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The role of progressive farmers in East Kolaka as opinion leaders: Effective communication strategies for organic rice innovation diffusion

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ABSTRACT

Introduction: Organic farming has emerged as a sustainable and environmentally friendly approach to food production. However, the adoption of organic farming practices in Indonesia remains slow. Progressive farmers have the potential to act as opinion leaders, accelerating the diffusion of innovations in organic rice farming. This study investigates the role of progressive farmers as opinion leaders in facilitating innovation diffusion for the development of organic paddy fields. **Methods**: A qualitative research design was employed, utilizing a case study method. Data were collected through in-depth interviews, focus group discussions, non-participant observations, and document analysis involving 17 participants, including progressive farmers, conventional farmers, and agricultural extension agents engaged in organic rice farming development. Data were analyzed descriptively using the framework of social learning theory. **Results**: Findings indicate that opinion leaders play a pivotal role as initiators, pioneers, information disseminators, and role models in promoting organic rice farming innovations. Their actions and statements regarding innovations strongly influence farmers' decision-making processes. **Conclusion:** The study concludes that progressive farmers, as opinion leaders, effectively act as change agents and mentors by introducing and fostering the adoption of organic farming practices. The shared socio-cultural background between opinion leaders and their communities facilitates intensive interpersonal communication, ensuring that messages are relevant, credible, memorable, and trustworthy, thereby accelerating innovation diffusion. Nevertheless, the study also highlights certain limitations faced by progressive farmers. Strengthening their communication skills and fostering collaborations with agricultural institutions, such as extension agents and organic farming communities, are essential to further expedite the diffusion of organic farming innovations.

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INTRODUCTION

The diffusion of innovation within a community or social group refers to the process by which new ideas, practices, or technologies spread and are adopted. This process is influenced by various factors, including farmers' socioeconomic characteristics, the role of change agents, and communication channels (Levis *et al.*, 2024); Indraningsih, 2017). The support of local change agents plays a pivotal role in this process, as they act as information providers and facilitators, assisting farmers in understanding the benefits of innovations and offering technical guidance required for their implementation (Tapi *et al.*, 2024; Suryaningrum *et al.*, 2022).

Organic farming represents an innovative agricultural practice that prioritizes the use of natural inputs while avoiding synthetic chemicals. Its primary goal is to produce agricultural products that are safe for human health and environmentally sustainable. In addition to focusing on output quality, organic farming emphasizes eco-friendly and sustainable production processes (Syahputera & Sunartomo, 2023; Rachma & Umam, 2020). However, the development of organic farming in Indonesia over the past three years, from 2020 to 2022, has shown fluctuations in the area of land certified as organic, particularly for organic rice. In 2020, the certified organic rice farmland covered 4,637.3 hectares, decreasing to 4,199.2 hectares in 2021, before increasing again to 4,766.1 hectares in 2022, which is far from the total rice paddy area of 10.6 million hectares in 2022 (Aliansi Organis Indonesia, 2023). Some factors that hinder the adoption of organic farming include: (1) farmer education level, political status, family disposable income, and understanding of organic agriculture ((Zhou & Ding, 2022); (2)) limited access to organic inputs (Chau & Ahamed, 2022) (3) attitude, subjective norms, and farmer norm (Nguyen *et al.*, 2021); and (4) lack of financial policy support

(Łuczka *et al.*, 2021). Regarding the low understanding and attitude of farmers toward organic farming, intervention is needed through local farmers who have already implemented organic farming. Successful local farmers are usually more advanced and have broader insights than other farmers. Local farmers often possess well-established communication networks founded on strong interpersonal relationships (Setyani, 2021). The similarity and proximity between farmers and change agents are crucial factors that influence farmers' willingness to adopt new agricultural technologies. Consequently, alternative approaches are required to promote the rapid adoption of new technologies.

The involvement of change agents, particularly opinion leaders, in disseminating agricultural practices can significantly accelerate innovation diffusion among farmers. Opinion leaders are progressive farmers who possess extensive knowledge and superior skills compared to average farmers. They often serve as influential figures within farmer groups. Research indicates that opinion leaders can bridge the gap between farmers and new technologies, thus facilitating the adoption of improved agricultural practices (Datta *et al.*, 2022; Zelaya *et al.*, 2016).

