(RESEARCH ARTICLE)

Agricultural extension workers' perception, usage, and satisfaction in use of internet in the Islands region of South Nias Regency, Indonesia (An Analysis using SEM-PLS Model)

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Abstract

The Internet is a potential information resource for agricultural extension. This study aimed to analyze agricultural extension workers' perceptions, usage, and satisfaction with the Internet and the effects of the perceptions on the level of usage and satisfaction with the Internet. The research was conducted in September-October 2022 at the Islands Region of South Nias Regency, the largest archipelago on Sumatra, and included as an underdeveloped territory in Indonesia. The research uses census techniques by interviewing all agricultural extension workers at South Nias. To describe the behavior of the Internet, use cross-tabulation and Spearman correlation. Path analysis using smart-PLS 4.0 is applied to know the direct and indirect effects of perceptions on the level of usage, and satisfaction of Internet, based on the Theory of Acceptance Model. Results of the research show that agricultural extension workers in South Nias use the Internet 4-6 hours/day with 7-8 sources, dominantly on cultivation techniques information and fertilizer prices. Generally, internal characteristics did not relate to the perception and satisfaction of using the Internet by agricultural extension. The path analysis showed that perception significantly influences the use and satisfaction of the Internet. The level of internet usage does not influence internet usage satisfaction, and it concludes that internet usage is not a mediating variable to affect the satisfaction of using the Internet in the model.

Keywords: Agricultural Extension Worker; Internet; Perception; Satisfaction; South Nias Indonesia

1. Introduction

Global, and also Indonesian society is currently experiencing a digital transformation. The Indonesian government has just drawn up the 2021-2024 Indonesia Digital Roadmap, which includes four strategic sectors and six targets for accelerating Indonesia's digital transformation. The four strategic sectors include digital infrastructure, government, economy, and citizens. While the six targets achieved are the development of safe digital infrastructure, the development of open and integrated digital government institutions, turning Indonesia into a technology producer through the development of 4G and 5G across the country, removing legal and monetary barriers to innovation, strengthening digital capacity to enhance competitiveness, and finally building a digital culture [1]. Likewise, the Indonesian Ministry of Agriculture is pushing to transform extension services from conventional to digital in the agricultural sector [2].

Extension agents are the spearhead of agricultural development, with various roles as facilitators and initiators and intermediaries between researchers, farmers, trainers, and producers [3]. Agriculture extension has become a main strategy in the global effort to improve food security and promote sustainable farming practices. Extension services provide farmers with the knowledge, resources, and support they need to increase crop yields, adopt new technologies,

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and adapt to changing environmental conditions. By working closely with farmers and local communities, extension agents can help to build resilience, reduce poverty, and promote economic growth. As the world faces increasing pressure to feed a growing population while protecting natural resources, agriculture extension will continue to play a critical role in shaping the future of global agriculture.

In 2022 through Presidential Regulation (Perpres) number 35 of 2022 programs to strengthen working relations, strengthen sub-district and village Agricultural Extension institutions, provide and increase the capacity of extension agents, Agricultural Extension materials, utilization of information technology and communication, as well as guaranteeing the availability of infrastructure and facilities (Regulatory Portal of the Indonesian Audit Board of the Republic of Indonesia, 2022). The Ministry of Agriculture has launched the application of Information and Communication Technology (ICT). Smart Feed Agrinak, My Agri, LKP Program (Rice Consultation Service), ITani, Planting Calendar, Takesi, and Cyber Extension, a web that provides information on extension materials from extension agents to extension agents, were applications that the government launched.

Communication information technology can be a means to access variously affordable, relevant, and reliable sources for farmers or extension workers Technology is an essential tool in future agricultural development in today's era. The internet offers good information alternatives in the field of agriculture, including online marketing [4] and understanding of material and extension assignments [5] [6]. Four channels through which the Internet affects job satisfaction [7]. First, using the Internet may save workers' work time and increase productivity. Second, through social software, the Internet provides workers with a convenient and inexpensive channel for remote communication. Third, the development of Internet technology has created a large number of new jobs. Fourth, on the Internet, there is a large amount of information and data for workers. It summarize these four channels as two mechanisms that influence job satisfaction: the information acquisition effect and the technology acquisition effect. The information acquisition effect refers to the fact that the Internet enhances the ability of individuals to access information, communicate information, and information selection in the labor market.

Several studies have concluded that there are at least some things that influence the use of the internet for agricultural extension workers, including individual characteristics, namely age, education, and experience [6] [8], features of media accessed via the internet [6], and training was recommended to be given to extension workers to increase the digital literacy of agricultural extension workers [4]. Furthermore, the internet use significantly improves job satisfaction [9].

The Nias Islands can be said to be one of the areas where the distribution of internet access has not been evenly throughout the region (results of interviews and initial observations of the author). Nias Islands is an archipelago with high agricultural potential. South Nias Regency is one of the regencies in North Sumatra Province, located on the island of Nias, which has the most significant number of sub-districts in the category of very underdeveloped villages [10]. Based on data from the Central Statistics Agency, in 2021, the population of South Nias Regency will be 360,531 people, with a population density of 145 people/km2, and work as farmers and fishermen, but farmer's occupation was dominant. According to Central Bureau Statistics of Indonesia news (2022) [11], the agricultural, forestry, and fishing business fields play a dominant role in South Nias Regency's GRDP, namely 44.57%. South Nias Regency is a district with potential for plantation crops, especially coconut, rubber, and cocoa plantations, as well as several types of vegetables. Apart from plantation crops and vegetables, food crop commodities also have quite potential, namely the rice crop commodity, which has an area of 17,230 hectares and an average production of 59 tons per year.

The agricultural potential of South Nias Regency requires modernization support in its cultivation and agribusiness. The urgency of modernization, is not only in agricultural systems but also in the organization and modern management of extension services so that they can respond to the quality demands of sustainable development and different agroecological zones [12], [13}. Whether agricultural extension workers at South Nias are ready to use the internet? The purpose of this research is as follows: (a) to determine the behavior of agricultural extension workers in South Nias District Indonesia utilizing the Internet by describing the agricultural extensions worker perceptions, level of Internet usage by agricultural extension workers, and satisfaction use of the Internet; (b) to analyze analyze direct and indirect effect of the perceptions to the level of usage and satisfaction use of the Internet.

