Kesenjangan Pemasaran Digital dalam Pertanian
(Studi Kasus Petani di Desa Ngale, Kabupaten Ngawi, Indonesia)
The Digital Marketing Gap in Agriculture
(Study Case Farmers at Ngale Village, Ngawi District, Indonesia)

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ABSTRACT

The digital transformation offers significant benefits, yet a digital marketing gap exists in the agricultural sector, particularly in emerging economies like Indonesia, hindering smallholder farmers in rural areas despite agriculture's economic importance. This study investigates this gap in Ngawi Regency, a key rice-producing region. Employing a qualitative method, the research utilized interviews with farmers, local residents, and agricultural experts, and secondary data from a literature review, analyzed through Van Dijk's Digital Divide Theory. Findings reveal that while farmers acknowledge digital marketing's potential, they face significant barriers including limited motivation, physical and material access, digital literacy, and prevailing reliance on traditional sales channels and middlemen. This is due to financial constraints, lack of structured training and support, complex digital platforms, and trust issues. The implications highlight the need for structured interventions such as financial assistance, accessible training programs integrated into farmer cooperatives, user-friendly platforms, and community-led initiatives to bridge this gap and enhance farmers' livelihoods and competitiveness in the digital economy. Future research should broaden the scope and explore effective intervention strategies.
Keywords: agricultural digital divide; digital inclusion agriculture; farmer technology barriers; rural digital marketing adoption.

ABSTRAK

Transformasi digital menawarkan berbagai manfaat signifikan, namun kesenjangan pemasaran digital masih menjadi tantangan dalam sektor pertanian, terutama di negara berkembang seperti Indonesia. Kesenjangan ini menghambat petani di daerah pedesaan, meskipun sektor pertanian memiliki peran ekonomi yang krusial. Penelitian ini meneliti kesenjangan tersebut di Kabupaten Ngawi, salah satu daerah penghasil padi utama di Indonesia. Dengan menggunakan metode kualitatif, penelitian ini mengumpulkan data melalui wawancara dengan petani, masyarakat lokal, dan pakar pertanian, serta data sekunder dari studi literatur yang dianalisis menggunakan Teori Digital Divide dari Van Dijk. Hasil penelitian menunjukkan bahwa meskipun petani memahami potensi pemasaran digital, mereka menghadapi hambatan besar, termasuk motivasi yang rendah, keterbatasan akses fisik dan material, rendahnya literasi digital, serta ketergantungan pada saluran penjualan tradisional dan peran tengkulak. Faktor-faktor yang memperburuk kondisi ini meliputi kendala finansial, kurangnya pelatihan dan dukungan yang terstruktur, kompleksitas platform digital, serta isu kepercayaan terhadap transaksi daring. Temuan ini menegaskan perlunya intervensi yang terstruktur, seperti bantuan keuangan, program pelatihan yang mudah diakses dan terintegrasi dalam koperasi petani, pengembangan platform yang ramah pengguna, serta inisiatif berbasis komunitas. Langkah-langkah ini diperlukan untuk menjembatani kesenjangan digital dan meningkatkan kesejahteraan serta daya saing petani dalam ekonomi digital. Penelitian selanjutnya disarankan untuk memperluas cakupan wilayah dan mengeksplorasi strategi intervensi yang lebih efektif.
Kata Kunci : kesenjangan digital pertanian; inklusi digital pertanian; hambatan teknologi petani; adopsi pemasaran digital pedesaan.

BACKGROUND

The digital transformation has profoundly transformed several sectors around the world, providing multiple benefits such as increased efficiency, a bigger market reach, and greater economic potential (Dąbrowska et al., 2022). The rapid expansion of digital technology has altered consumer behavior, company models, and economic structures, making digitalization a critical component of global economic growth (Bayumi et al., 2024). Digitalization has made it possible to conduct frictionless transactions, communicate in real time, and make data-driven decisions, all of which are critical for enhancing productivity across industries (Kyrychenko & Kyrychenko, 2025).

