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Asset Based Digitalization of Food Product Marketing for Optimizing Farmers' Income in Meureubo Subdistrict.

Muhammad Reza Aulia[1,2], Rony Rahmat Hidayat Hasibuan[1,2], Utari Azrani[1,2*], Cut Fitri Warahmah[1], Faimam[3], Firda Usina[3], Adi Saputra[1], Chairul Imam[1]
[1]Agribusiness Department, Universitas Teuku Umar, Aceh, Indonesia
[2]Human Development and Entrepreneurship Center, Universitas Teuku Umar, Aceh, Indonesia
[3]Information Technology Department, Universitas Teuku Umar, Aceh, Indonesia

*Corresponding Author: utariazrani@utu.ac.id

Abstract

The digitalization of the agricultural sector has become a fundamental necessity to address the stagnation of conventional farmer markets. In Meureubo District West Aceh Regency food crop farmers experience structural constraints characterized by dependence on middlemen, weak bargaining power and low income margins due to extended supply chains. This community service initiative was designed as a strategic intervention to enhance digital literacy, strengthen technical marketing competencies and expand direct market access to optimize farm income. The program applied the Asset-Based Community Development (ABCD) method combined with Focus Group Discussions (FGD), emphasizing local assets such as superior products and social capital rather than deficiencies. Thirty farmers participated in structured stages including asset mapping, conceptual understanding of short supply chains and hands-on training in product photography, persuasive copywriting and platform utilization through WhatsApp Business and Facebook Marketplace. Quantitative findings revealed a 110.6% increase in average knowledge scores (from 39.6 to 83.4) indicating a transition from technological unawareness to conscious competence. Qualitatively participants demonstrated increased confidence in producing promotional content and conducting digital transactions. Overall, the program effectively bridged the digital knowledge gap and shifted farmers' mindsets from conventional producers to emerging digital agropreneurs confirming that asset-based technology integration can reduce exploitative distribution chains and promote sustainable rural economic independence.

Keywords: *Agricultural Digitalization, Farmer Empowerment, Community Assets, Digital Marketing, Rural Welfare*

INTRODUCTION

Digital transformation in the agricultural sector has become a critical agenda in both global and national economic development, marking a paradigmatic shift from traditional agriculture toward technology and information based Agriculture 4.0 (Wolfert, Ge, Verdouw, & Bogaardt, 2017) (Organization, 2019). In the contemporary era farm business success is no longer determined solely by land productivity or harvest quantity but also by supply chain efficiency and the capacity to access broader markets through digital platforms (Pradana & Ha, 2021) (Prasetyo & Sutopo, 2018). The integration of digital technology into agribusiness offers concrete solutions to address market information asymmetry that has long disadvantaged smallholder farmers and has the potential to increase product value added through more precise

and efficient marketing (Barrett & Mutambatsere, 2008) (Zeng, Jia, Wan, & Guo, 2022). In the national context the Government of Indonesia continues to promote the digitalization of Micro, Small and Medium Enterprises (MSMEs) including the agricultural sector as a primary strategy for poverty alleviation and the enhancement of rural community welfare (Tambunan, 2020)(Indonesia, 2021). Knowledge and skills related to the digitalization of food products constitute vital instruments for the economic sustainability of farmers enabling them to adapt to shifting consumer behavior that increasingly favors online purchasing patterns. Therefore technological mastery is no longer merely complementary but an urgent necessity to ensure the competitiveness of local products amid increasingly open and dynamic market competition. Without adequate technology adoption, the local agricultural sector risks experiencing stagnation, wherein the economic value generated is not commensurate with the production efforts expended.

