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The Effectiveness of Online Agricultural Extension in Bekasi Regency

[1]Iqbal Fadhlurrahman, [2]Dwi Sadono, [2]Anna Fatchiya

[1] Study Program in Agricultural and Rural Development Communication, IPB University, Bogor, Indonesia
[2]Department of Communication Science and Community Development, IPB University, Bogor, Indonesia

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ABSTRACT

The current development of ICT is transforming the approach to agricultural extension from conventional methods to advanced method by incorporating digital technology. Jarkomluhdes is an online agricultural extension activity implemented as an effort to enhance the institutional development of extension services at the village level, known as Posluhdes. This research aims to analyze the level of participation and effectiveness of Jarkomluhdes, as well as to examine the influencing factors. The study employs a quantitative approach and survey method. The population includes 132 officials and members of Posluhdes spread across 12 villages in 5 sub-districts of Bekasi Regency, with a census sampling method. Data is analyzed using PLS method through SmartPLS 3.2.9. The level of participation and effectiveness of Jarkomluhdes is categorized as very low. The role of facilitators and the availability of facilities and infrastructure influence the level of participation. Furthermore, the level of participation affects the effectiveness of Jarkomluhdes.

Keywords: effectiveness, Jarkomluhdes, online agricultural extension, Posluhdes

INTRODUCTION

The current focus of agricultural development is on enhancing human resource capacity. The government's strategy to improve agricultural human resource capacity involves providing technology-based agricultural extension through print media, electronic media, and e-learning. This strategy requires support from internet usage to enable farmers to participate in online extension programs. According to BPS (2018) cited in the Minister of Agriculture of the Republic of Indonesia's decision (2021), there is a potential internet usage rate of 93.9 percent among rural farmers, totaling 33.4 million individuals in Indonesia. However, this potential seems disproportionate to the actual usage, as indicated by Amaliah & Deli (2023), where internet usage among farmers was only 6.22 percent in 2021, increasing to 8.88 percent in 2022. These percentages suggest that the number of farmers using the internet is still relatively low compared to the 82.41 percent of farmers who do not utilize digital technology. The use of the internet by farmers represents a significant opportunity to obtain agricultural information, enhance knowledge and skills, and build relationships to expand marketing opportunities.

Agricultural extension activities are carried out by extension institutions from the central level down to the village/urban ward level. The extension institution at the village/urban ward level takes the form of Pos Penyuluhan Desa (Posluhdes) or Village Extension Posts. Posluhdes is a

*Corresponding author:
Email: iqbalfadhlurrahman74@gmail.com

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non-structural work unit formed and managed in a participatory manner by farmers (UU Number 16 of 2006). Data from the Extension Division of the West Java Food Crops and Horticulture Office shows that there are 2,147 Posluhdes already established in the West Java Province out of a total of 5,962 villages/urban wards. The government is actively promoting the development of Posluhdes by providing financial assistance or facilitating the provision of supporting tools for Jaringan Komunikasi Pos Penyuluhan Desa (Jarkomluhdes) or the Village Extension Communication Network activities. Posluhdes that have received financial assistance amount to 1,307 and have been provided gradually from 2017 to 2021. According to the data from the Extension Division of the Bekasi Regency Agriculture Office, Bekasi Regency in West Java is the regency/city that has developed the most Posluhdes and received financial assistance, with a total of 135 villages/urban wards. However, this number is not in line with the Bekasi Regency Regent's Regulation (2016), which aimed to establish Posluhdes in 182 villages and 5 urban wards.

Jarkomluhdes is an online agricultural extension activity that utilizes interactive communication technology within a digital space that is not limited by distance, space, or time. The objective of Jarkomluhdes is to bring agricultural extension closer to farmers in rural areas, expedite the dissemination of information, expand market access, and share experiences related to farming businesses and prominent commodities developed in a particular region. The initial statement from the Sub-Coordinator of Methods and Information in the Extension Division of the Bekasi Regency Agriculture Office revealed that Jarkomluhdes activities have not been fully optimized. Some contributing factors include farmers' inability to use ICT devices, malfunctioning or non-functional devices, unstable and uneven internet connectivity, and internal issues within the Posluhdes institution. According to Prayoga et al. (2018), the utilization of hybrid media to convey information on a broader scale to farmers is a good and innovative idea. However, the low internet accessibility and smartphone ownership among farmers pose challenges that may hinder their access to information.

Mardikanto (2009) asserts that the effectiveness of an extension activity can be measured by the extent to which there has been a change in farmers' behavior, encompassing changes in knowledge, skills, and attitudes. The desired changes in farmers' behavior through extension activities are influenced by four factors: personal conditions, especially motivation; the physical environment; the socio-cultural environment; and the type and activities of the institution involved. According to Aria et al. (2016), the success of a program is influenced by the level of farmers' participation and their knowledge about the program.

Participation is defined as an individual's involvement in a social group to take part in community activities outside of their own job or profession (Bahua, 2015). In research, participation is associated with the use of technology. Technology usage, according to Davis (1986) cited in Atnan & Imran (2018), is the act of an individual using technology, measured by the amount of time and frequency of usage to interact with that technology. In the context of extension activities, participation in the use of online media is interpreted as the involvement of farmers and extension workers in online agricultural extension activities and how often they access internet-based media to obtain agricultural information.

The participation of farmers in a program/activity is influenced by numerous factors. Individual characteristics that affect farmer participation include age, land area, farming experience (Putriani et al., 2018),

education (Marphy & Priminingtyas, 2019), training, motivation (Dayat & Anwarudin, 2020), and the level of cosmopolitanism (Budiman & Sadono, 2016). Extension activities, encompassing intensity, content, methods, media used, and the role of extension workers, also influence farmer participation (Dayat & Anwarudin, 2020). Farmer participation is influenced by environmental support, both physical and socio-economic, which includes government policies regarding the provision of facilities and infrastructure, the availability of infrastructure, and institutional support (Mulyaningsih et al., 2018). Regarding participation in the use of digital technology, a farmer needs to have adequate digital knowledge and skills. Therefore, digital literacy becomes a crucial factor before participating in digital media. According to (Riel, 2016), good digital literacy enhances community participation in the use of digital media.

