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Effectiveness of AI-Based Smart Agriculture Innovation Communication Through the Agrimind Application in Increasing Young Generation's Interest in Farming

Mohammad Rifky[1], Eli Purwati[2], Deny Wahyu Tricana[3], Saba Mehmood[4], Wasim Raza[5]
[1,2,3] Communication Studies, Universitas Muhammadiyah Ponorogo, Indonesia
[4]University of Management and Technology, Pakistan
[5]Universidade Federal Do Rio de Janeiro, Brazil
Author emails : [1]reifkymohammad@gmail.com, [2]eli_purwati@umpo.ac.id, [3]deny@umpo.ac.id, [4]saba.mehmood@umt.edu.pk, [5]wasimrazaa135@gmail.com

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ABSTRACT

The low interest among the younger generation in entering the agricultural sector, as well as the challenges of farmer succession in Indonesia, are the primary issues underlying this study. This study aims to analyze the effectiveness of communicating smart agriculture innovations based on artificial intelligence (AI) through the Agrimind application in increasing young people's interest in the agricultural sector. This study employs a quantitative descriptive approach, with data collected via a questionnaire administered to 140 respondents from the younger generation in Ponorogo Regency. The collected data was subsequently processed using descriptive statistical analysis methods and tested for validity and reliability. The findings indicate that 70% of respondents support the implementation of modern technology and AI-based training for young farmers. Respondents believe that the use of the Agrimind application can help improve efficiency, attract the interest of young farmers, and strengthen collaboration between senior farmers and the younger generation who are tech-savvy. These findings demonstrate that AI-based agricultural innovation communication holds significant potential for transforming the younger generation's perception of the agricultural sector, improving farmers' work efficiency, and strengthening farmer succession in the digital era.

A. INTRODUCTION

Indonesia, widely known for its agrarian character, has consistently regarded the agricultural sector as an essential foundation for the socio-economic life of its people. The agricultural sector is not merely a provider of food for more than 270 million people, but also a key driver of the national economy that supports the stability of the food industry, trade, and employment (Mukhlis & Gurcam, 2022). From a macroeconomic perspective, the agricultural sector's contribution to the Gross Domestic Product (GDP) consistently stands at 13–15%, with labor absorption reaching 30–40% of the total national labor force. Given the high dependence of the population—especially in rural areas—on agriculture as the primary source of livelihood, the involvement of the younger generation plays a crucial role as agents of modernization. Young people hold strategic potential in the process of farmer regeneration to accelerate the adoption of new technologies essential for enhancing productivity and national food security (Moeis et al., 2020).

The younger generation plays a crucial role in the development of Indonesia's agricultural sector. Young people also hold strategic potential in the process of farmer succession and modernization within the agricultural sector (Geza et al., 2021). The

presence of young farmers is essential for ensuring the continuity of food production while accelerating the adoption of new practices and technologies needed to enhance national productivity and food security (Srinivasan, 2024). Data and studies indicate that, although the proportion of the agricultural workforce remains significant in Indonesia, demographic dynamics and age structure present real challenges for regeneration, making the role of young farmers a policy priority. The involvement of young farmers holds great potential, given that the agricultural sector is currently still dominated by older farmers, making it time for regeneration with young farmers (Girdziute et al., 2022).

In today's rapidly evolving world, particularly during the Fourth Industrial Revolution—the fourth phase of global development (Klerkx et al., 2022) the changes emerging during this period bring numerous benefits to human life, primarily due to the increasing ease of access to a wide range of innovations and new discoveries that continue to evolve (Liu et al., 2021). This revolution also has the potential to transform how society operates toward greater efficiency and productivity (Halawa, 2024). Smart farming or digital agriculture is an innovation in the agricultural sector that utilizes Internet of Things (IoT)-based networks as a means to monitor and control agricultural processes automatically (Rajak et al., 2023). The development of new technologies, such as the Internet of Things (IoT), is projected to optimize these advancements by driving the broader adoption of robotics and artificial intelligence in the agricultural sector (Wolfert et al., 2017). The adoption of this technology needs to be widely publicized and understood so that the public becomes increasingly aware that smart agricultural technology has the potential to bring positive impacts to the agricultural sector (Boursianis et al., 2022).

