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Competence of Extension Agents in Utilizing Information and Communication Technology to Support the Performance of Agricultural Extension Kendari-Indonesia

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This study aims to analyse the relationship between extension agents' competence in utilizing information and communication technology (ICT) and their performance in Kendari. This study covers all agricultural extension agents classified as state civil apparatus and honorary in Kendari, with 64 people considered the population. The research sample was selected through the census method. That is, the entire population of 64 agricultural extensions was used as respondents in the current study. This study used exogenous variables (X) in the form of the utilization of ICT and endogenous variables (Y) in the form of the performance of agricultural extension. Data were analyzed using partial least square-structural equation modeling (PLS-SEM). PLS-SEM analysis consists of two sub-models: measurement model (outer model) and structural model (inner model). Results show that the competence of extension agents in utilizing ICT has a positive and significant relationship with the performance of agricultural extension in Kendari. ICT, as one of the competencies needed by extension workers in the digital and fast-paced era, can be utilized by extension workers for searching, collecting, and reviewing all forms of information or materials in extension activities. This information is very diverse, ranging from agricultural problems and new innovations to the marketing of agricultural products. The competencies of extension workers increase by utilizing ICT, enabling them to accelerate the transfer of innovation and provide transparent and easier access to information. Important technical implications for the future in the field of agricultural extension include the need for intensive and continuous training on the use of ICT for agricultural extension workers. This training should cover the use of software, digital agricultural applications, and online platforms to improve their access to and understanding of the latest information. Additionally, the government and related institutions need to improve ICT infrastructure in rural and agricultural areas to support these efforts.

Keywords: Extension competence, utilization ICT, extension performance, agricultural extension, PLS-SEM,ICT infrastructure.

INTRODUCTION

Developing the competence of agricultural extension agents in utilizing Information and Communication Technology (ICT) is crucial to enhancing the efficiency and productivity of the agricultural sector. ICT enables extension agents to access and share information quickly, providing farmers with up-to-date data on agricultural techniques, weather, and market prices. The use of mobile applications and digital platforms by agricultural extension agents can improve the efficiency of knowledge transfer and accelerate the adoption of good agricultural practices. Moreover, extension agents proficient in ICT can empower farmers by providing them with information and resources that can enhance their skills and knowledge. This creates a stronger and more supportive network of farmers, allowing them to adopt technological innovations that can increase crop yields and reduce risks. A study by Khan *et al*. (2022) also highlights that farmers with access to digital information are more likely to adopt sustainable agricultural practices and improve their crop yields. In the context of Indonesia and Kendari, which is one of the agrarian regions in Indonesia, the competence of agricultural extension agents in ICT becomes increasingly relevant to support agricultural sustainability and farmer