The rapid advancement of technology and information has significantly transformed how people access knowledge. In Indonesia, internet penetration has increased, allowing individuals to obtain various types of information more easily. The number of internet users in the country continues to grow each year (Kinanti & Afriani, 2021), reflecting the expanding role of digital connectivity in daily life.

Many developed countries have effectively used digital agriculture techniques such as precision farming, digital marketing, and supply chain optimization. For example, the European Union (EU) has pushed smart farming efforts that use artificial intelligence, blockchain technology, and big data to boost agricultural output (European Commission, 2023). Similarly, in the United States, digital systems like Farmers Business Network (FBN) give farmers real-time market knowledge (FBN, n.d.), allowing them to make data-driven decisions that improve their production and sales strategies. These digital developments have helped farmers around the world improve food security, lower production costs, and increase market access (Chourad et al., 2024; Shamshiri et al., 2024)

Globally, the adoption of digital agricultural technologies has been steadily increasing. Between 1996 and 2019, the usage of digital agricultural technology surged in the United States, with precise instruments like as yield mapping, soil mapping, and Variable Rate Technology (VRT) becoming widely utilized for corn and soybean production (McFadden et al., 2023). While these breakthroughs have resulted in significant increases in efficiency and production, their application is generally concentrated in areas with strong technological infrastructure and financial support. Without effective intervention, this disparity may expand between technologically proficient farms and those that still use traditional methods, limiting the overall benefit of digitalization in agriculture.

This is especially important for emerging economies, as agriculture plays a significant role in economic stability. Many smallholder farmers face challenges including limited infrastructure, low digital literacy, as well as elevated adoption costs, leading in inconsistent digital transformation (Hackfort, 2021). These difficulties are especially acute in Indonesia, where agriculture remains the dominant economy. Despite efforts for modernization, the agricultural business still faces structural impediments that prevent widespread implementation of digital technology (Wanda et al., 2024).

Being a major contributor to Indonesia's economy, the agricultural industry is critical to national food security and rural employment. According to the Central Bureau of Statistics (BPS), agriculture is the second most important economic sector in Indonesia, accounting for 13.02% of

GDP on average between 2019 and 2022 (Pusat Data dan Sistem Informasi Pertanian Kementerian Pertanian, 2023). Understanding the importance of agriculture, the Indonesian government has designated agricultural development as a key goal for the Asta Cita agenda. One example is the Forest, Agriculture, and Sustainable Trade (FAST) Programme, a collaboration between Indonesia and the United Kingdom that aims to improve agricultural sector sustainability while also increasing the competitiveness of Indonesian commodities in the global market (Kementerian Koordinator Bidang Perekonomian, 2024)

Despite these actions, digital marketing penetration in Indonesia's agricultural sector is still low. Many farmers continue to use traditional marketing tactics, which results in inefficiencies and limited access to larger markets. According to the Ministry of Agriculture, the number of farmers aged 45-54 is quite dominant, and the most concerning fact is that only 363,327 persons will be between the ages of 15-24 in 2023 (Kementerian Pertanian, 2023). Several constraints, such as low digital literacy, insufficient internet infrastructure, and financial constraints, prevent widespread utilization of digital marketing in rural areas (Akinrinde et al., 2024).

This study focuses on Ngawi Regency, East Java Province, one of Indonesia's largest rice-producing regions, which plays a crucial role in national food security (Sakkarina, 2025). As the leading rice producer in the country (Mewangi et al., 2024), Ngawi serves as a compelling case study for examining digital marketing challenges in agriculture. By investigating the digital marketing gap in this region, this study hopes to provide insights into the problems farmers experience when implementing digital marketing strategies and to investigate potential solutions to improve digital inclusion in Indonesian agriculture.

