

The Challenge of Blended Learning-Based Extension

Do facilitators and Web Applications have good roles?

Blended learning combines the advantages of face-to-face meetings with the benefits of web-based learning. It integrates direct interactions with facilitators and self-directed learning. During face-to-face offline meetings, direct interaction with facilitators can enhance cognitive engagement by fostering dialogues between facilitators and participants in training or extension programs. Additionally, face-to-face meetings can initiate independent activities based on real-world issues.

Blended learning relies on integrating technology into education. Subejo (2018) argues that technology usage is influenced by gender and farmers' societal status. Male farmers tend to adopt information and communication technology faster than females. Additionally, farmers with higher societal status, like opinion leaders, are quicker to adopt technology to disseminate information among their peers. This difference arises from their need to utilize media channels for rapid and equitable information sharing among their community members.

However, farmers face difficulties in using internet-based media due to limited familiarity with device operation and limited understanding of digital content. Field data indicates that only about 5.2% of farmers in Indonesia utilize ICT for additional income generation (BPS, 2019), with age being a significant barrier to technology utilization.

On the other hand, blended learning offers a solution to align with global trends and overcome extension resources constraints. In line with these opportunities, the Lentera DESA serves as a platform dedicated to delivering online training to farmers, extension workers, and agricultural stakeholders who aim to enhance their capacity and capabilities.

This policy brief presents findings from a survey conducted among farmers who underwent training in PUTS (Soil Test). The training, employing blended learning, included two days of face-to-face sessions to introduce PUTS (Soil Test), coupled with access to the training room feature of the Lentera DESA website. Specifically, this policy briefs explores:

- i) Farmer's Characteristics
- ii) Human Capital and Farmer's Knowledge Exchange
- iii) The Role of Facilitators
- iv) Blended-Learning Based Extension Model for Soil Test Adoption



Topics

- Blended learning-based extension model
- Knowledge exchange about Lentera DESA
- The role of the role of training facilitator and resource person for Lentera DESA
- Adoption of soil test



The Survey

This study was conducted across three rice-producing regions, namely Sleman Regency, Bantul Regency, and Kulon Progo Regency, located in the Special Region of Yogyakarta. The selection of research locations employed a dual random sampling technique involving the random selection of districts and farmer groups. Two districts were randomly chosen from each regency, with two farmer groups selected from each district. Farmers from the selected groups were then sampled through census sampling, resulting in a total sample size of 170 farmers. Prior to the survey, all respondents had been invited to training on the utilization of the Rice Field Soil Test Device.

Findings: Human Capital and Knowledge Exchange about Lentera DESA

Figure 1. Farmers' Human Capital Level

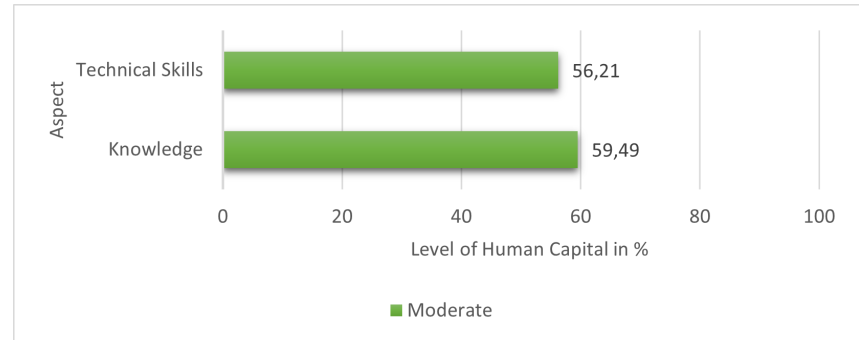
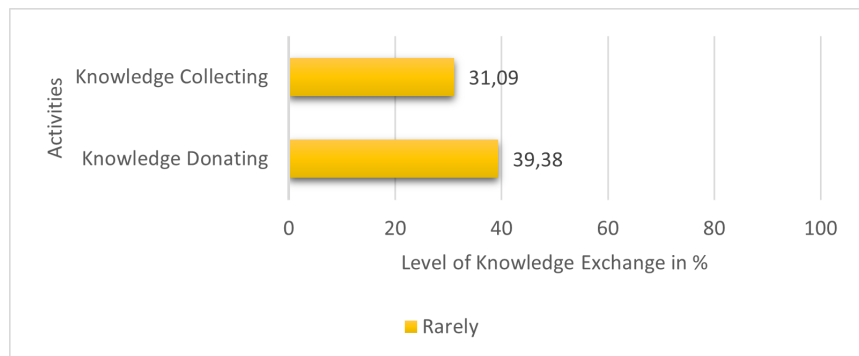


