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Managing the Effectivity of Communication of Farmers Group, Case of KWT Krisan in Genteng Village, Sumedang Regency, West Java

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Abstract. This paper aims to assess the effectiveness of communication that occurs between farmers groups with agricultural extension as part of how to see group capacity in communication. This information is important to be known as part of assessing farmers' groups in particular, and rural communities in Genteng Village readiness to grab with smart villages program. The study was conducted to the members of woman farmers group on chrysanthemum flower cultivation named KWT Krisan, by distributing a list of questions to assess the results of communication within a period of time with agricultural extension, seen from the cognitive, affective and behavioral aspects. Given the characteristics of the members, an interpretative qualitative approach is used to assess of what they express in answering the question. In depth interview and confirmation with agricultural extension agent, rural champion, and rural local officials were done to confirm the statement of farmer group members. The results show that in general farmers' groups can communicate well indicated by their statements on all three aspects of communication, although there are still a small number of members who claim to be less able to achieve communication goals.

Keywords: Agriculture extension, Communications, Effectiveness, Farmers group.

1. INTRODUCTION

All Agriculture is still a basic sector in the Indonesian economy. This is evident from the contribution of the agricultural sector to the development of the Indonesian economy. Data from the Central Bureau of Statistics noted that in the second quarter of 2017, the agricultural sector accounted for 13.92% of economic growth, the second highest after the manufacturing sector (Detikfinance, 2017). Agricultural sector is still a concern of the government, it is seen from various government policies in support of increasing agricultural productivity in an effort to realize food self-sufficiency. In the current era of farmers both individually and in groups are required to be smart farmers in order to achieve the goals of agricultural development can be achieved effectively and efficiently. Smart farmers becoming a major part of intelligent community in the village is one of the important pillars to achieve smart villages which focus on four development areas, namely Information and Communications Technology (ICT) services, the village institution (involving village governments, schools, village committees), the village resources (including land, energy, financial and human resources, water harvesting) and the nourishment such as efficient agricultural land utilization, self-sustainable irrigation, land mapping, and so on (Chatterjee & Kumar Kar, 2017; Bathaei & Štreimikienė, 2023; Gemtou et al, 2024;).

Agricultural development efforts must be in line with the development of human resources, especially the farmers as the main actors in the agricultural sector. Human resources are key factor to making farmers in Indonesia able to compete against global developments today, from free trade, environmental issues to the use of modern technology. Increasing human resources, especially for farmers is aimed at farmers able to be independent in their agricultural land management activities, meaning that farmers are able to identify problems, and can find solutions related to these problems. According to Sumardjo (1999) independent farmers are farmers who improve the quality of their lives not just on the guide extension or other apparatus but rather rely on the ability to make their own decisions appropriately and driven by his own motivation to improve the quality of his life. This quality is one of the enablers in order to lead basic intelligent needed to achieve smart society (Somwanshi et al, 2016; Vishnoi, & Goel, 2024). In an effort to improve the quality of human resources of farmers or educate farmers, various efforts can be done, one of which is through agricultural extension activities. Extension workers and extension processes are still a major source of information for farmers in rural areas, although independently farmers are also beginning to find sources of information and learning.

According to Indonesian Law No. 16 Year 2006 counseling is defined as a learning process for the main actors and business actors so that they are willing and able to help and organize themselves in accessing information, markets, technology, capital and other resources, in an effort to increase productivity, business efficiency, income and welfare, as well as raising awareness in the preservation of environmental functions. This is in line with the demands of farmers' intelligence which basically if it is reversed is how to translate sustainable agriculture development using intelligently available resources including the help of technological progress especially ICT. Hafsah (2009) and Prajanti & Utami (2019) define agricultural extension as an activity to empower farmers and their families through non-formal education activities in agriculture so they can build their capacity in the economic, social and political fields to increase the family income and farmers' welfare. Of the two definitions above, it is known that agriculture counseling has an important role for farmers to improve the quality, capacity, to improve the welfare of his life. This cannot be separated from the general condition of

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farmers in rural areas that are mostly dominated by people with low education level. Therefore, the role of agricultural extension is expected to increase the empowerment of farmers, thus making the farmers self-sufficient and able to increase agricultural productivity. The importance of agricultural extension is expected that any agricultural extension activities can be successful and have optimal results.

