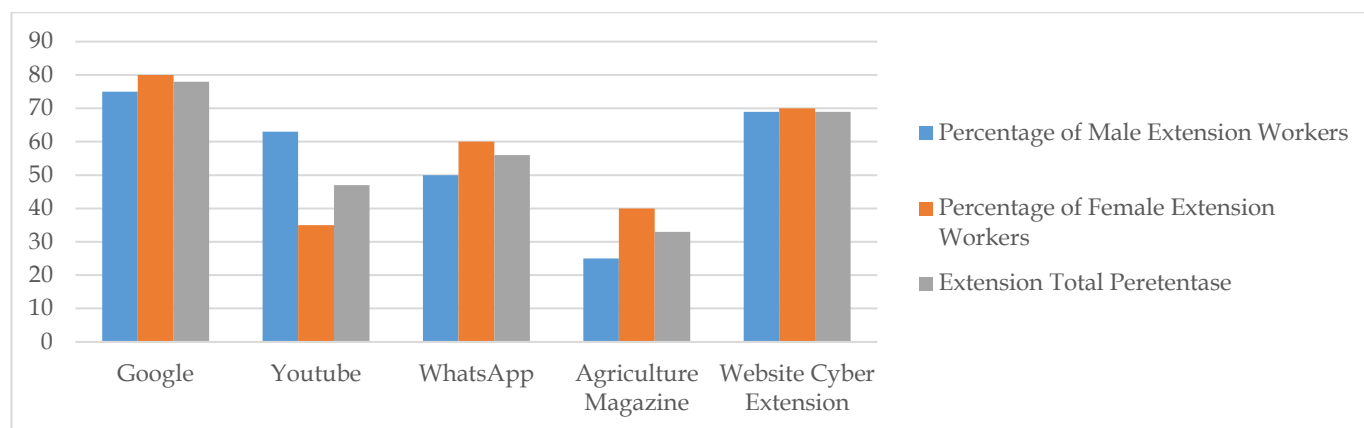


Figure 1. The media used by extension agents to seek information

Most extension agents use Google as a source of information other than the Cyber Extension website. The total percentage comparison for the two is 78% (google) versus 69% (Cyber Extension website). According to Kustanti and Muttaqien in (Winarko, 2021) this is because the Cyber Extension website is directly related to the field of extension where the information presented relates to extension and agricultural technology. The results of Ratnadila's research (2019) show that there are three media that extension workers often use to find information, namely the internet, print media and the

Cyber Extension website. The results of Cahyono's research (2020) show that experience has a significant influence on extension officers' perceptions of using Cyber Extension so that the more experienced an extension agent is, the easier it will be to use Cyber Extension. Based on BPS data for 2019 it shows that the percentage of women who have a higher education diploma is higher than men, which is 9.53% compared to 9.00%. With a higher level of education, it is easier for women to adapt to the use of technology, one of which is the Cyber Extension website.

2) *Content that is frequently accessed on the Cyber Extension website*

The content most frequently accessed by extension workers in seeking information is dominated by three contents. There are 40% male extension agents and the remaining 60% female looking for information from the three contents on the Cyber Extension website. The most accessed content is locality material, technology dissemination material, and extension material. Most extension agents often access the three contents in search of information compared to the other contents.

Figure 2 shows that the content that is often accessed by extension workers on the Cyber Extension website is extension material content with a percentage of 81%. The high level of utilization of extension material content on the Cyber Extension website shows that the website has proven to be very helpful for extension agents in carrying out extension activities. The content of extension materials is often accessed by male extension

workers, while female extension workers access technology dissemination content more often. In seeking information, extension workers are not limited by stereotypes about gender where women must prioritize feminine characteristics and men with masculinity characteristics. However, the extension worker is looking for information that is in accordance with what the farmers need for their guidance. This shows that the characteristics and characteristics are actually not absolute, that women are seen as having a subtle, passive, emotional, and motherly personality, while men are considered to have a strong, active, objective, and tough personality. These characteristics and characteristics can actually be interchanged, for example there are men who do not absolutely have a strong personality which is marked by some who have a gentle personality and vice versa there are women who are strong, active and rational (Sulistyowati, 2020).