Although it plays a vital role, the primary issue currently threatening the sustainability of Indonesian agriculture is the increasingly alarming crisis of farmer succession. According to data from the Central Statistics Agency (BPS), only about 8% of agricultural workers are under the age of 35, while the majority of workers are over 45 years old. This low participation stems from the negative perceptions of the younger generation, who view farming as a profession that is not economically promising, lacks social support, and is associated with physically demanding work that lacks prestige compared to jobs in the industrial or service sectors (Srinivasan, 2024). This problem is further exacerbated by the minimal use of technology in small-scale agricultural practices in rural areas, such as in Ponorogo Regency. Processes ranging from crop monitoring and soil moisture estimation to pest control are still carried out manually and conventionally without precise measurements. This further reinforces the stigma among the younger generation that farming is hard, back-breaking work. According to Farooq and Ullah (2021), the crisis of farmer succession is thus not only a challenge but also a long-term threat to the sustainability of food supply and the development of the national agricultural sector (Lasitya et al., 2024). The use of technology in the agricultural sector remains largely conventional and limited, while the industrial and service sectors have experienced significant technological advancements (Marinoudi et al., 2019). This situation has led the younger generation to show greater interest in jobs in the industrial and service sectors rather than pursuing a career in agriculture (Salamah et al., 2021). In small-scale agricultural practices, which are widely adopted by rural communities, crop monitoring and land management are still carried out manually and rely on traditional skills. Farmers typically monitor soil conditions by walking the fields daily to observe changes in leaf color, check for weeds, assess plant health, or look for signs of pest infestation (Carolan, 2020). All these activities are carried out without modern tools, so their accuracy relies heavily on the farmer's personal experience. Techniques such as feeling the soil texture

with one's hands to estimate soil moisture levels remain one of the traditional methods still widely used today. Similarly, soil fertility assessments are often conducted by observing the color of the soil surface or noting how easily the soil crumbles (Liu et al., 2021).

When it comes to crop care, various traditional methods remain prevalent. For example, watering is often done manually by walking through the fields. Some farmers still rely on natural indicators, such as changes in leaf color or soil surface conditions, to determine the right time to water or apply fertilizer (Klein et al., 2024). Pest control methods are also frequently carried out using simple techniques, such as monitoring the field area and manually spraying pesticides, or making and setting traps from used bottles (Lowenberg-Deboer & Erickson, 2019). In some rural communities, pesticide use is carried out without proper dosage calculations, so it is often ineffective or can even damage soil quality in the long term. As a result, harvest yields are often inconsistent, and productivity levels are difficult to improve without technological innovation. Overall, farmers still rely on conventional approaches, including for their critical transactions (Zhang et al., 2024).

Communication of innovation plays a central role in the process of adopting emerging technologies, particularly in the agricultural sector, which is currently undergoing a transition to the digital age, where young Indonesians often have limited exposure to innovation due to the limitations of conventional channels (Sulistiani, 2025). The Diffusion of Innovations theory, developed by Everett Rogers in 1962, outlines that innovations are disseminated through five key phases: awareness (knowledge of the innovation), evaluation (assessment of benefits), decision (adoption or rejection), implementation (practical application), and confirmation (reinforcement or adjustment of behavior) (Eastwood et al., 2017). Efficient communication through contemporary media such as mobile platforms can accelerate the acceptance of artificial intelligence (AI) by the younger generation, who are more familiar with digital devices and tend to remain in the agricultural sector because it is considered less attractive (Shukla & Sushil, 2020). Platforms like Agrimind are AI-based programs that begin by developing computer vision and deep learning capabilities to detect plant health, crop quality, and plant growth through video imagery. Machine Learning is then used to analyze data from soil sensors, humidity, temperature, and weather, as well as to automate irrigation, thereby increasing time and labor efficiency (Liakos et al., 2018). According to Tanha (2020), the development of Natural Language Processing and AI Chatbots serves to create virtual assistants for farmers, such as AI Chatbots that provide data-driven agricultural advice based on the latest information.