Progressive farmers have demonstrated the capacity to address various agricultural challenges. Nevertheless, their limited accessibility and exclusion from structured agricultural programs often hinder the success of innovation diffusion. Therefore, the active involvement of opinion leaders in the development of organic rice farming is imperative. Opinion leaders are particularly effective in the diffusion of innovation due to their extensive social networks and ability to influence the perspectives and behaviors of other farmers within their communities. In agricultural contexts, opinion leaders may not always occupy formal leadership positions but are widely recognized as credible and reliable sources of information by their peers (Lin *et al.*, 2021; Basera & Bhardwaj, 2022). Studies further suggest that opinion leaders can function as effective communication channels, and their participation in agricultural extension services can enhance farmers' trust in the information provided (Zelaya *et al.*, 2016; Taylor & Lamm, 2017). The engagement of opinion leaders in facilitating communication between farmers and agricultural institutions fosters the exchange of information relevant to the development of organic rice farming.

Farmers typically consult their peers when facing challenges in agricultural practices. Several studies highlight that farmers with limited formal education tend to rely more heavily on their communities and maintain strong social networks with fellow farmers. These networks serve as essential channels for exchanging agricultural information (Datta *et al.*, 2022; Zelaya *et al.*, 2016). Peer-shared information is often perceived as more relevant and trustworthy, as it is based on shared experiences and similar challenges. This aligns with the innovation diffusion theory, which posits that individuals are more inclined to accept information from trusted sources with whom they share similarities (Lin *et al.*, 2021).

Despite interactions with agricultural extension officers, peer-to-peer information sharing remains a critical element in the diffusion of agricultural practices. Fellow farmers are essential sources of knowledge, yet progressive farmers, as opinion leaders, play a particularly influential role in disseminating ideas. Research suggests that opinion leaders are more effective in influencing individuals who share similar socio-economic and cultural backgrounds (Blythe *et al.*, 2017; de Roo *et al.*, 2023). This study explores how progressive farmers function as opinion leaders to expedite the adoption of innovations in organic rice farming. Specifically, this study aims to analyze the role of progressive farmers as opinion leaders in facilitating the dissemination of innovations for the development of organic rice farming in lowland areas.

METHODS

Social learning theory

Bandura's Social Learning Theory posits that learning occurs through observation (observation) and imitation (modeling) of others' behaviors. According to Bandura, individuals are active information processors. Learning through observation does not take place unless cognitive processes are involved. Bandura emphasizes that learning is not limited to direct experiences but also occurs through observing and imitating others' actions. This process involves four cognitive sub-processes: attention, retention, motor reproduction, and incentive motivation (Gede & Siswadi, 2022; Oluwatoyin, 2014). Thus, individuals can acquire new knowledge, skills, and attitudes simply by observing the actions of others without having to experience the situations themselves (Hardiyana & Maemonah, 2023).

Cognitive factors (mental factors) mediate the relationship between observed stimuli and the behaviors that are imitated. Farmers, peers, agricultural extension agents, and media broadcasts serve as stimuli that can be assessed, perceived, and interpreted. According to Bandura, the most frequently observed stimuli are those that are prominent, simple, repetitive, positively perceived, and capable of fulfilling psychological needs, thereby providing satisfaction to the observer. These factors are referred to by Bandura as reinforcements, which influence the learning process. Observation and imitation provide practical guidance for enhancing educational effectiveness and character development (Hasan, 2018). Applying these principles across various contexts, including agriculture, allows researchers to examine farmers' learning processes.

An aspect not explicitly covered in Bandura's theory is the importance of proximity between the model and the observer and the role of mentoring during the learning process. Some researchers argue that model proximity and mentoring are closely related to the effectiveness of social learning processes. Therefore, these factors are examined in this study.

Research location, participants, and data collection

The research was conducted in East Kolaka Regency, Southeast Sulawesi Province—a trial site for the development of organic rice farming. Data collection occurred between June and September 2024. The study involved 17 participants, including 11 progressive farmers, 5 conventional farmers, and 1 agricultural extension officer. Participants were purposively selected after being informed verbally about the purpose and benefits of the research and voluntarily consenting to be interviewed. Their involvement was based on their knowledge of the early stages of organic rice farming, participation in mentoring activities, and active promotion of organic rice cultivation.