Figure 2 shows the post-training status of farmers' human capital concerning the knowledge and technical skills that are necessary for soil health preservation. Data shows that farmers' understanding of fertile soil attributes and their benefits in rice cultivation is moderate (56.21%). Likewise, farmers' proficiency in assessing fertilizer needs, employing PUTS for soil pH assessment, and formulating fertilization strategies is also at a moderate level (59.49%).

Figure 2. Farmer Knowledge Exchange Level



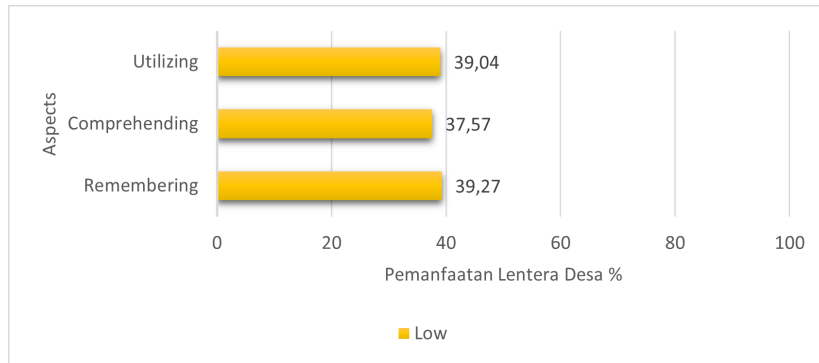
Post-training knowledge exchange activities encompass both sharing information (knowledge donating) and gathering information (knowledge collecting) among peers regarding soil fertility and PUTS. Participants of the training occasionally share insights from the training with fellow farmers, such as the importance of soil health and their experiences in conducting soil pH measurements. However, they rarely seek information on soil health maintenance and soil nutrient level assessment from their peer farmers (knowledge collecting). Overall, there is limited engagement in knowledge exchange regarding the Lentera DESA content and the platform itself.

Findings: Utilization of the Lentera DESA Web Application

The utilization of Lentera DESA in 2023 by farmers who participated in soil health management training in 2022 was examined considering three aspects: remembering the information presented within Lentera DESA,

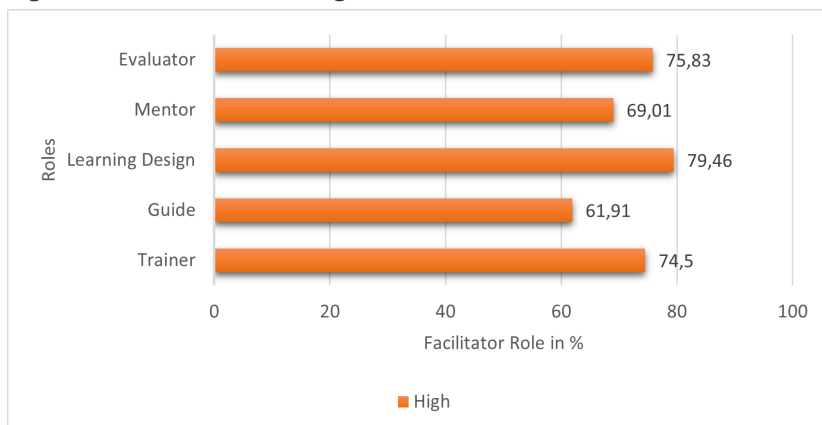
comprehending the information available within Lentera DESA, and utilizing the information contained therein. The research revealed that only a minority of farmers were able to recall the methods of accessing Lentera DESA and the functionalities of its features. Due to the persistently low capacity for recalling access methods, both comprehension and application were also at a low level.

