AGRISOCIONOMICS
Jurnal Sosial Ekonomi dan Kebijakan Pertanian
ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

A PERSPECTIVE OF TECHNOLOGY ACCEPTANCE MODEL ON THE AGRICULTURE EXTENSION STAFFS USING CYBER EXTENSION

Dwiningtyas Padmaningrum[1*], La Mani[2], Triya Ayu Retnaningtyas[1], Tri Sujatmiko[1], Subejo[3], and Emi Widiyanti[1]

[1]Department of Agricultural Extension and Communication, Faculty of Agriculture, Universitas Sebelas Maret, Surakarta, Central Java, Indonesia
[2]Department of Communication, Universitas Bina Nusantara, Jakarta, Indonesia
[3]Department of Agricultural Extension and Communication, Faculty of Agriculture, Universitas Gadjah Mada, Yogyakarta, Indonesia

*Correspondence Email: dwiningtyas_p@staff.uns.ac.id

Submitted 09 July 2024; Approved 05 August 2024

ABSTRACT

Cyber extension web facilitates agriculture extension staffs to leverage this media communication system to strengthen their capability and capacity for improving extension services. Through the Technology Acceptance Model approach, this study examines the use of cyber extension and the affect of self-efficacy, perceived usefulness, perceived ease of use, subjective norms, and attitude toward usage on cyber extension usage by agriculture extension staffs in Central Java Province. This study was conducted from April to May 2023 using a quantitative approach. The population includes agriculture extension staffs within the scope of the Central Java Provincial Agriculture Office. Sampling was done using convenience sampling, with 377 agriculture extension staffs spreading across 28 districts and five cities. Data were analyzed using Partial Least Squares - Structural Equation Modeling (PLS-SEM). The study showed that use of the cyber extension web can be categorized as low-level; meanwhile, self-efficacy, perceived ease of use, subjective norms, and attitudes towards positive use were relatively high. Cyber extension usage was directly affected by perceived ease of use, subjective norms, and attitude toward usage. As a recommendation, interventions are needed to improve and continue to update content variations. It is necessary to develop and optimize the use of cyber extension at the provincial and or district level.

Keywords: *adoption, agricultural, cyber extension, digital technology*

BACKGROUND

The rising academic popularity of extension services demonstrates the importance of agriculture and the need to produce enough food sustainably and challenges the boundaries of previously ineffective, gender-biased systems from a farmer's perspective (Cook et al., 2021). Although agriculture has been considered as important and strategic sector, however the agricultural sector faces many challenges, including sustainability, efficiency, sector image as income support, and multifunctional utilization of agriculture (Leeuwis, 2004). In addition, the sector's transition to commercialization and modernization of agriculture requires a gradual transformation of the integrated farming systems into the specialization of crop, livestock, poultry, and aquaculture products (Pingali & Rosegrant, 1995). In this process, mastery of various technologies is required. However, farmers still have weaknesses in accessing and mastering modern technologies to meet

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

market demands, including weak access to information and knowledge needed in this agricultural transformation process. Thus, the involvement of extension services is greatly needed in the form of technical and management assistance to improve agricultural performance and make it more productive, efficient, and acceptable to the market.

In Indonesia, the agricultural sector has significantly contributed to job creation, food security, and rural development, accounting for 13.70% of the Gross Domestic Product (GDP) in 2020 (Wibowo, 2021). In Indonesia's agriculture context, market access is often one of the weak points in agricultural development. When extension services focus solely on increasing productivity but not providing information and market access, it becomes an obstacle to increasing farmers' income. Agricultural innovation and information play a crucial role in modern agricultural development, and agricultural extension is closely related to extension activities (Indriyani et al., 2024), one of the strategies for sharing information and providing consultancy related to agricultural businesses (Swanson et al., 1977). The extension intensity was a significant factor since the activities are more readily accessed to the farmer (Rusliyadi et al., 2023). In carrying out its role in serving farmers, extension services cannot operate in isolation but must be integrated and collaborate with other elements such as research systems, training programs, and supporting elements (e.g., input provision and markets). Information and communication technology (ICT)-based extension can bridge these elements.

The effort to improve extension services and access is, among others, to use digitalization, namely cyber extension, broadening access to agricultural information for farmers. With increased internet connectivity and accessibility, farmers can now access the latest sources of information on more effective and sustainable agricultural practices. FAO (2023) stated that mobile technology has significantly improved small farmers' access to information, inputs, markets, and productivity. The presence of social media has also been transformative in connecting urban rooftop vegetable growers, highlighting communication behaviors that support outreach, collaboration, knowledge sharing, and popularity (Kabir et al., 2023).

Cyber extension is a new communication medium for agricultural innovations, facilitating information dissemination, building extension networks, and providing a platform for information sharing (Wijaya & Sarwoprasodjo, 2015). Cyber-extension promotes more effective agricultural extension and provides farmers with affordable, relevant, and reliable agricultural information (Adeyongo et al., 2022). This digital phenomenon has transformed agricultural research, connecting stakeholders, educators, farmers, and researchers, encouraging collaboration and complementarity (Sumardjo et al., 2010; Gitosaputro & Listiana, 2018). Studies conducted by Abdullah (2015) and Yunus et al., (2023) revealed positive perceptions and significant impacts of cyber extension on fishing and farming communities. Cyber extension also acts as an effective communication tool, offering continuous information on funding, breeding, production processes, and yields, becoming a source of information that supports the daily activities of farmers, especially millennial farmers.

On the one hand, 73,695 government agriculture extension staffs are considered insufficient to serve 33.4 million Indonesians who work in the agricultural sector (Gultom et al., 2021). Thus, implementing cyber extension in Indonesia can increase access to information, encourage sustainable practices, and strengthen collaboration in the agricultural sector while solving the limited number of agricultural extension staffs. One of the cyber extension platforms developed by the Ministry of Agriculture since 2010 is expected to bridge the dissemination of technology and access to

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

information quickly and cheaply. However, implementing cyber extensions in Indonesia presents both opportunities and challenges, as the utilization of cyber extensions is still relatively low (Adriyani, 2019). Indonesia's archipelagic nature with diverse geographical and cultural contexts, uneven technological infrastructure, varying levels of digital literacy among agriculture extension staffs and farmers, and cultural preferences for traditional communication methods are unique challenges (Guntoro et al., 2022a). Despite the widespread use of mobile phones, addressing these challenges is essential to ensure the effectiveness of online extension services. Rizkiansyah et al., (2023) provide an overview of the current state of cyber extension in Indonesia, including the limited number of social media contents discussing agricultural production strategies during a pandemic.

One of the cyber extension platforms that can be utilized to improve agricultural extension services in Indonesia is the Cyber Extension web developed by the Ministry of Agriculture. However, the use of this cyber extension web is still not well-functioned and is less developed. A study by Hayati (2022) shows that the use of the Cyber Extension web by both female and male extension workers in West Nusa Tenggara is still very low (no more than 2 hours a day), as is the frequency of use per week (twice a week). Some of the obstacles to the utilization of cyber extension include (1) lack of skills related to digitization and gadgets, where some extension workers feel insecure; (2) lack of operational cost support for the operations of the Agricultural Extension Center; and (3) the proliferation of digital applications that add administrative tasks, impacting the performance of extension workers (Partini et al., 2024). Additionally, the uneven distribution of internet connections to remote areas makes it difficult for counselors to access cyber extension (Guntoro et al., 2022b). A lack of understanding of cyber extension as a source of information (A. Abdullah et al., 2019) also hinders its utilization.