Research design

This study employed a qualitative case study design, focusing on an in-depth exploration of a group of progressive farmers in East Kolaka Regency who have successfully implemented organic farming practices. This study employed a research framework with four stages based on Bandura's model: attention, retention, reproduction, and motivation." (Gede & Siswadi, 2022; Oluwatoyin, 2014):

1. Attention Level : Observing information derived from various stimuli.
2. Retention Level : Retaining and recalling information or knowledge obtained.
3. Reproduction Level : Implementing the acquired information and knowledge about organic rice farming through shared learning experiences.
4. Motivational Level : Reinforcement of farmers' motivation to improve organic rice farming practices based on incentives and positive outcomes.

The study utilized qualitative methods for data collection, including in-depth interviews, (Dworkin, 2012); focus group discussions (Stokes & Bergin, 2006), non-participatory observations (Speed, 2019), and document analysis (Wach *et al.*, 2013). Data analysis followed Miles and Huberman’s technique, which consists of three interconnected stages: data reduction, data display, and conclusion drawing/verification. The process began with data reduction, where raw data were selected, organized, and categorized through abstraction, coding, and summarization to focus on relevant information. Next, the data were displayed in matrices, charts, or narrative formats to facilitate pattern recognition and interpretation. Finally, conclusions were drawn through continuous verification, ensuring data consistency and validity by cross-checking with field notes, participant feedback, and theoretical frameworks.".

RESULTS AND DISCUSSIONS

Characteristics of progressive farmers as opinion leaders

Progressive farmers were identified based on specific criteria, including land productivity, innovative cultivation methods, and active participation in community activities. These farmers demonstrated effective communication skills and frequently assisted other farmers. They were also highly engaged in field training and demonstrations (Parau *et al.*, 2017); (Seyed Mojtaba Hosseini Bamakan, Ildar Nurgaliev, 2019).

Among the 11 progressive farmers studied, farm sizes ranged between 1 and 7.5 hectares, with an average productivity of 6.5 tons per hectare. Variations in productivity depended on soil conditions, crop maintenance, and pest and disease management. Progressive farmers consistently implemented innovations such as soil fertility enhancement, planting techniques, pest control, and water management.

One farmer stated:

“I feel that my rice field has become degraded due to prolonged use of chemical fertilizers. Therefore, I started using organic manure to improve soil quality. Additionally, planting methods and pest control practices also determine the yield quality.”

Progressive farmers consistently pursued innovations due to their active participation in training programs organized by local and provincial agricultural offices. They were often leaders or members of farmers' groups, serving as key influencers. The resulting study shows that training in agricultural technologies was highly beneficial for smallholder farmers. Seventy-five percent of the farmers stated that the training was incredibly effective. The adoption rate of agricultural technologies among respondents increased significantly from 49.5% before the training to 85% after the participatory training (Olayemi & Olusola, 2020). The training program also received a high satisfaction rating from participants, with 88.4% expressing satisfaction. This indicates that the training material aligns well with the farmers' needs (Charles, 2013). The farmers exposed to new technologies through training are more likely to adopt

innovations (Faried *et al.*, 2024). Gede & Siswadi, (2022) also found that farmers who attended training sessions showed a significant increase in knowledge about sustainable farming practices.

One farmer described:

"I frequently attend training sessions, such as improving soil fertility, making bokashi compost, producing liquid organic fertilizers, and formulating botanical pesticides. After each session, I share the knowledge with our farmer group so others can learn and try it."

Some progressive farmers began producing liquid organic fertilizers (POC) using cow urine, which provided additional nutrients for crops (Helilusiatiningsih & Syahara, 2024). This transition from chemical to organic fertilizers was facilitated by Bank Indonesia (BI) through equipment support and training programs, including study tours to successful organic rice farming regions.

Role of progressive farmers as opinion leaders

Progressive farmers play a crucial role in disseminating innovations related to organic rice farming. Their roles as opinion leaders in the diffusion of organic rice farming innovations are outlined below:

Initiators and Pioneers

Progressive farmers are often the first to adopt new practices or technologies in organic farming. They demonstrate courage by taking risks and experimenting with new approaches. For instance, in 2019, a farmer named Arif initiated organic rice farming by reducing the use of chemical fertilizers and pesticides in his paddy fields. Mr. Arif realized that conventional rice cultivation was no longer able to increase crop productivity because the rice fields had lost their fertility. Based on his experience, adding chemical fertilizers did not significantly impact production. Recognizing this reality, Mr. Arif was motivated to switch to organic farming after gaining knowledge from mentoring by Bank Indonesia and training programs on organic rice development. He saw an opportunity to utilize compost, reducing his dependency on chemical fertilizers, which were increasingly difficult to obtain and expensive each year.