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welfare. ICT enables more effective communication between extension agents, farmers, and other stakeholders, facilitating online training and real-time information sharing. Research by Universitas Gadjah Mada (2023) shows that the use of digital platforms by extension agents in rural areas of Indonesia, including Kendari, increases farmer participation in training programs and extension activities by 40%. With the ability to monitor and evaluate programs digitally, extension agents can more easily identify problems and measure the impact of their interventions. Thus, this study is important to identify the necessary skills, develop effective training programs, and ensure that agricultural extension agents in Kendari can fully utilize the potential of ICT to support their performance, as suggested by Gow *et al*. (2020), who found that ICT-based training programs enhance the competence of extension agents and the effectiveness of extension services. Agricultural extension agents are the spearhead of agricultural development in Indonesia. That is, one of the successes of the agricultural sector in the welfare of the Indonesian people is in the hands of extension agents because they can interact directly with farmers. Changes in the condition of farmers who are increasingly advanced require district/ extension institutions to make changes to the extension delivery system Norton and Alwang (2020). develop technological innovation information systems and enhance the professionalism of field extension agents to be able to immediately and proportionally respond to all positive and negative changes occurring (Li, 2022; Fabregas *et al*., 2019). Given the current industrial era 4.0, the results of research and technology developed in agriculture are numerous and still increasing but have not been maximally utilized by extension agents (Annosi *et al*., 2019; Silveira *et al*., 2021). The reason is the lack of knowledge of this information even though it has been published in various media. Ashraf *et al*. (2018) discussed that extension agents are required to improve their knowledge, experience, and competence to be able to understand the condition of farmers (potential and problems) and expand the target of extension, not only limited to production institutions (farmer groups) but all institutions engaged in agriculture in an area as a unit. The competence referred to in this study is related to the utilisation of (ICT), such as Windows, Android, and other similar technologies, as tools for organizing agricultural extension activities. The agricultural sector in Southeast Sulawesi is still one of the important sectors, especially seen from its contribution to GRDP, which is still high (Maddatuang *et al*., 2021) and can absorb a sufficiently large workforce (Christiaensen *et al*., 2021). The contribution of the agricultural sector is inseparable from the development of production and productivity of various agricultural commodities, including food, livestock, plantations and horticulture, supported by the performance of agricultural extension agents who actively assist farmers in improving their farms. The development of agricultural potential can be achieved by improving the performance of extension agents in assisting farmers in farming (Antwi-Agyei and Stringer, 2021). Kendari has a land area of 27,176 ha. With increasingly narrowing agricultural land, the area of agricultural land has been 15,659 ha since 2015. Until 2020, the area of agricultural land has decreased to 807 ha. Consequently, it has an impact on the decline in total production in the agricultural sector, namely in 2015, by as much as 76,755 tons to 11,420 tons in 2020 (BPS *et al*., 2021). Agricultural lands caused this situation converted into productive lands in the secondary and tertiary sectors, such as housing, commercial centers, shophouses, and public facilities (Xia *et al*., 2020; Widowaty *et al*., 2021). Thus, Kendari 's agricultural sector experienced a significant decline in farm productivity. Accordingly, the agricultural sector is no longer able to meet the needs of agricultural commodities in Kendari, which eventually had to import its needs. The decline in agricultural sector productivity in Kendari is thought to be influenced by various factors, one of which is the performance level of agricultural extension agents. This idea is in line with Tamsah and Yusriadi (2022), who indicated that the performance level of agricultural extension agents has a real and mutually influencing relationship with farm productivity level. Good agricultural extension activities will provide satisfaction to farmers and encourage sustainability and food security in agriculture (Ragasa and Mazunda, 2018). However, there are several challenges, especially for extension agents, who have been unable to adapt to ICT development, which is increasingly advancing annually. Therefore, agricultural extension agents need to improve the basic skills needed to utilise ICT to respond to the challenges they face. Given that ICT can make a significant contribution to the development of sustainable agriculture (Lindblom *et al*., 2017), such a contribution can be reflected in the performance of agricultural extension agents. Performance in the case of agricultural extension agents is understanding the linkage of tasks and the basic needs of quality agricultural extension programs relevant to farmers' needs (Tamsah and Yusriadi 2022). Extension performance is the ability or work of agricultural extension agents based on work status, working conditions and organizational policies in implementing extension programs. The low performance level of extension agents is caused by the low technical competence level in the use of ICT. The competence in question is the basic ability possessed by extension agents in utilizing ICT. This is consistent with Ragasa *et al*. (2016); Roling (2019), who stated that there are still many agricultural extension agents with low-level competence. The competence of extension agents has a positive effect on the performance of agricultural extension agents (Elias *et al*., 2019). The competence of extension agents in utilizing ICT is needed in carrying out an extension activity because it is the ability to conduct activities based on knowledge and skills (Ashraf *et al*., 2018; Ashraf *et al*., 2020).

Additionally, Irpan *et al*. (2023) indicated that the competence of extension agents as seen by the target community depends on the factor of media usage through the use of communication technology, including mobile phones and computers. The more intensely an extension worker utilizes the media, the more knowledge they have and the greater the opportunity to answer farmers' problems.