This study will be analyzed using Van Dijk's Digital Divide Theory in 2012 (Maceviciute & D. Wilson, 2018). Digital Divide theory refers to disparities in access to and use of digital technology, such as the internet, influenced by socioeconomic conditions, demographics, and geographic factors (Kem, 2024; Kuteesa et al., 2024; 01Baraka, 2024). It not only explains inequalities across different societal groups but also highlights factors that exacerbate these disparities, particularly among marginalized communities.
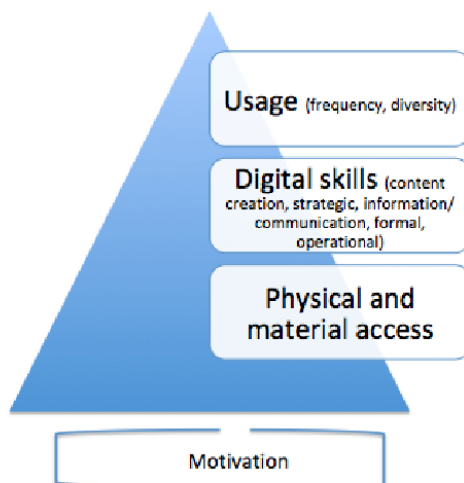

Figure 1. The Pyramid of Digital Divide Theory by van Dijk (Maceviciute & Wilson, 2018)

As illustrated in Figure 1, the first layer of factors influencing the adoption of digital technology by individuals or groups is motivation and attitude. This refers to the extent to which individuals have the desire and motivation to use digital technology. If they do not perceive any benefits from the technology or hold negative attitudes toward digitalization, they are less likely to make an effort to access it.

The second layer is physical and material access, which represents the extent to which individuals have access to digital devices such as smartphones, computers, and infrastructure like internet connectivity. Even if individuals have strong motivation, without adequate access, adopting digital technology remains challenging.

The third layer is digital literacy and skills. This layer highlights that even if individuals have strong motivation and access to technology, they still require digital literacy and skills to use it effectively. Digital literacy encompasses basic knowledge of device operation, internet usage, and digital security aspects. Furthermore, it includes competencies such as content creation, strategic thinking, information and communication management, formal skills, and operational proficiency.

The top layer of the Digital Divide Theory pyramid reflects the extent to which individuals actively use digital technology in their daily activities, including digital marketing in agriculture. Those with high levels of access, literacy, and motivation are more likely to adopt technology actively.

While digitalization in agriculture is a broad topic covering areas such as artificial intelligence, remote sensing, blockchain, robotics, drones, and more (Shamshiri et al., 2024), this study specifically focuses on the digitalization of agricultural marketing among farmers in Ngale Village, Ngawi District, Indonesia. This is because the digitalization of agricultural marketing is one of the most essential aspects of agricultural development. Digital marketing in agriculture enables farmers and agricultural producers to increase crop production, enhance business profitability, and expand their market reach. Consequently, this can improve their livelihoods and allow them to allocate budgets for further digitalization in other areas of agriculture (Judijanto et al., 2024)

This research aims to answer the question: What constitutes the digital marketing gap in Indonesia's agricultural industry? The study is expected to contribute to a grassroots understanding of digital marketing challenges in the farming sector and provide insights for private agritech startups and government policymakers in accelerating digital adoption in Indonesian agriculture.

METHOD

This study employs a qualitative method, utilizing primary data from interviews and secondary data from a literature review. The interview method was chosen for its ability to provide deeper insights into complex topics, aligning with the qualitative research approach that requires detailed personal responses (Hussein, 2022; Hillman, 2022). Furthermore, qualitative research using semi-structured interviews is an essential tool for understanding social realities, as open-ended questions allow flexibility in responses while maintaining focus on predefined themes and conversation trajectories set by the researcher, thereby enhancing the depth of the data collected (Pratiwi & Witono, 2024; Buriro et al., 2017).

The participants in this study are farmers from Ngale Village, Ngawi District, East Java Province, Indonesia. Additionally, interviews were conducted with local residents and agricultural experts to gain a more comprehensive perspective on the research topic. The participant profiles are presented in Table 1 below.

Tabel 1. Participant Profiles

Participant Code	Position	Relevant of Study
K1	Traditional Farmer	Represents farmers who still rely on traditional methods.
K2	Traditional Farmer	Represents farmers who still rely on traditional methods.
K3	Agricultural Expert	Provides insights into agricultural digitalization and its challenges.
K4	Local Communities	Represents perspectives on agricultural digitalization and habits in purchasing agricultural products.