In his first season, Arif faced crop failure due to pest and disease attacks. However, he remained resilient, learning from his failures and attempting again in the following season. By the second year, Arif achieved a yield of 2 tons/ha. Subsequent seasons yielded 3 tons/ha, and by the fifth season, his organic farming practices resulted in a harvest of 6 tons/ha.

During an interview, Arif stated:

"At first, I faced criticism from fellow farmers when I decided to switch to organic farming. After failing in the first season, the criticism intensified. However, with determination and family support, I continued my efforts. Eventually, my hard work paid off, and other farmers began asking me how I succeeded in organic rice farming."

The success of farmers like Arif inspired others to adopt organic farming practices. Tangible proof of success, such as high yields without chemical inputs, motivated neighboring farmers to transition to organic methods. Success stories spread through social networks, further encouraging adoption. Studies indicate that effective communication among farmers enhances their capacity in organic rice agribusiness (Wahyuni *et al.*, 2017).

Progressive farmers recognize the declining fertility of their fields and believe that adding organic materials can improve crop growth. Initial challenges include the limited availability of raw materials for organic fertilizers. Practical considerations also drive farmers to transition to organic methods. However, sourcing materials for organic fertilizers remains a barrier.

One farmer commented:

"As more farmers started adopting organic rice farming, others followed suit. However, the availability of materials for making fertilizers remains a challenge. Many farmers rely solely on liquid fertilizers (cow urine) without supplementing with solid compost. The results vary depending on the completeness of the inputs. Past issues also remain a challenge."

Such challenges led progressive farmers to establish group-based cattle-rearing systems to provide organic fertilizer inputs. For example, six cows were managed collectively to supply manure and urine for organic fertilizer production. Some farmers received cows as assistance from Bank Indonesia (BI), which supported the development of organic rice farming.

Another farmer explained:

"The support from BI, including cows, has greatly helped us develop organic rice farming. We now produce liquid organic fertilizer (POC) from cow urine and solid compost from manure. While the liquid fertilizer supply is sufficient, we still need more cows to meet the demand for solid compost."

The efforts of progressive farmers earned recognition and inspired others. For instance, Usman praised Arif's determination despite initial failures. Usman shared:

"I saw how Arif faced setbacks during the early stages, yet he remained persistent. Eventually, his success convinced me to try organic farming as well. Without his example, I might never have attempted organic rice farming."

Overcoming challenges through collective livestock management

To address the challenges faced in sourcing organic fertilizer materials, progressive farmers initiated a collective livestock management system. Six cows were managed communally as sources of organic materials for producing both solid and liquid fertilizers. Some of the cows were provided with assistance by Bank Indonesia (BI) and were managed through a communal pen system.

One progressive farmer shared:

"The support from BI, particularly the provision of cows, has been incredibly helpful in developing organic rice farming. We can now produce organic fertilizer using cow manure. The urine is processed into liquid organic fertilizer (POC), while the manure is used to produce solid compost. While the supply of POC is sufficient, we still need more livestock to meet the demand for solid compost."

This initiative earned praise from fellow farmers. Usman, another farmer, highlighted the perseverance of Arif, who played a significant role in pioneering organic rice farming. Usman observed Arif's struggles during the initial stages, including total crop failure. Despite these setbacks, Arif remained persistent and eventually succeeded, motivating others to follow his lead.

Usman stated:

"Arif's determination and hard work inspired me. Initially, he faced failures, but he never gave up. Eventually, he succeeded, and I decided to learn from him and adopt organic rice farming. Without Arif, I might never have attempted organic farming."

The collaborative efforts and resilience demonstrated by progressive farmers not only facilitated the production of organic fertilizers but also fostered a spirit of cooperation and knowledge-sharing within the farming community. Their success stories serve as tangible evidence, encouraging more farmers to transition to organic rice farming practices.