The effectiveness or success of Jarkomluhdes has not been precisely determined, even though it has been implemented since 2017. So far, there is no documented evaluation of Jarkomluhdes activities from the supervising institutions at the sub-district, regency/city, or provincial levels. There is also a lack of research demonstrating the success of Jarkomluhdes. Therefore, evaluating the effectiveness of online extension activities through Jarkomluhdes becomes crucial. The objectives of this research are to analyze the level of participation and effectiveness of Jarkomluhdes activities in Bekasi Regency and to examine the factors influencing the level of participation and effectiveness of Jarkomluhdes activities in Bekasi Regency.

RESEARCH METHOD

This study employs a quantitative approach enriched with qualitative data. It is an explanatory research, delineating six independent variables: individual characteristics, the role of extension workers, institutional support, extension support, availability of facilities and infrastructure, digital literacy, and two dependent variables: the level of participation and the effectiveness of Jarkomluhdes activities. A survey method is utilized, involving the distribution of questionnaires to respondents.

The research was conducted from July to September 2023. Bekasi Regency was purposively chosen as the research location, considering it is a regency/city in West Java that has been most active in cultivating Posluhdes in 135 villages/urban wards. All Posluhdes have received financial assistance or facilitation of supporting Jarkomluhdes tools, and there is government policy support through Bekasi Regency Regulation Number 24 of 2016, which encourages the growth and development of Posluhdes.

The determination of the population and sample locations was carried out in three stages. The first stage involved selecting three sub-districts with varying distances from the capital of Bekasi Regency – one with the farthest distance, one with a moderate distance, and one with the closest distance. In the second stage, villages with Posluhdes actively participating in Jarkomluhdes activities from October 2022 to March 2023 were identified, resulting in 10 villages from the three selected sub-districts. The third stage was undertaken to meet the required population and sample size, involving the selection of one village and one urban ward distinguished by unique characteristics compared to other villages/urban wards. The total population comprised 132 officials and members of Posluhdes from 11 villages and one urban ward across five different sub-districts: Cikarang Pusat, Sukatani, Pebayuran, Muaragembong, and Tambun Selatan. Sampling was done through a census method.

The collected data consist of primary data obtained directly from respondents and informants, as well as secondary data obtained from relevant government institutions. Data collection was conducted through a survey involving interviews using questionnaires, in-depth interviews with selected respondents based on questionnaire responses, and informants (including two agricultural extension officers from the West Java province, the Sub-Coordinator of Methods and Information in the Extension Division of the Bekasi Regency Agriculture Office, and five agricultural extension officers in Bekasi Regency). Other methods include observation, literature review, and documentation. The variables in this study were measured on a four-level ordinal scale (very high, high, low, very low). Data were analyzed descriptively and inferentially. Hypothesis testing was performed using the partial least squares (PLS) method with the SmartPLS 3.2.9 application.

RESULTS AND DISCUSSIONS

Posluhdes is a non-structural extension institution formed by key actors and rural entrepreneurs, characterized by self-reliance (UU Number 16 of 2006). Generally, the development of Posluhdes in Bekasi Regency had not adhered to principles such as participatory, self-reliant, democratic, decentralized, open, farmer-led, equal, and partnership-oriented. The functions and roles of Posluhdes in Bekasi Regency had not been optimal. This was due to ineffective management, as not all executives were aware of and fulfill their duties, lack of administrative and financial management, and a lack of implemented programs by Posluhdes, limited to participating in Jarkomluhdes activities. Research by Jamil et al. (2018) yielded similar results, indicating that Posluhdes has not been functioning according to its intended roles. The reasons included farmers rejecting Posluhdes, incompleted administrative documentation, inadequated representation of all commodities in the Posluhdes organizational structure, and not all farmers actively participating in formulating Posluhdes's vision and mission.

Jarkomluhdes is an online agricultural extension activity conducted through video conferences using applications such as FacePro. The objective of Jarkomluhdes is to bring agricultural extension closer to farmers in rural areas and expedite the dissemination of information. Similar to Prayoga (2017), which found that video conferences serve as an alternative to connect extension workers, who are limited in number, with a large number of beneficiaries, facilitating the exchange of information. Jarkomluhdes is carried out every Friday from 13:30 to 15:00 (GMT+7). The topics covered are diverse, including cultivation of food crops and horticulture, harvesting and post-harvesting practices, marketing, leadership and institutional development, agricultural business insurance, sharing experiences among farmers, and more. Speakers are invited from relevant government institutions, private companies, banks, and/or the Posluhdes itself.

Individual Characteristics

Individual characteristics are inherent traits that distinguish one person from another (Table 1). The majority of respondents fall within the age range of 35 to 60 years, with an average age of 49 years, categorizing them as productive individuals. Younger respondents tend to engage in alternative occupations outside of agriculture when facing drought-related challenges, while older respondents prefer to persist in agricultural activities. The formal education level of the majority of respondents is relatively low, with only completion of primary and junior high school. Notably, four respondents did not

complete primary school. The low level of formal education is evident in the respondents' inclination towards seeking instant solutions and their proficiency in utilizing digital technology.

The frequency of respondents attending training and extension activities was very low, with an average of 0.73 times. It means that the majority of respondents either never or only attended training and extension activities once in the last year. Computer operation training was conducted annually concurrently with financial assistance distribution, while leadership training as part of efforts to develop Posluhdes human resource capacity took place in June 2023. Training sessions were typically attended only by the chairperson or a representative from each Posluhdes. The range of extension activities attended by respondents was quite diverse, including pest and disease control, fertilization technology, smart farming, marketing, and livestock disease prevention. Respondents tent to participate infrequently in extension activities due to limited opportunities and an expectation of compensation when attending the extension sessions.