Beyond the aspect of extension workers, the use of cyber extension among farmers is also not encouraging and tends to be low. The farmer demographic in Indonesia, still dominated by relatively older, conventional farmers, is an obstacle to expanding cyber extension in this sector. According to the 2023 Agricultural Census Results, millennial farmers constitute only around 21.93% of Indonesia's total 28.19 million farmers (Annur, 2023). Undeniably, digital technology users are more prevalent among younger farmers (millennial farmers) across various platforms. For example, Central Java Province, the third-largest rice producer nationally in 2023 (Badan Pusat Statistik, 2024), also faces widespread cyber extension use challenges. With millennial farmers making up around 0.10% of the total population of millennial farmers in Indonesia, the opportunity for using cyber extension in extension services remains low, considering that extension services cater primarily to older farmers. Millennial farmers are generally more technologically literate and more independent in searching for information.

Regarding the use of cyber extension, as with other technologies, several factors, such as its usefulness in supporting extension work and tasks and its ease of use, will determine the extent of its adoption. The higher the perceived benefits and ease of use of cyber extension, the greater the likelihood of its utilization. In this context, the Technology Acceptance Model can be applied to understand how agricultural extension workers use cyber extension. The perceived usefulness of a technology is, according to the Technology Acceptance Model, influenced by its perceived ease of use, meaning that the more easily the technology is used, the higher its perceived usefulness (Venkatesh, 2000). Dixit & Prakash (2018) explain that technology use behavior is influenced by perceived behavioral consequences and attitudes toward technology. A model rooted in the Theory

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

of Reasoned Action (TRA) by Fishbein and Ajzen (Pinho & Soares, 2011; Dixit & Prakash, 2018) seeks to describe why individuals engage in intentional behavior. The Theory of Planned Behavior argues that perceived ease of use and perceived usefulness can predict attitudes toward technology, in turn predicting technology use (Lederer et al., 2000). Initially, this model suggests that two external variables - perceived usefulness and perceived ease of use - are the main factors in computer acceptance behavior (Teo et al., 1999). The Technology Acceptance Model explains that users' motivation to adopt new technology can be explained through three constructs: perceived ease of use (PEU), perceived usefulness (PU), and attitude to use (AU) of a system (Davis, 1989). Perceived ease of use refers to the extent to which potential technology system users feel that it does not require much effort. Perceived usefulness is the subjective belief that using a system will improve performance in an organizational context. If a system is perceived as highly useful, there will be a positive relationship with technology use.

In relation to technology adoption, TAM is a solid and substantial basic model to understand technology acceptance and is designed to predict the adoption of new technologies among users and identify information system design problems before they are used commonly (Kamal et al., 2020). The empirical evidence of TAM confirms its reliability and simplicity in predicting technology acceptance and adoption behavior (Dahi & Ezziane, 2015). TAM also plays a key role in predicting user acceptance of technological innovations (Nugraheni et al., 2020). The Technology Acceptance Model provides a solid foundation for understanding the factors influencing technology acceptance and confirms its relevance in predicting technology adoption behavior in various contexts, including the application of cyber extension in agriculture (Kamal et al., 2020; Dahi & Ezziane, 2015; Shachak et al., 2019). If a system is believed to be highly useful, there will be a positive relationship with technology adoption (Teo et al., 1999; Lederer et al., 2000).

In line with other technologies, the use of cyber extensions is thought to be influenced by the complexity of using this technology. The more complicated the use of a cyber extension, the lower the chance of its use, and vice versa. Thus, extension workers who have high self-efficacy tend to use cyber extensions more. Apart from that, attitudes towards the benefits of cyber extensions and social environmental expectations regarding the use of cyber extensions will also influence the use of this system. In addition to the ease of use and the usefulness of technology, the individual aspect of the user, namely self-efficacy, determines technology use (Howard et al., 2010; Aktag, 2015). Referring to Bandura (1977) and (Taylor & Todd, 1955), self-efficacy is a concept that can explain a wide range of human behavior. Self-efficacy is a belief that one can perform specific behaviors (Bandura, 1989; Ajzen, 1991). Higher self-efficacy will lead to high behavioral intention and increased usage, especially when using information technology (Liao et al., 2018). Subjective norms are an external aspect determining individuals' use of technology. Based on the Theory of Planned Behavior, subjective norms can predict usage intention, affecting the actual behavior of using technology (Egmond & Bruel, 2007). Subjective norms reflect the perceived social pressure to perform a specific behavior (Ramayah & Jantan, 2004; Sun et al., 2022).

Concerning the efforts to maximize the use of cyber extension among agriculture extension staffs in Central Java Province, a study on the influence of the technological aspect of cyber extension consisting of perceived ease of use, perceived usefulness, and attitude to use as well as aspect of extension workers including self-efficacy and subjective norms will help explain the behavior of cyber extension use among extension staffs and the efforts needing to take to maximize its use. The

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

use of cyber extension is influenced by several factors related to the extension agents themselves. Perceived usefulness is the view of agricultural extension workers regarding the extent to which cyber extension use can provide concrete benefits, such as expanding or improving abilities, performance, and productivity, as well as enhancing time efficiency and the quality of work results. Perceived ease of use refers to agricultural extension workers' perceptions of how easy cyber extension is to operate, considering aspects such as complexity of use, learning required, and available support. Subjective norms reflect agricultural extension workers' views on the extent to which others (fellow extension workers, farmers, or the agricultural community) expect or encourage them to use cyber extension. Self-efficacy represents the extension workers' confidence in their ability to master and use cyber extension. Understanding these factors will help guide the development of a cyber extension to improve extension worker performance and increase its usage. This study aims to identify the cyber extension use and the affects of self-efficacy, perceived usefulness, perceived ease of use, subjective norms, and attitude to use on the cyber extension web use through the theoretical framework of TAM (Figure 1).

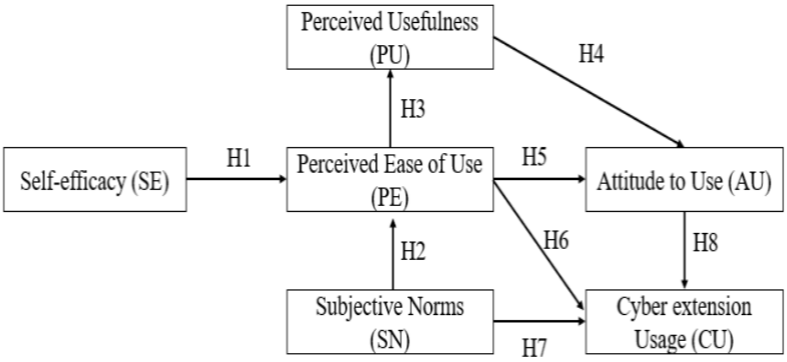

Figure 1. The Conceptual Framework for Factors Affecting Cyber Extension Usage

Based on the conceptual framework, this study proposes the following hypotheses that are inherently postulated in TAM models:

H1: Subjective norm (SE) has a significant positive affects on the perceived ease of use (PE) of cyber extension

H2: Subjective norm (SE) has a significant positive affect on the perceived ease of use (PE) of cyber extension

H3: Perceived ease of use (PE) has a significant positive affect on the perceived usefulness (PU) of cyber extension

H4: Perceived usefulness (PU) has a significant positive affect on the attitude to use (AU) cyber extension

H5: Perceived ease of use (PE) has a significant positive affect on the attitude to use (AU) cyber extension

H6: Perceived ease of use (PE) has a significant positive affect on cyber extension usage (CU)

H7: Subjective norms (SN) have a significant positive affect on cyber extension usage (CU)

H8: Attitude to use (AU) has a significant positive affect on cyber extension usage (CU)

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

RESEARCH METHODS

This research used a quantitative approach, using online survey technique. The research population was agriculture extension staffs employed by the Agriculture and Plantation Office of Central Java Province. Sampling was done through a convenience sampling technique, considering the size of the population and the wide area covered. Taherdoost (2016) explained that convenience sampling is a practical approach to sampling a large population with unknown individuals. This method was chosen because the population of extension workers is spread throughout the province of Central Java which consist of 35 regencies, and there are no specific criteria for determining respondents other than their willingness to participate by filling out the questionnaire which has been sent. The population of extension workers in Centra Java Province can be regarded as homogeneous so that each extension staff has an equal opportunity to be selected as the respondents of the study. As an official government platform, because the cyber extension web is what extension workers should ideally use, all extension workers in the Central Java region can be considered equally as potential respondents.

