IMPROVING THE EFFECTIVENESS OF AGRICULTURAL EXTENSION PROGRAMS THROUGH A WHATSAPP COMMUNICATION APPROACH IN MANULEA VILLAGE, SASITAMEAN DISTRICT, MALAKA REGENCY
(Peningkatan Efektivitas Program Penyuluhan Pertanian Melalui Pendekatan Komunikasi Whatsapp Di Desa Manulea Kecamatan Sasitamean Kabupaten Malaka)

Maria Magdalena Muti[1], Tomycho Olviana[2], Paulus Un[2]
[1,2] Agribusiness Study Program, Faculty of Agriculture, University of Nusa Cendana
Corresponding Author: mariamagdalenamuti@gmail.com

Received:23rd August, 2025 Accepted: 29th August, 2025

ABSTRACT

This study aimed to evaluate the effectiveness of a corn-farming agricultural extension program implemented through a digital communication approach using WhatsApp in Manulea Village, Sasitamean District, Malaka Regency. The study employed a mixed-methods approach combining qualitative and quantitative methods. Data were collected through interviews, observation, documentation, and questionnaires. A total of 38 farmers were selected purposively based on smartphone ownership, at least one year of farming experience, and participation in extension activities. The results showed that digital communication through WhatsApp helped disseminate agricultural information quickly, flexibly, and effectively. The extension program provided information related to the use of superior seeds, planting and crop maintenance techniques, fertilization, pest and disease control, and post-harvest processing. The effectiveness of the program was reflected in farmers' adoption of several recommended corn cultivation technologies. However, several constraints remained, including limited farmer time, the relatively older age of some farmers, limited internet access in certain areas, and difficulties in obtaining adequate agricultural inputs. The program was generally considered moderately effective to effective, although several aspects, such as fertilizer use, technical training, and post-harvest practices, still require improvement. The study recommends that extension agents provide more intensive direct and online assistance, prepare flexible communication schedules, and that local governments support digital extension through the provision of digital infrastructure and information technology training for farmers.
Keywords: Agricultural extension, digital communication, program effectiveness, WhatsApp

ABSTRAK

Tujuan dari penelitian ini adalah untuk mengevaluasi seberapa efektif program penyuluhan pertanian jagung dengan menggunakan metode komunikasi digital yang menggunakan aplikasi WhatsApp di Desa Manulea, sKecamatan Sasitamean, Kabupaten Malaka. Metode campuran—gabungan pendekatan kualitatif dan kuantitatif—digunakan. Secara purposive, sekelompok 38 petani dipilih. Hasil penelitian menunjukkan bahwa komunikasi digital melalui WhatsApp membantu penyebaran informasi pertanian dengan cepat dan efektif, tetapi ada beberapa kendala, seperti keterbatasan waktu, usia petani yang relatif tua, dan kesulitan mendapatkan akses ke sarana pertanian. Meskipun ada beberapa hal yang masih perlu diperbaiki, seperti penggunaan pupuk dan pelatihan pascapanen, pelatihan yang dilakukan telah membantu meningkatkan adopsi teknologi budidaya jagung. Studi ini menyarankan agar pemerintah daerah mendukung dan mendampingi infrastruktur digital dengan lebih aktif.
Kata kunci: Penyuluhan Pertanian, Komunikasi Digital, Whatsapp, Efektivitas Program

INTRODUCTION

Agriculture remains a highly important rural sector; however, many farmers still experience difficulties in understanding and accessing the technologies and information required to improve their productivity. Agricultural extension programs have long been implemented, but their effectiveness has not been fully optimal because of limited two-way communication, restricted access to rapid and accurate information, and the limited use of digital technology. In Manulea Village, the effectiveness

of extension activities is also constrained by the underutilization of potentially appropriate communication approaches.

Data from Statistics Indonesia of Malaka Regency in 2021 indicated a significant decline in corn production. One factor contributing to this decline was the weakening synergy between extension agents and farmers, as well as the suboptimal use of digital communication methods in extension activities. Digital communication can help bridge information gaps between extension agents and farmers. Through media such as WhatsApp, agricultural extension agents can deliver information rapidly, flexibly, and participatively. Two-way communication also enables farmers to communicate their needs and constraints directly.

By integrating a digital communication approach, the effectiveness of agricultural extension in Manulea Village is expected to increase, both in terms of information delivery, application of corn cultivation technology, and improvement of agricultural productivity in general. This study sought to analyze the effectiveness of digital-based extension communication, identify supporting and inhibiting factors, and formulate strategies to improve the quality of extension communication.

The objectives of this study were: (1) to identify the extension programs implemented by agricultural extension agents in Manulea Village; (2) to identify the supporting and inhibiting factors in the communication process between extension agents and farmers; and (3) to analyze the effectiveness of WhatsApp-based extension programs in Manulea Village.