Although the urgency of digitalization has been widely acknowledged field realities indicate that its implementation continues to encounter significant structural and cultural barriers particularly at the regional level (Hamdani & Wibowo, 2018) (Anwar & Satrio, 2021b). Specifically food crop farmers in Meureubo Subdistrict West Aceh Regency are currently constrained by classical agricultural economic challenges that hinder farm income growth. The primary issues identified are limited market access and low utilization of digital technology as most farmers remain heavily dependent on conventional marketing systems. Within this scheme, farmers possess weak bargaining positions and are compelled to sell their harvests to middlemen at unilaterally determined prices resulting in extended distribution chains and profit margin inefficiencies. Although the expansion of online marketing platforms creates substantial opportunities to shorten these distribution chains low digital literacy and limited technical skills constitute significant barriers for farmers in this region. The target partners namely food farmer groups in Meureubo Subdistrict generally lack understanding of food digitalization mechanisms and platform-based digital marketing such that the economic value potential of their products has not been optimally explored. This inadequacy in knowledge infrastructure generates a gap between available technological potential and farmer's adoption capacity which if not promptly addressed will perpetuate cycles of low income and dependence on traditional market intermediaries.

A review of prior literature indicates that interventions through digital empowerment have been widely implemented and have demonstrated positive impacts on farm business performance. Numerous previous studies affirm that the adoption of e-commerce and digital marketing exhibits a significant positive correlation with increased farmer income and expanded market reach. These studies emphasize that digital literacy training can transform farmer's mindsets from mere on-farm producers into market-oriented off-farm agribusiness entrepreneurs. However the majority of prior studies and community engagement initiatives have frequently concentrated on major production centers in Java Island or high-value commodities whereas peripheral regions such as West Aceh Regency particularly Meureubo Subdistrict have remained relatively underserved by comparable intensive assistance programs. Moreover existing approaches are often partial, focusing solely on technical application aspects without comprehensively addressing managerial dimensions of food products. Therefore this community engagement activity possesses high novelty and urgency as it is specifically designed to fill this assistance gap through an approach tailored to the socio-economic characteristics and literacy levels of local farmers in Meureubo. The expansion and replication of this digital empowerment model in this location are expected to provide empirical validation

regarding the effectiveness of digitalization in shortening conventional supply chains at the local level.

PKM novelty and positioning. Unlike many digital marketing trainings that focus solely on platform tutorials, this PKM integrates (1) ABCD-based asset mapping to identify marketable local commodities and social capital, (2) short supply-chain framing to explicitly link digital adoption with bargaining power and margin capture, (3) a low-tech pathway using platforms already familiar to farmers (WhatsApp Business and Facebook Marketplace) to reduce entry barriers, and (4) a replicable evaluation design that separates cognitive gains (digitalization concepts and platform mastery) from psychomotor skills (product photography and copywriting) using defined rubrics. Prior PKM in similar themes rarely combine these elements in a single, staged module tailored for peripheral food-crop contexts such as Meureubo.

As a strategic response to these challenges this Community Service Program (PKM) is presented as an integrated solution aimed at empowering farmers through the transfer of knowledge and technology. The program entitled 'Digitalization of Food Products for Optimizing Farmer's Income in Meureubo Subdistrict West Aceh Regency' is designed to bridge the digital divide through a participatory approach. Explicitly the objectives of this PKM are: 1) To enhance farmer's literacy and understanding of food product digitalization concepts, 2) To equip farmers with practical skills in managing and marketing food products based on digital technology, 3) To encourage farmers to access digital markets to expand product marketing reach and 4) To optimize farmer's income through the implementation of digitalization in food farming enterprises. The success of this program is expected to generate sustainable multidimensional benefits. The benefits of PKM for participants (farmer's) include improved digital literacy the capability to market food products online and opportunities to increase farm income. Meanwhile for partners (farmer groups) the anticipated benefits include the formation of farmer groups that are adaptive to digital technology and capable of marketing products more broadly and independently. For the service team this activity represents the implementation of agribusiness expertise in community empowerment and a tangible contribution to enhancing the welfare of local farmer's while simultaneously strengthening the role of higher education institutions in regional development.