This study targeted all extension workers in the regions of Central Java Province, aiming to have at least ten extension workers respond from each of the 29 districts and 6 cities. Questionnaires were created using Google Forms and distributed using the Central Java agricultural extensionist's WhatsApp group. From the 1.661 agriculture extension staffs under the Agriculture and Plantation Office of Central Java Province (Kementerian Pertanian, 2023) a total of 377 agriculture extension staffs from 28 districts and five cities responded, and their answer was recorded. This study examined six variables by applying the theoretical framework based on the Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB): self-efficacy, perceived ease of use, perceived usefulness, subjective norms, attitude to use, and cyber extension usage. Data collection for each variable was carried out by utilizing and modifying instruments developed by Venkatesh (2000), Davis (1989), Lederer et al. (2000), and Teo et al., (1999). The research hypotheses were tested using structural equation modeling (SEM) with WarpPLS 8.0 to determine the strengths and weaknesses of the direct and indirect effects of all research variables (Kock, 2022).

Instrument Validity

Validity explains the feasibility of measurement instruments (questionnaires) in testing research variables. The research instrument is considered valid if the p-value is less than 0.05 (Abebe et al., 2021; Aertsens et al., 2009; Bamberg et al., 2007). The validity test conducted on a sample of 30 extension workers found that the instrument was valid, as illustrated in Table 1.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

Tabel 1. Combined Loadings and Cross-loadings

	SE	PE	PU	SN	AU	CU	Type (a)	SE	P value
se1	(0.632)	-0.164	1.936	0.568	-0.916	-1.368	Reflective	0.047	<0.001
se2	(0.748)	0.192	-0.926	-0.299	0.612	0.497	Reflective	0.046	<0.001
se3	(0.727)	-0.015	1.106	0.382	-0.751	-0.744	Reflective	0.047	<0.001
se4	(0.718)	0.078	-1.507	-0.523	1.009	0.978	Reflective	0.047	<0.001
se5	(0.720)	-0.117	-0.355	-0.054	-0.078	0.462	Reflective	0.047	<0.001
sn1	-0.040	(0.537)	0.634	-0.007	-0.461	-0.401	Reflective	0.048	<0.001
sn2	-0.069	(0.658)	0.946	0.065	-0.485	-0.663	Reflective	0.047	<0.001
sn3	-0.044	(0.855)	0.728	-0.015	-0.310	-0.485	Reflective	0.046	<0.001
sn4	0.042	(0.862)	-0.638	-0.313	0.393	0.424	Reflective	0.046	<0.001
pe1	0.057	(0.820)	-1.224	-0.658	0.781	0.874	Reflective	0.046	<0.001
pe2	0.033	(0.672)	-0.048	1.164	-0.219	-0.024	Reflective	0.047	<0.001
pe3	-0.162	-0.290	(0.782)	-0.284	1.089	0.118	Reflective	0.046	<0.001
pe4	0.149	0.267	(0.666)	-0.875	1.445	-0.108	Reflective	0.047	<0.001
pe5	0.030	0.016	(0.727)	0.159	-0.094	0.880	Reflective	0.047	<0.001
Pe6	-0.050	0.119	(0.759)	0.087	-0.226	0.234	Reflective	0.046	<0.001
pu1	-0.056	-0.143	(0.720)	-0.230	0.098	0.982	Reflective	0.047	<0.001
pu2	0.068	0.002	(0.816)	-0.020	0.205	1.053	Reflective	0.046	<0.001
pu3	0.046	0.078	(0.609)	1.323	-2.975	-3.946	Reflective	0.047	<0.001
pu4	0.033	0.058	-0.048	(0.987)	-0.219	-0.024	Reflective	0.045	<0.001
pu5	-0.162	-0.290	0.237	(0.596)	1.089	0.118	Reflective	0.047	<0.001
pu6	0.033	0.058	-0.048	(0.987)	-0.219	-0.024	Reflective	0.045	<0.001
pu8	0.033	0.058	-0.048	(0.987)	-0.219	-0.024	Reflective	0.045	<0.001
cu1	-0.162	-0.290	0.237	-0.284	(0.830)	0.118	Reflective	0.046	<0.001
cu2	0.149	0.267	-0.218	-0.875	(0.736)	-0.108	Reflective	0.046	<0.001
cu3	0.033	0.058	-0.048	1.164	(0.756)	-0.024	Reflective	0.046	<0.001
au1	0.030	0.016	-0.175	0.159	-0.094	(0.773)	Reflective	0.046	<0.001
au2	-0.050	0.119	0.607	0.087	-0.226	(0.780)	Reflective	0.046	<0.001
au3	-0.056	-0.143	0.003	-0.230	0.098	(0.752)	Reflective	0.046	<0.001
au4	0.068	0.002	-0.399	-0.020	0.205	(0.853)	Reflective	0.046	<0.001

Source: Output WarpLS 8.0

Notes:

1. Loadings are unrotated and cross-loadings are oblique-rotated. SEs and P values are for loadings. P values < 0.05 are desirable for reflective indicators (Output WarpPLS 8.0).
2. SE (Self Efficacy), PE (Perceived Ease of Use), PU (Perceived Usefulness), SN (Subjective Norms), AU (Attitude to Use), CU (Cyber Extension Usage)

Table 1 shows the output of WarpPLS 8.0. All measurement instruments (questionnaires) are considered valid because all question items have a loading value greater than 0.50 with significance value of 0.001 or smaller than 0.05 (Kock, 2022).

RESULT AND DISCUSSION

Respondents' Profile

Employment as an agriculture extension staff which have various tasks for field extension services is sometimes perceived as a physical job so only very few women choose it. In reality, an agriculture extensionist does not necessarily require greater physical capacity. Instead, it focuses mainly on providing guidance and assistance to farmers, providing advice, supporting decision-

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

making, developing training programs, coordinating meetings or workshops, and providing information on agricultural cultivation. Organization for Economic Co-operation and Development (OECD) (2021) also revealed that women have great potential to be agriculture extension staffs, as they have good communication skills, are directly involved in household farming, and often play a crucial role in building and maintaining social networks and local communities.

Table 2. Distribution of Agriculture Extension Staffs Profile

No	Profile	Category	Frequency (person)	Percentage (%)
1.	Gender	Male	222	58.9
		Female	155	41.1
2.	Age (years)	Young (19-41)	170	45.1
		Middle (42-64)	207	54.9
3.	Education	Medium (Senior High School)	70	81.4
		High (Graduate and post-graduate school)	307	18.6
4.	Serviced village (unit)	Low (<10)	352	93.3
		Medium (11-20)	14	3.7
		High (>21)	11	2.9
5.	Working periods (years)	Low (<10)	34	9.0
		Medium (<20)	315	83.6
		High (>20)	28	7.4

Source: Primary Data Analysis

Table 2 shows that the proportion of male respondents (59%) is higher than that of female respondents (41%). However, the difference is not substantial and indicates that gender equity in the extension profession is quite good. In terms of age, the majority of respondents are older than 46. This condition reflects the need for regeneration of the agricultural extensionist profession. Regeneration is important to accelerate knowledge and technology amid the rapid pace of information and the need to adopt various new technologies, particularly to enhance communication and motivation for younger generations to engage in agriculture (Muksin et al., 2022). In terms of education level, the majority of respondents were university graduates. However, it is crucial to recognize that knowledge and skills in the agricultural extension profession can be acquired through various educational pathways and onsite experiences. Boonjing (2008) revealed that intelligence and dedication in facilitating quality mentoring for farmers are key qualities that agricultural extension workers should possess, regardless of their formal education level.