The cultivated land area of the respondents is relatively narrow, with an average of 1.07 hectares, primarily due to almost all agricultural land being purchased by investors/developers and converted for other purposes. The majority of farmers in the research area have the status of cultivators and tenants. Respondents had been involved in farming for quite a long period, with an average of 21 years. Some respondents have been engaged in farming since childhood or started farming after settling in Bekasi Regency, having ceased employment as private sector employees. Additionally, there are respondents who have been farming for less than two years, having recently graduated from school/college.

The respondents were considered local residents as they seldom travel outside the village and access information through communication media an average of 4 times in the last year. This is primarily due to the considerable distance from the village to the regency capital, and information access is only pursued when respondents genuinely need it. The motivation of respondents to participate in Jarkomluhdes activities was very low, with an average score of 11.69. This is attributed to the fact that the motivation does not stem from the respondents themselves but rather from invitations by extension workers or the chairperson and executives of other Posluhdes. There are also respondents who participate in Jarkomluhdes due to their positions as officials in Posluhdes.

Role of Extension Officer

The role of extension officers as communicators, motivators, and facilitators in Jarkomluhdes activities can be seen in Table 2. The role of extension officers as communicators fell into the relatively low category, with an average score of 32.29. According to respondent assessments, extension officers rarely socialize Jarkomluhdes activities and transmit messages conveyed by the provincial administrator in the Posluhdes WhatsApp group. Extension officers also infrequently repeated Jarkomluhdes materials in other extension activities, adapting to field issues and having their own programs.

Extension officers' role as motivators fell into the category of fairly low, with a mean score of 48.74. According to respondent assessments, extension officers seldom encouraged farmers to participate in Jarkomluhdes activities and fail to boost the enthusiasm of chairpersons or administrators to remain active every week. Extension officers also rarely convinced that Jarkomluhdes is a beneficial activity for enhancing knowledge and skills. In relation to attendance in Jarkomluhdes activities, extension officers never

reprimant or reminded respondents to be present in video conferences when they were absent.

Table 1
The Characteristics of the Management and Members of Posluhdes in Bekasi Regency

Characteristics	Category	(n)	(%)	Mean	Information
Age	Early adulthood (22-34 y.o.)	5	3.79	49.16	Early
	Late adulthood (35-47 y.o.)	59	44.70	y.o.	elderly
	Lansia (48-60 tahun)	57	43.18		
	Elderly (60-73 y.o.)	11	8.33		
Formal education level	Very low (elementary)	60	45.45	-	Fairly Low
	Low (Junior high cchool)	25	18.94		
	Moderate (High school)	41	31.06		
	High (College)	6	4.55		
Intensity of non-formal education	Very low (0-1 time(s))	102	77.27	0.73	Very low
	Low (2-3 times)	26	19.70	times	
	High (3-4 times)	2	1.52		
	Very high (4-5 times)	2	1.52		
Cultivation land area	Very narrow (0,00-1,00 ha)	90	68.18	1.07	Fairly
	Narrow (1,01-2,00 ha)	30	22.73	ha	narrow
	Wide (2,01-3,00 ha)	6	4.55		
	Very wide (>3,00 ha)	6	4.55		
Farming duration	Just a moment (0-13	36	27.27	21.06	Long
	year(s))	55	41.67	years	enough
	Long enough (14-26 years)	32	24.24		
	Long (27-39 years)	9	6.28		
	Very long (40-53 years)				
Cosmopolitan level	locality (0-6 time(s))	102	77.27	4.05	locality
	less cosmopolite (7-13	16	12.12	times	
	times)	11	8.33		
	cosmopolite (14-20 times)	3	2.27		
	very cosmopolite (21-26 times)				
Motivation to join Jarkomluhdes	Very low (0-25)	100	75.76	11.69	Very low
	Low (26-50)	29	21.97		
	High (50-75)	2	1.52		
	Very high (76-100)	1	0.76		

Source: Processed Primary Data, 2023

The role of extension workers as facilitators fell into the category of fairly low, with an average score of 40.59. According to respondent assessments, extension workers accompany respondents during the implementation of Jarkomluhdes in a rotating or alternating manner because they were not exclusively responsible for a single region. Devices were self-prepared by the chairperson or administrator, except in certain Posluhdes where the chairperson/administrator could not operate the devices. Extension workers adequately assisted respondents in resolving issues or obstacles that arose during the implementation of Jarkomluhdes.

Table 2
Assessment of Posluhdes Management and Members regarding to the Role of Extension Officers

Role of extension officer	Category	(n)	(%)	Mean	Information
Communicator	Very low (0-25)	67	50.76	32.29	Fairly low
	Low (26-50)	50	37.88		
	High (51-75)	12	9.09		
	Very High (76-100)	3	2.72		
Motivator	Very low (0-25)	9	6.28	48.74	Fairly low
	Low (26-50)	86	65.15		
	High (51-75)	31	23.48		
	Very High (76-100)	6	4.55		
Facilitator	Very low (0-25)	31	23.48	40.59	Fairly low
	Low (26-50)	75	56.82		
	High (51-75)	24	18.18		
	Very High (76-100)	2	1.52		

Source: Processed Primary Data, 2023

Institutional Support

Institutional support is the effort made or provided by an institution to support the continuity of Jarkomluhdes activities (Table 3). BPP, as the supervising institution at the sub-district level, conducted socialization on the technical guidelines for Posluhdes development, albeit infrequently. BPP also provided assistance to respondents when participating in Jarkomluhdes activities and facilitates the processing of financial assistance.