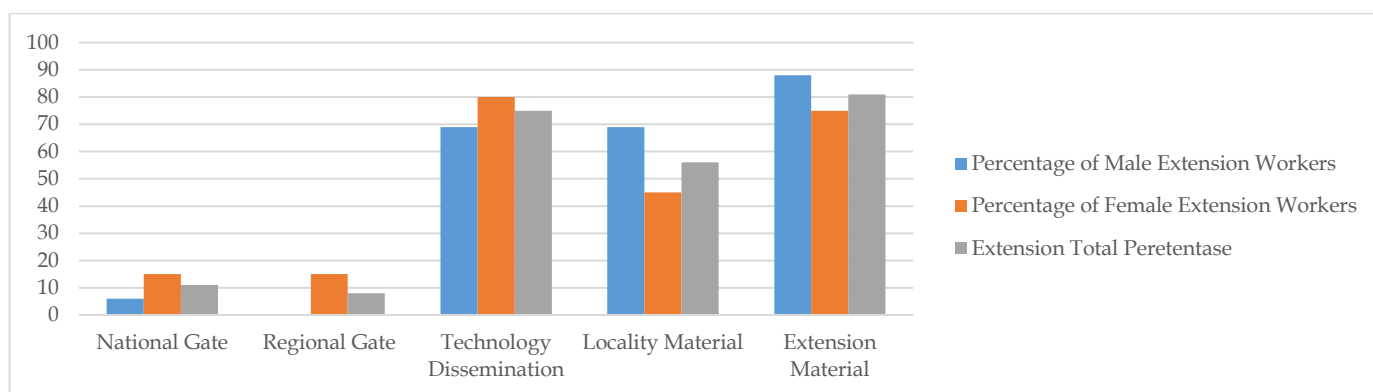


Figure 2. Utilization of Cyber Extension website content by extension agents.

3) *The intensity of cyber extension utilization in a week*

The intensity of extension agents in utilizing the Cyber Extension website is fairly low. The intensity of using the Cyber Extension website by male extension workers was 42.88% and the remaining 57.12% were women who used the Cyber Extension website less than

twice a week. Extension agents more often share information directly with other extension agents than seeking information through the Cyber Extension website. Most extension agents do not make use of the Cyber Extension website.

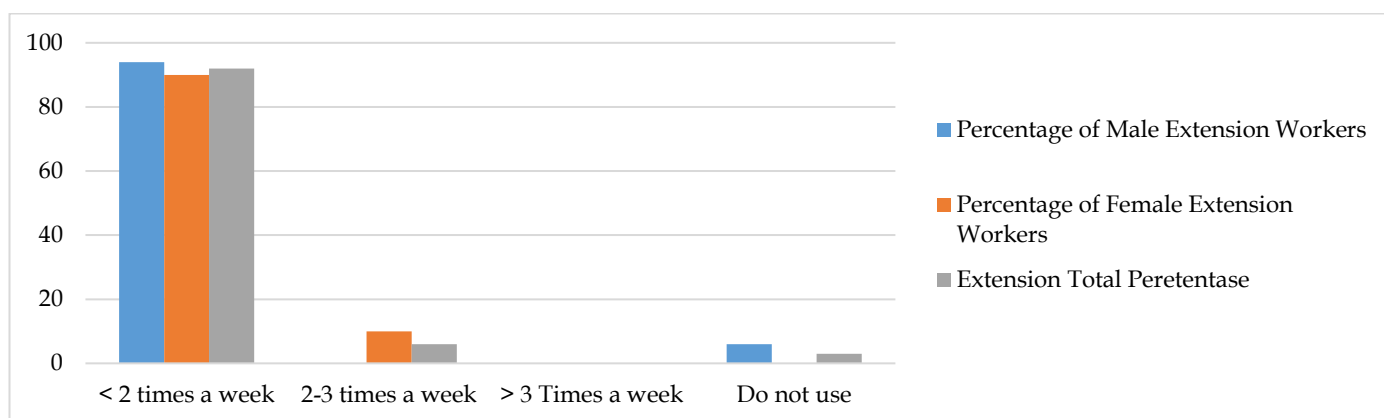


Figure 3. Utilization of Cyber Extension website content by extension agents

The Cyber Extension website is still lagging behind other media which are used as a source of information