Based on the data presented earlier, the objective of this study is to analyze and measure the effectiveness of communication regarding smart agricultural innovations based on Artificial Intelligence (AI) through the Agrimind application in increasing the interest of the younger generation in entering the modern agricultural sector, particularly in Ponorogo Regency. The results of this study are expected to provide empirical guidance regarding the most effective digital communication strategies to drive the modernization of agricultural practices, accelerate the recruitment of young farmers, and ensure the sustainability of national food security in the technological era.

B. METHODS

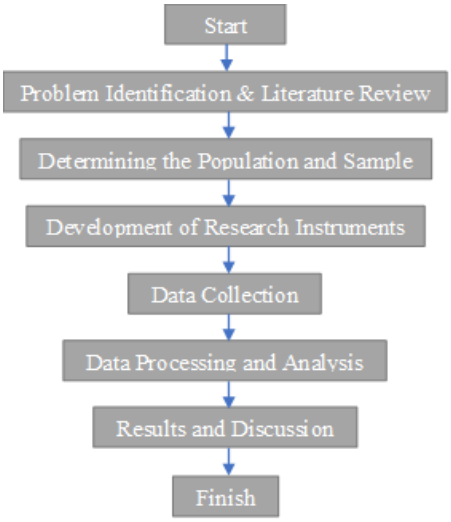

Figure 1. Research Flowchart

The research method used in this study is a descriptive quantitative method, chosen because it provides a systematic overview of the effectiveness of AI-based smart agricultural innovation communication through the Agrimind application in increasing young people's interest in the agricultural sector. This approach allows the study to process data numerically to objectively identify trends in respondents' perceptions, understanding, and attitudes, ensuring that the results obtained accurately reflect real-world conditions in the field without variable manipulation.

Data Collection Methods

In this study, the researcher used primary data obtained through the distribution of questionnaires as a data collection instrument. This study employed purposive sampling to determine the sample, which involves selecting respondents based on specific criteria deemed appropriate for the study's needs and objectives (Ghozali, 2018). The criteria for respondents were young people aged 13–28 who have an interest in agriculture and understand or are aware of agricultural innovations based on Artificial Intelligence (AI). Data collection was conducted through the distribution of an online questionnaire via Google Forms, which yielded a total of 140 respondents, who were then used as the research sample for quantitative analysis.

Data Analysis Methods

The collected data was then analyzed using descriptive statistical techniques to obtain a comprehensive overview of the respondents' levels of perception, understanding, and interest in using the Agrimind application. This analysis was conducted by presenting frequency distributions and percentages so that patterns in respondents' attitudes toward the application of Artificial Intelligence (AI)-based agricultural technology could be seen more clearly and measured. Through this approach, researchers can identify how respondents assess the usefulness and effectiveness of technological innovations in supporting the modernization of the agricultural sector.

Research Location and Time

This study was conducted in Ponorogo Regency, East Java, due to the limited level of digitalization in the agricultural sector. Although the region has significant agricultural potential, there is a lack of participation by the younger generation in agricultural activities because traditional methods are still widely used. Data collection took place from September to October 2025.

C. RESULT ND DISCUSSION

Beginning with the selection of respondents and the distribution of questionnaires, the data collection process successfully gathered 140 respondents who represent the younger generation in Ponorogo Regency. Based on the established data, the majority of respondents were in the 13–28 age group, dominated by high school/vocational school graduates and college students. This study aims to examine the extent of young people's interest in Artificial Intelligence (AI)-Based Smart Agricultural Innovation through the use of the Agrimind App as a form of modern agricultural technology. In the initial stage of this research process, the researcher tested the validity and reliability of 11 statement items contained in the questionnaire that had previously been distributed to 140 respondents.