Table 3
Assessment of Posluhdes Management and Members regarding Institutional Support

Institutions	Category	(n)	(%)	Mean	Information
BPP in Sub-Regency	Very low (0-25)	2	1.52	57.51	Fairly High
	Low (26-50)	42	31.82		
	High (51-75)	85	64.39		
	Very High (76-100)	3	2.27		
Bekasi Regency Agricultural Department	Very low (0-25)	4	3.03	56.36	Fairly High
	Low (26-50)	31	23.48		
	High (51-75)	92	69.70		
	Very High (76-100)	5	3.79		
West Java Food Crops and Horticulture Department	Very low (0-25)	5	3.79	45.15	Fairly High
	Low (26-50)	71	56.82		
	High (51-75)	51	38.64		
	Very High (76-100)	1	0.76		
Private company (PIT)	Very low (0-25)	60	45.45	27.86	Low
	Low (26-50)	49	37.12		
	High (51-75)	22	16.67		
	Very High (76-100)	1	0.76		

Source: Processed Primary Data, 2023

The Department of Agriculture provided assistance in the form of reimbursement for mobile credit/internet quota to Posluhdes actively participating in Jarkomluhdes, with the amount based on their attendance. Additionally, the Department of Agriculture monitors the activity of Posluhdes, provides training, and facilitates the processing of financial assistance. The Department of Food Crops and Horticulture established guidelines for financial assistance implementation and socialized them to the supervising institutions of Posluhdes in districts/cities, as well as disburses financial assistance. However, the extent of support provided was unknown to the majority of respondents.

The private company (PIT) is a partner that collaborates with the Department of Food Crops and Horticulture, assisting in the procurement of a set of computers equipped with video conferencing applications. PIT also provided training packages using hardware and software and offers insurance for equipment repairs. However, respondents stated that they encountered difficulties in claiming this insurance.

Extension Support

Extension support consists of elements that support the implementation of agricultural extension (Table 4). Cultivation and harvest-post-harvest materials are considered quite suitable for the needs and desires of some respondents. The topics covered were not limited to food crops but also include horticulture, plantations, and livestock. Some respondents found the presented materials less relevant to their farming activities, mainly focused on food crops, while others felt they received more information about horticulture. The variation in suitability depended on the region where the respondents reside.

Table 4
The assessment of Posluhdes Managements and Members Regarding to Extension Support

Indicators	Category	(n)	(%)	Mean	Information
Material suitability	Very low (0-25)	11	8.33	51.64	Fairly high
	Low (26-50)	49	37.12		
	High (51-75)	62	46.97		
	Very High (76-100)	10	7.58		
Method suitability	Very low (0-25)	9	6.82	46.92	Fairly high
	Low (26-50)	60	45.45		
	High (51-75)	61	46.21		
	Very High (76-100)	2	1.52		
Media suitability	Very low (0-25)	20	15.15	46.34	Fairly high
	Low (26-50)	67	50.76		
	High (51-75)	44	32.58		
	Very High (76-100)	2	1.52		

Source: Processed Primary Data, 2023

The methods applied in Jarkomluhdes activities included lectures, discussions, video demonstrations, distribution of brochures or leaflets, and video conferences. The lecture method was quite suitable for the characteristics of respondents because it was often used by extension officers in traditional counseling sessions. Discussions through video conferences worked well, especially if the material aligned with the conditions of farmers in the field. Video demonstrations made it easier for respondents to understand and practice

the presented material. The implementation of online methods through video conferences was less suitable for the characteristics of respondents due to their age and limited ability to independently participate in video conferences.

The availability of facilities and infrastructure

The availability of facilities and infrastructure supporting Jarkomluhdes activities is available in Table 5. The supporting devices for Jarkomluhdes, consisting of a computer, webcam, speaker, WIFI modem, LCD projector, FacePro, or Zoom application, were not sufficient for all farmers to participate in Jarkomluhdes, as the quantity was only one per Posluhdes, and some Posluhdes might not have received this equipment. Some Posluhdes used personal WIFI, join with BPP or the village office, and not all Posluhdes had an LCD projector. The quality of the provided devices varied; some were still in good condition and functional, some were damaged and non-functional, or lost due to conflicts in the village.

The quality of internet network connections varied in each area depending on the provider used. Muaragembong District was one of the regions that found it challenging to access the internet network. Respondents mostly used the Indosat provider because it was the most effective in capturing signals in Muaragembong District. The quality of the internet network in other areas was generally good, although sometimes it faced challenges such as power outages. Respondents spent approximately IDR 50,000.00 to IDR 250,000.00 per month on internet quota. The amount spent on purchasing internet quotas depended on the usage patterns of each respondent.

Table 5
Penilaian Pengurus dan Anggota Posluhdes terhadap Ketersediaan Sarana dan Prasarana

Facility and infrastructure	Category	n	%	Mean	Information
The supporting devices for Jarkomluhdes	Very low (0-25)	87	65.91	22.50	Low
	Low (26-50)	14	10.61		
	High (51-75)	30	22.73		
	Very high (76-100)	1	0.76		
Network and Internet quota	Very low (0-25)	25	18.94	52.19	Fairly high
	Low (26-50)	24	18.18		
	High (51-75)	75	56.82		
	Very high (76-100)	8	6.06		
Posluhdes Secretariat	Very low (0-25)	115	87.12	4.61	Fairly low
	Low (26-50)	3	2.27		
	High (51-75)	8	6.06		
	Very high (76-100)	6	4.55		

Source: Processed Primary Data, 2023

The location of Posluhdes secretariats varied; some were combined with BPP, village offices, or situated at the homes of the chairperson/administrator. Placing the secretariat at BPP was considered less suitable, as there might be concerned about overlapping functions between BPP and Posluhdes. While locating the secretariat at the homes of the chairperson or village office aligned with government recommendations, putting equipment in the village office might lead to conflicts of interest. The most ideal location was constructing a

Posluhdes secretariat building in the local village, but out of the 12 Posluhdes, none had their own secretariat building. Despite many facilities that still needed to be equipped, the current locations of each Posluhdes secretariat were still suitable for participating in Jarkomluhdes activities.