2. Methods

2.1. The Study Area

This research uses a quantitative descriptive approach to look at the phenomenon of using the internet by agricultural extension workers in the Islands Region of South Nias Regency, Indonesia.
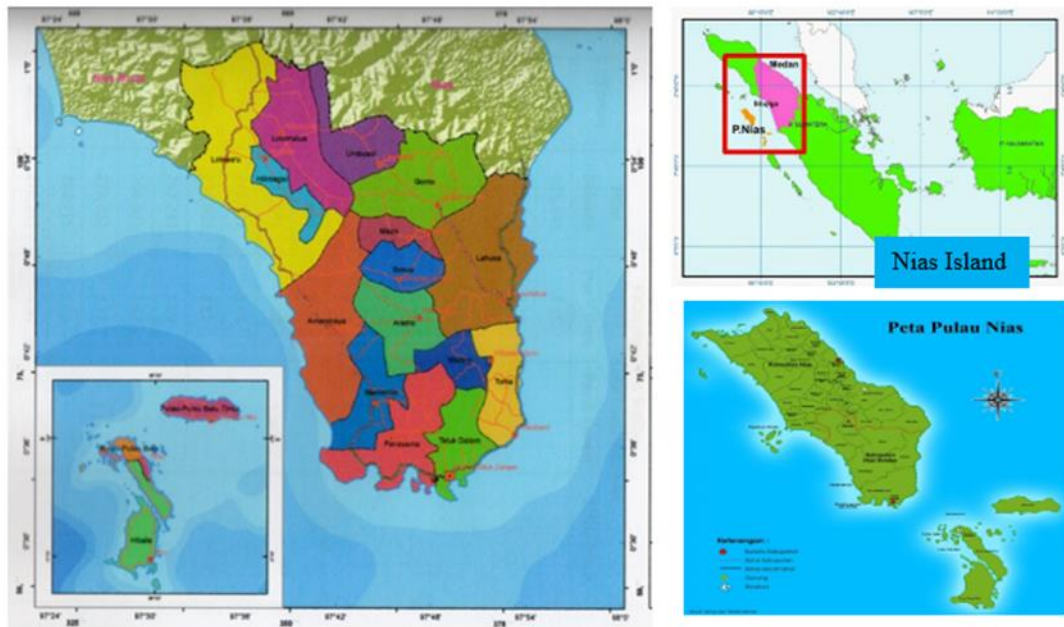
Figure 1 Map of South Nias Regency, which is an archipelago in North Sumatra Province

Nias Island is the largest archipelago on the island of Sumatra, which the villages in this area include as the underdeveloped category in Indonesia. South Nias Regency, which is an extension of Nias Regency, has an administrative area of 2,487.98 km2. The location of the islands in South Nias Regency extends parallel to the island of Sumatra. The total number of islands is 101 with 4 (four) large islands. There are 21 inhabited islands and 83 uninhabited islands.

2.2. Population of Study

The sampling technique used saturated or census sampling, namely the entire South Nias District Agricultural Extension, totaling 34 respondents. The agricultural extension worker has the status of a state employee at the South Nias Food Security Service. The number of extension workers in the South Nias District could be better and requires adequate government policies.

2.3. Data and Analysis Techniques

The primary data used in this research is the results of interviews and filling out questionnaires by agricultural extension workers in South Nias Regency. The research variables analyzed included the workers age, education, work experience, extension worker perception of the internet, the level of internet use, and satisfaction of extensions workers using the internet. To measure extension worker perception of the internet and satisfaction of extensions workers using the internet, using a five-point Likert scale (5 = Strongly Agree, 4 = Agree, 3 = Neither Agree nor Disagree, 2 = Disagree, and 1 = Strongly Disagree), while the level of internet usage was using a nominal rating scale.

The research hypothesis is that the perception of the Internet will, directly and indirectly, affect the satisfaction of extension workers using the Internet. Descriptive analysis, such as frequency, percentage distributions, cross-tabulation, and correlation were used to describe the behavior of agriculture extension workers in various characteristics. In addition, the research also applies the path analysis technique using smart-PLS 4.0 to know the direct and indirect effects of perceptions of the Internet, the level of Internet usage, and satisfaction with the Internet by agricultural extension agents in Nias Regency. Referring to [14], path analysis has the power that the researcher can determine the direct and indirect effects. In research using PLS-SEM which differs from covariance-based SEM, which requires large sample sizes that can include hundreds or even thousands, PLS-SEM is enough to use a few observations. According Rigdon in [15], PLS-SEM can be used with smaller samples but the population's nature determines the situations in which small sample sizes are acceptable. The analysis model in this research is based on the Technology Acceptance Model [16] as a major research to investigate the determinants of the behavior of receiving and using information systems in the last few decades. Hypothesis concerning perception and internet use on satisfaction as follows in Figure 2.
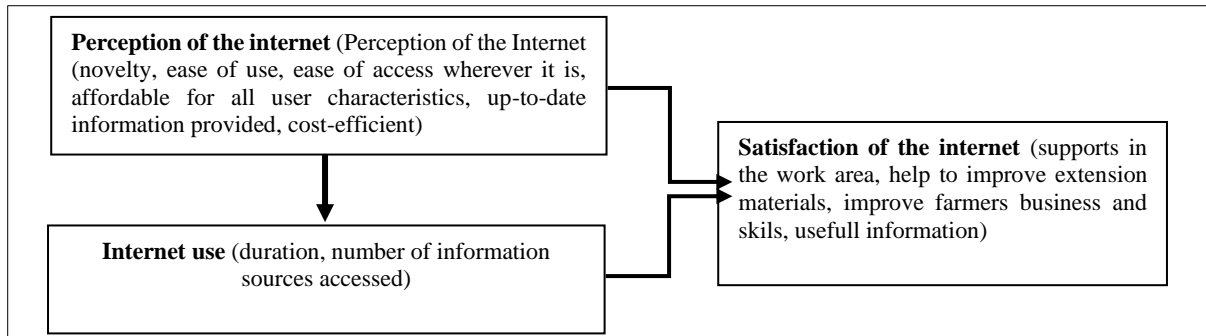
Figure 2 Framework diagram

3. Result and Discussions

3.1. Agricultural Extension Workers Characteristic

They find that mental ability tests predict a person's job performance better than any other observable characteristic. Agricultural field extension workers in South Nias Regency are dominated by young workers under 50 years of age, and high school education levels, and the male workers were more than female.