Data processing was conducted using IBM SPSS version 25 to ensure that each item met the standards of validity and reliability as a research instrument. Validity testing was used to determine the extent to which the statements in the questionnaire were able to measure what they were intended to measure, while reliability testing served to ensure the consistency of respondents' answers. If all items were deemed valid and reliable, the questionnaire could be used as a valid data collection tool. Conversely, items that did not meet the standards had to be removed so as not to affect the accuracy of the research results.

Table 1. Validity Test

Number	Calculated R	Table R	Description
1.	0,570	0,164	**Valid**
2.	0,723	0,164	**Valid**
3.	0,697	0,164	**Valid**
4.	0,912	0,164	**Valid**
5.	0,871	0,164	**Valid**
6.	0,873	0,164	**Valid**
7.	0,870	0,164	**Valid**
8.	0,851	0,164	**Valid**
9.	0,918	0,164	**Valid**
10.	0,903	0,164	**Valid**
11.	0,886	0,164	**Valid**

From the data analysis of the 11 statements listed in Table 1, it can be seen that each statement was deemed valid with a value exceeding 0.164. Next, the Reliability Test Table is presented. Reliability testing was conducted using Cronbach's Alpha, as the data used is interval-scaled. The alpha coefficient is used to measure the consistency of items within a test or questionnaire (Isnawati et al., 2020). The reliability of the instrument is determined by examining the R value (Cronbach's Alpha). If this value exceeds 0.60, the instrument is deemed reliable. Conversely, if the R value (Cronbach's Alpha) is below 0.60, the instrument is considered unreliable (Ghozali, 2018). The results of the instrument's reliability testing are as follows.

Table 2. Reliability Test

Reliability Statistics	
Cronbach's Alpha	**N of Items**
.953	**11**

Table 1 shows that the validation results for the 11 questionnaire items indicate that all of them fall into the valid category. Meanwhile, the reliability coefficient is presented in Table 2, with a Cronbach's alpha value of 0.953. Based on this Cronbach's alpha value,

it can be concluded that the reliability of the items is classified as very good; therefore, the 11 questionnaire items are considered valid and reliable.

The results of the validity and reliability tests of the statement items show that there are 11 statement items used to measure the level of interest of young people in Artificial Intelligence (AI)-based Smart Agricultural Innovation on the Agrimind Application, including: 1) The agricultural sector still looks attractive and promising in the current era. 2) Crop productivity in your area is already quite good. 3) Agriculture is still the backbone of society in many regions. 4) I support young people to enter agriculture with modern technology. 5) Training and assistance in AI-based agricultural technology needs to be focused on young farmers. 6) The younger generation has great potential to continue the family farming business. 7) The existence of ABSA can increase efficiency in the agricultural sector. 8) Investing in agricultural technology is more important than maintaining traditional methods. 9) Collaboration between senior farmers and young farmers who understand technology is important for the advancement of the agricultural sector. 10) The regeneration of young farmers is very important for maintaining the sustainability of the agricultural sector. 11) Support from the government and educational institutions is influential in the regeneration of young farmers.

1. The agricultural sector still looks attractive and promising in the current era.

Table 3. Frequency Test Results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	13	9.3	9.3	**9.3**
	Disagree	51	36.4	36.4	**45.7**
	Neutral	30	21.4	21.4	**67.1**
	Agree	23	16.4	16.4	**83.6**
	Strongly agree	23	16.4	16.4	**100.0**
	Total	140	100.0	100.0	

The table shows that 9.3% (13 people) of respondents stated that they strongly disagreed, followed by 36.4% (51 people) who disagreed, 21.4% (30 people) who were neutral, 16.4% (23 people) who agreed, and 16.4% (23 people) who strongly agreed. The results of the data show that it is 100% valid. Therefore, the general conclusion from the statement "The agricultural sector still looks attractive and promising in the current era" is that respondents disagree.