The rapid development of computer-based information technology provides many opportunities to obtain various information for the successful achievement of the professional role of extension agents, which generally depends on the operational competence of computer-based ICT equipment (Patra *et al*., 2020; Sivakumar *et al*., 2014). Nyarko and Kozari (2021) stated that one of the important elements that agricultural extension agents must possess is the ability to use and access ICT in agriculture to support their role in providing information services according to the needs of farmers and to help keep up with the rapid ICT development. This endeavor can improve the performance of extension agents by enhancing their competence. Competencies needed by extension agents in utilizing ICT are related to the basic capabilities of ICT. Basic information technology skills include computer operation, application software, Internet, and web pages (Deursen *et al*., 2014).

Available information or materials using ICT, such as the Internet, social media, and other similar technologies, could be utilized by extension agents to help the agricultural extension process become faster and more effective in solving the diverse problems of farmers, thereby potentially increasing the farmer productivity in Kendari. However, these aspects return to each individual agricultural extension worker to improve competence in utilising existing ICT to carry out his performance as an agricultural extension worker. Therefore, a study on the competence of agricultural extension agents, especially in utilizing ICT on the performance of agricultural extension agents in urban areas, was conducted to solve the previously discussed problems and challenges.

MATERIALS AND METHODS

This research was conducted in Kendari, Southeast Sulawesi Province, from May to July 2022. This study includes all agricultural extension agents classified as state civil apparatus (ASN) and honorary in Kendari, with 64 people considered as the population and sample of the study. Casteel and Bridier (2021) argued that population represents a broad area of interest, consisting of objects or subjects with certain qualities and characteristics applied by researchers to study and draw conclusions thereafter. Shukla (2020) defined population as the complete set of units of analysis, attributes of which will be estimated. The sample of this study, namely, 64 agricultural extension agents in Kendari, was selected using the census method. According to Etikan (2016), census samples also refer to saturated samples. Saturated samples are a sampling approach, in which the entire population is selected as the sample, and usually referred to in this context as a census. This study used exogenous and endogenous variables. The exogenous variable in this study is the utilization of ICT (X), which includes the perception of computer use, frequency of computer use, computer operation, extension activities using computers, advantages of computers in extension activities, support for effective computer use, basic application software, and the Internet. The selection of specific indicators to measure ICT competence and performance is based on several key reasons. The frequency of computer uses and perception of its use assess how often and what attitudes extension workers have toward the technology. Internet utilization is crucial to evaluate the ability of extension workers to access and leverage digital information. Computer operation and the use of basic application software reflect the essential technical skills required to perform various extension tasks. The use of computers in extension activities and the perceived benefits from their use demonstrate the extent to which technology has been integrated into work practices and its effectiveness in enhancing extension performance. The support received by extension workers for effective computer use, both in terms of training and infrastructure, is vital to ensure optimal utilization of ICT. These indicators are designed to provide a comprehensive overview of the extension workers' ability to utilize ICT to enhance their performance.

Endogenous variables in this study is the agricultural extension performance (Y), which includes the preparation, implementation and evaluation of agricultural extension activities. The following section presents the research concept model that will be subjected to analysis.

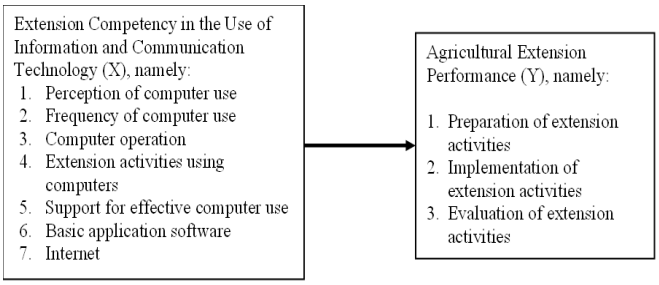

Figure 1. Initial research design.

