

THE INFLUENCE OF AGRICULTURAL EXTENSION COMMUNICATION FORMS ON THE ADOPTION RATE OF POST- HARVEST RICE TECHNOLOGY INNOVATION

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Abstract

This study was conducted to determine (1) the influence of forms of interpersonal communication, group communication and mass communication carried out by agricultural extension services on the adoption rate of postharvest rice field technology innovations. (2) To find out the right form of agricultural extension communication in order to achieve the adoption of pascapanen technological innovations. This research was conducted in Gapoktan Mulya Jaya in Babakanmulya Village, Jalaksana District, Kuningan Regency. The study was conducted from September to October 2022. This method and type of research uses descriptive quantitative methods with survey techniques and a sample of 75 members of the Association. Technical data collection is primary data obtained from interviews and questionnaires, and secondary data obtained from data obtained from literature studies and data from agencies or institutions related to research. Data Analysis techniques performed include: descriptive analysis, multiple linear regression analysis, and F test. The results of multiple linear regression analysis (1) Interpersonal Communication Variables have a real effect on the adoption rate of postharvest technology innovations in rice fields, with the results of multiple linear regression tests that have a sig value = 0.001 which means $0.001 < 0.05$ and have a B value = 0.791. (2) Group communication variables have a significant effect on the adoption rate of postharvest technology innovations in rice fields, with multiple linear regression test results that have a sig value = 0.038 which means $0.038 < 0.05$ and have a value of B = 0.510. (3) Mass Communication Variables have a real effect on the adoption rate of postharvest technology innovations in rice fields, with regression test results that have a sig value = 0.002 which means $0.002 < 0.05$ and has a value of 0.977. (4) The variables of interpersonal communication, group communication, and mass communication have a significant effect on the adoption rate of rice postharvest technology innovations with the results of multiple linear regression equation analysis, namely: $Y = (-1.031) + 0.791 X_1 + 0.510 X_2 + 0.977 X_3$.

Keywords: Forms of communication; counseling; Innovation Adoption

INTRODUCTION

Food in Indonesia has a very important position, especially staple foods, because it involves political, economic, social, and cultural issues. Most of the staple food of the population comes from serelia which consists of rice, corn, and wheat and the largest as the staple food of the population is rice. Therefore, the issue of food security in Indonesia is very important for political, economic, social and cultural stability.

Food security is a new policy concept that emerged in 1974 during the world food conference Prabowo et al., (2022). Maxwell Iswati et al., (2020) tries to trace the changes in

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the definition of food security since the 1974 world food conference to the mid-decade of the 90s; change occurs at global, national, household and individual levels; From the perspective of food as a basic need (food first perspective) to the perspective of livelihood (livelihood perspective) and from objective indicators to subjective perceptions.

Food security should include factors of availability, distribution, and consumption. Food availability factors function to ensure food supply to meet the needs of the entire population, both in terms of quantity, quality, diversity and safety. Distribution serves to create an effective and efficient distribution system to ensure that people can obtain food in sufficient quantity, quality and sustainability at affordable prices. Quite well the consumption factor serves to direct the pattern of national food utilization to meet the principles of quality, diversity, nutritional content, security and halal (Prabowo et al., 2022).

To run an agricultural program and adopt technological innovations, an extension worker is needed to communicate the program in the form of certain messages and technological developments in the field of agriculture of farming communities. Communication is the process of sending messages or information by communicators or extension workers to communicants or farmers, but in the process of sending it requires skills in interpreting messages both by communicators and communicants so as to make a successful exchange of information.

Communication and counseling methods used are the most important things in an extension activity in order to create the expected conditions of the extension activity. However, in this counseling process, expertise and communication skills are needed for an extension worker in socializing the programs he wants to run. Extension actors are required to work hard and be sensitive to the community. The main purpose of conducting counseling is how to instill in the community so that they can be independent and dare to try something new without having to fixate on the knowledge and experience gained from parents or the surrounding community so as to eliminate dependence on extension implementers as mentors.

Adoption of innovation is a mental process or change in behavior in the form of knowledge (cognitive), attitude (affective), and skills (psychomotor) in a person from knowing the innovation until deciding to adopt it after receiving the innovation (Musyafak & Ibrahim, 2005). According to Musyafak & Ibrahim, (2005) the adoption process goes through several stages, namely awareness, interest, evaluation, trial, adoption.