for extension workers in finding materials for extension activities such as Google and YouTube. Based on the

graph in Figure 3, it can be seen that the intensity of extension agents accessing Cyber Extension in a week is in the very low category, namely accessing the Cyber Extension website <2 times a week. Almost all male extension workers were in the low category and some even did not use the Cyber Extension website because from the start they did not know that the Cyber Extension website existed and it was considered quite complicated to use. For female extension workers, it is the opposite with male extension workers where there are two extension workers accessing the website two to three times a week with the opinion that the Cyber Extension website is very practical because in one place a lot of agricultural information is provided by extension workers. The research results are not in line with Widayati (2020), that the general view states that men are considered more competent in the work environment, more rational, independent, and have superior

leadership skills. On the other hand, women are often seen as more passive, soft-hearted, sharper focused, more sensitive, and perhaps seen as less responsible. The results of the study show that female extension workers are more active in utilizing the Cyber Extension website which is one of the government's innovations in the world of agricultural extension. by Widayati (2020).

4) *The intensity of the use of cyber extensions in a day.*

The intensity of use of the Cyber Extension website by extension agents in a day can be seen that there are 44% of extension workers who are male and the remaining 56% are women using or accessing the Cyber Extension website for less than two hours a day. This proves that Cyber Extension is still not optimal to be used as a source of information for extension workers so that extension workers still prefer to seek information through other media. For more details, see Figure 4.

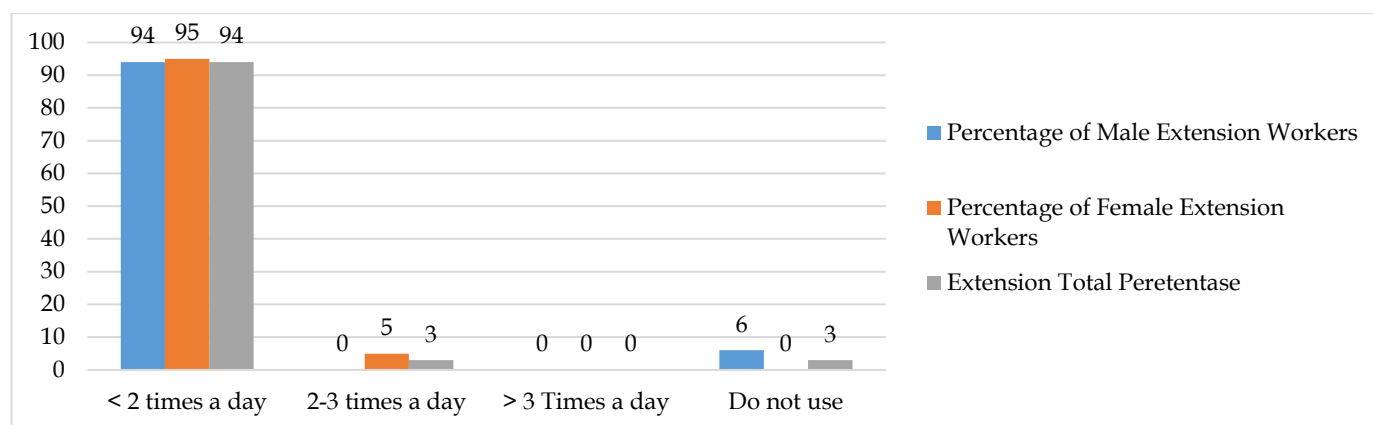


Figure 4. Utilization of Cyber Extension website content by extension agents

The intensity of using the Cyber Extension website seems to be very low where most of the extension agents, both male and female, access the Cyber Extension website for no more than 2 hours a day. This proves that apart from being considered complicated in its use, the Cyber Extension website still has many drawbacks as well as search engines like Google and YouTube as well as deficiencies in terms of material where most extension agents do not find what they are looking for on the Cyber Extension website so they switch to other platforms. The lack of popularity of the Cyber Extension website as an agricultural information search platform is unfortunate considering that the sources of information contained on the website are official information sources prepared by the government for extension agents or farmers so that they can be accessed and quality guaranteed. The Cyber Extension website is still less popular than other search engines such as Google, which has long been used by the

general public, so that the Cyber Extension website can win the hearts of extension workers (Wijaya, 2019).