The theoretical foundation of this study covers agricultural extension, communication in extension, digital technology, and program effectiveness. Agricultural extension is a non-formal learning process intended to improve farmers' knowledge, attitudes, and skills and ultimately enhance their welfare, as stated in Law Number 16 of 2006. Two-way and participatory communication is believed to improve extension effectiveness because it provides opportunities for feedback and encourages farmer involvement in each stage of the program. Digital technologies, including the internet, mobile applications, and social media, have been shown to accelerate information dissemination and improve extension efficiency. WhatsApp, in particular, has become an effective communication medium in rural communities. Program effectiveness is measured by the achievement of objectives and behavioral changes among target groups, in this case farmers, and is influenced by internal factors such as motivation and skills as well as external factors such as internet access and government support.

Accordingly, this study examined the extent to which agricultural extension programs in Manulea Village, Sasitamean District, Malaka Regency, were effective when implemented through a digital communication approach using WhatsApp. The study is expected to contribute to the development of agricultural extension strategies that are more adaptive to technological progress and to the needs of rural farmers.

METHODS

This study used a mixed-methods approach combining qualitative and quantitative methods. The research was conducted in Manulea Village, Sasitamean District, Malaka Regency, in October 2024. The population consisted of 436 farmers, and the sample was selected purposively, resulting in 38 respondents. The selection criteria included smartphone ownership, at least one year of farming experience, and participation in agricultural extension activities.

Data were collected through observation, interviews, documentation, and questionnaires. Data analysis refers to the process of grouping and organizing data into patterns in order to obtain useful information that can serve as a basis for decision-making and problem solving. The questionnaire and interviews were administered to respondents who had been selected based on the predetermined criteria.

To address the first objective regarding the extension programs used by agricultural extension agents in Manulea Village, the study employed descriptive analysis. According to Sugiyono (2018), descriptive analysis describes an event or phenomenon using words or language without involving numerical or statistical measurement. To address the second objective regarding the supporting and inhibiting factors in the communication process, the study used descriptive qualitative analysis because the focus was on factors rather than numerical or statistical measures. To address the third objective, namely to determine the effectiveness of digital agricultural extension programs conducted

by extension agents, the study employed descriptive quantitative analysis using a Likert scale divided into effectiveness criteria.

According to Sugiyono (2017), the Likert scale is used to measure the opinions and perceptions of research subjects, both individuals and groups. In this study, it was used to measure respondent answers for each questionnaire item.

Table 1. Likert Scale Scores

No.	Statement	Score
1	Very Effective	5
2	Effective	4
3	Moderately Effective	3
4	Ineffective	2
5	Very Ineffective	1

Source: Sugiyono, 2017

Qualitative data were analyzed descriptively, while quantitative data were analyzed using mean scores and interpretation of effectiveness levels.

RESULT AND DISCUSSION

Extension Programs Implemented in Manulea Village

The agricultural extension program in Manulea Village has utilized a digital communication approach, particularly through the WhatsApp application. Extension agents established WhatsApp groups consisting of corn farmers as a medium for sharing technical information, announcing activities, and facilitating questions and answers related to cultivation practices. The information shared included the use of superior seeds, maintenance techniques, fertilization, pest control, and post-harvest processing.

These findings were obtained through interviews and direct observation of the activities of farmers and extension agents. Digital media were generally understood and used effectively by most farmers who had access to and the ability to operate digital devices. The use of WhatsApp as a communication channel demonstrated effectiveness in accelerating information delivery. The limitations of face-to-face extension caused by time and distance could be addressed through this approach.

The findings are consistent with the concept of two-way and participatory communication proposed by Van Den Ban (1999) and support the view of Sumarjo et al. (2009) regarding the importance of modern communication systems in revitalizing agricultural extension.

Supporting and Inhibiting Factors in Extension Communication

The supporting factors identified in the extension communication process were: (1) the presence of active farmer groups; (2) farmers' access to smartphones and internet networks; (3) local and familiar communication patterns using language that is easy to understand; and (4) extension agents who understood farmers' social conditions closely.

The inhibiting factors included: (1) the low digital literacy of some farmers; (2) limited internet signal in several locations; (3) farmers' limited time due to fieldwork; and (4) the limited number of extension agents, which caused extension coverage to be uneven.

Although digital communication facilitates access to information, the effectiveness of extension remains influenced by social, economic, and local infrastructure factors. This is consistent with effectiveness theory, which states that both internal factors such as motivation and skills and external factors such as technology and regulation influence program success (Setiana, 2005; Sugiyono, 2016).

Effectiveness of the Digital Extension Program in Manulea Village

Based on quantitative data obtained from questionnaires completed by 38 respondents, the effectiveness of the extension program through WhatsApp was categorized as moderately effective to effective. The key findings are summarized in Table 2.