Information dissemination

Several progressive farmers actively share information about organic farming techniques. Discussions are conducted during farmer group meetings, community gatherings, and through social media platforms such as WhatsApp Groups (WAG). Some progressive farmers actively share information about organic farming techniques. Discussions take place in farmer group meetings, community gatherings, and through social media platforms such as WhatsApp Groups (WAG). Progressive farmers communicate directly with other farmers, both in group meetings and one-on-one interactions. Communication through social media (WAG) is also utilized, though on a limited scale. Not all farmers understand the information shared on social media, especially older farmers who are less familiar with technology. As a result, they prefer face-to-face meetings. These group meetings, held once a month, provide opportunities for progressive farmers to share updates and discuss organic rice farming practices. Additionally, they share information during field visits and home visits.

Research by Gede & Siswadi, (2022) and Faried *et al.*, (2024) highlights that active farmer organizations promoting information exchange about organic farming techniques significantly improve adoption rates. Group discussions also foster solidarity and social support, which are crucial for farmers facing agricultural challenges. H. Darman, a progressive farmer practicing organic rice farming, expressed:

"I strongly believe that our rice fields are no longer healthy, so adding organic materials is essential to restore soil fertility. Organic farming is the right approach. During group meetings or agricultural office sessions, I always emphasize the need to transition to organic farming. In the long term, organic farming for rice offers hope for farmers' welfare and environmental health. I have proven this on my 3-hectare field, which produced excellent yields. Many consumers seek organic rice, and I still cannot meet the demand."

In addition to sharing knowledge through group meetings, progressive farmers actively use social media platforms such as WhatsApp groups and Facebook to disseminate information about organic rice farming. These platforms are the most commonly used tools for information exchange among farmers. Farmers frequently consult progressive farmers when seeking clarification about information obtained through these platforms. Alif *et al.*, (2023) found that social media usage among farmers is high, making it an effective medium for promoting organic farming.

One farmer noted:

"I often receive information about organic rice farming from WhatsApp and Facebook. If I don't understand something, I usually ask questions in the group chat. If I still need more clarification, I visit farmers who have already adopted organic practices or bring it up during group meetings."

While information about organic rice farming is readily available, some farmers remain skeptical about its effectiveness. Although several progressive farmers have successfully adopted organic farming, this success alone is

insufficient to convince others to follow suit. Therefore, more effective communication strategies are needed to strengthen farmers' confidence in the benefits of organic rice farming systems. Progressive farmers, as opinion leaders, should focus on improving communication approaches to better address farmers' concerns and emphasize the economic and environmental advantages of adopting organic practices.

Conducting extension services, training, and mentorship

Progressive farmers acquire knowledge and skills in organic rice farming through various educational and training programs. These training sessions enhance their knowledge, attitudes, and skills in implementing organic farming techniques (K Rangga *et al.*, 2024; Wahyuni *et al.*, 2017). Training attended by progressive farmers includes topics such as the principles of organic farming, organic fertilizer production, pest and disease management, and plant maintenance. Programs focusing on the preparation of organic fertilizers and botanical pesticides have proven effective in improving farmers' abilities to manage their land more sustainably (Nurhajijah *et al.*, 2023; Mendes *et al.*, 2022). These trainings were organized by Bank Indonesia and universities, such as Halu Oleo University. The types of training needed by farmers in organic rice cultivation include technical training, management training, and marketing of their produce. At the beginning of cultivation, technical training is the most crucial. The impact of technical training is significant, with 81.6% influencing farmers' skills and 7.64% affecting their perceptions of organic fertilizers (Liu *et al.*, 2022). Intensive training is a promising tool to increase the adoption of organic farming (Grimm & Luck, 2020).

The knowledge gained from these trainings was applied by progressive farmers in their rice fields, serving as demonstrations for other farmers. Although initial efforts were met with challenges, motivation, and perseverance ultimately led to success. One farmer shared:

> *"The first planting season was very disappointing. My rice crop failed due to pest attacks. However, I did not give up. I continued seeking information from experts and frequently attended training sessions on organic rice farming. Support from BI and UHO provided valuable training in organic farming practices, including the production of liquid organic fertilizer (POC) and solid compost, as well as tools. By the second season, the results improved significantly. Seeing my success, other farmers began following my example."*

The success of progressive farmers attracted others to observe and learn about organic rice farming practices. Visiting farmers were provided with detailed explanations about techniques, including pest and disease control and fertilizer application. Questions related to these topics often reflected farmers' concerns about transitioning to organic systems.