The majority of respondents have less than ten assigned villages. Several factors contribute to this condition: new agriculture extension staffs starting their careers or having physical or time constraints, rural areas with relatively small populations, and areas with difficult accessibility or inadequate infrastructure (Kaegi, 2015; Manik et al., 2018). In addition, some agriculture extension staffs prefer to provide high-quality, in-depth, and effective services to only a few assigned villages, and some policies are issued by government or agricultural organizations. In this study, the measurement of tenure as a civil servant (PNS) is divided into three interval categories. Firstly, civil servants with less than ten years- tenure indicate a relatively short experience level. Secondly, the 10-20-year category includes civil servants demonstrating a more established commitment and

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

contribution to public service. Lastly, civil servants, having served for more than 20 years, generally have more onsite experience. The majority of respondents had a tenure of 11-20 years. Agriculture extension staffs with more extended experience tend to better know of their working areas. The younger agricultural extension workers with fewer years of tenure may bring a fresh perspective and understanding of the latest technology. Extensionists with varying tenure can contribute differently to advancing agriculture and the farmers' welfare.

Table 3. Distribution of Self-Efficacy, Perceived Usefulness, Perceived Ease of Use, Subjective Norms, Attitude Towards Usage and Cyber Extension Usage

No.	Variable	Gain (%)	Category
1.	Self-efficacy	73.87	High
2.	Perceived usefulness	80.28	Very High
3.	Perceived ease of use	68.01	High
4.	Subjective norms	79.15	Very High
5.	Attitude toward usage	61.31	High
6.	Cyber extension usage	90.50	Low

Source: Primary Data Analysis

Table 3 shows that the self-efficacy variable scores 73.87% (belonging to a high level), indicating that respondents are highly confident in using cyber extensions. Perceived usefulness scores of 80.28% (a very high level) indicate that extensionists consider cyber extension beneficial to their work, primarily in acquiring various information. Extension agents' views on the usefulness of the cyber extension web are very positive. A well-managed cyber extension can increase extension agents' access to new information and knowledge relevant to their work, enhance opportunities for technology adoption, improve collaboration and networking, and expand market access. Perceived ease of use regarding cyber extension scores 68.01% (high), illustrating that most extension respondents think it is easy to use and its application is not complicated. Perceived usefulness was seen as a perception directly influenced by perceived ease of use. If extension staff found the cyber extension easy to use, they would perceive it as useful and be more inclined to use this technology. When extension workers find the cyber extension web easy to use, it will be seen as supportive of their tasks, increasing the likelihood of its use.

Regarding subjective norms, a percentage of 79.15% (very high level) illustrates extension workers' perception that the work environment supports the use of cyber extension. This suggests that extension workers believe there are expectations from both their organization and their peers to use cyber extension to support their work. Ideally, this support should extend beyond finding information for materials to include activities like uploading materials on the web, particularly location-specific content. In this context, social pressure within the extension organization can further encourage the use of cyber extension. Extension workers also exhibit a positive attitude toward cyber extension, with a high attitude score of 61.31%. Attitudes are formed through a complex process where self-efficacy, perceived usefulness, perceived ease of use, and subjective norms interact. When agriculture extension staffs feel capable of using the cyber extension (high self-efficacy), have the view that this system is functional (perceived usefulness) and easy to apply (perceived ease of use) as the existing social influence to apply it (subjective norm), they will tend to form a positive individual attitude towards cyber extension. Additionally, a high perceived ease of use significantly

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

contributes to its adoption. Positive attitudes influence individual actions, so the favorable attitude of extension workers will likely increase their use of cyber extension.

However, the use of cyber extension by extension workers appears to be low. This may be due to inadequate internet infrastructure support or insufficiently varied content that does not fully meet the extension workers' information needs. As a national platform, the Cyber Extension web provides general content that is relatively well-known to extension workers. Its content includes extension materials (such as food crop agriculture, livestock, and horticulture), extension policies, localized materials, national gateways, and farmer learning. However, this content is not always updated to match the specific commodity needs of each region, leading extension workers to feel less compelled to access it frequently. Furthermore, the availability of alternative sources of knowledge and information, such as Google or YouTube, impacts the low usage of cyber extension. Hayati (2022) noted that the cyber extension website has several drawbacks compared to other search engines and may lack material, causing extension staff to switch to other platforms when they cannot find the content they are looking for.

Table 4 presents the types of information accessed by agricultural extension staff from cyber extension, with agribusiness information being the most frequently accessed. However, information on agribusiness, especially marketing, is often underrepresented in cyber extension, leading extension workers to seek this information elsewhere. As agriculture transforms towards agribusiness, extension workers must provide support, particularly regarding marketing knowledge and competence. Common issues for farmers include market access and product prices, where extension workers must facilitate access to markets and networking. Information on training was the least frequently accessed by extension workers. Interest in finding training information through Cybex is low because the website rarely provides updates on new training programs for extension workers. Training information is often obtained from other sources, such as WhatsApp, and distributed to extension workers. Online training sessions are also frequently organized for extension workers.

Table 4. Type of Information Accessed by Agriculture Extension Staffs From Cyber Extension

No.	Type of Information	Frequency (person)	Percentage (%)
1.	Agribusiness	357	94.7
2.	Research result	154	40.8
3.	Policy	143	37.9
4.	Technology	287	76.1
5.	Training	122	32.4
6.	Marketing	191	50.7
7.	Farming Product Processing	276	73.2

Source: Primary Data Analysis

Table 5 shows that the affects of SE and SN variances on PE constructs has a score of 0.59, while the affects of PE constructs on PU has a score of 0.584. Meanwhile, the affects of PU and PE variances on AU constructs has a score of 0.543, and the affects of SN, PE, and AU variances on CU constructs has a score of 0.786.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

Tabel 5. Outputs of Latent Variable Coefficient

	SE	PE	PU	AU	CU	SN
R-squared		0.594	0.585	0.545	0.787	
Adj. R-squared		0.592	0.584	0.543	0.786	
Composite reliab.	0.835	0.879	0.887	0.946	0.818	0.869
Cronbach's alpha	0.753	0.831	0.850	0.915	0.665	0.799
Avg. var. extrac.	0.504	0.553	0.530	0.819	0.600	0.625
Full collin. VIF	1.492	3.001	53.230	7.417	19.511	28.825
Q-squared		0.594	0.586	0.546	0.787	
(No. diff. valls.)	94.000	97.000	124.000	15.000	34.000	53.000
(No. diff. valls./N)	0.249	0.257	0.329	0.040	0.090	0.141
Min	-3.349	-4.184	-4.986	-3.594	-4.496	-4.505
Max	2.235	2.519	2.481	2.164	2.478	2.373
Median	0.125	0.058	-0.008	0.245	0.154	0.080
Mode	0.125	0.058	-0.008	0.245	0.154	0.080
Skewness	-0.123	-0.018	-0.138	-0.730	-0.460	-0.210
Exc. kurtosis	0.980	2.073	3.380	2.104	3.003	2.845
Unimodal-RS	Yes	Yes	Yes	Yes	Yes	Yes
Unimodal-KMV	Yes	Yes	Yes	Yes	Yes	Yes
Normal-JB	No	No	No	No	No	No
Normal-RJB	No	No	No	No	No	No
Histogram	View	View	View	View	View	View

Source: Output WarpPLS. 7.0.
Notes:
1. RS = Rohatgi–Székely (top)
2. KMV = Klaassen−Mokveld−van Es (bottom)
3. JB = Jarque–Bera (top)
4. RJB = robust Jarque–Bera (bottom)

WarpPLS output shows the direct effect of independent variables (predictor/ exogenous) on dependent variable (endogenous), as shown in figure 2.