Source: Data Processed by Author (2025)

The literature review serves as secondary data in this study to synthesize research findings and identify gaps that require further exploration (Snyder, 2024). Additionally, it examines how other countries have addressed similar digital agriculture challenges faced by the study's participants.

A previous literature review-based study comparing environmental law policies between two countries found significant gaps and weaknesses in Indonesia's environmental policies compared to Singapore's (Ayuningrum & Herari, 2024). Combining a literature review with interviews enhances research validity by integrating existing knowledge (literature) with in-depth perspectives (interviews), resulting in a more comprehensive and credible understanding of the research topic (Lim, 2024).

RESULT AND DISCUSSION

Considering the potential benefits, farmers continue to underuse digital marketing. Several main aspects influence farmers' decisions about whether to utilize or resist digital marketing, including motivation, accessibility to technology, digital literacy, and perceived usefulness. This section discusses the interview findings, which are divided into four primary themes: motivation, physical and material access, digital literacy, and usage.
Motivation

Farmers understand the value of digital marketing in improving sales and removing needless supply chain layers. The capacity to distribute directly to consumers allows for better profit margins.

"Digital marketing is necessary, especially for rice farmers, because younger generations to come are more familiar with technology. Most farmers nowadays are elderly and have difficulty using digital tools" (informant K1).

Many elderly farmers have spent decades relying on traditional sales channels and middlemen, making it difficult for them to switch to digital platforms. Informant K3 stated that their hesitancy is typically due to their absence of familiarity with technology and distrust about

online transactions. Without targeted digital literacy programs that address their individual needs, older farmers will continue to struggle with incorporating digital marketing into their farming businesses.

> "Younger farmers are capable of following digital trends, but for those above 50, it is quite challenging because they are unfamiliar with technology" (Informant K3).

Smallholder farmers, as opposed to commercial farmers, who frequently work within well-organized cooperatives, lack formal support networks that encourage technological adoption. Informant K3 stated that commercial farmers are more willing to experiment with digital marketing because they manage the complete production and distribution chain independently. Smallholder farmers, on the other hand, frequently rely on word-of-mouth marketing and conventional sales methods, which slows their shift to digital platforms.

> "Commercial farmers are more likely to utilize digital marketing given that they handle both agriculture and sales themselves. Their groups are stronger and share information about both direct and digital profits," (Informant K3).

Recognizing the relevance of digital marketing, however, does not guarantee adoption. Many farmers are apprehensive due to the difficulties connected with switching from traditional methods to unknown digital platforms. The lack of a structured support system exacerbates this reluctance, leaving farmers with insufficient guidance on how to properly utilize digital resources for marketing. Without external aid, farmers are discouraged from trying with new marketing tactics due to the risk of financial ruin and operational failure.

Many farmers recognize the need of digital marketing, but a lack of practical direction and direct incentives hinders adoption. This demonstrates that, even when farmers see the value of digital platforms, they frequently lack an organized onboarding process. Without direct guidance, many people are hesitant to abandon traditional selling approaches.

> "I've seen how other farmers use digital marketing, but I'm not sure where to start. If there was a way for me to learn step by step, I would be willing to attempt." (Informant K2).

Although understanding its significance, farmers have never attempted to employ digital marketing due to a lack of advice and cost constraints. This demonstrates how financial constraints and a lack of sufficient education undermine farmers' readiness to shift to digital platforms.

> "I would like to explore digital marketing, but no one has directed me, and I don't have the funds. Middlemen tend to have high capital and have the ability to implement technology" (informant K1).

The incorporation of middlemen reflects a larger issue in agricultural supply chains (Kopp & Sexton, 2021), in which people with financial power control control over profitable markets. Farmers are frequently trapped in a system in which they provide their products at low prices while middlemen use digital tools to increase their profit margins. This disparity emphasizes the need for specific strategies, such as financial subsidies or cooperative-based digital platforms, in order to enable farmers to take control of their own marketing channels.