Progressive farmers frequently received complaints about pest attacks and suboptimal crop growth. To address these concerns, they provided mentorship and collaborated with agricultural extension officers to develop solutions. One effective strategy involved improving soil fertility through organic compost application. The use of compost enhances soil structure, increases water retention, and improves nutrient availability for crops (Aini *et al.*, 2022; Kamsurya & Botanri, 2022; Bolly & Apelabi *et al.*, 2022). Progressive farmers emphasized that healthy soils, enriched with organic materials, promote better plant growth and resilience to pests and diseases.

Through their efforts in training and mentorship, progressive farmers have demonstrated how practical applications of organic farming principles can address challenges and improve yields. Their role as facilitators and problem-solvers further solidifies their position as opinion leaders in promoting sustainable agricultural practices.

Communication in the innovation diffusion process

Progressive farmers facilitate communication in the innovation diffusion process through several stages, including innovation introduction, initial trials, adoption, and dissemination. The following outlines the diffusion process of organic rice farming innovations led by progressive farmers:

Innovation Introduction

The initial step involves progressive farmers, as opinion leaders, introducing organic rice farming practices through group discussions and meetings. They highlight the benefits of organic rice farming and provide evidence of success through videos and images from other regions. Progressive farmers also encourage others to watch videos showcasing successful organic rice farming practices on YouTube channels. While some farmers expressed interest, many remained hesitant to adopt the practice initially.

Initial Trials

To demonstrate feasibility, progressive farmers implemented organic rice farming on small-scale plots. The aim was to validate the effectiveness of organic practices. While some trials were successful, others faced challenges. Successful trials were then established as demonstration plots (dump lots) to serve as learning centers for other farmers. These dump lots provided hands-on opportunities for farmers to observe and learn about organic rice farming systems directly.

Adoption

Following initial trials, progressive farmers who were convinced of the benefits of organic rice farming expanded their adoption to larger areas. Despite challenges such as pest attacks, diseases, and occasional crop failures, progressive farmers remained committed. Observing their success, other farmers began adopting organic rice farming under the guidance of progressive farmers and agricultural extension officers. From the initial 11 progressive farmers promoting organic rice farming, 15 additional farmers had adopted the practice by the time this study was conducted.

Farmers who transitioned to organic farming reported improvements in soil fertility, healthier crop growth, increased yields, healthier planting environments due to the absence of chemicals, better grain quality, and higher market prices for organic rice. Additionally, they noted that organic rice produced tastier and more nutritious grains.

Dissemination

To accelerate the diffusion of organic rice farming innovations, progressive farmers actively disseminated information about the benefits of organic practices. They participated in local, regional, and national events, including exhibitions organized by Bank Indonesia, local governments, and provincial authorities. Progressive farmers also showcased their organic rice products under the brand name "Magello Healthy Rice," with attractive packaging used as a promotional tool.

Through these stages, progressive farmers established themselves as key agents of change, promoting sustainable agricultural practices and encouraging wider adoption of organic rice farming systems.

Analysis of farmers' learning process

The role of progressive farmers as opinion leaders in the communication and diffusion of organic rice farming innovations can be explained through Albert Bandura's Social Learning Theory. The social learning process among rice farmers involves two key phases: observation and modeling (Bandura, 1977) (Figure 1).