Table 1 Distribution of Respondents according Their Characteristics

Characteristics	Category	Frequency	Percentage	Mean	Standard Deviation	Minimum	Maximum
Age	< 30	0	0%	41.3	7.44	32	55
	30-33	5	14.7.0 %				
	34-36	7	20.60%				
	37-40	7	20.60%				
	41-43	2	5.90%				
	44-46	4	11.80%				
	>46	0	0%				
Gender	Male	23	67.60%	-	-	Male	Female
	Female	11	32.40%				
Level of Education	High school	17	50.0%	13.35	2.17	12	17
	Vocational	7	20.58%				
	Diploma	2	5.88%				
	University	8	23.52%				
Years of working experience	≤ 10	0	0%	14.94	4.07	11	28
	11-14	24	70.60%				
	15-18	6	17.60%				
	22-24	2	0.90%				
	25-29	2	590%				
	≥ 30	0	0%				

Agricultural field extension workers in South Nias Regency are dominated by young workers under 50 years of age, and high school education levels, and the male workers were more than female. The condition of agricultural workers in South Nias Regency is different from several other regions in Indonesia, including in Jeneponto and Bulukumba Regency, South Sulawesi Province [17]; [18], Konawe Regency, Southeast Sulawesi Province [19], Bulukumba Regency, South Sulawesi, Magelang Regency, Cetral Java Province [20], where at those locations found agricultural workers had bachelor's level education, and in West Java Province, the education level of many extension workers even reaches master [21]; [22].

In some countries, for example, in Saudi Arabia, most agricultural extension workers (81%) are under 45 years of age, and three-quarters (75%) have a bachelor's or postgraduate degree. Young people and adolescents (futuristic farmers, extension workers, researchers, and investors) are the most social media customers, encouraging extension services to influence their agricultural socialization [23]. A research in Ethiopia [24] found that agricultural development agents were under 30 years with a diploma education or above; [25] research found agricultural extension agents in Kwara State, Nigeria, aged between 31 to 40 years and had a Higher National Diploma/ B. Agriculture. Research by [26] of extension workers in Ghana and Ethiopia found that 20.3% had a diploma-level training certificate, 45.5%, and around 40 (32.5%) had undergraduate-level training, and some had a Master's degree. [27] stated that individual characteristics, such as education, work experience and general mental abilities, relate to job performance.

3.2. Agricultural Extension Workers Behavior of Using Internet

Nowadays, field agricultural extension workers must improve their understanding of information and communication technology development. Freedom of internet access is an opportunity to increase efficiency in supporting extension workers' duties. The increase in the use of cell phone media or smartphones and online counseling in counseling assignments was even higher during the Covid-19 pandemic [28]; [29]; [17]. Table 3 shows the behavior of agricultural extension workers accessing the internet, and about seven sites are accessed every day.

Table 2 Behavior of Field Agricultural Extension Workers using Internet

Behavior	Category	Frequency	Percentage
Frequency to field	3 times in a week	1	2.90%
	4 times in a week	32	94.10 %
	5 times in a week	1	2.90%
Length of use of the Internet to search for agricultural information	Using > 6 hours per day	5	14.70%
	Using 4-6 hours per day	17	50.00%
	Using 2-4 hours per day	12	35.30%
	Using 1-2 hours per day	0	0%
	Using < 1 hours per day	0	0%
Number of information sources (sites) accessed	On average more than eight agricultural information sources accessed in 1 day	6	17.60%
	On average seven until eight agricultural information sources accessed in 1 day	15	44.10%
	On average five until six agricultural information sources accessed in 1 day	13	38.20%
	On average three until four agricultural information sources accessed in 1 day	0	0%
	On average only one until two agricultural information sources accessed in 1 day	0	0%
Frequently visited sites	Cyber extension (https://cybex.pertanian.go.Id)	34	100%

	Pak Tani Digital/Startup Sosial Petani Indonesia (https://paktanidigital.com/)	34	100%
	Various national you-tube channel	34	100%
Materials that are most often founded on the internet by agricultural extension workers	Sub-system of inputs/factors of production	14	44.10%
	Cultivation techniques	17	50.00%
	Harvest and post-harvest techniques	0	0%
	Marketing and support sub-systems	2	5.90%

Source: primary data (2022)

Table 2 shows the behavior of agricultural extension workers accessing the internet, and about seven sites are accessed every day. The leading site widely viewed is cyber extensions.go.id, a media for delivering agricultural information through a smartphone application and a website created by the Indonesian Ministry of Agriculture. Agricultural extension workers spend around 4 to 6 hours accessing the internet to find agricultural information. The agricultural information extension workers seek agricultural cultivation techniques and inputs or production facilities used in crop cultivation. [30], research results found that around 51.43% of agricultural extension workers in Sleman Regency rarely or occasionally used the Internet. Likewise, the findings of [21], research, the use of the Internet to obtain agricultural information by agricultural extension agents in the West Region of Bogor Regency belongs to the low category, where more than half of the respondents use the Internet less than three times a week. Almost all extension agents access the Internet for less than three hours daily. Agricultural extension workers are increasingly choosing the Internet as a tool to help their job. [31] shows that out of seven ICT tools, the knowledge of extension workers in Gazipur District, Bangladesh, was highest in the case of MS Word, followed by the Internet/ web service. However, the majority (88.9%) of agricultural extension workers in the study area had low to medium knowledge of ICT utilization.