5) *Information sought through Cyber Extension.*

Various types of information accessed by extension agents through Cyber Extension were 61% of extension workers who were male and the remaining 39% female looking for more than four, namely information on production facilities, cultivation, post-harvest, agricultural news, and agricultural technology. And the remaining one extension agent does not use the Cyber Extension website at all on the grounds that the Cyber Extension website is still far behind other platforms such as Google and YouTube which display more information with a search system which is also easier to use. For details, it can be seen in Figure 5.

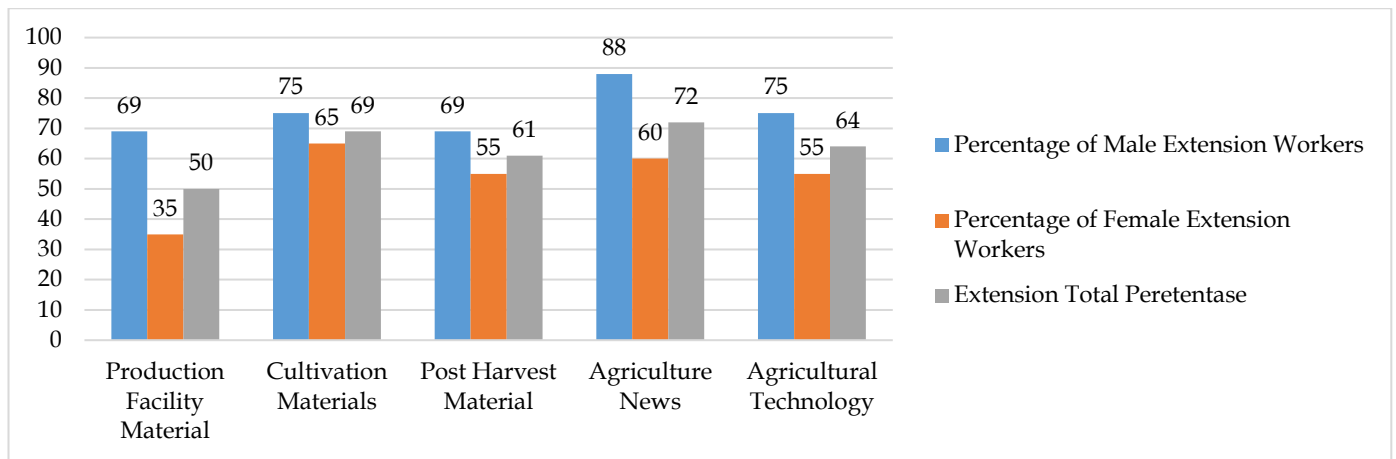


Figure 5. Information sought on the Cyber Extension website

Male extension workers seek more information related to agricultural news with a percentage of 88%, while female extension agents seek more information related to cultivation materials with a percentage of 65%. Extension agents seek information in accordance with the integrity of the field, for example, female extension workers who provide counseling about the use of yards for plant cultivation will seek information about cultivation materials. Male extension workers spend more time sharing information about current agricultural conditions with their mentor farmers so that the information sought is about agricultural news. The difference in this search is not differentiated based on gender, but based on the need for information in accordance with the field of work carried out by the farmer under his guidance.

b. Information Dissemination Media.

Utilization of the Cyber Extension website aside from being a source of information for extension

workers, this Cyber Extension can also be used as a medium in disseminating information. Information obtained from the Cyber Extension website and compiled by the extension workers is disseminated through other media such as blogs, YouTube, or through the instructor's WhatsApp group. The following aspects exist in the dissemination of information can be seen in Figure 6.

1) Target Information Dissemination

Utilization of Cyber Extension as a medium for disseminating information is known that as many as five male extension agents and 14 female extension agents are in the moderate classification. This means that the extension agents provide the information obtained to three categories, namely the information obtained is stored or used by themselves, distributed to farmers, and shared among extension workers.