Digital Literacy

Digital literacy is the knowledge and skills an individual possesses in using digital products (Table 6). The digital skills of the respondents were relatively low, as indicated by their inability to download and upload documents, connected devices to the internet, and shopped through local markets. While the majority of respondents could use digital communication devices and search, access, and store data, information, or content on digital media, they seldom verified the accuracy of information obtained through digital media.

Respondents' capabilities in digital security were also low. Most respondents had never created a secure password, adjusted their uploads on social media, disabled location options, stored data in multiple places, used antivirus applications, distinguished spam emails, or reported misuse on social networks. These actions were infrequently performed by respondents because they lacked understanding and awareness of the importance of safeguarding personal data.

The respondents' knowledge of digital ethics is fairly good, indicating an understanding of what is allowed and not allowed in using digital media. Respondents agreed and committed to behaving in accordance with digital ethics, such as refraining from inviting others to make negative comments, avoiding rude comments, refraining from sharing screenshots of private conversations and accident-related information without consideration, uploading photos with others' children, and not creating groups or adding people without permission.

Table 6
Digital Literacy of Posluhdes Management and Members in Bekasi Regency

Digital capability	Category	n	%	Mean	Information
Digital capability	Very low (0-25)	58	43.94	31.82	Fairly low
	Low (26-50)	37	28.03		
	High (51-75)	30	22.73		
	Very high (76-100)	7	5.30		
Digital security	Very low (0-25)	91	68.94	17.89	Low
	Low (26-50)	24	18.18		
	High (51-75)	17	12.18		
	Very high (76-100)	0	0.00		
Digital ethics	Very low (0-25)	1	0.76	62.19	Fairly high
	Low (26-50)	5	3.79		
	High (51-75)	119	90.15		
	Very high (76-100)	7	5.30		
Digital culture	Very low (0-25)	4	3.03	61.58	Fairly high
	Low (26-50)	18	13.64		
	High (51-75)	99	75.00		
	Very high (76-100)	11	8.33		

Source: Processed Primary Data, 2023

The respondents' knowledge of digital culture is fairly good, indicating an understanding of the appropriate attitudes when using digital media in the context of

Indonesia's cultural diversity. Respondents had adjusted their communication style to avoid causing offense to others, considering the feelings of readers from different religions, ethnicities, and political views. They also shared information on social media in line with Indonesian culture. However, respondents were less confident about sharing traditional cultural art digitally and including the author's name when reposting.

Participation Level

The participation level in this research was observed through three indicators: participation in Jarkomluhdes activities, group discussions, and the intensity of accessing Jarkomluhdes material (Table 7). Respondents' participation in Jarkomluhdes activities was very low, typically attended only by the chairperson or admin. Generally, the number of Posluhdes attendance ranges from 20 to 40 Posluhdes or approximately 30 percent at each meeting. Respondents participating in Jarkomluhdes tended to be passive, with many simply listening, sometimes engaging in other activities (smoking, eating, chatting), or attending only for attendance purposes before leaving the digital room. Respondents who actively engaged in discussions had strong internal motivation to develop their own or surrounding agricultural businesses. Reasons for non-participation included inconvenient timing, respondents preferring to work in the fields rather than attending video conferences, lack of information about schedules and links, and issues related to malfunctioning devices and inadequate signals.

Table 7
The Participation Level of the Management and Members of Posluhdes in Bekasi Regency

Indicator	Category	n	%	Mean	Information
Intensity to follow Jarkomluhdes	Very low (0-25)	124	93.94	6.33	Very low
	Low (26-50)	2	1.52		
	High (51-75)	4	3.03		
	Very high (76-100)	2	1.52		
Group discussion	Very low (0-25)	123	93.18	3.54	Very low
	Low (26-50)	7	5.30		
	High (51-75)	0	0.00		
	Very high (76-100)	2	1.52		
Intensity to access the material	Very low (0-25)	124	93.94	3.47	Very low
	Low (26-50)	2	1.52		
	High (51-75)	4	3.03		
	Very high (76-100)	2	1.52		

Source: Processed Primary Data, 2023

The participation of respondents in group discussion activities was very low. Discussions were conducted by Jarkomluhdes participants in a WhatsApp group after the video conference, addressing materials that were not understood or were unclear during the session. Farmers also tended to call other participants for further clarification regarding the content discussed in the video conference. Face-to-face group discussions were not conducted by the respondents because there was no agreement between the management and members to have discussions after each Jarkomluhdes session. Farmers who

acted as self-supported facilitators often presented Jarkomluhdes materials in informal meetings with other farmers.

The intensity of respondents accessing Jarkomluhdes materials within the last year was very low. This was because respondents had never participated in Jarkomluhdes activities, so they were unaware of the materials presented or if the materials were uploaded on the Jarkomluhdes website and social media. Materials uploaded on the website were challenging to access due to the need for a username and password known only to the chairperson/administrator. Respondents usually downloaded materials uploaded in the WhatsApp group, but not all respondents were members of that WhatsApp group.

The Effectiveness of Jarkomluhdes Activity

The understanding of respondents regarding the materials presented in Jarkomluhdes activities was quite low. The low understanding of materials was attributed to the limited participation of respondents in Jarkomluhdes activities. Respondents who had a good understanding of the materials had applied them in their farming practices, indicating that experience enhances respondents' comprehension of a particular subject matter.

The material most applied by respondents was the production of liquid organic fertilizer, with an average implementation time of three months. The short duration was due to respondents only conducting experiments in making liquid organic fertilizer. Respondents who applied the material consistently had received it earlier and had been implementing it for a long time. Additionally, these respondents had a strong willingness to apply the material and continuously experiment, leading to the creation of new innovations. Reasons for not implementing the material included not participating in Jarkomluhdes video conferences and fearing potential losses and failures when trying the material.