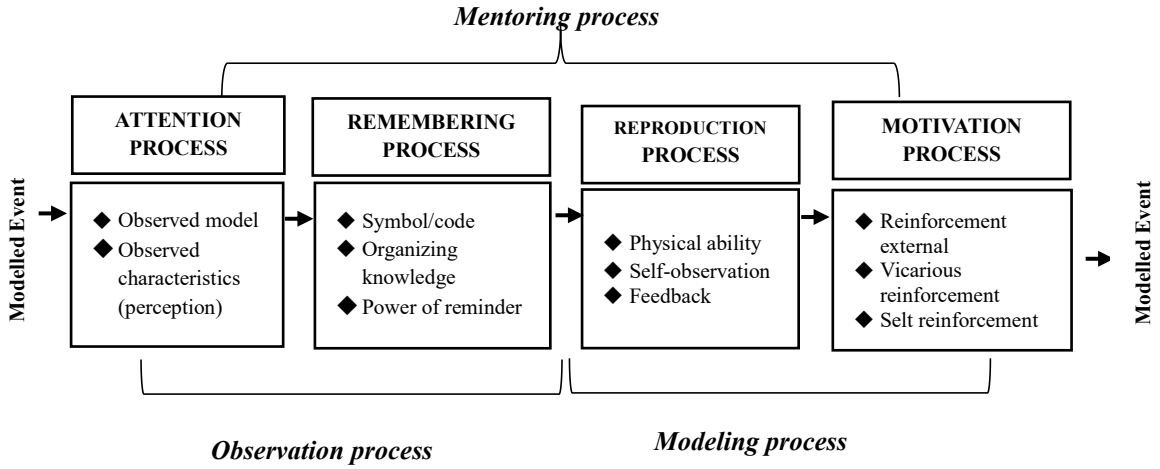

Figure 1. Farmer learning process in implementing organic rice cultivation (Adapted from Bandura, 1977)

Figure 1, adapted from Albert Bandura's theory (1977), illustrates the farmer's learning process in implementing organic rice cultivation. The process begins with a Modelled Event, where farmers observe organic cultivation practices performed by other farmers or information sources. Next, it goes through the Attention Process, where farmers need to pay attention to the essential details of the practice, including the characteristics observed (perception). After gaining attention, the information is processed through the Remembering Process, where farmers try to store the information in the form of symbolic codes (symbol/code), organize it into knowledge (organizing knowledge), and recall it when needed (power of reminder). The following process is the Reproduction Process, which involves physical ability, self-observation, and feedback to apply the practice. Finally, the Motivation Process is crucial, where farmers are motivated through external reinforcement, vicarious reinforcement by seeing others' successes, and self-reinforcement when they see positive results from their efforts. If motivation is strong enough, farmers will continue to implement and refine organic rice cultivation practices, which will eventually create another Modelled Event.

Stage one: observation process

The observation process begins with farmers identifying and paying attention to information about organic rice farming practices. Farmers acquire this information from progressive farmers and agricultural extension officers. Farmers' focus on organic rice farming systems arises from two main observations: (1) farmers observe progressive

farmers who have successfully implemented organic rice farming, and (2) farmers compare organic rice farming systems with conventional methods.

These observations serve as key inputs for farmers to evaluate whether transitioning to organic farming is feasible and beneficial. Personal factors, such as sensory abilities, influence farmers' capacity to assess the reliability of the information received. Additionally, farmers' interests and prior experiences with conventional farming influence their perceptions of success in organic systems. Farmers who witness the positive outcomes of organic farming practices, such as those demonstrated by Arif and H. Darma, are more inclined to adopt these practices.

Observations of successful implementation often prompt farmers to seek supplementary information. They engage in discussions with progressive farmers, consult agricultural extension services, and use media resources to explore the benefits of organic farming. Farmers also share knowledge with peers, frequently visiting the fields of those who have already adopted organic methods. Key topics of discussion include the requirements for organic inputs and pest management strategies.

Field training and visits to demonstration plots (dump lots) provide farmers with practical insights and allow them to compare and assess whether organic rice farming is viable. Farmers who observe healthy plant growth and high yields in organic fields are motivated to replicate these practices on their own farms.

Retention during the observation process is influenced by how well farmers internalize what they have seen. For example, witnessing organic practices that eliminate chemical fertilizers and pesticides inspires farmers to envision similar outcomes on their fields. Mental factors also play a role, as farmers assess whether organic farming can improve their household livelihoods. Demonstration plots are essential in this process, as farmers are more likely to adopt technologies they can observe directly.

Trust in opinion leaders further accelerates adoption. Farmers are more likely to follow the advice of individuals who have successfully implemented organic farming than those with no practical experience. Thus, the credibility of progressive farmers enhances their influence in motivating others to adopt organic practices.

Stage two: modeling process

The modeling process involves farmers replicating innovations based on prior observations. Farmers adopt organic rice farming methods when they perceive these practices as meeting their specific needs. Modeling is influenced by personal, environmental, and social factors, underscoring the importance of progressive farmers as opinion leaders.

However, several challenges may arise during this phase. Factors such as individual characteristics, support from extension officers, and communication channels can influence adoption rates (Rushendi & Zachroni, 2016; Sarwoprasdjo & Mulyandari, 2016). Farmers with better access to information and technical assistance are more likely to adopt innovations (Indraningsih, 2018).