METHOD

The implementation of this community service program employed a participatory approach that integrates the Asset-Based Community Development (ABCD) method with the reinforcement of Focus Group Discussion (FGD) techniques. The selection of the ABCD method was grounded in an empowerment principle that views the community not as an object characterized by deficiencies but as a subject possessing potential. In this context the ABCD method was applied systematically to map and optimize the assets of the farmer community, which include superior food products, the quality of human resources, strong farmer group networks and available production facilities as the primary foundation for the development of product digitalization and marketing. This approach was considered the most effective for achieving the objectives because it encourages farmer's self-reliance in utilizing their internal resources before seeking external assistance. The strategic target of this activity was food-crop farmer groups (rice and corn) and a small subset of household processed products in Meureubo Subdistrict West Aceh Regency particularly those who did not yet possess understanding and skills in product digitalization and platform-based digital marketing. This activity involved the active participation of 30 farmers who represented local partner farmer groups. The entire series

of community service activities was conducted intensively over two days namely on November 7–8, 2024, at the agricultural center of Meureubo Subdistrict West Aceh Regency Aceh Province to ensure direct interaction with the local agricultural ecosystem.

Operationally the application of the Asset-Based Community Development (ABCD) method and Focus Group Discussion (FGD) was implemented through interactive mechanisms between the implementation team and target partners. The ABCD implementation focused on appreciative efforts to explore local "hidden treasures," in which farmers were encouraged to inventory the strengths of their products that possess high market value in digital markets. Meanwhile the FGD technique was utilized as a vital participatory instrument to examine four crucial aspects: first, collectively identifying the primary problems faced by farmers related to conventional marketing constraints and the digitalization gap in food products; second, exploring specific training needs, including determining the most relevant digital platforms (such as WhatsApp Business or local marketplaces), identifying attractive promotional content types and analyzing existing sales patterns that have not yet been optimal; third, determining digital marketing strategies agreed upon through group consensus, ranging from prioritizing products and segmenting target markets to selecting digital channels; and fourth, formulating post-training mentoring follow-up plans to ensure program sustainability. Through this combination of methods, the activity did not proceed in a one-directional lecture format but rather took the form of a dynamic workshop in which knowledge transfer occurred simultaneously with the strengthening of farmer group institutional capacity.

The stages of activity implementation were arranged systematically and chronologically to ensure the achievement of program success indicators. The activity began with an opening session and introduction to the PKM program to build mutual understanding between the service team and participants followed by mapping the potential of local food products and farmer's digital readiness using ABCD principles. Subsequently participants received theoretical reinforcement through Material 1 which discussed the fundamental concepts of food product digitalization and digital market opportunities accessible to local farmers. The next session focused on technical strengthening through Material 2 namely the introduction of various digital platforms and social media that are effective for marketing food products. After conceptual understanding was established participants proceeded to the core stage of the activity in the form of direct practice in creating simple promotional content ranging from product photography techniques using mobile devices to product description writing (copywriting) as well as digital marketing simulations. This process was enriched with discussion sessions and intensive group mentoring to resolve technical obstacles encountered by participants. The series of activities concluded with a comprehensive evaluation through pre-test and post-test to measure cognitive improvement, as well as a joint reflection session to formulate commitments to the sustainable application of digital technology in their farming enterprises.

To measure the effectiveness and success of this community service program the implementation team employed comprehensive evaluation instruments encompassing cognitive, affective and psychomotor aspects. The cognitive aspect was measured through written test instruments in the form of a pre-test administered prior to material delivery and a post-test administered at the end of the activity aimed at calculating the percentage increase in participant's understanding of digital literacy and marketing strategies. In addition participatory observation sheets were utilized during hands-on practice sessions to assess participant's technical skills in creating digital content and operating marketing platforms which served as indicators of psychomotor achievement. Other success indicators were measured through satisfaction questionnaires and reflection sheets to identify participant's responses regarding

material relevance, delivery method comfort and program usefulness for their enterprises. Data obtained from all these instruments were subsequently analyzed using descriptive comparative analysis to determine the level of output target achievement and to serve as the basis for formulating recommendations for future follow-up mentoring activities.