3.3. Field Agricultural Extension Workers Perceptions of The Internet

The use of the Internet by agricultural extension workers can facilitate access to the latest agricultural information, improve the quality of extension services, and provide support for the success of agricultural programs. The study in the South Nias District, as shown in Figure 3, showed that not all extension workers agreed that the Internet was a new device; almost 23,5% of extension workers answered neutral or were unsure. As many as 26.5% of extension workers stated that they were neutral (undecided). As many as 2.9% of extension workers stated that they disagreed with the statement that the Internet is easy to use to help them with their tasks. For agricultural extension workers in Nias District, the Internet is not the only tool for obtaining up-to-date information. Perceived ease of use is defined as the level of trust of individuals who use new technology will be free from difficulties [16]. This has a strong influence on behavioral intentions on information technology adoption. If a technology is perceived as easy to use, people will choose to implement it. The application of ease of use in the context of research is that customers believe through the internet will be flexible in making use of, easy in learning the use of applications.
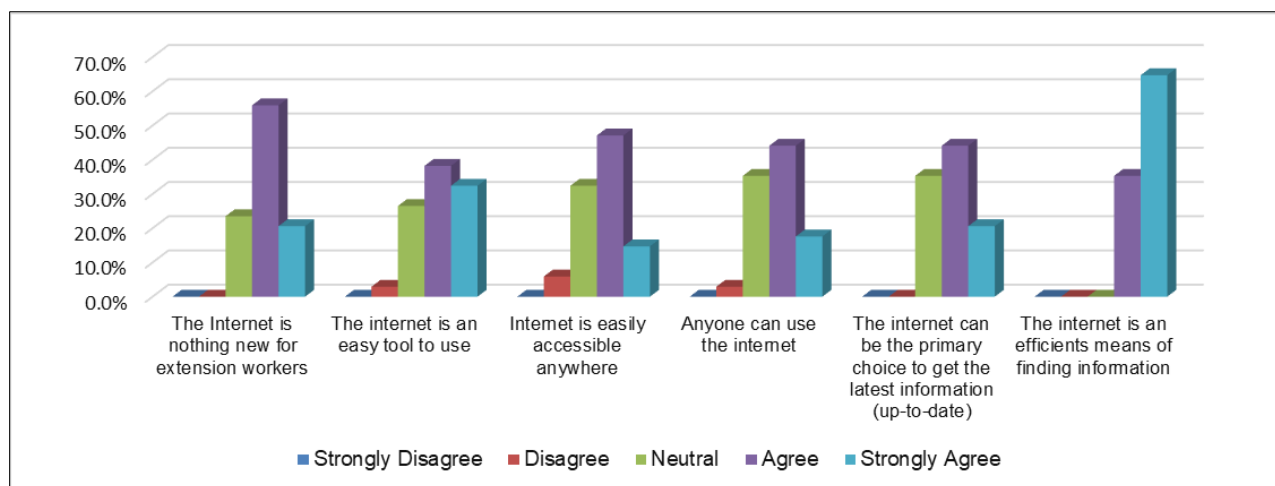

Figure 3 Field Agricultural Extension Workers Perceptions of the Internet

Some extension workers (5,9%) disagree and 32,45% are unsure that the internet is easy to use and can be accessed anywhere, and not everyone can use the internet. The research findings were interesting that as many as 35.3% of extension workers stated they were neutral or doubtful. As many as 2.9% of extension workers disagreed that every extension agent could use the Internet. About 35.3% stated that they were neutral or doubtful that the Internet was the primary source of looking for agricultural information. Although extension workers still disagree with the Internet, almost all consider the Internet a very efficient or cost-effective device for obtaining information.

3.4. Agricultural Extension Workers Satisfaction Using Internet

Does the internet give satisfaction for extension work? [32] defined job satisfaction as a pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating the achievement of one's job values, which this achievement, as well as the pleasurable emotional state, are subjective. Figure 6 explains the research findings on the satisfaction of South Nias agricultural extension workers with internet usage.
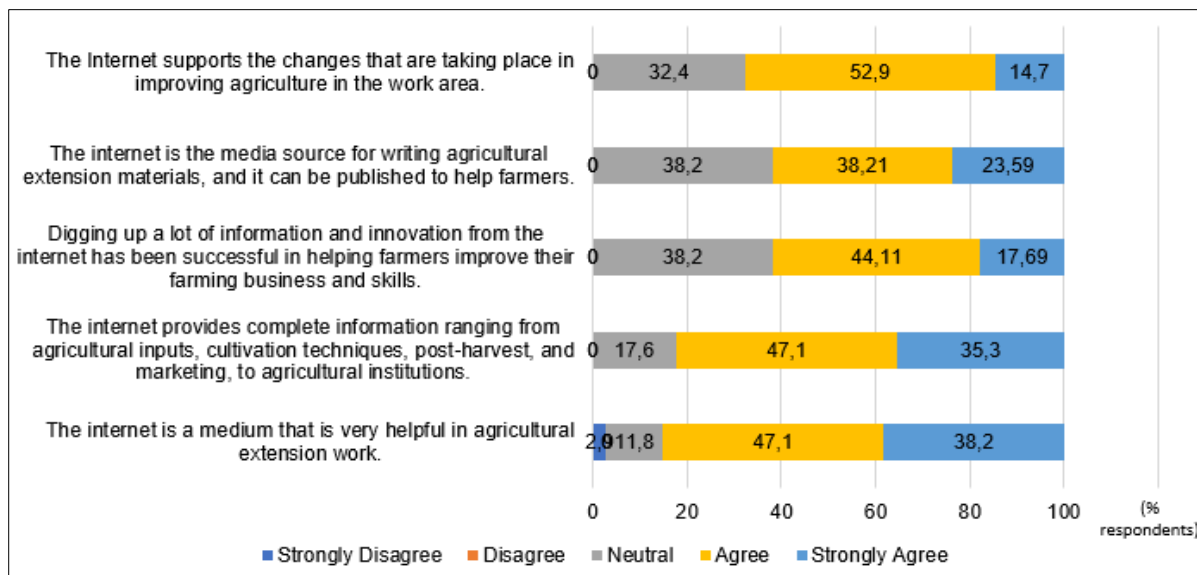