2. The productivity of crops in your area is quite good.

Table 4. Frequency Test Results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	23	16.4	16.4	**16.4**
	Disagree	39	27.9	27.9	**44.3**
	Neutral	19	13.6	13.6	**57.9**
	Agree	43	30.7	30.7	**88.6**
	Strongly agree	16	11.4	11.4	**100.0**
	Total	140	100.0	100.0	

The table shows that 16.4% (23 people) of respondents stated that they strongly disagreed, followed by 27.9% (39 people) who disagreed, 13.6% (19 people) who were neutral, 30.7% (43 people) who agreed, and 11.4% (16 people) who strongly agreed. The results of the data show that it is 100% valid. Therefore, it can be

concluded that the mode value of the statement "The productivity of the harvest in your area is quite good" indicates agreement.

3. Agriculture remains the backbone of society in many regions.

Table 5. Frequency Test Results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	28	20.0	20.0	**20.0**
	Disagree	28	20.0	20.0	**40.0**
	Neutral	16	11.4	11.4	**51.4**
	Agree	32	22.9	22.9	**74.3**
	Strongly agree	36	25.7	25.7	**100.0**
	Total	140	100.0	100.0	

The table shows that 20% (28 people) of respondents stated that they strongly disagreed, while 20% (28 people) disagreed, 11.4% (16 people) were neutral, 22.9% (32 people) agreed, and 25.7% (36 people) strongly agreed. The results of the data show that it is 100% valid. This supports the conclusion that respondents strongly agree with the statement "Agriculture is still the backbone of society in many regions."

4. I encourage young people to get involved in agriculture using modern technology.

Table 6. Frequency Test Results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	7	5.0	5.0	**5.0**
	Disagree	23	16.4	16.4	**21.4**
	Neutral	11	7.9	7.9	**29.3**
	Agree	31	22.1	22.1	**51.4**
	Strongly agree	68	48.6	48.6	**100.0**
	Total	140	100.0	100.0	

The table shows that 5% (7 people) of respondents stated that they strongly disagreed, while 16.4% (23 people) disagreed, 7.9% (11 people) were neutral, 22.1% (31 people) agreed, and 48.6% (68 people) strongly agreed. The results of the data show that it is 100% valid. Therefore, it can be concluded that 68 respondents strongly agree with the statement "I support young people to engage in agriculture with modern technology".

5. Training and mentoring in AI-based agricultural technology should focus on young farmers.

Table 7. Frequency Test Results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	12	8.6	8.6	**8.6**
	Disagree	18	12.9	12.9	**21.4**
	Neutral	14	10.0	10.0	**31.4**
	Agree	54	38.6	38.6	**70.0**
	Strongly agree	42	30.0	30.0	**100.0**
	Total	140	100.0	100.0	

The table shows that 8.6% (12 people) of respondents stated that they strongly disagreed, while 12.9% (18 people) disagreed, 10% (14 people) were neutral, 38.6%

(54 people) agreed, and 30% (42 people) strongly agreed. The results of the data show that it is 100% valid. Therefore, the general conclusion of the statement "Training and assistance in AI-based agricultural technology needs to be focused on young farmers" is agreed upon.

6. The younger generation has great potential to continue the family farming business.

Table 8. Frequency Test Results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	14	10.0	10.0	**10.0**
	Disagree	16	11.4	11.4	**21.4**
	Neutral	20	14.3	14.3	**35.7**
	Agree	39	27.9	27.9	**63.6**
	Strongly agree	51	36.4	36.4	**100.0**
	Total	140	100.0	100.0	

The table shows that 10% (14 people) of respondents stated that they strongly disagreed, while 11.4% (16 people) disagreed, 14.3% (20 people) were neutral, 27.9% (39 people) agreed, and 36.4% (51 people) strongly agreed. The results of the data show that it is 100% valid. Therefore, it can be concluded that the respondents strongly agree with the statement "The younger generation has great potential to continue the family farming business."