Communication and information exchange are the major components in agricultural extension efforts (Obuh, 2007; Prajanti & Utami, 2019; Wijeratne & De Silva, 2024; Nyoni et al., 2024). Effective and good communication can provide space for farmers and extension workers to cooperate in achieving agricultural development goals (Zainal et al., 2019; Nyoni et al., 2024; Muliadi et al., 2024). Good communication is a communication that can convey a message to the recipient of the message with the same interpretations and conclusions in accordance with the purpose and purpose of the message. However, the success of agricultural extension activities is influenced by various factors, such as extension personnel, extension methods, extension materials, or farmers' and communication backgrounds.

The use of different communication methods will give different results. Murdiyanto (2010) found that there were differences in outcomes between extension activities using group communication methods and interpersonal communication. Therefore, in the extension activities of extension workers should be able to bridge the communication gap and build harmonious communication with farmers so that the purpose of extension activities can be achieved and solutions provided following the needs of local farmers (Disyacitta et al., 2021; Fatimah & Dewi, 2015; Nyoni et al., 2024).

Genteng Village located in the District of Tanjung Sari Sumedang District, is one of the villages implement human resource development program. The human resource development was carried out on one farmer's group namely Women Farmers Group (KWT) Krisan. This farmer group aims to increase the productivity of women in Genteng Village, so it can help and increase family income. Human resource development is conducted through discussions with members and extension agents to improve agricultural product innovation. One of the products innovations done is potato crackers. However, at present, not all members are able to process so the product is still limited. Besides new product finding, other problem is in the field of marketing of processed products. This is a challenge for farmers and other village stakeholders, especially agricultural extension agents to be able to help farmers in their agribusiness activities.

Based on the above description, it is necessary to know the effectiveness of agricultural extension communication and the impact of the extension activities. This is important to know, so it can be an evaluation material for the government as well as institutions related to counseling in further extension activities. These results can also be a reflection of how far the farmers in particular have been intelligently utilizing the presence of extension agents and effectively exploiting their presence to assist in the smooth running of their farms. This study is practically significant as it provides insights into the real-world application of communication strategies in agricultural extension, which can help improve the effectiveness of these programs. Theoretically, it contributes to the body of knowledge on agricultural communication by exploring the cognitive, affective, and behavioral impacts of extension activities (Pan, Smith, & Sulaiman, 2018; Yitayew et al., 2021; Gemtou et al., 2024). Understanding these impacts can help refine communication models and strategies to better support farmers in adopting new technologies and practices (Kaur, 2022; Nyoni et al., 2024).

2. CONCEPT AND METHODOLOGY

Communication is the process of transmitting / disseminating information and mutual understanding from one person to another (Iacob & Radulescu, 2017; Keyton, 2011; Huda, 2024; Muliadi et al., 2024). In the context of agricultural extension communication is the delivery of information or can be an exchange of ideas of good thinking between farmers and between farmers and agricultural extension workers. In agricultural extension an activity, which is an activity in socializing government development programs in the agricultural sector, the communication will contain information on which development programs need to be submitted to farmers. This form of communication is usually referred to as development communication. Effendy (2006) defines communication development as the process of spreading messages by a person or group of people to audiences to change their attitudes, opinions, and behaviors in order to improve outward progress and inner satisfaction. Another definition by Waisbord (2018) stated that communication development means the systematic use of communication channels and techniques to increase community participation in development programs and to inform, motivate and train rural populations.

Development communication is designated research and intervention aimed to improve the conditions of people struggling with economic, social and political problems in the non-Western world. In this type of communication, it considers that communities should be the main actors of further development program integration (Waisbord, 2018; Wijeratne, M., & De Silva, 2024). Communication, which has a dominant role in empowering farmers as a medium for knowledge transfer to better behaviour change, can be done through interpersonal communication such as counselling, dialogue, and taking advantage of other media (Oktarina et al., 2020; Muliadi et al., 2024). Effective communication and counseling require good interaction between extension workers and farmer-to-farmer. Extension workers should have good skills in building cooperation and trust in the extension process, so that communication and programs suggested in extension activities can be applied by

