Communication in agricultural extension services toward farmer empowerment

A Faqih* and S Aisyah

Department of Agribusiness, Universitas Swadaya Gunung Jati, Cirebon. Indonesia

*afaqih024@gmail.com

Abstract. This research was conducted to find out the influence of agents on the results of empowerment of farmers, the effect of recipients on the results of the farmer empowerment, the effect of agricultural extension on the results of the farmer empowerment, and the influence of agents, recipients, and agricultural extension on the results of farmer empowerment. This research was carried out in May to July 2017. Quantitative descriptive method was applied by using primary and secondary data. Primary data obtained from interviews with 24 respondents who applied integrated crop management technology (PTT) on paddy fields. Technique of interview was guided with questionnaires while secondary data was taken from some literature work and relevant agencies. The results showed that: there is positive and significant influence between the agents and farmer empowerment, there is positive and significant influence between the recipients on the farmer empowerment, there is positive and significant influence between agricultural extension on the results of the farmer empowerment, and there is positive and significant influence between the agents, recipients, and agricultural extension on the results of farmer empowerment.

1. Introduction

Agricultural development is a process that is intended to always increase agricultural production which at the same time enhances the income and business productivity of each farmer by increasing capital, skill and preservation of environmental resources. The objectives of agricultural development, among others, are to increase the income and living standards of farmers and fishermen, to create jobs and improve food security [1-3].

Rice plants are classified as strategic agricultural commodities, because they concern the lives of many people. If it is not handled properly and its production slumps or crops fail, the impact will be felt for the community. The development of a sustainable agricultural system requires an effort to improve the quality of human resources that are useful in supporting agricultural development. This quality improvement is not only in increasing the productivity of farmers, but can improve their ability to be more involved in various development processes [4,5].

In this case agricultural extension is an important factor in realizing the goals of agricultural development. Through the extension, agricultural community is equipped with knowledge, skills, introduction of technology packages and new innovations in agriculture with its business, planting or the values or principles of agribusiness, creating human resources with basic philosophy of diligent, cooperative, innovative, creative etc. [6,7].

Agricultural extension agents in the 1970s was known as a non-formal education system for farmers and their families, with the aim that they had capability and self-sufficient to improve their own welfare.
and society [8]. Communication plays an important role to establish good cooperative relationships between the agents and farmers, and has a large influence in the process of achieving agricultural goals. Communication has three components: Communicators (the agents), Recipients, and Messages. Accordingly, communication is the statement between individual human and group which are general in nature using meaningful symbol [9-11].

Lack number of agents as the communicator in delivering information to the farmers was less accomplished. The implementation of agricultural extension was not completely successful. As a result, the message that the agents transferred to the farmers were still far from the goal. The recipients were less active in the implementation of agricultural extension. Communication will only be effective if the message delivered can be interpreted equally by the recipient. In general, effective communication is about more than just exchanging information. It is about understanding the emotion and intentions behind the information, as well as being able to clearly convey a message [12-13].

The purpose of this study was to determine the effect of communicators (the agents), recipients, and messages on the results of farmer empowerment in the implementation of Integrated Crop Management Rice Field technology. The hypothesis resulted that there was a significant influence between communicator (agents), recipient, and message towards farmer empowerment on the implementation of both partial and simultaneous integrated crop management technology in paddy fields.

2. Research method
This research was conducted at Sirnabaya Village, Gunung Jati Subdistrict, Cirebon Regency and was carried out in May to July 2017. Subject of the research was farmer group “Sri Mekar” with 24 members as the respondents. The design used in this research was quantitative research with descriptive research technique. Quantitative research is the data in the form of numeral or qualitative data which are scored [14]. Purpose of this current study is to examine a theory or hypothesis to strengthen or reject a theory or result hypothesis which exists. In addition, descriptive is the procedure to solve the problem observed by drawing the condition of subject/object of the research (person, institution, society, and others) at current situation based on the facts which exist or emerge [15].