7. The existence of ABSA can improve efficiency in the agricultural sector.

Table 9. Frequency Test Results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	11	7.9	7.9	**7.9**
	Disagree	20	14.3	14.3	**22.1**
	Neutral	16	11.4	11.4	**33.6**
	Agree	41	29.3	29.3	**62.9**
	Strongly agree	52	37.1	37.1	**100.0**
	Total	140	100.0	100.0	

The table shows that 7.9% (11 people) of respondents stated that they strongly disagreed, followed by 14.3% (20 people) who disagreed, 11.4% (16 people) who were neutral, 29.3% (41 people) who agreed, and 37.1% (52 people) who strongly agreed. The results of the data show that it is 100% valid. Therefore, the general conclusion of the statement "The existence of ABSA can increase efficiency in the agricultural sector" is strongly agree.

8. Investing in agricultural technology is more important than maintaining traditional methods.

Table 10. Frequency Test Results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	12	8.6	8.6	**8.6**
	Disagree	18	12.9	12.9	**21.4**
	Neutral	16	11.4	11.4	**32.9**
	Agree	51	36.4	36.4	**69.3**
	Strongly agree	43	30.7	30.7	**100.0**
	Total	140	100.0	100.0	

The table shows that 8.6% (12 people) of respondents stated that they strongly disagreed, followed by 12.9% (18 people) who disagreed, 11.4% (16 people) who were neutral, 36.4% (51 people) who agreed, and 30.7% (43 people) who strongly agreed. The results of the data show that it is 100% valid. Therefore, it can be concluded that the respondents strongly agree with the statement "Investing in technology in agriculture is more important than maintaining traditional methods."

9. Collaboration between senior farmers and young farmers who understand technology is important for the advancement of the agricultural sector.

Table 11. Frequency Test Results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	14	10.0	10.0	**10.0**
	Disagree	20	14.3	14.3	**24.3**
	Neutral	7	5.0	5.0	**29.3**
	Agree	40	28.6	28.6	**57.9**
	Strongly agree	59	42.1	42.1	**100.0**
	Total	140	100.0	100.0	

The table shows that 10% (14 people) of respondents stated that they strongly disagreed, while 14.3% (20 people) disagreed, 5% (7 people) were neutral, 28.6% (40 people) agreed, and 42.1% (59 people) strongly agreed. The results of the data show that it is 100% valid. Therefore, it can be concluded that the mode value of the statement "Collaboration between senior farmers and young farmers who understand technology is important for the advancement of the agricultural sector" is strongly agree.

10. The regeneration of young farmers is very important for maintaining the sustainability of the agricultural sector.

Table 12. Frequency Test Results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	14	10.0	10.0	**10.0**
	Disagree	17	12.1	12.1	**22.1**
	Neutral	10	7.1	7.1	**29.3**
	Agree	52	37.1	37.1	**66.4**
	Strongly agree	47	33.6	33.6	**100.0**
	Total	140	100.0	100.0	

The table shows that 10% (14 people) of respondents stated that they strongly disagreed, while 12.1% (17 people) disagreed, 7.1% (10 people) were neutral, 37.1% (52 people) agreed, and 33.6% (47 people) strongly agreed. The results of the data show that it is 100% valid. The general conclusion from the above data shows that the statement "The regeneration of young farmers is very important to maintain the sustainability of the agricultural sector" is agreed upon.

11. Support from the government and educational institutions is influential in the regeneration of young farmers.

Table 13. Frequency Test Results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	12	8.6	8.6	**8.6**
	Disagree	22	15.7	15.7	**24.3**
	Neutral	8	5.7	5.7	**30.0**
	Agree	39	27.9	27.9	**57.9**
	Strongly agree	59	42.1	42.1	**100.0**
	Total	140	100.0	100.0	

The table shows that 8.6% (12 people) of respondents stated that they strongly disagreed, while 15.7% (22 people) disagreed, 5.7% (8 people) were neutral, 27.9% (39 people) agreed, and 42.1% (59 people) strongly agreed. The results of the data show that it is 100% valid. Therefore, the general conclusion of the statement "Government and educational institution support influences the regeneration of young farmers" is strongly agree.