farmers. According to Agunga and Manda (2014) extension workers need to require training in the field of development communication, so as to build a more effective relationship with development partners. Agricultural extension workers who have limitations on communication will have an impact on the results of less optimum extension activities (Setiawan et al., 2021; Muliadi et al., 2024). This is as suggested by Ajani and Onwubuya (2013), that the performance of agricultural extension workers is influenced by factors such as incentives, communication skills, extension education, and illiterate peasants. Selection of communication methods should be tailored to the characteristics of farmers, so that farmers are also able to absorb information or messages provided by extension workers. Agholor et al (2013) stated that the contents and methods of agricultural extension programs should be selected in accordance with the characteristics of farmers in order to achieve the purpose of the extension program. For that, effective and interactive communication becomes one of the decisive factors in the succession of agricultural extension activities (Huda, 2024; Shaktawat, & Swayamprava, 2024).

Effective communication is one of the main determinants of the success of realization a program. Communication is said to be effective if stakeholders can provide correct, relevant, and cost-effective information to the information recipients also the communication is delivered in a simple, duplicable manner, and at the end of the process asks for feedback from the recipient of the message (Muszyńska, 2018; Velado-Alonso et al., 2024). Effendy (2006) explains that in communication effectiveness there is a common meaning between sender and recipient about the message and raises three impacts namely cognitive, affective, and behavioral impact. These three effects may constitute a series of processes from the reception of information, beginning with the cognitive impact that is a change of knowledge for the recipient of information caused by the received message. Communications containing knowledge-related information will enrich the knowledge of the message recipient. After the recipient receives additional knowledge, it can have an Affective effect which is a change of attitude on the recipient of the information caused by the received message. Increased knowledge of a person will give effect to the attitude in facing a problem or stimulus received. The next impact that arises is a behavioral impact that is a change of action caused by a received message. Mantra (1984, in Syadzali, 2007) reveals that one's knowledge will determine the attitude of accepting or rejecting then will behave about something that is considered positive for her/him.

Critical gaps still exist in literature despite extensive work on agricultural extension and communication. Despite all the work that is already being done through these and other initiatives, needed communication gaps remain in better understanding the behavioral change link associated with different communication strategies for farmers, specifically incentives that will encourage adoption of new and better technologies and practices. Despite extensive documentation of cognitive and affective impacts, translating knowledge and attitudes into actual behavior is a challenging gap (Astuti, Nurhaeni, & Rahmanto, 2020; Gemtou et al., 2024).This will not only facilitate behavior change, but future research should also identify common themes that may aid in the development of communication approaches that account for these themes to promote widespread behavior shift. Furthermore, more research should be completed to investigate how digital communication tools could improve the effectiveness of both traditional agricultural extension programs and training courses (Bathaei & Štreimikienė, 2023; Disyacitta et al., 2021).

This research uses descriptive qualitative methods to draw conclusions from the characteristics of the sample and explain the questionnaire results. Analysis is mainly done to measure the effectiveness of agricultural extension communication seen from three perspectives namely cognitive, affective, and behavioral aspects. This research was conducted in Genteng Village, Tanjung Sari Subdistrict, Sumedang Regency, West Java Province, Indonesia. The field surveys were primarily conducted before the Covid-19 pandemic occurred and were followed up with re-confirmations during and after. The number of respondents is a population of 25 KWT members who were active members in group activities as stated by the group leader. For the interview purpose, a purposive sampling was employed with a selection of 5 very active members (including the head of the group) of the KWT group who regularly participate in group activities as compared to the rest of the members. A summary of respondents' answers collected from interviews and questionnaires are then being grouped into thematic issues to identify patterns and themes that are further analyzed from the three perspectives mentioned above. The results of the questionnaires and statements from members of the farmer groups were also re-confirmed to several community leaders and village government, and counselling officers from the government to validate the results obtained.

3. RESULTS AND DISCUSSION

3.1. Group Characteristics

KWT Chrysanthemum is a group of women farmers located in the Village Genteng, District Sukasari, Sumedang District. This group was established in 2014, which was initiated by the joint chairman of farmer group (Gapoktan) of chrysanthemum plant, in order to collect the chrysanthemum farmers' wives, so as to assist the husband in conducting more productive activities and the results can also help increase family income. The group then formed with a considerable number of members from across the village. In addition to managing the flower harvest, they also develop other agribusiness businesses such as potato chips and are currently studying various agribusiness activities utilizing agricultural produce around them.