The measurement of variable instruments in this study uses a Likert scale, giving weight and value to the responses for each item. This scale ranges from strongly agree (5), agree (4), undecided (3), disagree (2), to strongly disagree (1). Joshi *et al*. (2015) described the Likert scale as a tool used to measure the attitudes, opinions, and perceptions of individuals or groups regarding social phenomena.

Research data were analyzed using partial least squares (PLS), which is a technique for inferential statistical data

analysis. PLS is a structural equation modeling (SEM) that uses a variance or component-based approach. According to Sarstedt *et al*. (2021), PLS-SEM analysis is oriented towards developing or building theory, especially with a predictive focus. PLS is used to ascertain whether there is a relationship between latent variables, which has a predictive function.

PLS-SEM analysis consists of two sub-models: measurement model (outer model) and structural model (inner model). Sadidi *et al*. (2018) explained that the measurement model, or outer model, describes the relationship between each indicator block and its latent variable. Measurement model assessment involves confirmatory factor analysis and testing of convergent and discriminant validity. Reliability is evaluated using two methods: Cronbach's alpha and composite reliability. Benitez *et al*. (2020) stated that the evaluation of the structural model, or inner model, aims to predict the relationship between latent variables. The inner model describes the strength of the relationship or estimation between latent variables or constructs based on substantive theory. Inner model analysis in this study includes testing the path coefficient, R-squared (R^2), and hypothesis testing.

RESULTS AND DISCUSSION

***Competence of extension agents in utilizing information and communication technology*:** Competence of extension agents in Kendari in utilising ICT will be evaluated based on several indicators. These indicators include the frequency of computer use, perception of computer use, Internet utilisation, computer operation, computer use in extension activities, advantages of computer use in extension activities, support for effective computer use and use of basic application software. Thereafter, data were classified into three categories: low, medium and high. The findings indicate that the competence of extension agents in utilising ICT is within the high category. Competence of extension agents determines the success level of an extension activity in dealing with any problems faced by extension targets (main and business actors). Eastwood *et al*. (2017); Jackson (2014) explained that the competence of extension agents is needed in implementing extension activities because it is a basic ability based on knowledge and skills. Competence is a person's ability that can be observed and includes the aspects of knowledge, attitudes and work skills in completing functions and tasks or jobs in accordance with predetermined job requirements. Hakim (2015) further explained that competence is the application of knowledge, technical skills and personal characteristics that produce maximum performance, which is used as basis for improving the professional performance of agricultural extension agents. One of the competencies that extension agents must possess is competence in using ICT. ICT, as one of the competencies needed by extension agents in the current digital and fast-paced era, can be an alternative. ICT that is currently developing is likely to be utilised by extension agents in searching, collecting and reviewing all forms of information or materials that can assist them in carrying out extension activities (Patra *et al*., 2020). This information is substantially diverse, ranging from information on the latest innovations and technologies to marketing information and business opportunities. Hence, every extension worker should be required to have competence in using ICT to improve performance and professionalism as an agricultural extension worker.

Competence of extension agents in Kendari in utilising ICT will be measured using several indicators, such as frequency of computer use, perception of computer use, Internet utilisation, computer operation, computer use in extension activities, computer advantages in extension activities, support for effective computer use and use of basic application software. The more time extension agents devote to using or operating computers continuously and repeatedly, the more they can improve their ability to operate computers. Additionally, having good competence in using ICT will have a positive impact on the extension agents and farmers. It is also expected to accelerate the transfer of innovations and access to transparent information to farmers, so they will no longer be easily fooled by certain individuals.