Ethics and safeguarding. Participants joined voluntarily after receiving an explanation of the program and the evaluation procedures. Informed consent was obtained verbally at the start of the activity. Pre/post-test and satisfaction data were recorded anonymously and used only for program evaluation and publication purposes in aggregate form.

Evaluation instruments and scoring rules. The cognitive test consisted of 20 multiple-choice items covering four domains: (a) digitalization concepts (5 items), (b) marketplace/platform mastery (5 items), (c) product photography principles (5 items), and (d) copywriting strategy (5 items). Each correct answer was scored 5 points, resulting in a 0–100 scale per domain and overall. The same instrument was used for pre-test and post-test to enable paired comparison. Content validity was ensured through expert review by two agribusiness lecturers and one information-technology lecturer who assessed item relevance and clarity; items were revised based on feedback before field use.

Psychomotor performance was assessed during practice sessions using an observation checklist rubric (0–4 scale per criterion; converted to 0–100) for (1) product photography and (2) copywriting. Two raters (one agribusiness team member and one IT team member) independently scored outputs; discrepancies were resolved through brief consensus discussion to maintain inter-rater consistency.

RESULTS AND DISCUSSION

RESULTS

The implementation of the Community Service Program (PKM) with the theme “Digitalization of Food Products for Optimizing Farmer’s Income in Meureubo Subdistrict West Aceh Regency” was comprehensively conducted on November 7–8, 2024. This activity involved 30 participants who represented members of local farmer groups. Based on the Asset-Based Community Development (ABCD) framework and a participatory approach the following outlines the implementation details presented in several strategic stages:

1. Opening Session and Potential Mapping (Discovery and Mapping)
   The activity commenced with an opening session aimed at building rapport and mutual understanding between the service team and the target partners. After presenting the program objectives a local food product potential mapping process was conducted using the ABCD instrument. At this stage participants were encouraged not to focus on deficiencies but to inventory their existing assets. The identification results indicated that Meureubo Subdistrict possesses leading commodities in the form of lowland rice, corn, and small-scale household horticultural processed products that have not yet been properly branded. Through the initial Focus Group Discussion (FGD) it was also revealed that farmers’ digital readiness remains at a basic level the majority own smartphones, yet their use is limited to social communication rather than productive economic activities.

Table 1. Partner profile and baseline needs assessment (FGD summary, N=30).

Partner identity	Food-crop farmer group members in Meureubo Subdistrict (main commodities: lowland rice and corn) and a small subset of household processed products.
Production & marketing pattern	Seasonal harvesting; sales mainly at farm-gate to local collectors; limited direct sales to local markets.
Baseline marketing channels	Dominant: middlemen/collectors; Complementary: occasional local market sales (small share).
Baseline digital exposure	All participants own smartphones; routine use: WhatsApp for social communication; limited prior selling experience via Facebook/Marketplace; no use of WhatsApp Business catalog features.
Prior training exposure	No structured training on product photography, copywriting, or platform-based selling reported by participants.
Key constraints prioritized in FGD	Low digital literacy; lack of product branding/photos; uncertainty in pricing and responding to buyers; limited confidence; intermittent internet quota/signal constraints.

2. Concept Reinforcement: Product Digitalization and Market Opportunities (Theory Transfer)
   The subsequent stage involved the delivery of Material 1 concerning the concept of digitalization. In this session the service team provided in-depth insights into the post-pandemic shift in consumer behavior toward online markets. Farmers were given the understanding that local food products possess high market value when packaged with appropriate narratives. Participants were introduced to the concept of a short supply chain in which digital technology enables them to reduce long distribution channels previously dominated by middlemen allowing profit margins to be directly captured by producers.
3. Introduction to Platforms and Social Media Strategies
   In the Material 2 session the focus shifted to the introduction of relevant and accessible digital platforms (Low-tech, High-impact) such as WhatsApp Business, Facebook Marketplace and Instagram Shop. The team explained specific business features available on these platforms, such as product catalog features chat labels and location features that assist local consumers in finding their products. The selection of these platforms was aligned with the farmer's learning curve avoiding overly complex applications that could reduce motivation for technology adoption.