Once the instrument was confirmed to be valid and reliable, the next step was to conduct descriptive statistical analysis using frequency distributions and percentages. This analysis reveals two seemingly contradictory trends in young people's perceptions of the agricultural sector. The first finding indicates that the majority of respondents still view the agricultural sector conventionally—as a field of work that is unattractive and unable to offer promising economic prospects in the modern era. This indication is evidenced by the high rejection rate of the initial statement in the questionnaire stating that the agricultural sector appears attractive, with 36.4% of respondents stating they Disagree and 9.3% stating they Strongly Disagree. These figures confirm that the image of the agricultural sector has not yet fully shed the negative perceptions stemming from its continued reliance on traditional working methods. Nevertheless, respondents' perceptions shifted dramatically toward the positive once technology and external support were introduced. This is clearly evident in their responses to statements regarding the extent to which government and educational institution support influences the recruitment of young farmers. In this section, the highest cumulative percentages were found in the "Strongly Agree" category at 42.1% and "Agree" at 27.9%. These data align with the high level of support for the use of artificial intelligence (AI)-based technologies, such as the Agrimind app, as well as increased digital interactions that help them connect more closely with the agricultural community—which serves not only as a source of information but also as a vital source of training and mentoring for young farmers, and awareness of the role of young farmers in embracing more efficient and future-oriented agricultural innovations (Yunandar et al., 2024).

D. CONCLUSION AND SUGGESTIONS

This study concludes that communicating smart agricultural innovations through the Agrimind app has proven effective in addressing key issues related to the farmer succession crisis and the reluctance of the younger generation to enter the agricultural sector in Ponorogo Regency. The introduction of artificial intelligence (AI)-based technology in the app has successfully shifted the negative perceptions of the younger generation, who previously viewed farming as physically demanding, outdated work with limited economic prospects. Through the use of efficient and modern features, this innovation dissemination strategy has not only successfully revived the younger

generation's interest and fostered a positive perception of the farming profession but has also spurred the creation of a productive collaborative space between the digital literacy of the youth and the local wisdom of senior farmers to ensure the sustainability of food security in the technological era. Based on the results of this data analysis, it can be concluded that the younger generation holds two contrasting views on the agricultural sector. On the one hand, most respondents still view agriculture as an unattractive field that is not yet economically promising. However, on the other hand, although the conventional agricultural sector is no longer considered economically promising, the integration of AI features such as plant health detection, sensor-based environmental analysis, and recommendation systems via chatbots is seen as capable of facilitating accurate decision-making. With an overall average positive sentiment toward technology and generational renewal exceeding 70%, it can be concluded that AI technology is the key to addressing the farmer generational renewal crisis. This transformation is believed to be capable of shifting negative perceptions of agriculture—which has long been viewed as exhausting and unpredictable—into a modern, efficient, and measurable industry with significant economic potential for the future. This is achieved through the use of AI features on Agrimind, such as plant health detection, sensor-based environmental analysis, as well as providing recommendations to farmers via chatbots, is expected to improve farmers' work efficiency and facilitate decision-making.

As a follow-up to the findings of this study, it is recommended that local governments and relevant educational institutions begin designing structured Smart Farming technology mentoring programs to channel the enthusiasm of young people. Meanwhile, for future research, it is highly recommended to conduct a study by expanding the sample population and area beyond Ponorogo Regency, as well as considering the use of a mixed-methods approach to explore barriers to technology adoption in greater depth, so that the effectiveness of this AI innovation is measured not only in terms of psychological interest but also in terms of concrete increases in crop productivity and economic impact.

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