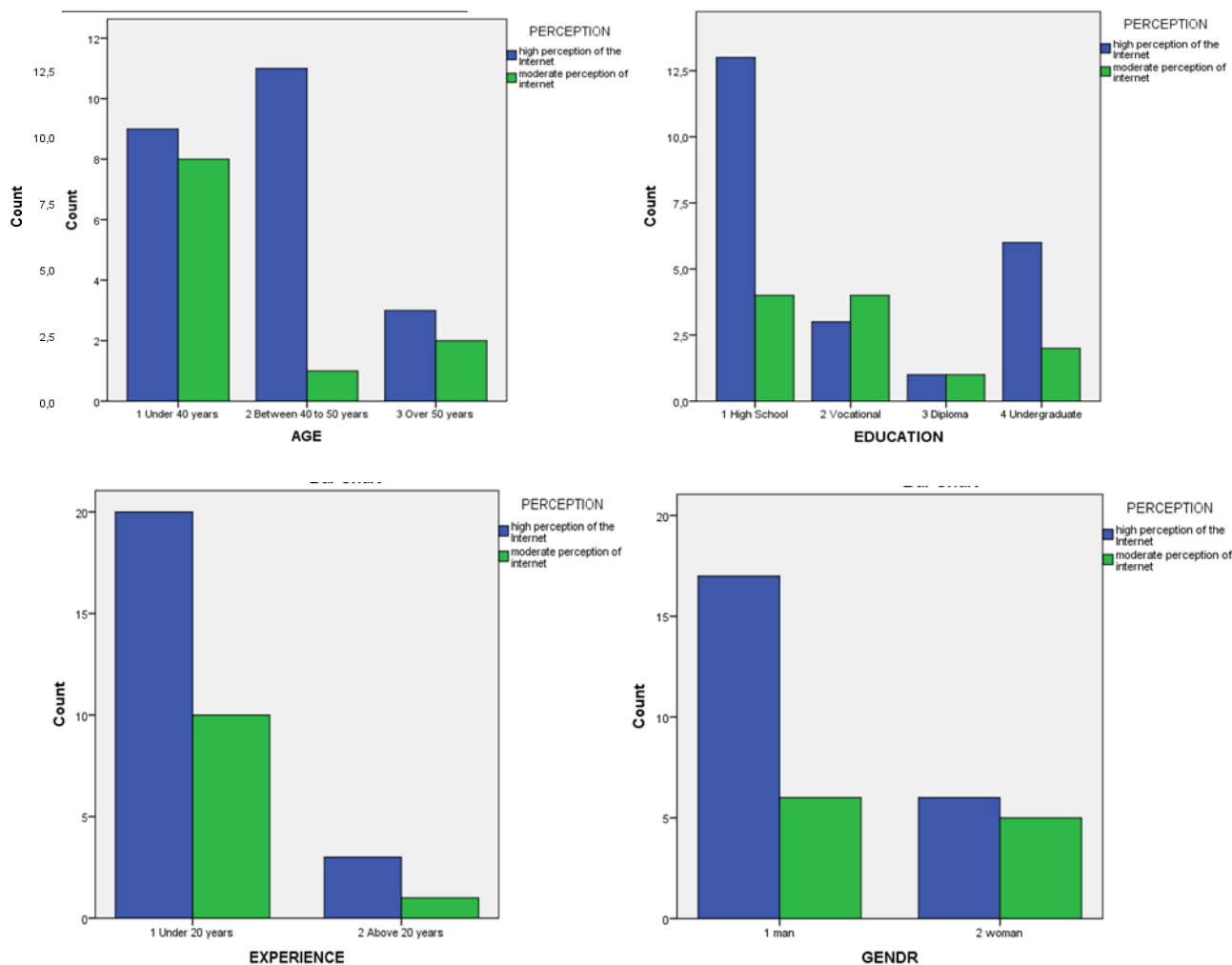**Figure 4** Field Agricultural Extension Workers Satisfaction of the Internet

Indicators of extension workers satisfaction with the internet include satisfaction in assisting extension workers, satisfaction related to quality and complete materials, satisfaction with the internet in helping farmers, and satisfaction in helping with preparing extension materials and supporting agriculture in the extension work area. Agriculture extension workers in South Nias appear satisfied with using the Internet to provide benefits in their assignments; in improving agriculture, making extension materials; helping farmers with business (marketing) and skills; improve the technical aspects of farming and post-harvest. Internet can help understand the latest changes in agriculture, including the latest agricultural policies issued by the government, new agricultural technologies, and business information and skills in agriculture, such as farmer group management. According [33], the competency of extension workers at Bondowoso, East Java, especially in technology access and management of farmer group management. Internet facility is familiar for field agricultural extension workers, but the Internet will provide optimal benefits for extension workers if used.

3.5. Cross-tabulation Analysis

3.5.1. Cross-tabulation Analysis of Agricultural Extension Workers Characteristic and Perceptions

In Figure 4, the results of the cross-tabulation analysis between the characteristics of extension agents and their perceptions of the Internet show that there is no tendency for specific characteristics to have a high perception of the Internet. Agricultural extension workers in different age categories gave similar perceptions of the internet, but those above 40 years old used the internet more frequently and for longer than those below 40 years old. The lower use of the internet by younger extension workers may be because younger extension workers are quicker and easier to understand the use of the internet and are more likely to "learn" in the field. The results of the data analysis found that extension worker with high school education gave high perceptions of internet. Extension workers who have been working for a longer period of time do not have a significantly higher perception of the Internet and a higher level of

Internet use than those with less years of experience. The cross tabulation showed that extension workers with male gender showed higher perception of Internet.

Figure 5 Cross-tabulation Analysis of Agricultural Extension Workers Characteristic and Perceptions

The government has developed communication technology infrastructure and the Internet in all corners of Indonesia. However, South Nias is one of the archipelagoes in Indonesia that still needs improvement. The ease of access and the ability to use internet technology seems yet to be optimally and evenly achieved by agricultural extension workers. Research by [34], the availability of facilities has a significant positive effect on the behavior of agricultural extension workers in using the Internet.

3.5.2. Cross-tabulation of Agricultural Extension Workers Characteristic and Internet Usage

Based on cross-tabulation data analysis, the age of extension workers was between 40-50 years, with around 83.35 using the internet in the high category; extension workers aged over 50 years also showed 80% at a high level of using the internet, while extension workers aged under 40 years were only around 35.29 % utilize high-level internet. Figure 5 shows that agricultural extension workers in South Nias Regency with high school education are relatively higher in use than agricultural extension workers with vocational, diploma and bachelor's degree. Out of 17 extension workers with high school education, 76.47%, only about 23.53% belong to the level of medium internet usage. Of the eight agricultural extension workers with basic education, 62.5% used the Internet at a high level.