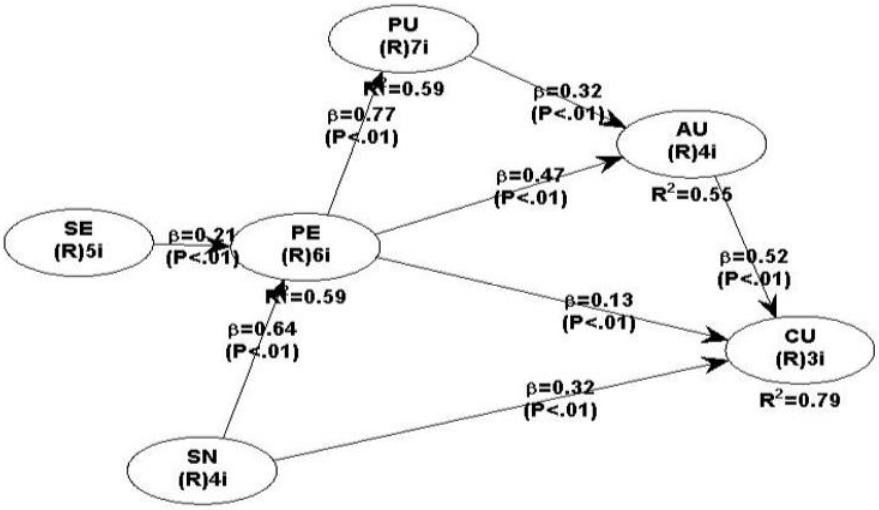

Figure 2. Diagram Path Analysis

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

Direct Affects of Self-Efficacy, Perceived of Usefulness, Perceived Ease of Use, Subjective Norms and Attitude toward Usage on Cyber Extension Usage

Referring to Figure 1, the direct affects of the variables indicate that self-efficacy (SE) affects perceived ease of use (PE) with a coefficient of 0.214 ($p < 0.001$). The result shows that perceived ease of use is influenced by self-efficacy (with a coefficient value of 0.21). This means that a high level of self-efficacy can increase the perception of the cyber extension platform's ease of use, in line with a study conducted by Jimenez et al., (2021). Self-efficacy reflects the extent to which agricultural extension workers think they are capable of and confident in operating, understanding, and utilizing the features of the cyber extension platform. Agriculture extension staffs capable of overcoming obstacles and understanding the features of cyber extension well tend to have a more positive perception of its ease of use. Their experience can influence extension workers' self-efficacy in using cyber extension. Since the Ministry of Agriculture has launched a cyber extension for a considerable period, it is relatively well-known and has been used by extension workers. This familiarity can enhance their self-efficacy and make them perceive cyber extension as easy to use.

Perceived ease of use (PE) affects perceived usefulness (PU) with a coefficient of 0.765 ($p < 0.001$). Perceived ease of use also builds and affects perceived usefulness (with a coefficient value of 0.77). Individuals who believe a technology is easy to use generally also assume that the technology is useful. Conversely, when individuals find technology difficult to use due to its complexity, they view it as less useful. Therefore, ease of use is a crucial factor in technology acceptance. These results are in line with Wang et al., (2023) finding that perceived ease of use has a positive effect on perceived usefulness and shows that agriculture extension staffs perceiving the cyber extension's ease of use likely have an accurate perception of the usefulness of the platform use. Cyber extension is considered to have a user-friendly design, thus providing a positive user experience, stimulating perceptions of ease, and increasing perceptions of usefulness over time. Easy use of cyber extensions also helps extension workers deliver information more effectively and efficiently, so they tend to perceive real benefits from their use.

Perceived ease of use (PE) affects attitude toward usage (AU) with a coefficient of 0.465 ($p < 0.001$). Another interrelated factor is an attitude toward usage, which is affected by perceived ease of use and perceived usefulness. Sudaryati et al., (2017) found that attitude toward usage significantly affects perceived usefulness and ease of use. This means that agriculture extension staffs with a positive perception of the cyber extension's ease of use tend to have a positive attitude toward the platform use. Agriculture extension staffs using cyber extensions with positive experiences, such as easy-to-use, intuitive features, and satisfying results, are more likely to develop a positive perception of ease of use. These positive experiences can build positive attitudes. Positive attitudes include a favorable view and acceptance of the use of cyber extensions in the daily work of extension workers.

Perceived ease of use (PE) affects cyber extension usage (CU) with a coefficient of 0.135 ($p < 0.001$). It indicates that the more the agricultural extension workers find it easy to understand and use the cyber extension, the more likely they will adopt and use the platform actively in their daily work. Perceived ease of use refers to the extent to which agriculture extension staffs consider cyber extension relatively easy to understand and do in their work. This includes emphasizing how easily agricultures extension staffs can understand the basic concepts and functions of cyber extension (ease of understanding) and how clear and focused the information presented on cyber extension is (focused information). Making the cyber extension understandable can reduce barriers to comprehension and

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

increase the extensionists' readiness for adopting it. By providing focused and beneficial information, the cyber extension can enhance the efficiency and effectiveness of extensionists in performing their duties.

Additionally, subjective norms (SN) affects perceived ease of use (PE) directly with a coefficient of 0.644 ($p < 0.001$). This suggests that the higher the social environment's view and support, the higher the extension staffs' perception of the cyber extensions's ease of use. These results are in line with Wang et al., (2023) finding that subjective norm has a positive effect on perceived ease of use. Effective communication between the social environment and agriculture extension staffs regarding the benefits and relevance of cyber extension plays an important role. A supportive social environment providing clear and positive information on how cyber extension can improve the performance of agriculture extension staffs will build a perception that using it is beneficial and easy.

Subjective norms (SN) affects cyber extension usage (CU) with a coefficient of 0.319 ($p < 0.001$). Subjective norm affects the use of cyber extension (with a coefficient value of 0.32). This means that subjective norms, reflecting the surrounding environment's view and support, affects directly the decision of agriculture extension staffs to use the platform. Subjective norm measures the extent to which agriculture extension staffs think their environment supports or expects them to use cyber extension, including peer and superior support. The environment's positive support or view may include the belief that using cyber extension is beneficial and relevant to the work of agricultural extension staffs.

Perceived usefulness (PU) affects attitude toward usage (AU) with a coefficient of 0.323 ($p < 0.001$). In addition, attitude toward usage is also affected by perceived usefulness (with a coefficient value of 0.32). This means that extensionists with a positive perception of the usefulness of cyber extensions likely have a positive attitude toward platform use. The use of cyber extensions helps extensionists do their work more efficiently and effectively. The perceived benefits of use positively contribute to the attitude of agriculture extension staffs. Cyber extension's benefits include serving as a valuable source of extension materials, providing up-to-date information on government policies related to extension, and offering localized materials with region-specific information. It also facilitates the exchange of information among extension workers and accelerates the dissemination of information and technology adoption among farmers.

Attitude toward usage (AU) affects cyber extension usage (CU) with a coefficient of 0.520 ($p < 0.001$). The use of cyber extension is also affected by attitude to use (with a coefficient value of 0.52). This suggests that the positive attitude of agricultural extension workers towards this platform use directly affects the level of adoption and use. Attitude to use describes the attitude of agriculture extension staffs toward cyber extension use. This attitude includes beliefs in its benefits, perceived ease of use, and whether they view the use of cyber extension as positive or negative. A positive attitude toward using cyber extension strengthens the likelihood of agriculture extension staffs to adopt and use the platform.