Table 8
The Effectiveness of Jarkomluhdes Activity in Bekasi Regency

Indicator	Category	n	%	Mean	Information
Material understanding level	Very low (0-25)	9	6,82	46,21	Fairly Low
	Low (26-50)	76	57,58		
	High (51-75)	36	27,27		
	Very high (76-100)	11	8,33		
Material Implementation Level	Very low (0-25)	104	78,79	10,10	Very low
	Low (26-50)	22	16,67		
	High (51-75)	1	0,76		
	Very high (76-100)	5	3,79		
Feedback Frequency	Very low (0-25)	124	93,94	2,15	Very low
	Low (26-50)	6	4,55		
	High (51-75)	2	1,52		
	Very high (76-100)	0	0,00		
Number of partnerships established	Very low (0-25)	124	93,94	1,01	Very low
	Low (26-50)	8	6,06		
	High (51-75)	0	0,00		
	Very high (76-100)	0	0,00		

Source: Processed Primary Data, 2023

Feedback on the applied material was conveyed directly by respondents to the extension officers during extension activities or video conferences. The timing of providing feedback varied; some immediately asked questions about unclear material, while others provided feedback a week after implementing the material. In some cases, feedback was given 1-6 months after the material was applied. Feedback during extension activities or video conferences usually received a prompt response from extension officers speakers, or fellow farmers. Reasons for not providing feedback included the fact that most respondents did not participate in video conferences, did not implement Jarkomluhdes material, and might be hesitant to express opinions in a public forum.

Partnerships formed on an individual basis involved respondents collaborating with fellow farmers who might not be from the same group, residing in different areas, or being relatives engaged in farming. These individual partnerships were based on familial relationships between respondents and their partners. Group-based partnerships, on the other hand, involved respondents collaborating with companies. In these partnerships, the group provided land, and the company supplied its products for use in farming activities. These partnerships were typically short-lived, lasting only one growing season, which was around 3-4 months. The partnerships formed bring benefits, including the reduction of farming expenses.

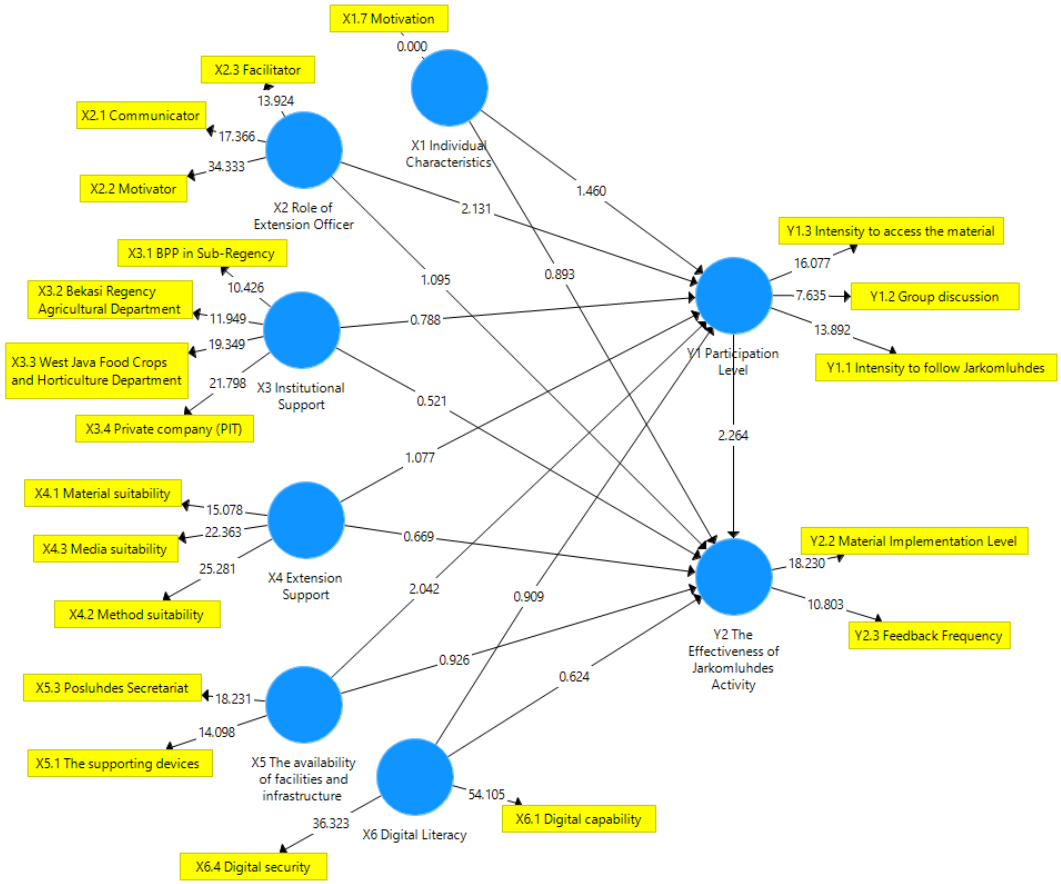
Factors Influencing the Level of Participation and Effectiveness of Jarkomluhdes Activities

The outer model analysis resulted in indicators such as age, formal education, non-formal education, cultivated land area, years of farming experience, and the level of cosmopolitanism being retained for the individual characteristics variable. Indicators such as network and internet quota on the availability of facilities and infrastructure variable; digital ethics and digital culture on the digital literacy variable; and indicators such as the level of understanding of the material and the number of partnerships on the effectiveness of Jarkomluhdes need to be removed from the model as they have loading factor values < 0.7 and are considered invalid. The inner model analysis produced R^2 and f^2 values that meet the criteria, allowing for hypothesis testing to proceed. The hypothesis testing results using SmartPLS 3 indicate that the T-Statistics values must be > 1.96. Factors influencing the level of participation and effectiveness of Jarkomluhdes can be seen in Figure 1.