Techniques of collecting data in this research were interview and questionnaires using Likert scale. Likert scale is a scale used to measure attitude, idea, and perception from person or group on an educational phenomenon [16]. The answers of each instrument using Likert scale has a graduation from very positive and very negative. The technique of analyzing data using multiple linear regression analysis is to connect with linear between two or more independent variables and dependent variable [17,18]. Multiple Linear Regression Analysis aims to find out the influence of communication agent of farming toward the result of farmers’ empowerment on the program of the implementation of integrated plant management technology (PTT) at rice fields [18].

3. Results and discussion

3.1. Communicator (agents) variable (X1)
The result of statistical calculation shows that the communicator (agents) regression coefficient is 0.362 with Sig at 0.001. Meaning that, there is significance influence at communicator variable (see table 1). The result proves that the higher communicators are shown by the indicators of communicator such as: credibility, attractiveness, and power. In the indicator of credibility, farmers said that most of them trusted the ability and content of the message conveyed by the agents. In the indicator of attractiveness, the farmer argued that good agents must have an attractive attitude so it can attract opinion and attitude of farmers. Then, in the indicator of power, farmers said the agent who gave information or message must be experienced agent, like BP3K that socializes the process of extension. Communicator as the agent of counsellor must have good attitude in doing the task [19]. The process of conveying the message of the information will be effective if the total effort of counsellor as communicator is available, so that the content of the message can be received by the target group, farmers. From the result of t test for communicator variable ($X_1$), the score of t test 2.809 is obtained by using a significant limit $\alpha = 0.05$. 
The score of $t$ table 1,724 is obtained. So the criteria of test is $t_{\text{count}} > t_{\text{table}}$. It means ($H_1$) is accepted and ($H_0$) is rejected. In short, the communicator variable has significance influence toward the result of the empowerment.

### Table 1. The result of T test.

| Model | B   | Std. Error | Beta | T    | Sig  |
|-------|-----|------------|------|------|------|
| (Constant) | 5.150 | 2.359      |      | 1.358 | .189 |
| x1    | .362 | .073       | .372 | 2.809 | .001 |
| x2    | .432 | .074       | .450 | 2.495 | .002 |
| x3    | .525 | .142       | .310 | 2.127 | .020 |

a. Dependent Variable: y
(Source: Data Analysis using SPSS 22.00 for windows. 2017)

3.2. **Recipient variables (X_2)**

The result of statistical calculations shows that there is the communicator regression coefficient of 0.432 with a $\text{Sig}$ at 0.002 which shows that there is significance influence at communicant variable. The result proves that the higher communicals are shown by the indicators of recipient such as: attitudes, emotions, beliefs, habits, and willingness. In the attitude indicator, the farmers said that they respond and are motivated after attending the session. In the emotional indicator, the farmers argued that they got new information after the session. In the belief indicator, the farmers argued that the correct information given by the agent can be delivered to other farmers. In the habit indicator, the farmers argued that the session is monthly activity in order to the farmers get the information. And in the willingness indicator, the farmers said that the implementation of new technology is based on their own will. The farmers receiving the message given by the agent are called communicant [19]. The information given by the agent is hoped that the farmers can understand the goals. The result of $t$ test for communicant variable ($X_2$) is obtained. The score of $t_{\text{count}}$ is 2.495 by using a significant limit $\alpha = 0.05$. The score of $t_{\text{table}}$ is 1,724. So the criteria of test is $t_{\text{count}} > t_{\text{table}}$. It means ($H_1$) is accepted and ($H_0$) is rejected. In short, communicant variable has significance influence toward the result of empowerment.

3.3. **Message variable (X_3)**

The result of statistical calculations shows that there is message regression coefficient of 0.525 with a $\text{Sig}$ at 0.020 which shows that there is significance influence at variable of message. The result proves that the higher messages are shown by the indicators of messages such as: informative message and persuasive message. The message should have core message (theme) as the direction to examine the communicant's attitude and behavior. Message can be delivered at length, but it must be aimed to the goal of communication [20,21]. The result of $t$ test for message variable ($X_3$) is obtained. The score of $t_{\text{count}}$ is 2.127 by using a significant limit $\alpha = 0.05$. The score of $t_{\text{table}}$ is 1,724. So the criteria of test is $t_{\text{count}} > t_{\text{table}}$. It means ($H_1$) is accepted and ($H_0$) is rejected. In brief, recipient variable has significance influence toward the result of empowerment.