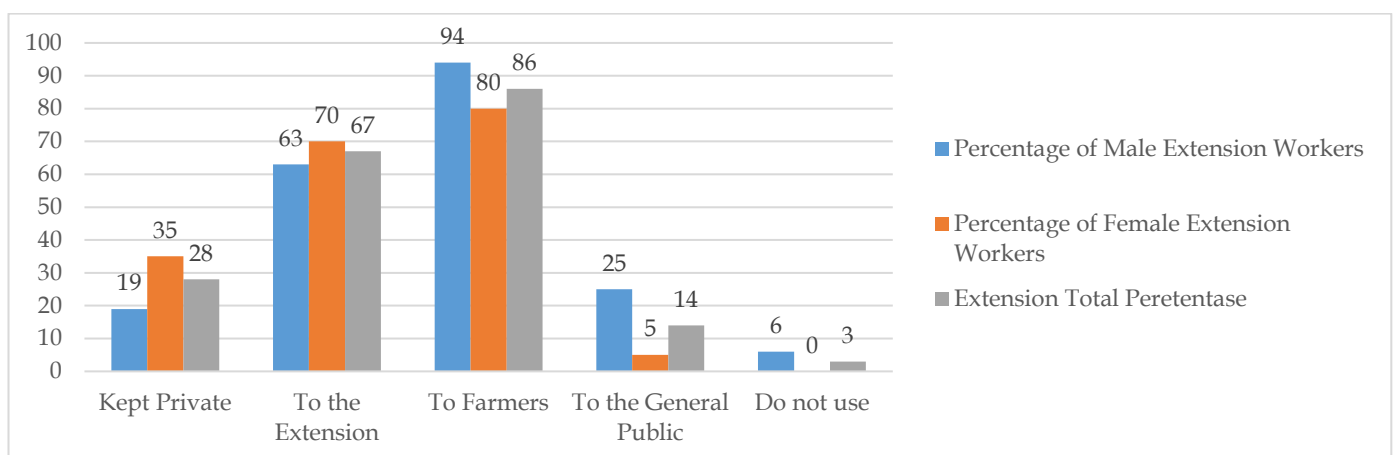


Figure 7. Targets for disseminating information obtained from Cyber Extension

Most of the agricultural extension agents disseminate information obtained through the Cyber Extension website to farmers with a percentage of 86%.

Extension officers said that the information obtained through the Cyber Extension website could increase the capacity of extension agents and could assist extension

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workers in solving problems being faced by the farmers under their guidance. This is supported by the results of research that male extension workers disseminate more information from the Cyber Extension website to farmers in order to help outreach activities to farmers and solve farmers' problems in the field.

2) *Information dissemination media obtained from the Cyber Extension web.*

The media commonly used by farmers when disseminating information are WhatsApp and Facebook because most extension agents use these two media to communicate on a daily basis.

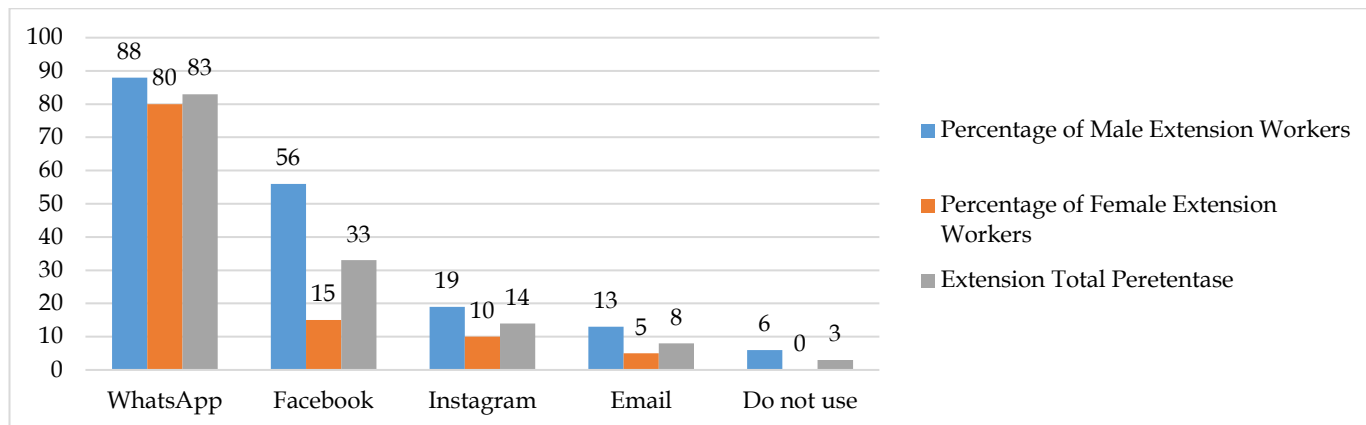


Figure 8. Information dissemination media obtained from the Cyber Extension website.