The role of extension officers as communicators, motivators, and facilitators has a direct and significant impact on farmers' participation, but their role does not significantly influence the effectiveness of Jarkomluhdes. It means that the more extension officers perform their roles, the higher the farmers' participation in Jarkomluhdes activities. However, no matter how often extension officers perform their roles, it does not guarantee the effectiveness of Jarkomluhdes activities. This is consistent with the findings of Tanjungsari et al. (2017), which indicates that the role of extension officers affects farmers' participation. Aisyah et al. (2023) shows different results, where the role of extension officers significantly influences the success of the program.

The availability of infrastructure and facilities, including supporting devices and the location of Posluhdes, significantly influences the level of participation but does not significantly affect the effectiveness of Jarkomluhdes. This is consistent with the findings of Wahyuni et al. (2021), indicating that infrastructure and facilities significantly influence the level of participation. Rahayu & Haq

(2021) state that one crucial component for the success and smoothness of the learning process is the availability of adequate infrastructure and facilities.



Source: Processed Primary Data, 2023

Figure 1
Factors Affecting the Level of Participation and Effectiveness of Jarkomluhdes Activities

Individual characteristics in the form of motivation do not significantly affect the level of participation and effectiveness of Jarkomluhdes. This means that high motivation among respondents does not influence their participation and the success of Jarkomluhdes activities. This is in contrast to the findings of Dayat & Anwarudin (2020), which indicate that motivation has a positive and significant effect on farmer participation. Mardikanto (2009) states that one of the factors influencing the effectiveness of counseling is the personal condition of the beneficiaries, primarily depending on their motivation.

The support from government institutions and private companies does not have a significant effect on the level of participation and effectiveness of Jarkomluhdes activities. This differs from the findings of Mulyaningsih et al. (2018), which indicate that support from the physical and socio-economic environment, such as government policy support, infrastructure availability, and institutional support, influences farmers' participation. However, this research aligns with the notion that institutional

support has a negative relationship with farmers' participation. Mardikanto (2009) states that the effectiveness of extension services is greatly influenced by how much attention the extension institution receives from other subsystems. In other words, the support from the supporting institution is crucial for the success of extension programs organized by Posluhdes as an extension institution in rural areas.

The support from extension services, including material relevance, method suitability, and media accuracy, does not have a significant effect on the level of participation and effectiveness of Jarkomluhdes. This differs from the findings of Dayat & Anwarudin (2020), that suggest extension activities with indicators such as method, media, and material significantly influence farmer participation. The success of an extension activity, according to Mardikanto (2009), is influenced by the education level of the beneficiaries because it is related to their understanding of the material, communication skills with the extension officer, and their attitude towards the applied methods. This statement indicates that extension officers need to select appropriate materials, present them in easily understandable language, and select methods that are most preferred by the beneficiaries.

Digital literacy, encompassing digital skills and digital security, does not significantly influence the level of participation and effectiveness of Jarkomluhdes. This differs from the findings of Riel (2016), that indicate digital literacy has a positive and significant impact on community participation. It means that communities with good digital literacy will enhance community participation. The results of this research do not align with the research by Muntu et al. (2023), states that digital literacy has a direct and significant impact on the effectiveness of learning. This implies that an improved understanding of digital literacy can enhance the effectiveness of learning.

The level of participation, including the intensity of participating in Jarkomluhdes, group discussions, and the intensity of accessing materials, significantly influences the effectiveness of Jarkomluhdes. It means that the higher the farmers' participation in Jarkomluhdes activities, the greater the likelihood of Jarkomluhdes being successful and providing benefits to participating farmers. This differs from the findings of Julianto & Dewi (2019), that reveals, participation has a positive and significant impact on program success.

CONCLUSION

The level of participation and effectiveness of Jarkomluhdes activities is very low. The low level of participation is influenced by the insufficient role of extension officers as communicators, motivators, and facilitators, as well as the lack of supporting devices for Jarkomluhdes and Posluhdes secretariat facilities. Furthermore, the effectiveness of Jarkomluhdes activities is affected by the low level of participation by the administrators and members of Posluhdes. To improve the participation of Posluhdes administrators and members, it is necessary to conduct re-socialization related to Jarkomluhdes activities, not restrict the use of communication devices, use commonly used video conferencing applications, and disseminate information about the timing and links through social media. Jarkomluhdes material needs to be uploaded to various Jarkomluhdes digital platforms that are easily accessible to farmers without having to use usernames and passwords.

REFERENCES

Aisyah, S., Faqih, A., dan Yatriadi, J. (2023). Peran Penyuluh Pertanian Lapangan (PPL) sebagai Edukator

terhadap Tingkat Keberhasilan Program Pemberdayaan Masyarakat. *Prosiding Seminar Nasional Fakultas Pertanian UNS dalam Rangka Dies Natalis UNS ke 47* (pp. 560-585). Surakarta: Fakultas Pertanian Universitas Sebelas Maret.

Amaliah, D. L., & Deli, N. F. (2023). Internet, “Pupuk” untuk Pertanian Masa Kini. Retrieved from https://bigdata.bps.go.id.

Aria, R. A., Hasanuddin, T., & Prayitno, R. T. (2016). Peranan Penyuluh Pertanian Lapangan (PPL) Terhadap Keberhasilan Program Pengembangan Usaha Agribisnis Pedesaan (PUAP) di Kecamatan Sungkai Selatan, Kabupaten Lampung Utara. *Journal JIIA*, *4*(4), 430-436.

Atnan, N., & Imran, A. I. (2018). Tingkat Partisipasi Publik Melalui Pemanfaatan Media Lapor di Kota Bandung. *Jurnal Wacana Politik*, *3*(2), 150–162.