By age group, members of KWT Krisan are all in the productive age group, which is in the age range of 35 - 64 years. As according to Directorate General of Agriculture (2015), productive age group is 15-64 years old. Education has an important role in creating good human resources. Based on the level of education, members of KWT Krisan are dominated by members with low level of education. Of the 25 members of the KWT, members attending high school education are only 8% or only 2 members, while members with primary education level reach 48% of the total members of KWT. Local government has allocated an extension personnel that regularly visit the group to provide.

3.2. Communication Effectiveness OF KWT Krisan

The effectiveness of communication at KWT Krisan were identified based on three impacts of agricultural extension communication that has been done, which includes cognitive impact, affective impact, and behavioral impact. It is intended to assess the changes occurring from the extension activities that provide for changes change both in terms of knowledge and actions of KWT Krisan. For that to be done counseling KWT members with the introduction of new products more details will be described below. In general, KWT appreciate the existence of extension personnel that actively helping them to improve the performance of their group. The head of the group stated in the interview that the group was getting much attention from the extension and rural local official as the group pioneering the activities for selling flower, a product that is beyond traditional cultivation. Some members of the group even stated that the extension staff has kindly communicate with them and intensively introduce new terms or technique or concept for the improvement of the group. However, they realized that they have some constraints to understand quickly with such dynamic development in the agribusiness of flower products.

Some members however state in the interview that the positively welcome what have been introduced by the extension. Those members that gain from the interaction with extension state that there have been new knowledge not only in the field to flower management but also communication knowledge and technology or means of communication. Some of the members feel satisfied with the knowledge of putting their products in market platform and medium of communication at various social media to help their marketing as well as exchange information.

3.3. Cognitive Aspect

Cognitive impact indicates a change in knowledge increase. It is reviewed to find out whether there is any change to the improvement of knowledge of KWT Chrysanthemum in the management of agricultural activities especially the introduction of new products processing their agricultural products and at the same time marketing the results. The results of questionnaires conducted on KWT Chrysanthemum showed that the cognitive impact of agricultural extension activities is significant, it can be seen from the level of knowledge before the extension activities with knowledge level of less than 48% and the knowledge level is only 16% of the total number of respondents. However, after the extension activities, the knowledge level is less than 0% and the good knowledge increases to 64%. This shows that the level of knowledge has quite a large percentage of 36% and this value does not change from before or after counseling. This indicates that there are still many members of KWT who have not achieved the maximum results of extension activities.

Representatives from the village government acknowledged that residents, especially farmer groups, had very high enthusiasm for new knowledge dissemination, but their low level of education made dissemination, especially complex knowledge, slow to be adopted. This statement was later reinforced by community leaders from the education sector who stated that although farmer groups have received some counselling, the effectiveness and absorption of extension are highly dependent on their quality and capacity. Their ability to absorb new knowledge is still slow because their education level is only up to elementary school.

From the observations made this can be caused by some members of KWT Krisan who are relatively passive and follow more trusted colleagues. Judging from the change of knowledge, the rate of change of knowledge improved to reach 88%, while the change of knowledge which is fixed is 12%. Some aspects of counseling are most effective based on the results of questionnaires from cognitive impacts of knowledge are about e-commerce as well as knowledge of developing products and promotion of agricultural products. While the less effective aspects of counseling that is about the function of marketing, strategy and marketing process.

Though still quite slower than is expected, the improvement of cognitive aspects in the KWT Krisan farmer group shows that the task of agriculture extension workers to disseminate new knowledge related to farming methods and encourage farmers to change their way of thinking and working has been in general successfully carried out. These results are also in line with research by Pan et al. (2018) that showed an increase in farmers' knowledge in Uganda after extension program implementation to improve farmers' basic cultivation methods resulting in increased agricultural productivity and wage income.