From initial observations, it was illustrated that extension workers had difficulty in communicating either individually, in groups, or through mass media with farmers in technology application activities or adopting post-harvest technology. In addition, the level of awareness and interest of farmers in the process of adopting technology is very low. The purpose of the study was to determine the influence of interpersonal communication forms, group communication forms, mass communication forms and appropriate forms of agricultural extension communication carried out by agricultural extension services on the adoption rate of post-harvest technology innovation.

METHOD RESEARCH

This research was conducted in Gapoktan Mulya Jaya in Babakanmulya Village, Jalaksana District, Kuningan Regency. This research was conducted from September to October 2022. The object of his research was in the Mulya Jaya Association in Babakanmulya Village, Jalaksana District, Kuningan Regency with a total of 75 farmers. The determination of sample farmers in this study was carried out by census, where all members of the population were sampled and the sampling area was carried out deliberately by considering certain reasons in accordance with the purpose of the study (Tarsito, 2014).

The method used in this study is a descriptive quantitative method, which is a method

that has the characteristics of focusing on solving problems that exist in the present and actual problems by means of data collected first arranged, explained and then analyzed (Surakhmad, 2014). The implementation of the research was carried out using survey techniques, namely collecting data from a number of units or individuals in the same time (period) using an interview measurement tool in the form of a questionnaire containing a list of questions (Arikunto, 2013).

Data Analysis techniques carried out include: descriptive analysis, multiple linear regression analysis, and F test which is used to determine the significant level of influence of independent variables together (simultaneously) on the dependent variable and T test which is used to determine the significant influence of independent variables partially or individually on the dependent variable (Suharsimi Arikunto, 2016). To facilitate data analysis testing both descriptive analysis, multiple regression analysis, and validity and reliability test analysis. This test uses the Stastical Product and Service Solution (SPSS) application version 22.00.

RESULT AND DISCUSSION

Babakanmulya Village is an area with an altitude of 500 m above sea level with rainfall of 1,370-1,500 mm / year with the number of wet months between 3-6 months. Babakanmulya Village has great potential in the agricultural sector, especially in food crops such as rice plants. This is what causes Babakanmulya village as a large enough rice producing center. Land use in Babakanmulya Village can be seen in Table 1

Table 1. Land use in Babakanmulya Village

No	Types of Land Use	Luas (Ha)	Persentase (%)
1.	Settlement	402.932	63,49
2.	Rice fields and plantations	197.016,5	31,04
3.	Public facilities	34.724	5,47
	Sum	634.672,5	100,00

(Source : Babakanmulya Village Profile Data, 2022)

From Table 1 it can be seen that, with the amount of land owned by Babakanmulya Village amounting to 634,672.5 Ha, as much as 63.49 Ha is dominated by residential land, this illustrates that Babakanmulya Village still has a large area of built land (solid urban) compared to open land (urban void). According to Faqih, (2016) Land Use is the use of land or the use of a land. Land Use or land use is a regulation of land use where human and other resources are needed. Land uses consist of built land (solid urban) and open land (urban void).

Table 2. F Test Analysis

ANOVA ^a					
Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	661,136	3	220,379	17,491	,000 ^b
Residual	894,544	71	12,599		
Total	1555,680	74			

a. Dependent Variable: Adopsi

b. Predictors: (Constant), Massa, Kelompok, Interpersonal

Sumber : Analisis Data SPSS 22.00 for Windows. 2012

The test result is F count showing a value of 17.491. So $F_{\text{calculate}} > F_{\text{table}}$ ($17.491 > 2.73$) or $\text{Sig } F < 5\%$ ($0.000 < 0.05$). This means that simultaneously or together the variables of interpersonal communication (X1), group communication (X2), and mass communication (X3) have a significant effect on the variable adoption rate of postharvest rice technology innovation (Y). Because $F_{\text{calculate}} > F_{\text{table}}$ and if the significant level $< \alpha$ (0.05), the dependent variable has an effect on the dependent variable.