Indirect Affects of Self-Efficacy, Perceived Usefulness, Perceived Ease of Use, Subjective Norms, and Attitude toward Usage of Cyber Extension Usage

Based on the research model, indirect affects occur in two- and three-segments, as shown in table 6.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

Table 6. Indirect Affect of 2 Segments

Indirect affects for paths with 2 segments				Number of paths with 2 segments			P values of indirect affects for paths with 2 segments		
	SE	PE	PU	SE	PE	PU	SE	PE	PU
PU	0.402			1			<0.001		
AU	0.245	0.247		1	1		<0.001	<0.001	
CU	0.071	0.479	0.168	1	2	1	0.025	<0.001	<0.001
SN	0.390			1			<0.001		

Source: Primary Data Analysis

The indirect affect of two segments SE on PU has a score of 0.402 with p <0.001 (significant), SE on SN has a score of 0.390 with p <0.001 (significant), SE on CU has a score of 0.071 with p = 0.025 (significant), SE on AU has a score of 0.245 with p <0.001 (significant). The affect of PE on AU has a score of 0.247 with p<0.001 (significant), PE on CU has a score of 0.479 with p<0.001 (significant), and PU on CU has a score of 0.168 with p<0.001 (significant).

Self-efficacy significantly indirectly affects perceived usefulness through perceived ease of use (with a strong correlation coefficient of 0.402). This indicates that agriculture extension staffs with high self-efficacy are confident using the cyber extension to access the information and resources needed for their work. High self-efficacy enables agriculture extension staffs to learn how to use cyber extensions easily to get the benefits more quickly, including getting the latest information related to agriculture or the capability of participating in online agricultural training. This is affected indirectly by high perceived ease of use, such as the perception of a user-friendly platform design. Perceived ease of use is thus an important factor in increasing the perceived usefulness of the cyber extension platform.

Self-efficacy also has a significant indirect affects on attitude toward usage, through perceived ease of use (with a strong correlation coefficient of 0.245). The confidence in one's ability to operate the cyber extension facilitates its use. This ease of use is essential to build a positive attitude among agriculture extension staffs. A positive attitude towards cyber extension is important as it can influence the decision of extension staffs to adopt and use it in their work actively. Furthermore, the analysis shows that self-efficacy significantly affects attitude toward usage indirectly through two mediating variables: perceived ease of use and perceived usefulness, despite a weaker correlation (0.103).

Self-efficacy has a significant indirect affects on the use of cyber extensions through perceived ease of use (with a weak correlation coefficient of 0.071). However, the effect of self-efficacy on using cyber extension through perceived ease of use and attitude toward usage has a strong correlation coefficient of 0.252. This shows that agriculture extension staffs with high self-efficacy will find learning how to use cyber extensions easier. This ease of use further motivates extensionists to use the cyber extension, making them more likely to develop a positive attitude towards it (Abramson et al., 2015). Besides these two mediating variables, self-efficacy can indirectly affect cyber extension usage through perceived ease of use, perceived usefulness, and attitude toward usage. However, the indirect effect through these three mediating variables is weaker than that through one or two mediating variables, with a significance value of 0.068.

Self-efficacy also significantly affects subjective norms through perceived ease of use (with a correlation coefficient of 0.390). Agriculture extension staffs' self-belief in their ability to use cyber

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

extension can build perceptions of ease of use, affecting how the surrounding environment assesses and supports this technology use (subjective norm). Perceived ease of use is a mediating variable that can overcome barriers to adopting cyber extension. If extension workers perceive the cyber extension as easy to use, they are more likely to overcome psychological resistance to the platform. Perceived ease of use then leads to the support of the surrounding environment (peers and superiors), significantly influencing the extensionists' decision to use the cyber extension. Subjective norms also include conformity with professional norms and ethics. Conformity can include the cyber extension's ability to increase work effectiveness and benefit the farmers. If the cyber extension is perceived to be in line with professional norms and ethics, subjective norms may strongly support the platform's adoption.

In addition to being a mediating variable, perceived ease of use as an exogenous variable also has a significant indirect affect on attitude toward usage through perceived usefulness (with a correlation coefficient of 0.247). This means that the cyber extension's perceived ease of use can affect how useful the platform is perceived to be, and the perceived usefulness can affect the extensionists's attitude toward its use. Perceived usefulness is a critical factor in building attitudes toward technology use. Agriculture extension staffs perceiving that using cyber extensions has a real and relevant benefit to their work tend to have a more positive attitude. Perceived usefulness can provide a clear rationale for why extensionists should use cyber extension. It can help convince extension workers that investing time and effort in learning and using the technology can yield beneficial results.

Perceived ease of use also has a significant indirect affects on cyber extension use through attitude to usage (with a strong correlation coefficient of 0.479). This reflects the effect of psychological flow from perceived ease of use on attitude toward usage. Attitude is key in influencing agriculture extension staffs' decision to use cyber extension. Attitude also plays an essential role in the continuous use of technology. While initially, the technology may be used easily, a positive attitude can help maintain its use over a longer period. In addition, the effect of ease of use on cyber extension can also mediated by perceived usefulness and attitude toward usage, but with a lower correlation coefficient of 0.129.

Table 7. Indirect Affect of 3 Segments

	Indirect affects for paths with 3 segments		**Number of paths with 3 segments**		**P values of indirect affects for paths with 3 segments**	
	SE	**PE**	**SE**	**PE**	**SE**	**PE**
AU	0.130		1		<0.001	
CU	0.252	0.129	2	1	<0.001	<0.001

Source: Primary Data Analysis

The indirect affect of three segments of SE on AU has a score of 0.130 with $p<0.001$ (significant), SE on CU has a score of 0.252 with $p<0.001$ (significant), PE on CU has a score of 0.129 with $p<0.001$ (significant).

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

Total Affects

The total affects represent the cumulative impact of all independent variables on the dependent variable, as shown in Table 8.

Table 8. Total Affects

	SE	PE	PU	AU	SN
SE					
PE	0.526				
PU	0.402	0.765			
AU	0.375	0.712	0.323		
CU	0.391	0.742	0.168	0.520	0.319
SN	0.390	0.742			

Source: Primary Data Analysis

Table 8 shows the simultaneous affect of self-efficacy (SE), perceived ease of use (PE), perceived usefulness (PU), attitude to use (AU), and subjective norms (SN) on cyber extension usage (CU). The results show that the total simultaneous affect of these variables on cyber extension usage is 0.391. This indicates that self-efficacy, perceived ease of use, perceived usefulness, subjective norms, and attitude toward usage positively affect the usage of cyber extension.

CONCLUSION AND SUGGESTION

This study concluded that the use of the cyber extension web in Central Java Province can be categorized as low level; meanwhile, self-efficacy, perceived ease of use, subjective norms, and attitudes towards positive use are relatively high level. Self-efficacy, perceived ease of use, subjective norms, and attitude toward usage positively affect agriculture extension staffs using cyber extension. This indicates that cyber extension is perceived as useful and easy to use. Agriculture extension staffs also have a positive attitude toward cyber extension. Supported by subjective norms among extension workers, an environmental atmosphere encourages them to use a cyber extension to support their work. Ideally, all these factors should promote increased the use of cyber extension. However, in fact, the use of cyber extension among extension workers remains at low level. The low usage of cyber extension may be attributed to several factors, including geographical conditions that pose obstacles to internet access and content that is less varied and has not yet met the needs of extension workers for specific local information to support their farming-working area.