Figure 3. Level of Utilization of the Lentera DESA Web Application



Findings: The Role of Training’s Facilitator

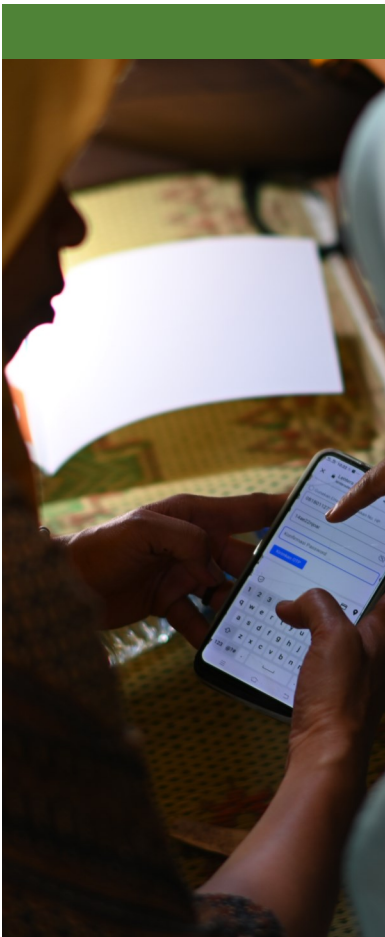
Figure 4. The Role of Training’s Facilitator



Farmers stated that facilitators of the face-to-face training sessions and the speakers in the training videos which were uploaded on the Lentera DESA website performed their roles effectively. Facilitators were assessed across five roles: trainer, guide, learning designer, mentor, and evaluator. Facilitators were ranked highest in their role as learning designers (79.46%). The diverse teaching methods involving lectures, discussions, practices, and the utilization of website media (Blended learning) fostered farmers' learning interest. As a trainer, facilitators fulfilled their role by explaining how to use Lentera DESA, conveying the features available in Lentera DESA, and speakers on the Lentera DESA website providing clear information. As guides, facilitators guided farmers in using the Lentera DESA website, and speakers on the Lentera DESA website clearly guided farmers through the steps of soil health management. After the face-to-face training, facilitators evaluated farmers' learning outcomes and their skills in using Lentera DESA by applying pretest and post-test methods.

Farmers Characteristics

Most farmers in our sample (68%) are aged between 40 and 59 years old, with 19% classified as elderly, aged over 60 years old. Most farmers (65%) have completed senior high school, while 31% have completed basic education (junior high school or less). Regarding their experience with PUTS, nearly all farmers (95.88%) have utilized the PUTS only once, during the training. As for social media use, the most farmers have only a WhatsApp account (75%).