Figure 1. Platform introduction and social media strategy session (Meureubo Subdistrict, West Aceh; November 7 August, 7th 2024).

4. Creative Content Workshop and Marketing Simulation
   The core of the technical activity was a practical training session on content creation. Participants were directly guided to conduct product photography using mobile phone cameras with simple yet aesthetic lighting techniques. In addition to visual aspects, participants were trained to compose persuasive product descriptions (copywriting), including information on variety, taste advantages, price, and personal farmer narratives to build emotional connections with buyers. This session concluded with a simulation of uploading content to social media and practicing responses to prospective buyer inquiries.
5. Group Mentoring and Evaluation
   The final session focused on directed discussions and group-based mentoring to formulate follow-up marketing plans. Evaluation was conducted using pre-test and post-test instruments to measure the effectiveness of knowledge transfer.

Quantitative Analysis of Participant's Capacity Improvement Based on data collected before and after the activity a significant improvement occurred in partners' understanding and skills. The following table presents a summary of the evaluation data analysis:

Table 2. Comparison of Average Scores of Farmers' Digital Knowledge and Skills (N=30)

Assessment Indicator	Average Pre-Test Score	Average Post-Test Score	Increase (%)	Achievement Category
Understanding of Digitalization Concepts	45.5	88.0	93.4%	Very Good
Product Photography Skills	38.0	82.5	117.1%	Very Good
Marketplace Feature Mastery	40.0	85.0	112.5%	Very Good
Copywriting Strategy	35.0	78.0	122.8%	Good
Overall Average	39.6	83.4	110.6%	Very Good

Note: Scores are standardized to a 0–100 scale. Category cut-offs: Low (<60), Good (60–79), Very Good (≥80).

The data above indicate that in aggregate there was an increase in understanding of more than 100% compared to the initial condition. Prior to the activity the average level of material mastery was 39.6 (low category), and after the intervention it increased to 83.4 (very good category). The primary outcomes of this community service activity both qualitatively and quantitatively are:

1) Increased farmer understanding of the urgency of digital transformation in agribusiness
2) Farmers are able to operate business features on social media and independently produce promotional content
3) The establishment of collective awareness to reduce dependence on middlemen and 4) The emergence of potential expansion in marketreach validated by participant's enthusiasm in attempting their first digital transactions during the simulation.

DISCUSSION

1. Analysis of Goal Achievement and Internal Program Logic

Table 3. PKM logic model (input–process–output–outcome–impact).

Inputs	ABCD & FGD facilitation; trainers; training modules; smartphones; internet quota support; venue.
Process	Asset mapping → short supply-chain framing → platform introduction → hands-on workshop → mentoring.
Outputs (immediate)	Mapped assets and product priorities; draft content (photos/captions); activated WhatsApp Business catalogs; Marketplace listings during simulation.
Outcomes (short-term)	Increased knowledge and platform confidence; improved photography/copywriting competence;

	reduced psychological barriers to online selling.
Outcomes (medium-term)	Regular posting and response routines; first inquiries/orders; improved price transparency and negotiation position.
Impact (long-term)	Potential improvement of margins and resilience through shorter, more transparent distribution chains (requires longitudinal follow-up).

The success of this community service program can be analyzed through the strong linkage between the empirical results obtained and the initial objectives that were established. The post-test score increase reaching an average of 83.4 directly confirms the achievement of the first objective namely enhancing farmer's literacy and understanding of digitalization concepts. The substantial increase in technical skill indicators (photography and platform mastery) demonstrates that the second objective of equipping farmers with practical skills has been fulfilled. This outcome is not merely statistical data but reflects a process of knowledge internalization in which farmers progressed from unconscious incompetence to conscious competence.