Physical and Material Access

Access to technology is crucial for farmers in interacting with digital marketing platforms. The interviewed farmer owns a smartphone and utilizes the internet for agricultural purposes, including weather forecasts, pest control knowledge, and fertilizer new information.

> "I utilize my phone to obtain agricultural news, daily weather changes, and information about fertilizers and plant diseases" (informant K1).

Farmers' capacity to efficiently utilize digital marketplaces is limited by infrastructure constraints, particularly in rural locations. Even as smartphones and internet access become more common, inconsistent network coverage and high-cost data plans make constant usage difficult.

> "Internet signal enhancement should be priority. To provide stable connectivity, at least one significant provider, whether private or collaborative, is required" (informant K3).

Accessibility to a digital device and the internet does not guarantee successful usage of digital marketing tools (Taiminen & Karjaluoto, 2015). The discrepancy between utilization and accessibility implies that simply providing technology infrastructure is inadequate. Farmers who lack sufficient training and awareness may limit their digital involvement to passive information intake rather than actively leveraging online platforms for business and sales growth.

However, despite having internet connection and a digital device, the farmer has never sold agricultural products through social media, e-commerce, or marketplaces. This suggests that physical access alone is insufficient, additional training and capacity-building programs are necessary.

Digital Literacy

Limited digital literacy is a key impediment to the adoption of digital marketing. The respondent argues that internet platforms are challenging to understand, especially for elderly farmers.

> "I think digital marketing features are complicated to understand, especially for older farmers who are not skilled in technology," (informant K1).

Many consumers continue to rely on traditional markets and are ignorant of the advantages of buying agricultural products online. The limited promotion of digital agriculture platforms exacerbates the problem, since consumers are frequently inexperienced regarding how they can validate product quality and ensure secure transactions. Without planned awareness campaigns, farmers and consumers may struggle with confidence in digital marketplaces, limiting adoption.

> "Most people continue to rely on traditional markets and middlemen because it's our habit. We are not yet accustomed to trying to buy agricultural products digitally," (Informant K4).

Despite some digital training efforts exist, they are often short-term and lack post-training evaluation, rendering it difficult for farmers retain and implement what they have learned. Informant K3 stressed the importance of integrating training programs into farmer cooperatives to enable ongoing learning and peer support. Farmers may revert to traditional marketing strategies due to a lack of confidence in managing digital platforms in the absence of ongoing mentoring and follow-up initiatives. Furthermore, existing training courses frequently fail to address the specific needs of rural farmers, diminishing their efficacy.

"Introducing digital literacy within farmer cooperatives would be more beneficial than doing external workshops. It enables continual learning and adaptability (Informant K3).

The intricacy of digital platforms creates a psychological barrier that prevents farmers from even trying to use them. Many digital marketing solutions are created with urban entrepreneurs in consideration, overlooking rural farmers' specific requirements and capabilities. Farmers may see digital marketing as a problem rather than an opportunity for growth if interfaces are complex and difficult to use (McCown, 2002). This lack of user-centered designing alienates folks with limited exposure to technology.

Additionally, a lack of socialization and training hinders farmers from using digital channels. The interviewee indicated that he had never had any digital marketing training in agriculture. Farmers who do not participate in formal education and training programs may continue to rely on traditional marketing strategies that feel familiar and accessible.

"There has never been any training or socialization for farmers concerning digital," (informant K1).

The lack of planned training courses reflects a systemic gap in the agricultural sector's digital transformation initiatives. While government and private initiatives frequently emphasize infrastructure development, they rarely tackle the need for hands-on education tailored to farmers' reality. Implementing widely used digital literacy programs, particularly in rural areas, is essential to bridging this knowledge divide and ensuring that farmers are capable of successfully transitioning.

Usage

Traditional selling strategies remain popular because of their perceived simplicity and dependability. The responder now sells agricultural items through middlemen, which allows for easier access and faster transactions.