***Agricultural extension performance*:** The efficacy of agricultural extension agents is contingent upon their ability to facilitate the acquisition of knowledge and skills by farmers and their families, thereby enhancing their quality of life. The performance of extension agents in agricultural extension activities encompasses the stages of preparation, implementation and evaluation of extension programs. Improvements must be implemented to enhance the performance of extension agents. Furthermore, adequate support must be provided, particularly from the central and regional governments, to optimise the performance of extension and achieve the objectives of extension activities. The effectiveness of agricultural extension agents can be gauged by their ability to prepare, implement and evaluate agricultural extension activities. This assessment is conducted by categorising it into three groups, namely low, medium and high categories. The results indicate that the performance of extension agents was in the high category, indicating that agricultural extension agents had effectively carried out each indicator of the agricultural extension performance. The high performance of extension agents is due to the fact that in all extension activity processes, they have exerted their best effort to help and assist farmers in increasing their business productivity. Additionally, agricultural extension agents in extension activities have done their best at every stage, from preparation to implementation and evaluation. Performance is the result of work or achievement at work (Eliyana *et al*., 2019). However, performance actually has a considerably broad meaning, not only limited to the results of work but also includes the work process. Kovac (2016) defined

performance as a self-expression of the potential possessed by a person in a particular field. Performance in relation to the performance of agricultural extension agents is the existence of extension agents in understanding the linkage of tasks and the basic needs of quality agricultural extension programs relevant to farmers' needs.

***Relationship between extension agents' competence in utilizing ICT to support extension agents' performance in Kendari*:** Extension competence is a person's ability that can be observed and includes the aspects of knowledge, attitudes, and work skills applied to complete a function and task or job in accordance with the responsibilities entrusted to him. Meanwhile, the performance of extension is the existence of extension agents in understanding the linkage of tasks and basic needs of quality agricultural extension programs relevant to the needs of farmers. This case is reflected in the preparation of extension activities, implementation of extension activities, and evaluation of extension activities. Competence has a significant effect on the performance of extension agents. Thus, the better the competence of extension agents, the better their performance. Any increase in the competence of extension agents will provide a significant increase in performance in carrying out their duties and responsibilities. ICT competence significantly helps address various challenges faced by agricultural extension agents, including limited access to current agricultural information, difficulties in reaching farmers in remote areas, and the need for efficient data management. With strong ICT skills, extension agents can utilize the internet and other digital information sources to access the latest information on farming techniques, innovations, and policies. This allows them to stay up-to-date and provide relevant information to farmers. Moreover, communication technologies such as instant messaging apps, social media, and web-based platforms enable extension agents to communicate with farmers in remote areas without needing to be physically present. This is crucial for regions that are hard to reach or have inadequate transportation infrastructure. Through ICT, extension agents can provide guidance, answer questions, and distribute extension materials effectively (Antwi-Agyei and Stringer (2021). The relationship between the competence of extension agents in utilising ICT to support the performance of extension agents in Kendari will use PLS-SEM data analysis, which used to develop or predict an existing theory (Lowry and Gaskin, 2014). The current research will use the PLS structural model analysis by utilising the SmartPLS software version 3.2.9. Structural model analysis has several stages (1) formulating structural model theory, (2) outer model analysis, (3) inner model analysis and (4) hypothesis testing.

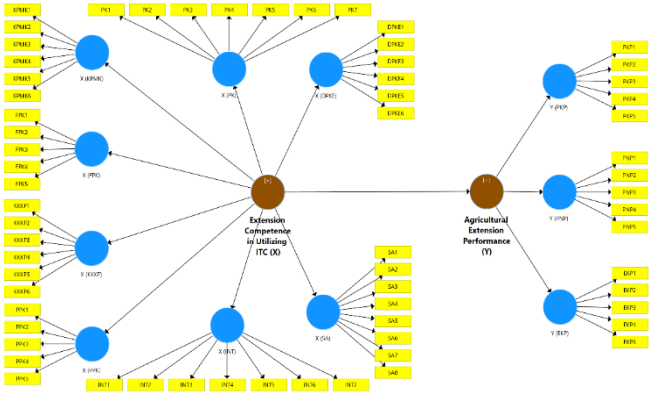

Figure 2. Formulation of the initial research model in the SmartPLS application.