T-Test Analysis

This test is carried out to determine the significance or absence of the influence of each independent variable on the dependent variable. If the results of the $t_{\text{calculate}}$ test $> t_{\text{table}}$, it means that the variable is significant enough to explain the dependent variable. In calculating the t-test analysis here using *SPSS 22.00 for Windows*. This analysis can be seen in table 3 below:

Table 3. T-Test Analysis

Model	Unstandardized Coefficients		Standardized Coefficients		T	Sig.
	B	Std. Error	Beta			
1 (Constant)	-1,031	3,649			-,282	,778
Interpersonal	,791	,224	,346		3,529	,001
Kelompok	,510	,242	,201		2,113	,038
Massa	,977	,302	,327		3,240	,002

a. Dependent Variable: Adopsi

Sumber : Analisis Data SPSS 22.00 for Windows. 2022

1. The results of testing t for interpersonal communication variables (X1) obtained a calculated value of 3.529 using a significant limit of $\alpha = 0.05$ obtained t_{table} which is 1.665 from these results, then the test criteria are $t_{\text{calculate}} > t_{\text{table}}$ which means (H1) is accepted and (H0) is rejected. Thus, interpersonal communication variables have a significant influence on the adoption rate of postharvest rice field technology innovations.
2. The results of the t test for the group communication variable (X2) obtained a calculated value of 2.113 using a significant limit of $\alpha = 0.05$ in the t_{table} , which is 1.665. From these results, the test criteria are $t_{\text{calculate}} > t_{\text{table}}$, which means (H1) is accepted and (H0) is rejected. Thus, group communication variables have a significant influence on the adoption rate of postharvest rice field technology innovations.
3. The test result t for the mass communication variable (X3) obtained a calculated value of 3.240 using a significant limit of $\alpha = 0.05$ in the t_{table} , which is 1.665. From these results, the test criteria are $t_{\text{calculate}} > t_{\text{table}}$ which means (H1) is accepted and (H0) is rejected. Thus, mass communication variables have a significant influence on the adoption rate of postharvest rice field technology innovations.
4. The results of the t test for the variable adoption rate of rice postharvest technology innovation (Y) are also strongly influenced by the three types of variables (X), namely interpersonal communication, group communication, and mass communication. In other words, the variables of interpersonal communication, group communication, mass communication have a significant effect on the adoption rate of postharvest technology innovation.

Multiple Linear Regression Analysis

Multiple linear regression analysis aims to determine the effect of empowerment and motivation on the performance of farmer groups. The results of this analysis can be seen in table 4 below:

Table 4. Multiple Linear Regression Analysis

		Coefficients ^a			
		Unstandardized Coefficients		Standardized Coefficients	
Model		B	Std. Error	Beta	T Sig.
1	(Constant)	-1,031	3,649		-,282 ,778
	Interpersonal	,791	,224	,346	3,529 ,001
	Kelompok	,510	,242	,201	2,113 ,038
	Massa	,977	,302	,327	3,240 ,002

Sumber : Analisis Data SPSS 22.00 for Windows. 2022

Then we get the following equation:

$$\hat{Y} = (-1,031) + 0.791 X_1 + 0.510 X_2 + 0.977 X_3$$

The equation shows that the influence of Mass Communication (X3) is stronger than the influence of Interpersonal Communication (X1), and Group Communication (X2).

From the table above, it can be explained that two independent variables, namely interpersonal communication, group communication, and mass communication, these three variables have a significant effect on the adoption rate of postharvest rice field technology innovation. But the most dominant variable is the mass communication variable.

1. The Effect of Interpersonal Communication on the Adoption Rate of Postharvest Technology Innovation in Rice Rice Fields

Indicators of interpersonal communication variables (X1) associated with the adoption rate of postharvest technology innovation are: (1) messages, and (2) the effect of interpersonal communication. Interpersonal communication according to Spitzberg and Cupach in Suryanto, (2015) the ability to communicate effectively is an interpersonal competence. These competencies include knowledge of context (interactions, people), knowledge of the "rules" of nonverbal behavior, interpersonal communication has messages as ideas or thoughts that will be encoded by the sender or *decoded* by the receiver, and interpersonal communication has the effect or result of the communication process such as the attitudes and behaviors of the person who is the target of communication according to or not in accordance with the Conducted such as *personal opinion, public opinion* and *majority opinion*.