Furthermore the qualitative results in the form of participant's ability to conduct transaction simulations on Facebook Marketplace and WhatsApp Business serve as valid indicators of the achievement of the third objective namely encouraging access to digital markets. The intervention logic that was constructed beginning with conceptual understanding and advancing to technical practice, proved effective in dismantling the psychological barriers of farmers who previously perceived technology as complex. With mastery of these digital tools the primary prerequisite for achieving the fourth objective namely income optimization has been established. This mechanism operates by increasing product visibility to end consumers which theoretically and practically enhances profit margins by reducing intermediary costs.

2. Practical Implications for Partners and Socio-Economic Impact

For food farmers in Meureubo Subdistrict the outcomes of this activity carry highly crucial practical implications in transforming their microeconomic structure. Prior to the intervention, farmers were positioned with low bargaining power due to information asymmetry and extreme dependence on conventional distribution chains (middlemen). The results of this training provided them with a new instrument in the form of direct-to-consumer market access. The tangible implication is price transparency by being able to monitor prices in online markets farmers can no longer be unilaterally dictated by local collectors. The ability to create visual

content and product narratives also transforms their commodities from mere raw materials into value added products, which constitutes the key to increasing added value.

The external impact of this transformation is the potential revitalization of the rural economy in West Aceh. When farmers are capable of independently managing marketing activities, financial circulation remains at the village producer level rather than leaking to intermediaries in larger cities. In addition, the digital skills acquired are transferable; thus, this digital mindset can be applied to other aspects of life or other commodities in the future. For the partner farmer groups, the success of these 30 participants serves as a role model that can trigger a snowball effect for other community members to adopt technology, thereby gradually reducing the digital divide in this peripheral region.

3. Scientific Contextualization and Academic Contribution

The findings of this activity reinforce and expand academic discourse on agricultural digitalization in developing countries. The results align with studies (Anwar & Satrio, 2021a) as well as (Tarmizi, Kamarulzaman, Latiff, & Rahman, 2023) that affirm digital readiness is positively correlated with agribusiness sustainability potential. However this activity provides new nuance by highlighting the specific context of regions outside Java Island. If (Rahayu & Sudarsono, 2022a) (Bresciani, Ferraris, & Santoro, 2021) focus extensively on high-value commodities, the findings in Meureubo demonstrate that digitalization is also relevant and urgent for staple food farmers (rice/corn) to disrupt exploitative supply chains as articulated in supply chain theory (Nuryanti & Swastika, 2019) (van Veldhoven & Vanthienen, 2022).

The specific contribution of this activity lies in validating the effectiveness of the Asset-Based Community Development (ABCD) approach in agricultural technology transfer. In contrast to top-down approaches that frequently fail due to cultural misalignment the participatory approach that explores local assets proved to enhance technology acceptance among farmers with diverse levels of formal education (Green & Haines, 2015)(Mathie & Cunningham, 2003). These results confirm that barriers to technology adoption in rural areas are not solely attributable to farmers' cognitive limitations (Kretzmann & McKnight, 1993)(Rahayu & Sudarsono, 2022b) but rather to delivery methods that are often misaligned with their needs and local language. Therefore the hybrid training model (conceptual and hands-on practice) implemented in Meureubo may serve as a reference for similar empowerment models in other agrarian regions.

4. Program Limitations and Critical Reflection

Despite demonstrating positive results, this activity is not without limitations that must be critically addressed. The primary limitation lies in the relatively short implementation duration (two intensive days). Behavioral change from traditional farmers to digital entrepreneurs

(agropreneurs) is an evolutionary process requiring extended time. The increase in post-test scores measures short-term competence (knowledge retention) and does not guarantee consistent long-term technology application without sustained mentoring. Furthermore the participant scope of only 30 individuals may not fully represent the complexity of agricultural challenges throughout West Aceh Regency.