Many extension workers provide knowledge obtained through the Cyber Extension website through the WhatsApp application. The WhatsApp application is often used by extension workers for daily communication activities on the grounds that providing information via WhatsApp makes it very easy for extension workers to support extension activities. The percentage of information shared via WhatsApp did not differ much from male and female extension workers, namely 88% to 80%. The media used by male extension agents is slightly more diverse than female extension agents where female extension workers are more focused on using WhatsApp in disseminating information obtained through the Cyber Extension website. Based on Andjani's research (2018) that the use of WhatsApp can increase employee work effectiveness and there is a strong relationship between the use of social media, especially WhatsApp, on employee performance.

3) *Frequency of uploading material through Cyber Extension.*

The registered extension agents are still consistently uploading material on the Cyber Extension website until 2022, there will only be one female extension worker, this is due to the limited facilities owned by each BPP and encouraged by the program being implemented at BPP, especially at BPP Sandubaya.

Factors affecting the use of Cyber Extension

The results of multiple linear regression analysis are used to estimate and evaluate how much contribution is made by variable X as a whole to variable Y. Variables X include gender, age, last education, income, work experience, experience using the internet, ownership of mass media, training, perception and motivation while the variable Y is Utilization of Cyber Extension. The following are the results of the multiple linear regression test obtained.

The results of the partial test are to indicate the effect that the variable X partially (each variable X) has on the variable Y. Meanwhile, the regression equation is used to analyze the data and understand whether the relationship between variable X and variable Y has increased or decreased. In this study, you can see the details of the partial test results and the regression equation in Table 1.

Referring to Table 1 data to find out the variables that have a real influence on the use of Cyber Extension seen by comparing the significant value of each variable obtained from the results of data analysis with a significant level value of 5% (0.05). If the significant value of the variable obtained is higher than the significant level value (0.05) it can be said that the variable has no significant effect on the use of Cyber Extension. Meanwhile, if the significant value of the variable obtained is smaller or less than the significant level value (0.05) then it can be said that this variable has a real influence on the use of Cyber Extension.

Table 1. Partial test results and regression equations

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig
	B	Std. Error	Beta		
(Constant)	22.776	9.157		2.487	0.020
Gender (X1)	-1.911	1.361	-0.358	-1.404	0.173
Age (X2)	-1.240	0.674	-0.338	-1.839	0.078
Last Education (X3)	1.541	0.706	0.584	2.181	0.039*
Income (X4)	-2.183	1.226	-0.441	-1.780	0.087
Work Experience (X5)	0.291	1.397	0.046	0.208	0.837
Experience Using the Internet (X6)	-0.067	1.542	-0.011	-0.043	0.966
Mass Media Ownership (X7)	-1.504	1.674	-0.223	-0.899	0.377
Training (X8)	-1.078	0.650	-0.401	-1.658	0.110
Perception (X9)	-0.051	0.488	-0.020	-0.106	0.917
Motivation (x10)	-0.068	0.653	-0.022	-0.104	0.918

Source: Primary Data is Processed (2023).

The results showed that there was no difference in the use of Cyber Extension by both male and female extension workers. Male and female extension workers can use the Cyber Extension website in the same way. Male and female extension workers have the same opportunity to use the Cyber Extension website. Extension officers also have the same access in accessing the content contained on the website and also have the same rights how long extension workers use the website and have the same rights to the information that has been obtained through the Cyber Extension website which will be distributed. The results of the study showed that there was no difference between young adult, middle adult and old adult extension workers in the amount of time used to utilize Cyber Extension. Extension agents for young adults, middle adults and old adults have information needs that are not much different in utilizing the Cyber Extension website, extension workers seek information according to what is happening in the field and what is currently needed by farmers. Farmer's age can affect skills in understanding a technology. Young instructors usually tend to have a high curiosity compared to adult instructors where young extension workers will absorb new innovations more quickly, but at this age they will be less quick to make decisions (Hamdalah, 2020).