Bahua, M. I. (2015). Penyuluhan dan Pemberdayaan Petani Indonesia. In *Angewandte Chemie International Edition,* 6(11), 951–952*.*

Budiman, M. F., & Sadono, D. (2016). Tingkat Partisipasi dan Kemandirian Petani Alumni Sekolah Lapangan Pengelolaan Tanaman Terpadu (Kasus Desa Kebon Pedes, Kecamatan Kebon Pedes, Kabupaten Sukabumi, Provinsi Jawa Barat). *Jurnal Penyuluhan*, *6*(2). https://doi.org/10.25015/penyuluhan.v6i2.11447.

Dayat, D., & Anwarudin, O. (2020). Faktor-Faktor Penentu Partisipasi Petani dalam Penyuluhan Pertanian Era Otonomi Daerah di Kabupaten Bogor. *Jurnal Agribisnis Terpadu*, *13*(2), 167-186. https://doi.org/10.33512/jat.v13i2.9865.

Jamil, H., Rukka, M. R., & Tenriawaru, A. N. (2018). Pengembangan Pos Penyuluhan Desa: Studi Eksperensial Posluhdes di Desa Pattallassang, Kecamatan Tompobulu, Kabupaten Bantaeng. *Jurnal Sosial Ekonomi Pertanian*, *14*(2), 171-182. https://doi.org/10.20956/jsep.v14i2.4499

Julianto, I. P., & Dewi, G. A. K. R. S. (2019). Pengaruh Partisipasi Masyarakat, Penggunaan Sistem Keuangan Desa, Kompetensi Pendamping Desa serta Komitmen Pemerintah Daerah Terhadap Keberhasilan Pengelolaan Dana Desa. *Jurnal Ilmiah Akuntansi*, *4*(1), 22-42. https://doi.org/10.23887/jia.v4i1.17242.

Keputusan Menteri Pertanian Republik Indonesia Nomor 484/KPTS/RC.010/M/8/2921 Tentang Perubahan Kedua Atas Keputusan Menteri Pertanian Nomor 259/KPTS/M/05/202 Tentang Rencana Strategis Kementerian Pertanian Tahun 2020-2024. In *Salinan Keputusan Menteri*.

Mardikanto, T. (2009). *Sistem Penyuluhan Pertanian.* Surakarta: Sebelas Maret University Press.

Marphy, T., & Priminingtyas, D. (2019). Analisis Faktor-Faktor yang Mempengaruhi Tingkat Partisipasi Petani dalam Program Asuransi Usahatani Padi (AUTP) di Desa Watugede, Kecamatan Singosari, Kabupaten Malang. *HABITAT*, *30*(2), 62-70. https://doi.org/10.21776/ub.habitat.2019.030.2.8.

Mulyaningsih, A., Hubeis, A. V. S., & Sadono, D. (2018). Partisipasi Petani pada Usahatani Padi, Jagung, dan Kedelai Perspektif Gender. *Jurnal Penyuluhan*, *14*(1), 145-158. https://doi.org/10.25015/penyuluhan.v14i1.18546.

Muntu, D. F., Yuliana, O. Y., & Tarigan, Z. J. H. (2023). The Influence of Digital

Literacy on Learning Effectiveness Through Classroom Management. *Petra International Journal of Business Studies*, *6*(1), 42-52. https://doi.org/10.9744/petraijbs.6.1.42-52.

Peraturan Bupati Bekasi Nomor 24 Tahun 2016 Tentang Petunjuk Teknis Penumbuhan dan Pengembangan Pos Penyuluhan Desa di Kabupaten Bekasi. (n.d.).

Prayoga, K. (2017). Pemanfaatan Sosial Media dalam Penyuluhan Pertanian dan Perikanan di Indonesia. *Agriekonomika*, *6*(1), 32-43. https://doi.org/10.21107/agriekonomika.v6i1.2680.

Prayoga, K., Banar, P. S., & Prayoga, D. S. (2018). Keberadaan TV TANI sebagai Revitalisasi Media Baru Penyuluhan Pertanian di Indonesia. *Agriekonomika*, *7*(1), 99-109. https://doi.org/10.21107/agriekonomika.v7i1.3509.

Putriani, R., Tenriawaru, A., & Amrullah, A. (2018). Pengaruh Faktor-Faktor Partisipasi Terhadap Tingkat Partisipasi Petani Anggota P3A dalam Kegiatan Pengelolaan Saluran Irigasi. *Jurnal Sosial Ekonomi Pertanian*, *14*(3), 263-274. https://doi.org/10.20956/jsep.v14i3.5498.

Rahayu, A. D., & Haq, M. S. (2021). Sarana dan Prasarana dalam Mendukung Pembelajaran Daring pada Masa Pandemi Covid-19. *Jurnal Inspirasi Manajemen Pendidikan*, *09*(1), 186-199.

Riel, J. (2016). The Digitally Literate Citizen: How Digital Literacy Empowers Mass Participation in the United States. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2781190.

Tanjungsari, K., Hariadi, S. S., & Sulastri, E. (2017). Pengaruh Peran Petugas Lapang terhadap Partisipasi Petani dalam Pengembangan Model Desa Kakao di Kabupaten Gunungkidul. *Agro Ekonomi*, *27*(2), 121-135. https://doi.org/10.22146/jae.22877.

Undang-Undang Nomor 16 Tahun 2006 Tentang Sistem Penyuluhan Pertanian, Perikanan dan Kehutanan. (2006).

Wahyuni, R., Sudibyo, R., & Amir, N. (2021). Faktor-Faktor yang Berperan terhadap Tingkat Partisipasi Petani dalam Budidaya Tanaman Organik di Kecamatan Junrejo Kota Batu. *Jurnal Ekonomi Pertanian dan Agribisnis*, *5*(2), 544–560. https://doi.org/10.21776/ub.jepa.2021.005.02.22.