As a recommendation, the study suggests providing cyber extension with more varied content to address diverse location-specific information needs and the need for regular and continuous content updates. Information on agribusiness, such as markets and partnerships, should be uploaded regularly to assist farmers in transforming towards marketable farming. To meet the diverse information needs in various extension working areas, in addition to cyber extension developed at the national level, it is necessary to develop and optimize the use of cyber extension at the provincial and or district level. In this regard, the cyber extension manager at local level could collaborate with various related parties, such as local reserachers from research instutites or universities, millennial farmers, business actors, NGOs or extension workers, to enrich and improve the required content on various farming aspects.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

REFERENCES

Abdullah, A., Mustabi, J., A, A., & Amrullah. 2019. Identification Of The Use Of Cyber Extension As The Source Of Information In Adoption Of Feed Technology. Suluh Pembangunan: Journal Of Extension And Development, 1(2): 109–114.

Abdullah, S. 2015. Implementation Of Cyber Extension Of Fisheries Product Marketing. International Journal Of Education And Research, 3(6): 101–112.

Abebe, H., Shitu, S., & Mose, A. 2021. Understanding Of Covid-19 Vaccine Knowledge, Attitude, Acceptance, And Determinantes Of Covid-19 Vaccineaacceptance Among Adult Population In Ethiopia. Infect Drug Resist, 1(14): 2015–2025. https://doi.org/https://doi.org/10.2147/idr.s312116

Abramson, J., Dawson, M., & Stevens, J. 2015. An Examination Of The Prior Use Of E-Learning Within An Extended Technology Acceptance Model And The Factors That Influence The Behavioral Intention Of Users To Use M-Learning. SAGE Open, 1(9).

Adeyongo, I. L., Sennuga, S. O., Lai-Solarin, W. I., & Ezinne, M. E. 2022. Impact Of Cyber-Extension And Social Media (Whatsapp And Facebook) On Extension Workers In Federal Capital Territory, Abuja, Nigeria. Applied Research Frontiers, 1(1). https://doi.org/https://doi.org/10.36686/ariviyal.arf.2022.01.01.007

Adriyani, F. Y. 2019. Pemanfaatan Cyber Extension Sebagai Media Diseminasi Inovasi Pertanian Oleh Penyuluh Pertanian Di Provinsi Lampung. Suluh Pembangunan : Journal Of Extension And Development, 1(1): 1–7.

Aertsens, J., Van, H. G., Verbeke, W., & Mondelaers, K. 2009. Personal Determinants Of Organic Food Consumption: A Review. British Food Journal, 111(10): 1140–1167. https://doi.org/https://doi.org/10.1108/00070700910992961

Ajzen, I. 1991. The Theory Of Planned Behavior. Organizational Behavior And Human Decision Processes, 50(2): 179–211. https://doi.org/https://doi.org/10.1016/0749-5978(91)90020-t

Aktag, I. 2015. Computer Self-Efficacy, Computer Anxiety, Performance And Personal Outcomes Of Turkish Physical Education Teachers",. Educational Research And Reviews, 10(3): 328–337.

Annur, C. M. 2023. Inilah 10 Provinsi Dengan Jumlah Petani Milenial Terbanyak Nasional Pada 2023. Databoks. https://databoks.katadata.co.id/datapublish/2023/12/05/inilah-10-provinsi-dengan-jumlah-petani-milenial-terbanyak-nasional-pada-2023-jawa-timur-teratas

Badan Pusat Statistik (BPS). 2024. Luas Panen, Produksi, Dan Produktivitas Padi Menurut Provinsi, 2021-2023. https://www.bps.go.id/id/statistics-table/2/mtq5ocmy/luas-panen--produksi--dan-produktivitas-padi-menurut-provinsi.html

Bamberg, S., Hunecke, M., & Blöbaum, A. 2007. Social Context, Personal Norms And The Use Of Public Transportation: Two Field Studies. Journal Of Environmental Psychology, 27(3): 190–203. https://doi.org/https://doi.org/10.1016/j.jenvp.2007.04.001

Bandura, A. 1977. Self-Efficacy: Toward A Unifying Theory Of Behavioral Change. Advances In Behaviour Research And Therapy, 1(4): 139–161. https://doi.org/https://doi.org/10.1016/0146-6402(78)90002-4

Bandura, A. 1989. Regulation Of Cognitive Pprocesses Through Perceived Self-Efficacy. Developmental Psychology, 25(5), 729–735. https://doi.org/10.1037/0012-1649.25.5.729

Boonjing, R. 2008. A Study On Characteristics Of Agricultural Extensionists. Chiang Mai University Journal Of Social Science And Humanities, 2(2): 101–115.

Cook, B. R., Satizabal, P., & Curnow, J. 2021. Humanising Agricultural Extension: A Review. World Development, 140(105337). https://doi.org/10.1016/j.worlddev.2020.105337

Dahi, M., & Ezziane, Z. 2015. Measuring E-Government Adoption In Abu Dhabi With Technology Acceptance Model (TAM). International Journal Of Electronic Governance, 7(3): 206–231. https://doi.org/https://doi.org/10.1504/ijeg.2015.071564

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

Davis, D. D. 1989. Perceived Usefulness, Perceived Ease Of Use, And User Acceptance Of Information Technology. MIS Quarterly, 13(3): 319–340.

Dixit, R. V, & Prakash, G. 2018. Intentions To Use Social Networking Sites (SNS) Using Technology Acceptance Model (TAM). Paradigm, 22(1): 65–79. https://doi.org/https://doi.org/10.1177/0971890718758201

Egmond, C., & Bruel, R. 2007. Nothing Is As Practical As A Good Theory: Analysis Of Theories And A Tool For Developing Interventions To Influence Energy Behaviour.

Gitosaputro, S., & Listiana, I. 2018. Dinamika Penyuluhan Pertanian: Dari Era Kolonial Sampai Dengan Era Digital. CV Anugrah Utama Raharja.

Gultom, R., Hasanah, L., Subehi, M., Sulistiyowati, H., Uliyah, Abdurahman, A. A., Surasa, J., Heruwaty, & Martono, H. D. 2021. Statistik SDM Pertanian Dan Kelembagaan Petani 2020.

Guntoro, B., Qui, N. H., & Triatmojo, A. 2022a. Challenges And Roles Of Extension Workers On Cyber Extension As Information Media. International Conference On Advance & Scientific Innovation ICASI – Life Sciences Chapter, Kne Life Sciences, 547–555. Https://Doi.Org/10.18502/Kls.V0i0.11843

Guntoro, B., Qui, N. H., & Triatmojo, A. 2022b. Challenges And Roles Of Extension Workers On Cyber Extension As Information Media. 3rd International Conference On Advance & Scientific Innovation. ICASI.

Hayati. 2022. Factors Affecting The Use Of Cyber Extension By Gender Based Extensioners In Supporting Artificial Intelegence In Agriculture In NTB (Case Study Of Mataram City). Jurnal Penelitian Pendidikan IPA, 8(6): 3187–3195.

Howard, N. L., Marshall, P., & Swatman, P. A. 2010. Reconceptualising Motivation In Adoption And Acceptance Research: Back To Basics. Proceedings Of The 21st Australasian Conference On Information Systems, Brisbane.

Indriyani, Y. R., Yurisinthae, E., & Dolorosa, E. 2024. Improving The Performance Of Agricultural Extension Workers Through Increasing Capacity, Willingness, And Opportunity. Agrisocionomics, 8(1): 97–111.

Jimenez, I. A. C., García, L. C. C., Marcolin, F., Violante, M. G., & Vezzetti, E. 2021. Validation Of A TAM Extension In Agriculture: Exploring The Determinants Of Acceptance Of An E-Learning Platform. Appl. Science, 11(10), 4672. https://doi.org/10.3390/app11104672 https://www.mdpi.com/2076-3417/11/10/4672

Kabir, K. H., Rahman, S., Hasan, M. M., Chowdhury, A., & Gow, G. 2023. Facebook For Digital Agricultural Extension Services: The Case Of Rooftop Gardeners In Bangladesh. Smart Agricultural Technology, 6(100338).