3.4. Affective Aspect

Affective impacts that show changes in attitudes of the recipient of information, are identified to determine whether there is a change of attitude from members of KWT Krisan with the extension activity. The results of

questionnaires conducted show that with the existence of extension activities changes attitude from less and enough to be better. The attitude of the members of KWT Krisan before the extension activity showed 8% had less attitude and 12% had enough attitude. After the extension activities, the total 100% attitude of KWT members has good value.

The head of the women's farmer group stated that it was not easy and needed some time to change the attitude of the members. They tend to view new ideas as a threat and fear that they would find it increasingly difficult to understand the new era and technology. The village government also confirmed the inertia of farmer group members to change. However, the times have proven that the awareness to change and keep up with developments is a must because of external demands, especially consumer demand. The extension instructor stated that many members began to participate and were curious about new knowledge and terms.

This suggests that with the extension activities of the members of KWT Krisan better on new products and marketing knowledge of agricultural products. Extension activities can be judged to be effective on the affective aspect of being able to change attitudes of members of farmer groups. This change of attitude is expected to help farmers in overcoming various problems faced in the marketing of agricultural products. Based on empirical studies, the simultaneous improvement facilities and communication provided by agricultural extension workers had a significant outcome in farmer attitudes to try new knowledge after counselling program (Yitayew et al., 2021; Nyoni et al., 2024).

3.5. Behavioral Aspect

The behavioral impacts that arise in the form of behaviors, actions or activities of information received by the recipients, need to be identified to determine whether there is a change in the form of activities in the management of agriculture, especially marketing to members of KWT Krisan. The results of the questionnaire showed that the rate of behavior change was not good enough after the extension activity. The rate of change with less value is still quite large with a percentage of 40%, while the rate of change with good value has a percentage of 48%. This indicates that extension activities have not been effective enough to change the behavior of KWT members.

Farmer group members had difficulty in implementing the knowledge provided by action. Almost all members had issues due to limited ability and capacity in management and technology. The low educational background and the possibility of the age factor being over 45 years old are the causes of these difficulties. Based on the interviews, the extension instructor confirmed that one of the biggest obstacles for farmer group members was the difficulty in implementing the new knowledge they had acquired because they thought they would face complexities that were beyond their capabilities. Efforts made by members of farmer groups to overcome this problem were asking for help from people who understand the use of technology (i.e. more knowledgeable members or their families).

The most effective extension aspect is the desire to run the advice of the extension agent, while the less effective aspect is to restart and innovate in the production of potato crackers as well as learning about marketing through e-commerce. Some members of KWT Krisan have tried to run potato crackers business, but there is a presumption that the product does not have a high potential value that is difficult to develop because of limited marketing ability. It is in line with a study conducted by Astuti et al. (2020) which found changes in the behaviour of snake fruit (salacca zalacca) farmers in Sleman, Yogyakarta, in tackling fruit fly pests after an agricultural extension program. The result of behaviour change is an improvement in the production of the snake fruit harvest. It also proved that the extension program could significantly improve farm performance (Rokhani et al., 2021).

3.6. Discussion

From the KWT Krisan Genteng Village, the effectiveness of communication in cognitive, affective, and cognitive aspects has increased. The cognitive effect which measures the information improved by the members regarding agricultural practices and marketing strategies showed a significant increase in knowledge. The percentage of members with a good level of knowledge was 16% before the extension activities and increased to 64% after the extension activities. This implies that the extension activities were able to improve the thinking skills of its members, which is in line with the findings of Pan et al. (2018), which found the same kind of improvement in the knowledge of farmers in Uganda after providing extension interventions. Furthermore, Kaur (2022) inspires more theoretical approaches to agricultural communication, which could allow for a more productive and effective outreach program.

The affective meassure which measures change in attitudes fared well too given its statisitical significance. At the start, 20% of the members had no or adequate attitude about the extension activities. Yet, following the interventions, 100% of the members displayed a positive attitude. This change indicates that the tangible, relevant extension activities could play a significant role in changing the opinions of the members with respect to the adoption of innovative agricultural production and processing techniques. This aligns with the findings of Yitayew et al. (2021), who revealed that extension services are instrumental in altering farmers' perceptions of new agricultural technologies. According to Bathaei, and Štreimikienė (2023), the role of renewable energy and

sustainable agriculture in promoting sustainable economic development is particularly salient, and media communication of sustainable practices can influence attitudes as discussed previously.