However notwithstanding these limitations the principal strength of the approach employed is the integration of personal and digital methods. The utilization of platforms already embedded in farmer's daily routines (such as WhatsApp) reduced the barrier to entry, ensuring that technology was perceived as assistance rather than a burden. The ABCD approach also ensured that the solutions introduced emerged from their own internal potential rather than external imposition, which theoretically guarantees higher program sustainability compared to equipment-based assistance alone. This condition constitutes strong social capital for farmer groups in Meureubo to continue independently developing their digital marketing systems following the completion of the activity.

CONCLUSION AND RECOMMENDATIONS

CONCLUSION

The Community Service Program (PKM) carrying the theme of food product digitalization in Meureubo Subdistrict West Aceh Regency implemented through the Asset-Based Community Development (ABCD) approach was successfully executed in a comprehensive manner and demonstrated significant achievement across all established objective indicators. Based on the synthesis of pre-test and post-test evaluation results as well as participatory observations it can be concluded that this program effectively bridged the technological gap previously experienced by local farmers.

1. The objective of enhancing farmers' literacy and understanding was empirically achieved, as indicated by an increase in the average knowledge score of partners by 110.6% (from 39.6 to 83.4) reflecting a fundamental cognitive shift from lack of awareness to comprehensive understanding of the urgency of digital transformation.
2. The provision of practical skills was successfully internalized as evidenced by the technical ability of 30 participants to produce aesthetically appealing product photography content and compose persuasive copywriting narratives, competencies that were previously unfamiliar to them.
3. The encouragement of digital market access proved effective, as farmer's psychological barriers to technology utilization were dismantled through real transaction simulations on

Facebook Marketplace and WhatsApp Business, thereby opening new marketing channels that are more inclusive and transparent.

4. Enabling conditions for future income improvement were established through understanding of the short supply chain concept; farmers now possess collective awareness and technical instruments to reduce extended distribution channels dominated by middlemen enabling profit margins to be directly captured by producers. Thus this activity not only transferred technical knowledge but also instilled a digital entrepreneurial mindset that is crucial for the economic sustainability of farmers in the digitalization era, while simultaneously validating that a participatory asset-based approach constitutes the most effective method for accelerating technology adoption in rural agrarian regions.

RECOMENDATIONS

Based on the findings and reflections derived from the implementation of the activity, strategic recommendations are formulated to ensure sustainability of impact and future scholarly development.

1. **For Target Partners (Food Farmer Groups in Meureubo Subdistrict)**
   It is recommended that the farmer groups establish a dedicated task unit or Digital Cadre composed of 3–5 members selected based on (a) fastest platform mastery during practice, (b) availability to manage weekly posting, and (c) willingness to mentor peers. Core roles include: content coordinator (weekly content calendar), customer-response admin (response time target within 2–4 hours), pricing/logistics focal person (standard price list and delivery options), and documentation officer (monthly record of posts, inquiries, and realized sales). Monitoring can be implemented through a weekly posting plan (minimum 2 posts/week per commodity) and a monthly sales reflection meeting to review inquiries, conversions, and constraints.
2. **For Future Service Implementers**
   It is strongly recommended to develop the program design from a short-term intensive workshop model into a long-term incubation mentoring model (longitudinal) with a minimum duration of 3–6 months. This approach is necessary because behavioral change from traditional farmers to digital agropreneurs requires an adaptation period that extends beyond mere technical mastery of application features. Future implementers may integrate program topics with digital financial management and shipping logistics (packaging and expedition), which frequently become subsequent constraints after digital market access is established. Furthermore, expansion of the target audience should not be limited to land-owning farmers but should also involve village youth (millennial/Gen Z generation) as active

collaborators who can accelerate technological adoption within agricultural environments, thereby fostering systematic regeneration of technologically literate farmers in West Aceh Regency.

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