Kaegi, S. 2015. The Experiences Of India's Agricultural Extension System In Reaching A Large Number Of Farmers With Rural Advisory Services. In Federal Department Of Foreign Affairs FDFA.

Kamal, S. A., Shafiq, M., & Kakria, P. 2020. Investigating Acceptance Of Telemedicine Services Through An Extended Technology Acceptance Model (TAM). Technology In Society, 60(101212). https://doi.org/https://doi.org/10.1016/j.techsoc.2019.101212

Kementerian Pertanian. 2023. Statistik SDM Pertanian Dan Kelembagaan Petani 2023.

Kock, N. 2022. Warppls User Manual: Version 8.0. Scriptwarp Systems.

Lederer, A. L., Maupin, D. J., Sena, M. P., & Zhuang, Y. 2000. The Technology Acceptance Model And The World Wide Web. Decision Support Systems, 29: 269–282.

Leeuwis, C. 2004. Communication For Rural Innovation: Rethinking Agricultural Extension. Blackwell Publishing.

Liao, S., Hong, J.-C., Wen, M.-H., Pan, Y.-C., & Yun-Wu. 2018. Applying Technology Acceptance Model (TAM) To Explore Users' Behavioral Intention To Adopt A Performance Assessment System For E-Book Production. EURASIA Journal Of Mathematics, Science And Technology Education, 14(10): 1601.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

Manik, J. R., Refiswal, & Salsabila. 2018. Analysis Of Factors Affecting The Performance Of Agricultural Extension Agent In Langkat District. International Conference On Sustainable Agriculture And Natural Resources Management, 2(1): 89–94.

Muksin, Juanda, I., Wahyono, N. D., Eliyatiningsih, E., Harlianingtyas, I., & Purwoko, D. 2022. Design Of The Needs Model For The Development Of Young Generation Interests In The Agricultural Sector In Banyuwangi Regency. IOP Conferences Series Earth And Environmental Science, 980: 012055.

Nugraheni, D. M. K., Hadisoewono, A., & Noranita, B. 2020. Continuance Intention To Use (CIU) On Technology Acceptance Model (TAM) For M-Payment (Case Study: TIX ID). Icicos 2020 - Proceeding: 4th International Conference On Informatics And Computational Sciences. https://doi.org/https://doi.org/10.1109/icicos51170.2020.9299100

Organisation For Economic Co-Operation And Development (OECD). 2021. Strengthening Women's Entrepreneurship In Agriculture In ASEAN Countries. Secretary-General Of The OECD.

Partini, Wastutiningsih, S. P., Nugroho, N. C., & Fatonah, S. 2024. Tantangan Menjadi Penyuluh Kekinian Di Era Disrupsi. Jurnal Penyuluhan, 20(01): 29–40.

Pingali, P. L., & Rosegrant, M. W. 1995. Agricultural Commercialization And Diversification: Processes And Policies. Food Policy, 20(3): 171–185. https://doi.org/https://doi.org/10.1016/0306-9192(95)00012-4

Pinho, J. C., & Soares, A. M. 2011. Examining The Technology Acceptance Model In The Adoption Of Social Networks. Academic Public Administration Studies Archive - APAS, Apas Paper.

Ramayah, T., & Jantan, M. 2004. Technology Acceptance: An Individual Perspective Current And Future Research In Malaysia. Review Of Business Research, 2(1): 103–111.

Rizkiansyah, M., Ariestyani, A., & Yunus, U. 2023. Cyber Extension Content And Interactivity Online Social Media Agricultural Ministry During Covid 19. E3S Web Of Conferences, 388(04043). https://doi.org/https://doi.org/10.1051/e3sconf/202338804043

Rusliyadi, M., Ardi, Y. W. Y., & Winarno, K. 2023. The Factor Influencing Technology Adoption Process Of Farmers In The Term Of Agricultural Extension Policy Case In Central Java Indonesia. Agrisocionomics, 7(2): 250–260.

Shachak, A., Kuziemsky, C., & Petersen, C. 2019. Beyond TAM And UTAUT: Future Directions For HIT Implementation Research. Journal Of Biomedical Informatics, 100(103315). https://doi.org/https://doi.org/10.1016/j.jbi.2019.103315

Sudaryati, E., Agustia, D., & Syahputra, M. 'Illiyun. 2017. The Influence Of Perceived Usefulness, Perceived Ease Of Use, Attitude, Subjectif Norm, And Perceived Behavioral Control To Actual Usage PSAK 45 Revision On 2011 With Intention As Intervening Variable In Unair Financial Department. International Conference Of Organizational Innovation (ICOI 2017): Advances In Intelligent Systems Research, 131: 86–92.

Sumardjo, Baga, L. M., & Mulyandari, R. S. H. 2010. Cyber Extension: Peluang Dan Tantangan Dalam Revitalisasi Penyuluhan. IPB Press.

Sun, S., Wen, X., Jie, S., Gao, Q., Zhu, Y., & Wen, S. 2022. Drivers Of Farmers' Intention To Use The Digital Agricultural Management System: Integrating Theory Of Planned Behavior And Behavioral Economics. Front. Psychol, 13(901169). https://doi.org/10.3389/fpsyg.2022.901169

Swanson, B. E., Bentz, R. P., & Sofranko, A. J. 1977. Improving Agricultural Extension – A Reference Manual. The History, Development And The Future Of Agricultural Extension. FAO.

Taherdoost, H. 2016. Sampling Methods In Research Methodology; How To Choose A Sampling Technique For Research. International Journal Of Academic Research In Management (IJARM), 5(2): 18–27.

Taylor, S., & Todd, P. A. 1955. Understanding Information Technology Usage: A Test Of Competing

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (3): 637-656, November 2024

Models. Information Systems Research, 6(2): 144–176.

Teo, T. S. H., Lim, V. K. G., & Lai, R. Y. C. 1999. Intrinsic And Extrinsic Motivation In Internet Usage. Omega, International Journal Of Management Science, 27: 25–27.

Venkatesh, V. 2000. Determinants Of Perceived Ease Of Use : Integrating Control, Intrinsic Motivation, And Emotion Into The Technology Acceptance Model. Information Systems Research, 11(4): 342–365.

Wang, C., Ahmad, S. F., Ayassrah, A. Y. A. B. A., Awwad, E. M., Irshad, M., Ali, Y. A., Al-Razgan, M., Khan, Y., & Han, H. 2023. An Empirical Evaluation Of Technology Acceptance Model For Artificial Intelligance In E-Commerce. Heliyon, 9(8). https://doi.org/https://www.sciencedirect.com/science/article/pii/s2405844023055573

Wibowo, A. 2021. Indikator Pertanian 2020 (1st Ed., Vol. 1). Badan Pusat Statistik. https://www.bps.go.id/publication/download.html?nrbvfeve=zdg3yjc1mzy2ytayzgjkymm2zgyzn2ew&xzmn=ahr0chm6ly93d3cuynbzlmdvlmlkl3b1ymxpy2f0aw9ulziwmjevmtavmdgvzdg3yjc1mzy2ytayzgjkymm2zgyzn2ewl2luzglryxrvci1wzxj0yw5pyw4tmjaymc5odg1s&twoadfnoarfeauf=mjaymy0woc0

Wijaya, A. S., & Sarwoprasodjo, S. 2015. Pemanfaatan Cyber Extension Sebagai Media Informasi Oleh Penyuluh Pertanian Di Kabupaten Bogor. Jurnal KMP, 13, 1. Jurnal KMP, 13(1).

Yunus, U., Rizkiansyah, M., & Ariestyani, A. 2023. Cyber Extension As The Sustainable Communication For Farmers. AIP Conference Proceedings, 2594, 1200. https://doi.org/https://doi.org/10.1063/5.0110070