Table 2. Effectiveness of Agricultural Extension

Extension Indicator	Mean Score
Use of superior seeds	2.71
Planting and maintenance techniques	> 2.5
Use of fertilizer	2.26
Language used in extension	3.00
Training	2.00

Source: Primary Data, 2024

Communication via WhatsApp was relatively successful in delivering technical materials, especially practical information that could be directly applied in the field. However, effectiveness decreased in aspects requiring direct presence, such as technical training and fertilization assistance.

These findings strengthen the role of digital communication as a modern strategy in agricultural extension (Margono & Sugimoto, 2011; Anwas, 2009). However, they also emphasize the need for a blended approach, namely the combination of digital communication and face-to-face interaction, as recommended in participatory extension theory.

Implications of the Findings and Theoretical Development

The findings of this study indicate that digital-based extension not only accelerates information distribution but also increases farmer involvement when it is adapted to local conditions, including access, language, and technological ability. Therefore, this study suggests a modification of agricultural extension theory: the effectiveness of digital extension is not determined only by the sophistication of the media but also by the close relationship among content, local context, and the social relationship between extension agents and farmers.

CONCLUSION AND RECOMMENDATION

Conclusions

1. The agricultural extension program in Manulea Village has utilized a digital communication approach, especially the use of WhatsApp, to deliver information to corn farmers. The materials delivered included the use of superior seeds, fertilization, pest control, and post-harvest processing.
2. The supporting factors in the extension communication process included the experience of extension agents and farmers, as well as the ability of some farmers to use smartphones. The inhibiting factors included the advanced age of some farmers, limited internet network access, and differences in available time between extension agents and farmers.
3. The effectiveness of the extension program using the WhatsApp communication approach was assessed as reasonably good. This was reflected in the Likert-scale assessment of the application of corn cultivation technologies recommended by extension agents. Most indicators were categorized as "Effective," although several aspects, such as training, fertilizer use, and post-harvest techniques, were still categorized as "Less Effective."

Recommendation

1. Agricultural extension agents should provide more active direct and online assistance to farmers and arrange flexible schedules so that communication with farmers can be optimized.
2. Local governments and related agencies are expected to support digital extension through the provision of facilities and information technology training, particularly for farmers who are not yet familiar with digital media.
3. Farmers in Manulea Village should be encouraged to continue learning and actively utilize digital technology so that agricultural information can be accessed more quickly and used to improve productivity and welfare.

REFERENCES

Anwas, O. M. (2009). Agricultural extension based on information and communication technology. Jakarta: Universitas Terbuka.

Badan Pusat Statistik Kabupaten Malaka. (2021). Kabupaten Malaka in Figures 2021. Malaka: Badan Pusat Statistik Kabupaten Malaka.

Lestari, D., & Mulyana, R. (2020). Two-way communication in digital technology-based agricultural extension programs. Jurnal Komunikasi Pembangunan dan Pertanian, 8(3), 56–67.

Margono, M., & Sugimoto, Y. (2011). The role of information technology in improving the effectiveness of agricultural extension in Indonesia. Jurnal Komunikasi Pembangunan, 9(1), 45–56.

Rahman, A., & Fitriani, S. (2022). Effectiveness of WhatsApp application use in improving rice farmers' knowledge in South Sulawesi. Jurnal Agroteknologi dan Penyuluhan, 10(1), 34–42.

Republic of Indonesia. (2006). Law Number 16 of 2006 concerning the Agricultural, Fisheries, and Forestry Extension System. State Gazette of the Republic of Indonesia Year 2006 Number 92. Jakarta: State Secretariat.

Sari, N. K., & Suharjo, B. (2021). The effect of WhatsApp social media utilization on the effectiveness of agricultural extension in Sleman Regency. Jurnal Penyuluhan Pertanian Digital, 5(2), 101–110.

Setiana, L. (2005). Agricultural extension and communication techniques. Jakarta: Bumi Aksara.

Sugiyono. (2016). Quantitative, qualitative, and R&D research methods. Bandung: Alfabeta.

Sugiyono. (2017). Educational research methods. Bandung: Alfabeta.

Sugiyono. (2018). Quantitative, qualitative, and R&D research methods. Bandung: Alfabeta.

Sumarjo, et al. (2009). Development extension: Paradigms and approaches. Bogor: IPB Press.

Van Den Ban, A. W., & Hawkins, H. S. (1999). Agricultural extension. Oxford: Blackwell Science.

Wulandari, E., & Nugroho, T. (2023). Agricultural extension communication strategies in the digital era: A case study in Banyumas Regency. Jurnal Komunikasi Pertanian Indonesia, 12(2), 78–89.