Agricultural extension workers with vocational education tended to have the lowest percentage in the high category of internet use (only about 14% of the total of 7 PPLs had vocational education). Extension workers with ample work experience use the internet to support their duties. Male worker showed higher use of internet than female worker, this may be due to social norms and women's role as housewives or marital status.
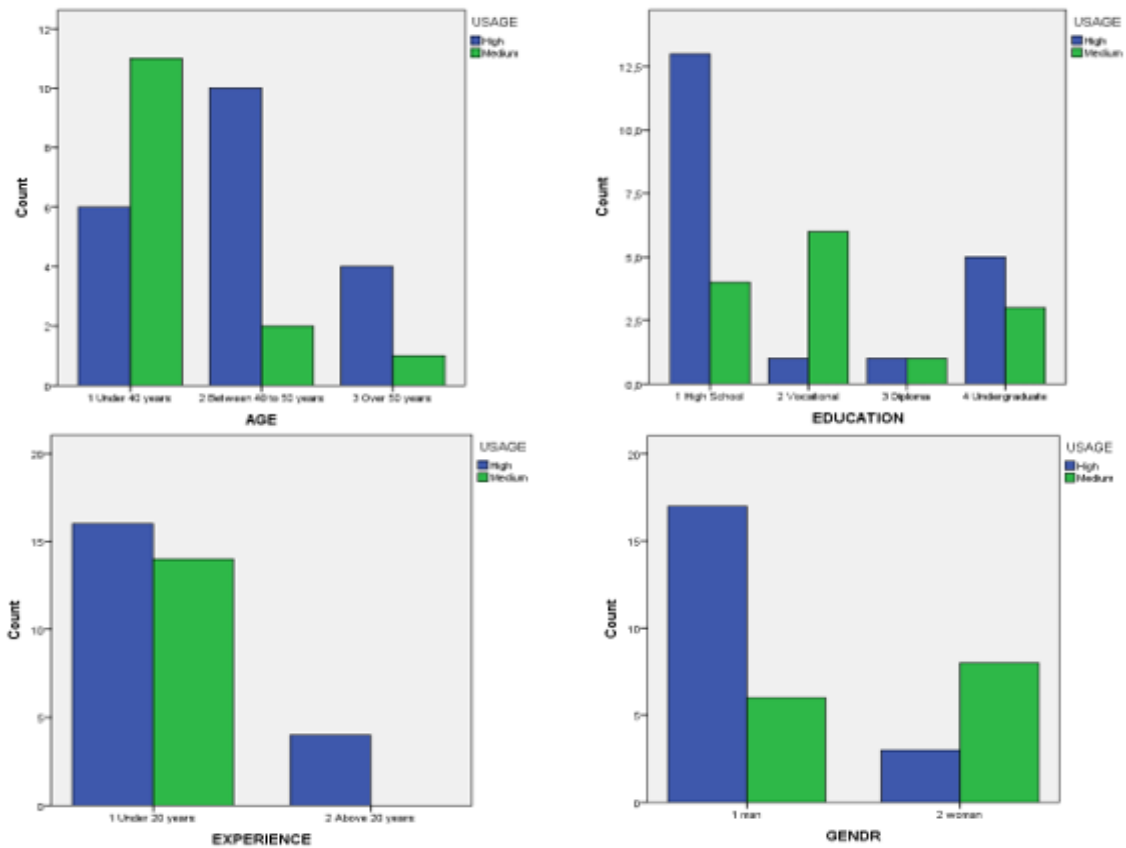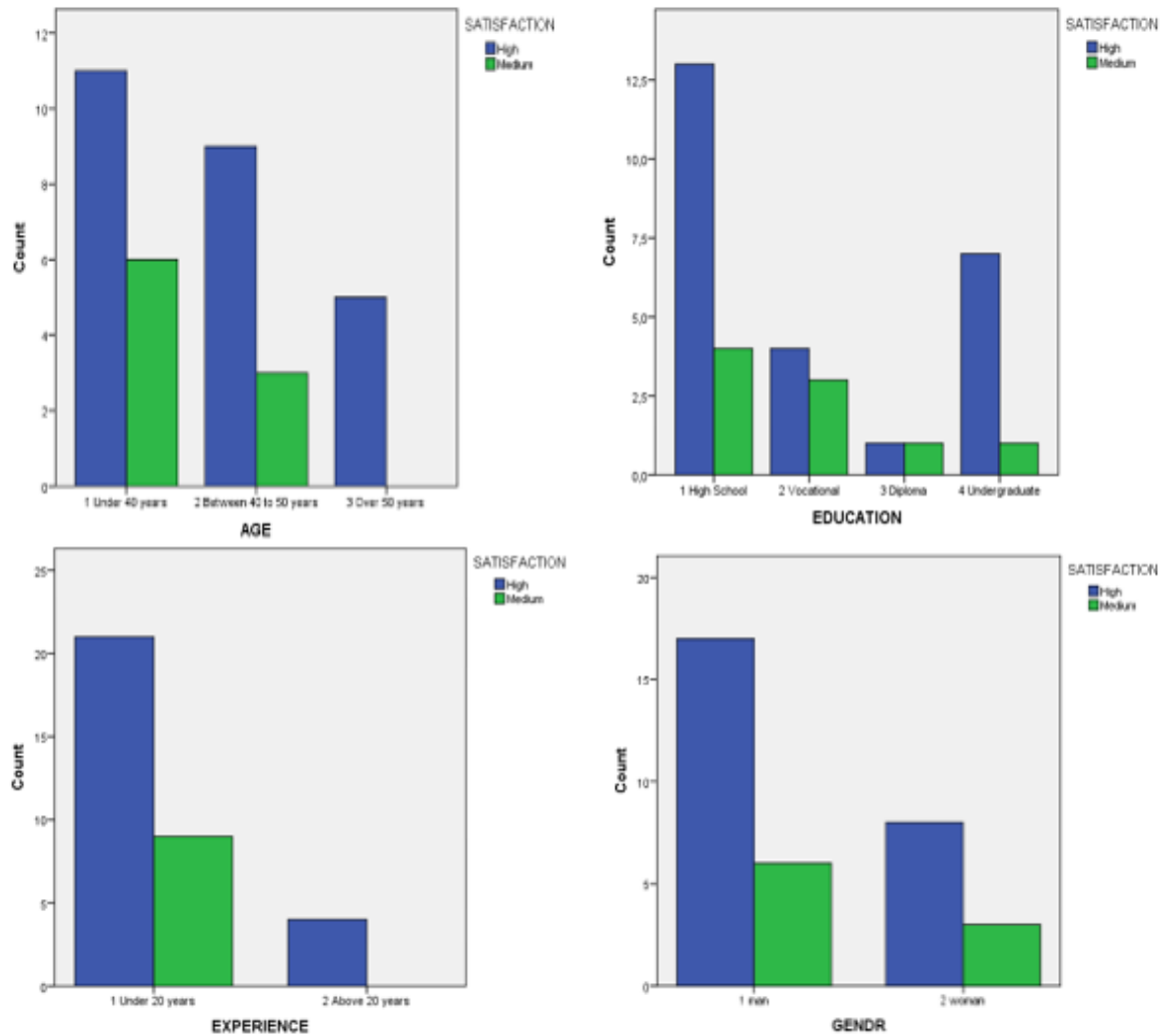
Figure 6 Cross-tabulation of Agricultural Extension Workers Characteristic and Internet Usage

Reports from the Economist Intelligence Unit (EUI), the International Telecommunications Union (ITU) and the GSM Alliance (GSMA) (2020) show that men are still 21% more likely to be online than women, rising to 52% in the world's least developed countries. The lower the percentage of women online, the larger the digital gender gap will be. [30] research showed personal factors and situational factor of agriculture extension workers indirectly influenced the performance of agriculture extension workers of the behavior of seeking information in agriculture. Age and salary of agricultural extension workers as personal factors have no direct or indirect effect through the variable between agricultural information seeking behavior on the performance of agricultural extension workers.