While the study reported positive cognitive and affective impacts, the behavioral impact, which measures the degree of changes in people's actions, was less significant. Improving actions with good value of use among members was just 48% to mean that most of the scheme members did not benefit of the learning. This may be due to the low educational level of members and the complexity of these new technologies. Related to the results of using media were in accordance with Astuti, Nurhaeni and Rahmanto (2020) findings, which concluded that farmers often had difficulty converting new knowledge into action, limited capacity and inadequate resources. Gemtou et al. (2024) highlight the relevance of consideration in decision-making factors for the adoption of climate-smart agriculture, implying that communication strategies tailored to the needs of the implementation entities is vital for achieving effective outcomes.

Therefore, the extension activities have shown the demands for further support and special communication strategies that take the needs of the farmer group members into account. It is vital that the extension agents focus on simplifying the information they go out to teach to farmers, as well as offer practical training, because often the members may not have access to the research, but can understand some of the services being offered. This relates to the findings by Agunga and Manda (2014), where they highlighted the role of communication and training in improving agricultural extension workers' effectiveness. Nyoni et al. (2024) further strengthen the point by emphasizing the necessity of disseminating climate information services to smallholder farmers to increase adoption rates.

Data from this experienced used to train and provide new knowledge to KWT members, hence specified extension activities have more impact on cognitive and affective aspects rather than behavioral dimensions, thus the need for more specific interventions. Thus, for future extension programs, it is imperative that the educational background and capacity of the members be considered so that the new learned can be used. To help achieve this, they will need support from extension workers, local government and community leaders in developing an enabling environment for the farmers. According to Disyacitta et al. (2021) they highlight the importance of communication in agricultural extension services as well, noting how using local dialects and terminology in crop extension services helps increase the efficiency of communication on the field.

4. CONCLUSION

This paper has tried to assess the agricultural extension activities in the efforts in building and developing human resources of farmers, so that farmers can become more intelligent as shown with the ability to innovate and compete on various agricultural products and able to independently in the welfare of their life. To assess the effectiveness of communication performed by the extension, the impact to recipient of the messages is seen from perspective of cognitive, affective and behavioral using the case of a women-farmer group of KWT Krisan in West Java, Indonesia.

Extension activities conducted at KWT Krisan in Genteng Village show that the extension activities can be seen a progressive though some objectives may not be fully achieved. This is shown from the cognitive, affective, and behavioral effects shown by members of KWT Krisan. Extension activities have not been able to provide encouragement for members of KWT Krisan in innovation and developing agricultural product processing activities, because the members have not been able to create new products or markets or look for opportunities for the distribution of the products. However, it is understandable since what is introduced are related to modern and recent terms that are requiring a complex capacity to perform while the member of the group is understood as facing constraints to catch up with such dynamism.

The results of this study can also be an evaluation of extension activities for the future extension mode and the delivery system mainly in helping the Village towards a smart village. It is important to develop extension materials in the creation of market opportunities for agricultural products through new agribusiness products. Utilization of information technology needs to be socialized on a regular basis so that farmers are able to master and utilize these technologies to assist the marketing of agricultural products. This is very important because of this research shows that KWT member Krisan still needs to improve communication ability as the basis of the creation of intelligent group to support smart village.

In conclusion, this paper infers that the cognitive and affective effects of the extension activities were significant, resulting in improved knowledge and positive attitudes of the members, but in this case, the behavioral effect was not pronounced. This indicates the necessity of greater assistance and targeted communication techniques to aid farmers in converting new knowledge and attitudes into actionable measures. Extension programs in the future should be cognizant of the members educational level and capacity to implement the new knowledge gathered. Partnerships between extension workers, local government, and community leaders are essential to create a supportive environment for the farmers to thrive.

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REFERENCES

Agunga, R., & Manda, L. Z. (2014). Communication for strengthening agricultural extension and rural development in Malawi. *Journal of Development and Communication Studies*, *3*(1), 1-14.

Agholor, I. A., Monde, N., Obi, A., & Akinsumi, S. O. (2013). Quality of extension services: A case study of farmers in Amathole. *Journal of Agricultural Science*, *5*(2).