***Outer Model Testing*:** Outer model testing aims to determine the validity and reliability of a model. This test analysis will be observed from the effects of factor loading, average variance extracted (AVE), discriminant validity, and composite reliability. The results of testing the outer model are as follows.

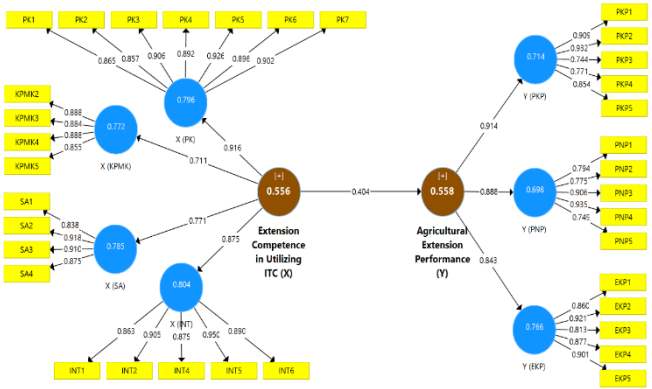

Figure 3. Outer Model testing results.

Figure 3 shows that in the latent variable of the competence of extension agents in utilizing ICT, there are three indicators (manifest variables) that must be removed from the model because the factor loading value is <0.7. The four indicators are (1) perception of computer (with factor loading of 0.483), (2) frequency of computer use (0.594), (3) support for effective computer use (0.353) and (4) advantages of computers in extension activities (0.763). The next analysis can be performed because some manifest variables were removed from the model. In this study, factor loading was set at 0.7. Another parameter considered in evaluating the cross-loading value is AVE. If the correlation of the indicator with the latent variable exceeds its correlation with other latent variables, then high discriminant validity is indicated (Anekawati *et al.*, 2017). The AVE value in this study is recommended at ≥0.5. The model reliability test uses a

Table 1. Outer Model for exogenous variables (x) and endogenous variables (y).

Variables	Dimensions	Indicators	Factor loadings	Composite reliability	Cronbach's Alpha	AVE
Extension Competence in Utilising Information and Communication Technology (X)	Internet (INT)	INT.1	0.863	0.954	0.939	0.804
		INT.2	0.905			
		INT.4	0.875			
		INT.5	0.950			
		INT.6	0.890			
	Counseling Activities Using Computers (KPMK)	KPMK.2	0.888	0.903	0.931	0.772
		KPMK.3	0.884			
		KPMK.4	0.888			
		KPMK.5	0.855			
	Computer Operation (PK)	PK.1	0.865	0.965	0.957	0.796
		PK.2	0.857			
		PK.3	0.906			
		PK.4	0.892			
		PK.5	0.926			
		PK.6	0.896			
		PK.7	0.902			
	Application Software (SA)	SA.1	0.834	0.936	0.908	0.785
		SA.2	0.918			
		SA.3	0.910			
		SA.4	0.875			
Agricultural Extension Performance (Y)	Preparation of Extension Activities (PNP)	PNP.1	0.794	0.942	0.923	0.698
		PNP.2	0.775			
		PNP.3	0.906			
		PNP.4	0.935			
		PNP.5	0.749			
	Implementation of Extension Activities (PKP)	PKP.1	0.909	0.925	0.898	0.714
		PKP.2	0.932			
		PKP.3	0.744			
		PKP.4	0.771			
		PKP.5	0.854			
	Evaluation of Extension Activities (EKP)	EKP.1	0.860	0.920	0.890	0.766
		EKP.2	0.921			
		EKP.3	0.813			
		EKP.4	0.877			
		EKP.5	0.901			

Source: Processed Primary Data, 2022.