3.5.3. Cross-tabulation Analysis of Agricultural Extension Workers Characteristic and Internet Use Satisfaction

Cross tabulation in Figure 7 shows variations in the satisfaction of agricultural extension agents based on the internal characteristics of the extension agents.

Figure 7 Cross-tabulation Analysis of Agricultural Extension Workers Characteristic and Internet Use Satisfaction

There were more agricultural extension workers with high than medium satisfaction rates on various age criteria. Likewise, the various criteria for education, length of work experience, and gender show a similar pattern, namely that more agricultural extension workers have high satisfaction than medium satisfaction.

3.6. 3.6. The relationship between perception, level of use, and satisfaction of internet use

According the theory of the Technology Acceptance Model [16] two primary factors influencing an individual's intention to use technology are perceived ease of use and usefulness. The attitude toward using technology is influenced by two significant beliefs: perceived usefulness and ease of use, and perceived ease of use directly affect perceived usefulness. Previous research concluded that the variable perception of the internet is closely related to internet usage behavior and satisfaction. [31] concluded that job satisfaction of the agriculture extension workers in Gazipur, Bangladesh showed a significant positive relationship with their perception towards ICT utilization.[35] states that the high use of information technology further increases the satisfaction of service users. The use of information technology by agricultural extension workers helps improve performance on duty [36]. According to [9], internet use induces job satisfaction by increasing time efficiency and enhancing job autonomy.

Path analysis was carried out in this study to see the mutual influence between perception variables, internet usage, and satisfaction with the internet. In first phase of analysis process, we do data validation, reliability test, model fit and goodness, and evaluation of structural model.

3.6.1. Loading Factor (LF)

The loading factor value can be said to be valid if ≥ 0.70 [15], but if the loading factor value is below 0.70, the indicator (observed variable) is said to be invalid or not good enough to measure latent variables and must be excluded from the analysis. The results of the initial evaluation of the outer loading value of the variable perception indicator 3,4,6 have a value <0.70, so they are not used in the analysis. The results of convergent validity can be seen in Table 3.

Table 3 Loading Factor

Variable	Loading value	result
X4.1 <- Perception of internet	0.745	valid
X4.2 <- Perception of internet	0.807	valid
X4.5 <- Perception of internet	0.853	valid
Y5.1 <- Internet Use	0.987	valid
Y5.2 <- Internet Use	0.983	valid
Z1.1 <- Satisfaction Use of Internet	0.748	valid
Z1.2 <- Satisfaction Use of Internet	0.784	valid
Z1.3 <- Satisfaction Use of Internet	0.780	valid
Z1.4 <- Satisfaction Use of Internet	0.720	valid
Z1.5 <- Satisfaction Use of Internet	0.911	valid

Overall, each indicator that measures latent variables has an LF >= 0.70 so that the indicators in the model are declared valid.

3.6.2. Composite Reliability

Composite Reliability is used to test the value of the reliability of indicators on a variable. A variable is said to be reliable if the Composite Reliability has a value greater than 0.7

Table 4 Composite Reliability

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Internet Use	0.97	0.981	0.985	0.971
Perception of internet	0.728	0.759	0.844	0.645
Satisfaction Use of Internet	0.85	0.869	0.893	0.626

The variables of perception of the internet, level of use, and satisfaction with the internet have a value (CR >= 0.70) which indicates that each item that measures perception, level of use, and satisfaction with the internet is consistent/reliable in measuring this variable. The AVE value of the variable perception, level of use, and satisfaction with internet use are >= 0.50, which means good convergent validity conditions. One latent variable can explain more than half of the variance of its indicators in the average.

3.6.3. Discriminant Validity

Discriminant validity is analyzed using the Fornell and Lecker tests.

Table 5 Fornel dan Lecker Value

	Internet Use	Perception of internet	Satisfaction Use of Internet
Internet Use	0.985		
Perception of internet	0.771	0.803	
Satisfaction Use of Internet	0.524	0.776	0.791

Table 5 shows that the root value of AVE (bold) is greater than the correlation of other variables, so it is concluded that the discriminant validity requirements are fulfilled. Likewise, the validity value of the model can be seen from the cross-loading value.

Table 6 Cross Loading Value

	Internet Use	Perception of internet	Satisfaction Use of Internet
X4.1	0.345	0.745	0.709
X4.2	0.46	0.807	0.622
X4.5	0.935	0.853	0.572
Y5.1	0.987	0.792	0.565
Y5.2	0.983	0.723	0.461
Z1.1	0.463	0.593	0.748
Z1.2	0.595	0.746	0.784
Z1.3	0.337	0.479	0.78
Z1.4	0.195	0.473	0.72
Z1.5	0.409	0.7	0.911

3.6.4. Multicollinearity test

Before testing the structural model, it is necessary to check the multicollinearity between the variables by looking at the Inner VIF value, where between variables must be free from multicollinearity indicated by the VIF value < 5. As shown in Table 7, the VIF value between variables is <5, so it can be concluded that the model is free from multicollinearity

Table 7 Inner VIF

Item	Variance Inflation Factor (VIF)
Internet Use -> Satisfaction Use of Internet	2.467
Perception of internet -> Internet Use	1.000
Perception of internet -> Satisfaction Use of Internet	2.467

As shown in Table 7, the VIF value between variables is <5, so it can be concluded that the model is free from multicollinearity

3.6.5. Goodness of fit

The fit and goodness of the model are shown by the R square and SRMR values (Tables 8 and 9).

Table 8 R square Value

Item	R-square	R-square adjusted
Internet Use	0.595	0.582
Satisfaction Use of Internet	0.615	0.590

The magnitude of the influence of the perception variable on the level of internet usage is 59.5%. In [15], it is said to be moderate, so is the influence of the perception variable on the internet, and the level of use showing an R squared value of 61.5% which is also said to be at a moderate level. Next, to see the model's suitability with empirical data, look at the SRMR value.

Table 9 SRMR Value

Item	Saturated model	Estimated model
SRMR	0.132	0.132
d_ULS	0.960	0.960
d_G	0.876	0.876
Chi-square	118.810	118.810
NFI	0.625	0.625

The SRMR value is 0.132 or more than 0.10, so the proposed model is suitable or close to the empirical data. The estimated model correlation matrix results in this study are close to the correlation of empirical data.