Extension officers in Mataram City have various formal education levels, where the lowest level of education is Senior High School (SMA), while those with the highest level of education are Bachelor Degree graduates (S2). According to Tamba (2022) extension workers with a higher level of formal education have a higher level of adjustment to new innovations in agriculture. The knowledge and skills possessed are generally obtained through personal learning experiences with other extension agents or through interactions with close family members. This allows them to have abilities that are not too far behind compared to extension workers who have a higher level of education.

It is known that there is no difference in the level of use of Cyber Extension between extension workers with low, medium and high incomes. Extension agents, both those with low and high incomes, have the ability to access Cyber Extension through their internet connection at home or through the use of personal quotas. Even though most extension agents have sufficient income, not all of them always use Cyber Extension. This is due to the fact that extension workers obtain information not only through Cyber Extension, but also through other print and electronic media such as magazines, the Google search engine and the YouTube platform. According to Elian in Purwatiningsih (2018) states that extension agents will incur expenses from their income to purchase quotas in order to be able to access information on the internet because the agency does not yet have a wifi network to support the search for agricultural information they need. So that whatever the extension agent's income is, it doesn't have a significant effect on the use of Cyber Extension.

Based on this research, it was found that the work experience of extension workers in the City of Mataram has provided support for their ability to master extension materials and operate various agricultural information technology media, including Cyber Extension. Hubeis (2007) states that the work experience of extension workers that has spanned several decades also contributes significantly to their quality and ability to master extension materials and operate various agricultural information technology media. So based on the work experience of agricultural extension workers in the city of Mataram, extension workers can access Cyber Extension media.

Most of the extension workers in the city of Mataram are quite experienced in using the internet because most of the work of extension workers is also internet-based. This is the reason for the absence of differences in the use of Cyber Extension in the experience variable of using the internet because most of the instructors are used to using the internet.

Extension agents who own one or more than three media do not differ in the intensity of accessing the Cyber Extension website. So that in the field it was found that the ownership of extension media technology in the City of Mataram did not affect extension workers in accessing information through Cyber Extension.

The results of the study show that whether or not extension workers have participated in training or outreach does not change the intensity of utilization of the Cyber Extension website. The results of research in the extension field stated that there had never been any specific training that discussed Cyber Extension, but it had been socialized at extension activities held at the Provincial level and the extension officers who attended these activities were extension agents from each agency. Mataram City agricultural extension workers who did not have the opportunity to attend training or outreach stated that they received Cyber Extension information through non-formal discussions with fellow extension workers. As well as from extension agents who have participated in socialization who then immediately share the information obtained with fellow extension workers.

Extension workers consider that using Cyber Extension is more cost-effective than print media as a source of agricultural news. In addition, they also acknowledge that Cyber Extension can expand the connection between farmers and extension workers. Even though most extension agents see the benefits of Cyber Extension, the intensity of its use is still low. This is due to the impracticality of the Cyber Extension website when searching for information, so extension agents still prefer to use other platforms to find information.

Most of the extension officers in Mataram City have high motivation in utilizing Cyber Extension, the intensity of using extension agents is still relatively low because extension agents still feel that other platforms are still more effective and efficient in accessing information. On the Cyber Extension website, extension workers are required to search manually to get the information they are looking for. This of course makes the website increasingly left behind by other platforms such as Google and YouTube, which provide more efficient search engines. Extension agents benefit from accessing the latest information and extension materials provided, but to be able to upload information, extension agents must go through a selection stage through the Cyber Extension admin in the District so that the information and experience possessed by extension agents is more often shared through the extension's blog or YouTube channel.

Conclusion

Based on the results of the study it was concluded that: (1) Latest education is a variable that has a significant influence in increasing the utilization of

Cyber Extension. Meanwhile, factors such as age, gender, income level, work experience, experience using the internet, information technology ownership, training opportunities, perceptions, and motivation have no effect on reducing the use of Cyber Extension; (2) Utilization of the Cyber Extension website from the aspect of utilization as a source of information is in the high category and utilization as a medium for disseminating information is in the low category.

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