composite reliability test, which is reinforced by Cronbach's alpha. Composite reliability assesses the reliability of indicators on a variable, and a variable is considered reliable or meets the Cronbach's alpha value if it has a value of >0.6. Latent variables are considered to have good reliability if the composite reliability value exceeds 0.6. The composite reliability coefficient should ideally exceed 0.7, although a value of 0.6 is still acceptable (Hair *et al*., 2014). Internal consistency is not an absolute necessity once construct validity has been established because valid constructs are inherently unreliable, although the reverse may not be true (Mohajan, 2017). Composite reliability values of 0.6 to 0.7 and Cronbach's alpha values of >0.7 are considered indications of good reliability (Sarstedt *et al*., 2021).

Figure 3 shows that all research variable instruments are valid because they met the required convergent validity, which has an outer loading above 0.5. The following results of the testing the measurement model (outer model) includes measurement of convergent validity, discriminant validity, composite reliability and Cronbach's alpha of the constructs or variables of extension agent competence in utilising ICT and agricultural extension performance variables.

***Inner Model Testing*:** The next check after completing the outer model in the SmartPLS analysis is the inner model

analysis. The findings of the outer model analysis indicate that the constructs or variables meet the criteria for data validity and reliability (Wong, 2013). The results of testing the inner model are as follows.

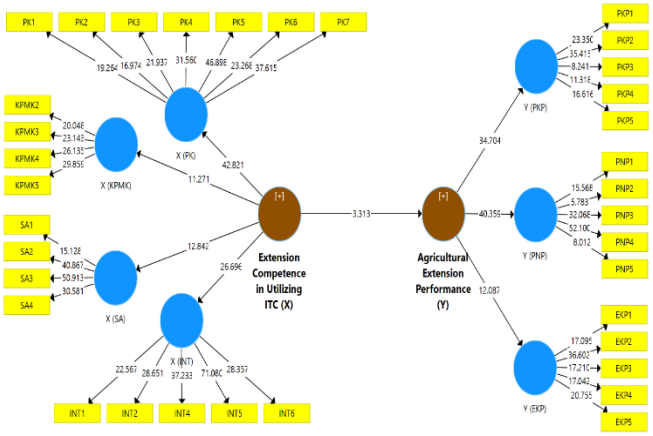

Figure 4. Inner Model testing results.

Inner model checking consists of assessing the path coefficient and R-squared (R^2) values. Path coefficient assessment shows the direction of influence exerted by the independent variable on the independent variable (Wong, 2013). A positive path coefficient value indicates a unidirectional influence of the independent variable on the independent variable, whilst a negative value indicates an opposite influence. The path coefficient test also reveals the extent of the influence of the independent variable on the dependent variable. The results of the path coefficient test are presented in Table 3.

Table 3. Path coefficient value.

Building	Agricultural Extension Performance (Y)
Extension Competence in Utilising Information and Communication Technology (X)	0.404

Source: Processed Primary Data, 2022.

Table 3 shows that each variable in this model shows a positive path coefficient. This finding indicates that as the path coefficient value for the independent variable increases in relation to the independent variable, the influence between the independent variable and dependent variable becomes considerably strong. Testing the coefficient of determination (R-squared) is a way to measure how much the endogenous (dependent) construct can be explained by the exogenous (independent) construct. The coefficient of determination (R-squared) is expected to range from 0 to 1 Al-Zwainy and Al-Marsomi (2023) provided the criteria for whether the R-squared value is 0.67 (strong model), 0.33 (moderate model) or 0.19 (weak model).

Table 4. R-squared values.

Constructs	R^2	R^2 adjusted
Agricultural Extension Performance (Y)	0.163	0.150

Source: Processed Primary Data, 2022.

Table 4 shows that the R-squared value, which is jointly or simultaneously influenced by the competence of extension agents in utilising ICT (X) on the performance of agricultural extension agents (Y), is 0.163 with an adjusted R-squared value of 0.150. Therefore, all exogenous constructs (X) affect the endogenous construct (Y) by 0.163 or 16.3%. The effect of exogenous constructs (X) on endogenous constructs (Y) is weak. That is, the contribution or influence of the variable competence of extension agents in utilising ICT on the performance of extension agents in Kendari is 16.3%, and the rest is influenced by other factors.