3.6.6. Significance Value

Table 10 Significance Value of Variables

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Internet Use -> Satisfaction Use of Internet	-0.183	-0.213	0,143	1.283	0,199
Perception of internet -> Internet Use	0,771	0,782	0,068	11.262	0.000
Perception of internet -> Satisfaction Use of Internet	0,917	0,956	0,116	7.920	0.000

This research use p values to asses significance level, which when p value smaller than 0.05 the the relationship is significant at a 5% level, and when p valeu smaller than 0.01, it means that the relationship is significant at 1% level. Acording Table 13, the model formed shows that perceptions of the internet had significant relationship with internet usage behavior and the satisfaction, but internet use did not significant relationship with satisfaction of the internet.

The final results of the path analysis in this research, are shown in Figure 8. For bootstrap procedure, 5000 subsample were used, in the second phase of analysis.

A positive perception of the Internet will increase the use of the Internet by agricultural extension workers at the island of South Nias. Infrastructure services that support the ease and smoothness of extension workers accessing the Internet wherever they are essential things to note. The ease of accessing the Internet must be accompanied by increased understanding by agricultural extension workers to be more insightful and skilled in finding more sources of agricultural information that are useful for their tasks. In addition to facilities, habits or cultural factors also influence

perceptions., as results of the research of [37], large-scale online surveys in Korea, Hong Kong, and Taiwan show that cultural factors significantly influence post-adoption perceptions of mobile Internet service users.

Positive perceptions of the Internet also positively influence the worker's satisfaction with the Internet. Agricultural extension workers' perceptions of the Internet are influenced by a supportive work environment, including support for internet access facilities, resulting in extension worker satisfaction. These results reinforce that forming positive perceptions is the initial thing that needs to be formed and strived for better satisfaction. Satisfaction with technology will support good performance. Herzberg's motivation-hygiene theory states that there are certain factors in the workplace that cause job satisfaction or dissatisfaction. Increasing extension workers' perceptions of the internet will increase internet user satisfaction. In this case, this can be done by completing internet access facilities and overcoming agricultural extension workers' obstacles.
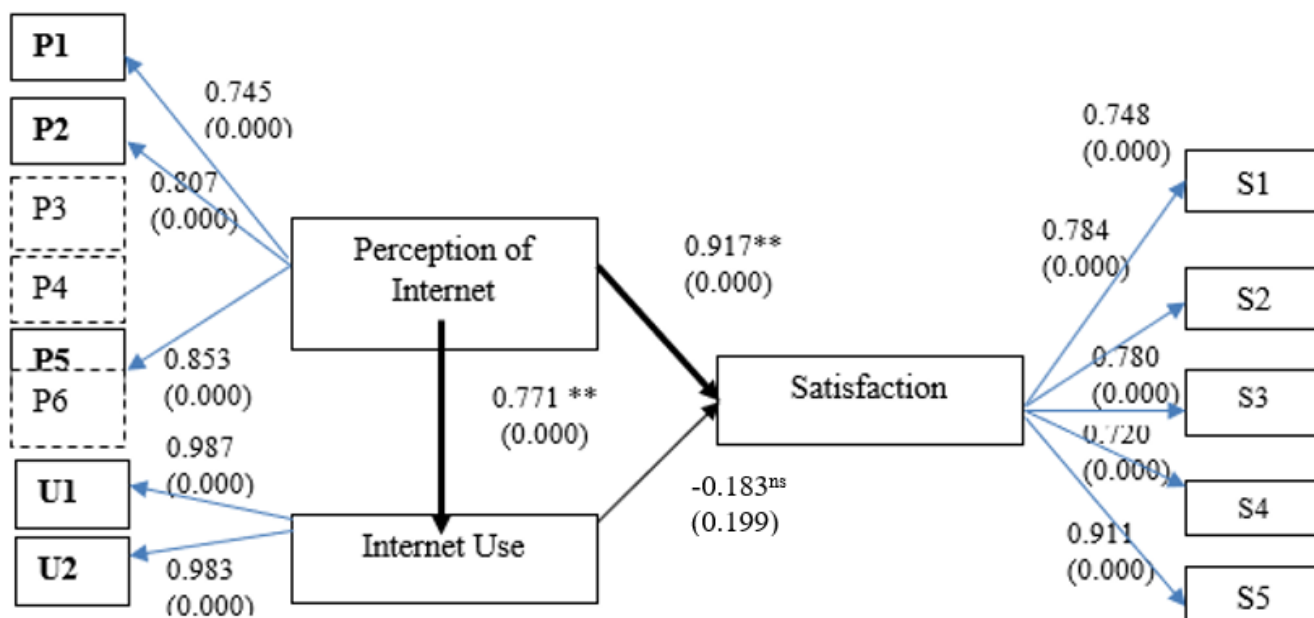

Figure 8 Path Diagram Construction

This study found that internet usage is not a mediating variable affecting the satisfaction of using the internet in the model. These results suggest increasing internet usage satisfaction can be increased by encouraging internet perception. However, the increasing duration and the types of channels extension workers can access do not influence satisfaction. It happen because high internet usage only sometimes provides relevant benefits for extension workers or farming activities carried out by farmers. Extension workers in Nias District are in a low category in using the internet with limited sources of information, therefore, the information obtained could be more optimal. In addition, agricultural extension workers in South Nias spend much of their time visiting farmers in the field, which is more beneficial for farmers without depending on information from the internet. Research by [21] concluded that 62% of the total extension respondents in Bogor District in the western region utilized information obtained from the internet by sharing it with fellow extension workers, only 25% shared it with farmers, and 13% kept it private. Information obtained from the internet by extension workers is not directly informed and applied to farmers but is processed and adjusted in advance to suit the needs of farmers.

4. Conclusions

Results of the research show that agricultural extension workers in South Nias Regency use the Internet 4-6 hours/day with 7-8 sources, dominantly on cultivation techniques information and fertilizer prices. The characteristics did not relate to the perception and satisfaction of using the Internet, but age and gender relate with the level of use. The perception significantly influences the use level and the satisfaction of the Internet. The level of internet usage did not influence satisfaction of internet, and it concludes that internet usage is not a mediating variable to affect the satisfaction of using the Internet in the model.

The recommendations of this research are increasing the adequacy of the number of extension officers in South Nias Regency, increasing and optimizing the capabilities of extension workers in utilizing the internet as a means of supporting tasks; as well as increasing ease of internet access for extension workers.

Compliance with ethical standards

Disclosure of conflict of interest

Authors declare that there is no conflict of interest.

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