3.4. **Empowerment result variable (Y)**

Regression calculating results showed that $F$ account was 31,215 with $\text{Sig.} 0.000$. Thus $\text{Sig} 0.000$ was less than 0.05 indicating that the hypothesis which stated: the influence of agricultural extension communication towards farmer empowerment result in integrated plants technology management program towards paddy is accepted.

Regression Coefficient in 5% significant level found in communicator variable had 0.001 coefficient regression, it indicated that significant value (0.001) $<$ significant level 5% can be concluded as
regression coefficient showed that there was a significant effect. In the other hand, communicator variable had 0.002 regression coefficient indicating significant value (0.002) <significant level 5% therefore it can be concluded that the regression coefficient showed a significant effect. Message variable had 0.020 regression coefficient indicating significant value (0.020) <significant level 5% (0.05) therefore it can be concluded that the regression coefficient showed a significant effect. Based on analysis result, it can be concluded that the most influenced variables towards farmer empowerment result are communicator variable with indicators namely trust, appeal and power. Those indicators will push the farmer/peasant as a communicator to being involved in every extension programs [22,23].

Double linear regression analysis result was \( \hat{Y} = 5.105 + 0.362X_1 + 0.432X_2 + 0.525X_3 \). That formula indicated that message influence (X3) was stronger than Communicator Influence (X1) and Recipient (X2). It can be concluded that those three independent variables, namely communicator, recipient and message, significantly affected towards empowerment result. Yet the most dominant variable was message variable.

### Table 2. F–test.

| ANOVA<sup>b</sup> | Sum of Squares | Df | Mean Square | F     | Sig. |
|-------------------|----------------|----|-------------|-------|------|
| **Model**         |                |    |             |       |      |
| 1                 | Regression     | 143.037 | 3 | 47.679 | 31.215 | .000<sup>a</sup> |
|                   | Residual       | 28.588 | 20 | 1.429  |       |      |
| **Total**         | 171.625        | 23  |       |       |      |

<sup>a</sup> Predictors: (Constant), x3, x1, x2
b. Dependent Variable: y
(Source: Data Analysis SPSS 22.00 for windows. 2017)

In Table 2, formulation result of F account was 31.215. Thus, \( F_{\text{account}} > F_{\text{table}} \) (31.215 > 3.10) or \( \text{Sig} F < 5\% (0.000 < 0.05) \). It simultaneously means that communicator (X1), recipient (X2) and message (X3) variables significantly affected towards empowerment result variable (Y) because \( F_{\text{account}} > F_{\text{table}} \) and if significant level was \( <a \) (0.05), then independent variable affected dependent variable.

### 4. Conclusion

Based on analysis of results and discussions that has been explained above, it is concluded as follow: communicator Variable with trust, appeal and power indicators showed real effects towards empowerment result. It is proved by t-test for communicator variable (X1) with significant rate \( a \) (0.05) obtained value \( t_{\text{account}} = 2.809 > t_{\text{table}} \) (1,724), recipient Variable with attitude, emotion, trust, behaviour and willingness indicators showed real effects towards empowerment results. It is proved by t-test for recipient variable (X2) with significant rate \( a \) (0.05) obtained value \( t_{\text{account}} = 2.495 > t_{\text{table}} \) (1,724), message Variable with informative and persuasive information indicators showed real effects towards empowerment result. It is proved by t-test for message variable (X3) with significant rate \( a \) (0.05) obtained value \( t_{\text{account}} = 2.495 > t_{\text{table}} \) (1,724), communicator, recipient and message variables had real effects towards empowerment result according to data analysis which conducted to figure double linear regression, namely: \( 5.105 + 0.362X_1 + 0.432X_2 + 0.525X_3 \). The equation indicated that message influences with informative and persuasive information indicators was stronger than Communicator Variable with trust, appeal and power and Recipient Variable with attitude, emotion, trust, behaviour and willingness indicators.

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