Ajani, E. N., & Onwubuya, E. A. (2013). Constraints to effective communication among extension agents in Anambra State, Nigeria. *Journal of Agricultural & Food Information*, *14*(1).

Astuti, K., Nurhaeni, I. D. A., & Rahmanto, A. N. (2020). Communication of Salak Pondoh farmers group in Yogyakarta, Indonesia to addressing climate change. *E&ES*, *423*(1), 012056. https://doi.org/10.1088/1755-1315/423/1/012056.

Bathaei, A., & Štreimikienė, D. (2023). Renewable energy and sustainable agriculture: Review of indicators. *Sustainability*, *15*(19), 14307. https://doi.org/10.3390/su151914307.

Chatterjee, S., & Kumar Kar, A. (2017). Concept of smart village in India: A proposed ecosystem and framework. *Advances in Smart Cities*, 83–92. https://doi.org/10.1201/9781315156040-7.

Colussi, J., Sonka, S., Schnitkey, G. D., Morgan, E. L., & Padula, A. D. (2024). A comparative study of the influence of communication on the adoption of digital agriculture in the United States and Brazil. *Agriculture*, *14*(7), 1027. https://doi.org/10.3390/agriculture14071027.

Disyacitta, R. A., Multamia, N., & Lauder, R. M. T. (2021). Agricultural terms in rice production: A dialectological study. *Dialectologia: Revista Electrònica*, *26*, 145-178. https://raco.cat/index.php/Dialectologia/article/view/384905.

Gemtou, M., Kakkavou, K., Anastasiou, E., Fountas, S., Pedersen, S. M., Isakhanyan, G., Erekalo, K. T., & Pazos-Vidal, S. (2024). Farmers' transition to climate-smart agriculture: A systematic review of the decision-making factors affecting adoption. *Sustainability*, *16*(7), 2828. https://doi.org/10.3390/su16072828.

Huda, M. (2024). Trust as a key element for quality communication and information management: Insights into developing safe cyber-organisational sustainability. *International Journal of Organizational Analysis*, *32*(8), 1539-1558. https://doi.org/10.1108/IJOA-12-2022-3532.

Iacob, S., & Bădina Rădulescu, M. (2017). Communication, a premise of efficiency and effectiveness in current society. *Valahian Journal of Economic Studies*, *8*(2), 25-32. https://doi.org/10.1515/vjes-2017-0015.

Kaur, A. (2022). Agricultural communication: A theoretical perspective. *International Journal of Advanced Mass Communication and Journalism*, *3*(1), 73-77. https://www.masscomjournal.com/archives/2022.v3.i1.A.42.

Muliadi, M., Muhammadiah, M. U., Amin, K. F., Kaharuddin, K., Junaidi, J., Pratiwi, B. I., & Fitriani, F. (2024). The information sharing among students on social media: The role of social capital and trust. *VINE Journal of Information and Knowledge Management Systems*, *54*(4), 823-840. https://doi.org/10.1108/VJIKMS-12-2021-0285.

Murdiyanto, E. (2010). Communication strategies in agricultural extension with vendors (a group and interpersonal communication approach). *Journal of Agricultural Socioeconomics and Agribusiness (SEPA)*, *6*(2). https://doi.org/10.20961/sepa.v6i2.48916.

Muszyńska, K. (2018). A concept for measuring effectiveness of communication in project teams. *Journal of Economics & Management*, *33*(3), 63–79. https://doi.org/10.22367/JEM.2018.33.04.

Nyoni, R. S., Bruelle, G., Chikowo, R., & Andrieu, N. (2024). Targeting smallholder farmers for climate information services adoption in Africa: A systematic literature review. *Climate Services*, *34*, 100450. https://doi.org/10.1016/j.cliser.2024.100450.

Obuh, J. (2007). Effectiveness of communication outreach strategies of extension agents. *Global Approaches to Extension Practice*, *3*(2), 152-155.

Pan, Y., Smith, S. C., & Sulaiman, M. (2018). Agricultural extension and technology adoption for food security: Evidence from Uganda. *American Journal of Agricultural Economics*, *100*(4), 1012–1031. https://doi.org/10.1093/AJAE/AAY012.