The results of statistical calculations show that the regression coefficient of interpersonal communication of 0.791 with *Sig* at 0.001 shows a significant influence on interpersonal communication variables. These results prove that the higher the interpersonal communication shown from the indicators of interpersonal communication, among others: Messages and the effects of interpersonal communication. In the message indicator, there are sub-indicators consisting of verbal messages and non-verbal messages, the verbal message language used by extension workers must be easily understood and understood by farmers, while in non-verbal messages the tone of voice owned by extension workers must be loud and clear, as well as gestures, movements, facial expressions also have an important role in conveying messages. In the interpersonal communication effect indicator, there are

sub-indicators consisting of respect, empathy, being listened to or understood, openness, and humility possessed by communicators or extension workers.

The results of this study are in line with Rasyid, (2012) in extension activities for farmers carried out using a system of training and visits. The visit was carried out at the secretariat of the group and gapoktan or rice fields owned by farmers and asked what problems were faced by farmers, but not all problems could be solved at the location. This system of exercises and visits is carried out three times a week.

Sadono, (2009) as communication between people face-to-face, which allows each participant to capture the reactions of others directly, both verbally and nonverbally. Such communication indicates that the communicating parties are in close proximity, sending and receiving messages both verbal and nonverbal simultaneously and spontaneously.

2. The Effect of Group Communication on the Adoption Rate of Postharvest Technology Innovation in Rice Rice Fields

Indicators of group communication variables associated with the level of adoption of postharvest technology innovations are: (1) group discussion, and (2) group effectiveness. Nurdin et al., (2013) states group communication as face-to-face interaction between three or more people, with better known goals, such as sharing information, taking care of themselves, problem solving, whose members can remember the personal characteristics of other members precisely. Group communication is a very important method of counseling because it produces opportunities to influence the behavior of its participants.

The results of statistical calculations show that the communicator regression coefficient of 0.510 with *Sig* at 0.038 shows a significant influence on the communicant variable. This result proves that the higher group communication shown from group communication indicators, among others: (1) group discussion, (2) group effectiveness. In the group discussion indicator, there are sub-indicators consisting of increasing knowledge, changing attitudes and changing behavior, in the sub-indicators of increasing knowledge, group discussions can help members integrate knowledge by providing opportunities to ask questions, connect new information with what is already known. In the sub-indicators of attitude change, creating awareness of problems, problem formulation, changes in norms, and opinion formation. In sub-indicators of behavior change such as individual decision making, collective decision making, choice making, conformity, social facilitation that shows smooth work quality, and polarization.

In the group effectiveness indicator, there are sub-indicators of situational factors of group characteristics such as group size, communication networks, group cohesion and leadership, and group personal factors consisting of interpersonal needs, communication actions and roles. In this case the farmer says the members of the group work together to carry out the task of the group and maintain the morale of its members, besides that the purpose of the group is to share information with each other.

This result is in line with the results of research conducted by Cahyanto & Sugihen, (2008) which revealed that group communication is more effective than other communications because farmers are guided and directed in groups to carry out more productive activities on the basis of cooperation. Group communication is more beneficial because it allows for feedback and group interaction that provides opportunities to exchange experiences and influence on its members. In this method, organizing in extension activities is directed at accelerating technology distribution at each level of the target of development.

And B. Curtis, James J. Floyd, and Jerril L. Winsor (2005) in (S. Suryanto & Safrizal, (2015) stated that group communication occurs when three or more people meet face-to-

face, usually under the direction of a leader to achieve common goals or objectives and influence each other. They acquire the characteristics of group communication, namely communicating face-to-face, having few participants, working under the direction of a leader, sharing common goals or objectives and group members having influence over each other

3. The Effect of Mass Communication on the Adoption Rate of Postharvest Rice Technology Innovation

Indicators of mass communication variables associated with the adoption rate of postharvest technology innovation are: (1) media influence and (2) media form. In the media influence indicator, there are sub-indicators, namely selective publication, selective attention, and selective perception, selective memory, selective acceptance and selective discussion. In the form of mass media, there are sub-indicators, namely print media and electronic media. Judging from the number of farmers who answered questions on the media influence indicator, the largest farmers gave answers to the correct question that mass media can accelerate the dissemination of the latest information but farmers remain selective in using media and information contained in mass media and electronic media, on the largest media form indicator provides answers to the correct question, This is because electronic media is very often used by farmers in obtaining information besides that electronic media is easily accessible. Mass communication is a message communicated through mass media to a large number of people Rakhmat, 1999 *in* (S. Suryanto & Safrizal, 2015).