Key factors influencing adoption include:

- Physical ability: Younger and healthier farmers tend to adopt innovations more quickly.
- Observational skills: Farmers with stronger observational and memory retention skills are better equipped to replicate new practices.
- Reinforcement: Farmers require ongoing motivation to sustain organic practices. Support from peers, successful examples, and confidence in long-term benefits reinforce their decisions to adopt innovations.

Progressive farmers, as role models, must effectively communicate innovations to ensure shared understanding within the community. Frequent communication and familiarity between progressive farmers and their peers are critical for successful adoption.

Addressing challenges in innovation diffusion through communication strategies

One of the primary barriers to the diffusion of agricultural innovations among farmers is the lack of effective communication strategies. Involving progressive farmers in agricultural development programs can serve as a highly effective approach. According to Bandura (1977), farmers' failure to model innovations is influenced by personal and environmental factors.

Personal factors include farmers' ability to meet the requirements of organic rice farming, such as providing organic inputs and botanical pesticides for pest and disease control. Additionally, farmers' reliance on past experiences and perceptions that conventional methods are superior may hinder adoption. Environmental factors, such as the presence of farmers who have adopted organic systems versus those who have not, also influence decisions. Negative perceptions from peers about organic farming may further deter adoption. Thus, positive reinforcement from the farming community and farmers' confidence in the benefits of organic systems are critical for accelerating innovation diffusion (Sapbamrer & Thammachai, 2021; Arimbawa *et al.*, 2024).

The role of opinion leaders as communicators is vital in influencing farmers' decisions. Higher levels of trust in opinion leaders increase farmers' willingness to adopt new practices. Social learning processes in organic rice farming, therefore, depend not only on observation and modeling but also on mentorship and assistance throughout the learning process.

Mentorship as a key factor in innovation diffusion

Mentorship (assistance process) is recognized as a crucial factor in facilitating the diffusion of organic rice farming systems. Effective mentors must possess strong communication skills and technical expertise in the innovations being promoted. Farmers who remain hesitant to adopt organic practices often do so due to misinformation. In such cases, mentors help farmers filter and assess the reliability of information to make informed decisions.

(Morgan, 2011) highlights that the success of social learning approaches depends heavily on facilitation, institutional management, and communication skills. Mentorship becomes more effective when supported by demonstration plots. Progressive farmers' fields serve as learning platforms for farmers interested in transitioning to organic practices.

The effectiveness of information transfer depends on farmers' ability to interpret and share knowledge. Progressive farmers can act as mentors by facilitating peer-to-peer learning and using convergent communication strategies (Arimbawa *et al.*, 2021; Arimbawa *et al.*, 2024). For example, progressive farmers explain the relationship between healthy crops and resistance to pests and diseases. They emphasize that soil enriched with organic materials provides sufficient nutrients for crops, resulting in healthier plants that are less prone to pests.

The use of convergent communication strategies ensures that farmers reach mutual understanding through knowledge sharing (Mulyandari *et al.*, 2010); Sarwoprasdjo & Mulyandari, 2016). To achieve consensus, progressive farmers can assist others in building capacity for organic rice farming. Demonstration plots also accelerate the learning process by enabling farmers to observe results firsthand.

Phuong *et al.*, (2018) found that enhancing social learning processes within communities leads to improved farmer capacity. Involving progressive farmers who have successfully implemented organic rice farming provides credible, evidence-based knowledge. Their role as self-reliant extension agents facilitates dialogue-based communication, leveraging cultural familiarity and shared experiences (Phuong *et al.*, 2018; Rushendi & Zachroni, 2016).

Mentorship programs should emphasize personalized engagement, encouraging farmers to participate actively at all stages of development. Progressive farmers' fields act as practical learning sites, bridging gaps between theory and practice and promoting faster adoption of organic farming techniques.

CONCLUSION

Opinion leaders, especially progressive farmers, play a crucial role in accelerating the adoption of organic rice farming innovations. They act as catalysts and mentors, influencing the decisions and actions of other farmers. Their shared background with the community enhances effective communication, making innovative messages more credible and impactful. However, to maximize their influence, local governments need to facilitate communication training for progressive farmers and establish a communication forum involving progressive farmers, extension agents, researchers, and other relevant stakeholders as a platform for learning and developing organic rice farming.

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