Prajanti, S. D. W., & Utami, S. (2019). Capacity building for agricultural extensionists: A case from Indonesia. *International Journal of Business and Society*, *20*(2), 691–708.

Rokhani, Asrofi, A., Adi, A. H., Khasan, A. F., & Rondhi, M. (2021). The effect of agricultural extension access on the performance of smallholder sugarcane farmers in Indonesia. *AGRARIS: Journal of Agribusiness and Rural Development Research*, *7*(2), 142–159. https://doi.org/10.18196/AGRARIS.V7I2.11224.

Setiawan, I. P., Fachmi, M., Fattah, M. N., Rasyid, I., & Yusriadi, Y. (2021). Teamwork is an intervening variable, the quality of agricultural extension agents on farmer productivity, from a human capital perspective. *Review of International Geographical Education Online*, *11*(4), 1389–1397. https://doi.org/10.48047/rigeo.11.04.132.

Somwanshi, R., Shindepatil, U., Tule, D., Mankar, A., Ingle, N. R., & Deshmukh, A. (2016). Study and development of village as a smart village. *International Journal of Scientific & Engineering Research*, *7*(6), June-2016.

Syadzali, M. J. (2007). Efektivitas penyuluhan sapi potong di Kabupaten Jeneponto Sulawesi Selatan (Studi kasus Kecamatan Kelara). Skripsi. Institut Pertanian Bogor. http://repository.ipb.ac.id/bitstream/handle/123456789/1746/1999sum.pdf?sequence=4.

Velado-Alonso, E., Kleijn, D., & Bartomeus, I. (2024). Reassessing science communication for effective farmland biodiversity conservation. *Trends in Ecology & Evolution*. https://doi.org/10.1088/1755-1315/1297/1/012028.

Vishnoi, S., & Goel, R. K. (2024). Climate smart agriculture for sustainable productivity and healthy landscapes. *Environmental Science & Policy*, *151*, 103600. https://doi.org/10.1016/j.envsci.2023.103600.

Waisbord, S. (2018). Family tree of theories, methodologies, and strategies in development communication. *Handbook of Communication for Development and Social Change*, 1–40. https://doi.org/10.1007/978-981-10-7035-8_56-1.

Wijeratne, M., & De Silva, W. N. (2024). The paradigm shift of agricultural extension from technology transfer towards participatory approaches. *Journal of Agricultural Sciences (Sri Lanka)*, *19*(1). https://doi.org/10.4038/jas.v19i1.9851.

Yitayew, A., Abdulai, A., Yigezu, Y. A., Deneke, T. T., & Kassie, G. T. (2021). Impact of agricultural extension services on the adoption of improved wheat variety in Ethiopia: A cluster randomized controlled trial. *World Development*, *146*, 105605. https://doi.org/10.1016/J.WORLDDEV.2021.105605

Effendy, O.U. (2006). Ilmu Komunikasi: Teori dan Praktek. Remaja Rosda Karya. Bandung.

Hafsah, M. J. (2009). Penyuluhan Pertanian di Era Otonomi Daerah. Jakarta: PT Pustaka Sinar Harapan.

Keyton, J. (2011). Communication and organizational culture: A key to understanding work experience. Thousand Oaks, CA: Sage.

Shaktawat, P., & Swaymprava, S. (2024). Digital Agriculture: Exploring the Role of Information and Communication Technology for Sustainable Development. Ed. Biswajit Mallick and Jyotishree Anshuman published by PMW, New Delhi, 31.

Detikfinance, (2017). Kontribusi Pertanian ke Pertumbuhan Ekonomi RI. https://finance.detik.com/berita-ekonomi-bisnis/3612066/kontribusi-pertanian-ke-pertumbuhan-ekonomi-ri, Accessed 23 September 2024.

Fatimah, Sri & Dewi P. Sari. (2015). Attitude Towards Cyber Extension as Information Source Among Farmers; Case of Mujagi and Rancasari Farmers Groups In West Java. Proceedings International Seminar ICT4SRD, Kuala Lumpur.

Sumardjo. (1999). Transformasi Model Penyuluhan Pertanian Menuju Pengembangan Kemandirian Petani. Disertasi. Institut Pertanian Bogor.