The results of statistical calculations show that the mass communication regression coefficient of 0.977 with *Sig* at 0.002 shows a significant influence on mass communication variables. This result proves that the higher mass communication shown from mass communication indicators, among others: (1) media influence and (2) media form. Thus, the hypothesis reads, "There is a significant influence between mass communication on the adoption rate of postharvest rice field technology innovations.

The results of this study are in line with Elvinaro, (2015) mass communication is the production and distribution based on technology and institutions of continuous message flow and is most widely owned by people in industrial society.

4. The Effect of Interpersonal Communication, Group Communication, and Mass Communication on the Adoption Rate of Postharvest Rice Technology Innovation

In agricultural extension activities, the communication process between extension workers and their targets also not only stops receiving messages about innovations delivered by extension workers, but often communication only stops if the targets have responded as desired by the extension workers, namely in the form of acceptance and application of these innovations in farming practices, both shown in changes in knowledge, attitudes, or skills (Prihantiwi et al., 2016).

The regression calculation results show an F count of 17.491 with *Sig.* 0.000. Since *Sig.* 0.000 is less than 0.05, the hypothesis that "There is a significant influence between interpersonal communication, group communication and mass communication on the adoption rate of postharvest technology innovations" is acceptable.

The value of the regression coefficient at the real level of 5% turns out that the interpersonal communication variable has a regression coefficient of 0.001, meaning that the value of significance (0.001) < real level of 5% (0.05) so that it can be stated that the regression coefficient shows a significant influence. Likewise, the group communication

variable has a regression coefficient of 0.038, meaning that the significance value (0.038) < a real level of 5% (0.05) so that it can be stated that the regression coefficient shows a significant influence, and the mass communication variable has a regression coefficient of 0.002, meaning that the value of significance (0.002) < a real level of 5% (0.05) so that it can be stated that the regression coefficient shows a significant influence. From the results of the analysis, it can be concluded that the variables that are more influential with the adoption rate of postharvest technology innovation in rice fields are interpersonal communication variables with message indicators and interpersonal communication effects.

This is in line with the results of research by Rohit et al., (2019) the counseling communication method used by the Counseling Information Center (BIP) of West Bangkinang District, Kampar Regency only uses one method used optimally in delivering counseling messages to its communicants, namely the Training and Visiting System (LAKU) method, quite well the other methods are less functional. This leads to a lack of behavior change from the target audience so that the expected adoption of innovation is not achieved.

CONCLUSION

From the results of the analysis and discussion that have been described, several things can be concluded as The variable adoption rate of rice postharvest technology innovation (Y) is influenced by the Interpersonal communication variable (X1). The interpersonal communication variable has a coefficient value of 0.791, meaning that every change in the interpersonal communication variable by 1% will increase the adoption rate of postharvest rice technology innovation by 0.791%.

The variable adoption rate of rice postharvest technology innovation (Y) is influenced by group communication variables. The group communication variable has a coefficient value of 0.510, meaning that every change in the group communication variable by 1% will increase the adoption rate of postharvest rice technology innovation by 0.510%.

The variable adoption rate of rice postharvest technology innovation (Y) is influenced by mass communication variables. The mass communication variable has a coefficient of 0.977, meaning that every change in the mass communication variable by 1% will increase the adoption rate of postharvest rice technology innovation by 0.977%.

The variables of interpersonal communication, group communication, and mass communication have a significant effect on the adoption rate of postharvest technology innovations aimed at multiple regression equations, namely: $Y = (-1.031) + 0.791 X_1 + 0.510 X_2 + 0.977 X_3$. The equation shows that X_1 X_2 X_3 the influence of Mass Communication with indicators of media influence and media forms is stronger than the influence of interpersonal communication with indicators of messages and effectiveness of interpersonal communication, and group communication with indicators of group discussion and group effectiveness.

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(2023)**

First publication right:

Injurity - Interdisciplinary Journal and Humanity



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