***Hypothesis Testing*:** Hypothesis testing in PLS-SEM can be made by using the calculated t-value (top) compared with the t-table value (tα). The t-table value with a significance of 5 per cent and degree of freedom (DF) = a number of data (n) − 2, namely 64 − 2 = 62, is 2.000 (t-table). The effect of the independent variable on the dependent variable is presented in Table 5.

Table 5 shows that the t-statistic value of the relationship between the competence of extension agents in utilizing ICT to support the performance of extension agents is 3.385 > t-table 2.000. This result indicates a significant relationship between the competence of extension agents in utilizing ICT to support the performance of extension agents in Kendari. Thus, the superior competence of extension agents in the utilization of ICT will cause an increase in the quality and quantity of the performance level of agricultural extension agents in carrying out their duties and responsibilities.

The results of the preceding study are consistent with Ragasa *et al*. (2016), who found a positive and significant relationship between the competence of extension agents and the performance of agricultural extension in improving self-

Table 5. Effect of extension competence variables in the utilisation of information and communication technology on agricultural extension performance.

Building	Original Sample (O)	Sample Mean (M)	T Statistics (|O/STDEV|)	P-values
Extension Competence in ICT Utilisation (X) -> Agricultural Extension Performance (Y)	0,404	0,409	3,385	0,001

Source: Processed Primary Data, 2022.

professionalism. Additionally, the work competence of extension agents should be supported by the creation of a good working atmosphere and organization (Taheri *et al*., 2020). Hence, the better the competence of extension agents, the better their performance level.

The role of extension agents who are able to adapt to changes that occur by maximising the existing potential by utilising all tools that are able to have a significant impact, especially on the main and business actors. One of these tools is the development of ICT. Agricultural extension agents who have competence in the ICT field will be able to develop themselves by finding various information and technological innovations in agriculture contributing to the achievement of sustainable development and national food security. In the current industrial era, the agricultural sector will experience rapid changes with the entry of technology that can facilitate agricultural activities (Khan *et al*., 2021; Liu *et al*., 2020). However, if this sector is not supported by the appropriate capabilities, then it will certainly cause problems or even be able to provide losses to the main and business actors themselves. Agricultural extension agents, as the spearhead of development, must be able to perform their duties, namely, changing the behaviour of farmers to be able to adapt themselves to technological developments and the changing times. Particularly at this time, the issue of extreme climate change often occurs, resulting in food crises in various countries, especially developing countries.

***Conclusion*:** The competence of extension agents in utilizing ICT in Kendari is applied by looking at factors of perception of computer use, frequency of computer use, computer operation, extension activities using computers, advantages of computers in extension activities, support for effective computer use, basic application software and the Internet. Agricultural extension performance is shown through all stages of extension activities, ranging from preparation to implementation and evaluation. Accordingly, there is a positive and significant relationship between the competence of extension agents in utilising ICT to support their performance in Kendari.

***Author contribution statement*:** I. Z. Rela: responsible for the overall research and writing of the paper; S. Salahuddin prepared the draft; D. Agustina reviewed and finalized the draft.

***Conflict of interest*:** The authors declare no conflict of interest

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***Ethical statement*:** This research contains no experimental measures on humans or animals.

***Availability of data and materials*:** We declare that the submitted manuscript is our work, which has not been previously published and is not under consideration for publication elsewhere.

***Availability Code*:** paper not applicable

***Consent to participate*:** All authors participated in this research.

***Consent for publication*:** All authors consented to publish this research in the Journal of Global Innovations in Agricultural Sciences (JGIAS).

***SDGs addressed*:** Quality Education, Decent Work and Economic Growth

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