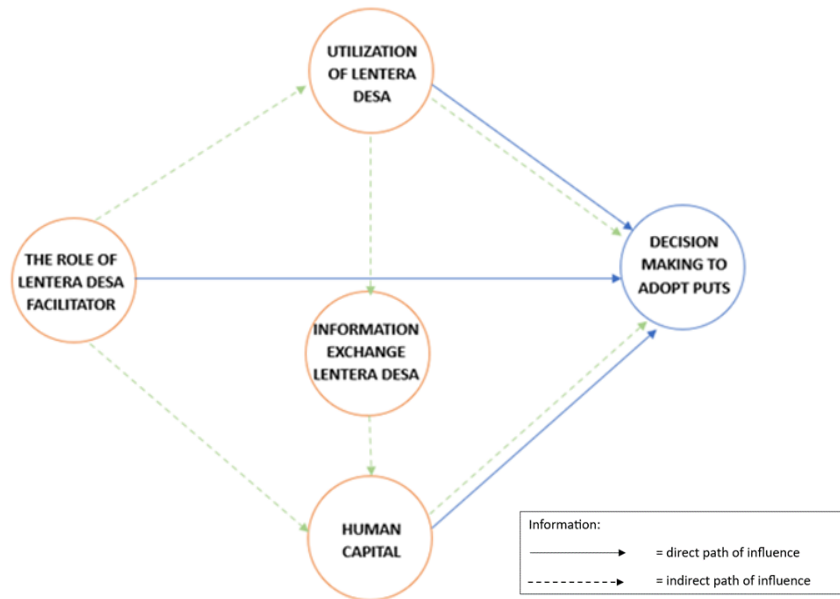


Farmers' Access to Information

Farmers' inclination to seek information about soil health and fertility remains notably limited. Most have never searched online to find information on fertilizer dosages. Despite the availability of WhatsApp as a valuable platform for discussions, farmers rarely interact with peers via social media to discuss soil health issues or PUTS. Thus, farmers' awareness about the potential benefits of using internet-based platforms to access agricultural information needs to be increased.

Blended Learning-Based Extension Model for Adoption of Soil Test

Figure 5. Decision Making Adoption Process in Blended Learning-Based Extension



The results of the data analysis indicate that blended learning influences the formation of adoption decisions through five pathways.

1. The adoption decision of PUTS is directly influenced by the role of the facilitators who conducted the face-to-face training.

Trainers explaining the benefits of PUTS can encourage farmers to use it. Offline training also allows for direct practice, enabling farmers to understand its usage.

2. The decision to adopt PUTS is directly influenced by human capital capability, which comprises knowledge capacity and technical proficiency in using PUTS. The higher the human capital capability, the faster the adoption of the PUTS innovation.

3. In our model, there is a direct pathway between the decision to adopt PUTS and the utilization of Lentera DESA. To access Lentera DESA, farmers must be registered as members of Lentera DESA. Utilizing Lentera DESA, farmers can calculate the fertilizer requirements needed in their fields after receiving PUTS recommendations. The information and facilities available on Lentera DESA can accelerate the adoption decision of the PUTS innovation.

4. The utilization of Lentera DESA and human capital are directly influenced by the role of facilitators/extension workers during face-to-face training sessions

Up to now, farmers rarely utilize online media as information resource, despite the abundance of agricultural information available online. Enhancing farmers' information literacy is crucial to building human capital so that farmers can improve their businesses and lives. Well-informed farmers can make better decisions and serve as

experts for others, offering valuable insights into soil fertility and agricultural challenges.

5. Facilitators can play a key role in promoting the utilization of Lentera DESA, thereby facilitating information exchange among farmers. This can potentially improve human capital capabilities and consequently impact the decision to adopt PUTS.

Farmers' participation in blended learning training/extension can increase information exchange among farmers. Farmers who attend training and have access to learning resources stored in web applications can use the obtained information to initiate discussions among farmers. Frequent knowledge donating and knowledge collecting among farmers increases farmers' knowledge and skills regarding soil fertility and PUTS. Therefore,

Key Messages:

- Farmers find training beneficial when trainers design engaging and enjoyable learning sessions. The role of trainers directly impacts the adoption decision of PUTS.
- Human capital can play an important role after training regarding the decision to adopt PUTS.
- Blended learning-based extension has the potential to make the training more sustainable. This is because training materials can still be accessed by farmers, allowing for continued discussion among farmers.
- Farmers forget how to access the Lentera DESA platform. Thus, when introducing online resources, farmers may require repeated instructions and practice on how to use it.



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