"I sell my crops traditionally through middlemen since it is more accessible, transactions are easier, and it is what I am used to," (Informant K1).

Many farmers, including those interviewed, said they trust digital transactions in theory since they are traceable and transparent. However, their reluctance to adopt new methods is due to the complexity of existing platforms and a lack of hands-on training.

"Farmers trust digital transactions because they are trackable within a system. However, they don't fully comprehend the procedure, so they don't try," (Informant K3).

Concerns about product authenticity, quality control, and price transparency deter consumers from acquiring agricultural goods through digital channels. Many people are concerned that they will obtain subpar products or become victims of dishonest sellers.

"If there were proper certification and regulations, I would have been more willing for purchasing agricultural products online," (Informant K4).

The reliance on middlemen is not only a tradition, but also a result of systemic bottlenecks in rural market access. Farmers frequently lack direct access to consumers or processing businesses, forcing them to rely on middlemen who control pricing and distribution. This dependence reinforces the cycle in which farmers continue to use traditional tactics despite acknowledging the prospective advantages of digital marketing. Without structural improvements that allow for direct-to-consumer transactions, digital marketing adoption will be limited.

Despite understanding the benefits of digital marketing, many farmers continue to rely on middlemen due to established patterns and practical constraints. This implies that digital marketing adoption must address not only technological constraints, but also logistical support, in order to compete with the convenience provided by traditional intermediaries.

"I understand that selling online could increase my income, but middlemen make things easier for me. They come immediately to my farm and manage the distribution," (Informant K2).

Despite the farmer's recognition of the advantages of digital transactions, such as traceability and transparency, a lack of advice and financial resources hinders him from completing the shift.

"Actually, I trust digital transactions since everything can be tracked in one system, which should make things easier for farmers. However, as I already explained, there are obstacles that keep me from trying it" (informant K1).

Trust in digital transactions is insufficient if farmers lack the resources to participate in them as well. The cost of using digital platforms, from purchasing the gear to learning how to utilize it efficiently, is a substantial obstacle. Furthermore, digital marketing platforms are frequently built for tech-savvy consumers, which presents usability issues for farmers inexperienced with complex online systems. For widespread acceptance, platforms must be developed with accessibility in mind, accommodating users with varying degrees of digital literacy.

Roadly, the findings from the interviews, analyzed using Digital Divide Theory, are summarized in Table 2 below:

Table 2. Analysis the Digital Marketing Gap in Agriculture

Digital Divide Level	Current Condition of Ngawi's Farmers	Issues Faced by Ngawi's Farmers	Ngawi's Farmers Expectations	Studies from Other Countries
Motivation	Farmers acknowledge digital marketing benefits but rely on traditional methods due to financial constraints and lack of guidance.	Lack of structured support system, fear of financial risk, dependency on middlemen.	Financial aid, cooperative-based digital platforms, structured support system to facilitate transition.	Digital marketing initiatives in developed countries provide structured training and subsidies for farmers (APEC Finance Ministers' Process, 2017)
Physical and Material Access	Farmers own smartphones and use the internet for agricultural information but have never utilized digital marketing platforms.	Physical access does not translate to effective use; farmers lack training on digital platforms.	Training programs to bridge the gap between access and effective utilization.	Many countries invest in rural digital infrastructure to increase adoption (Ranjan, 2022)

Digital Divide Level	Current Condition of Ngawi's Farmers	Issues Faced by Ngawi's Farmers	Ngawi's Farmers Expectations	Studies from Other Countries
Digital Literacy	Limited digital literacy; farmers find digital platforms complex and have never received digital marketing training.	Psychological barriers due to platform complexity; absence of targeted training programs.	User-friendly digital platforms, socialization programs, integration of digital literacy in farmer cooperatives.	Digital literacy programs for farmers are widely implemented in other nations (Fharaz et al., 2022; University of California Davis, n.d.)
Usage	Farmers continue selling through middlemen due to ease of transactions despite recognizing digital marketing's advantages.	Dependence on traditional supply chains, limited access to direct-to-consumer markets, usability issues with digital platforms.	Locally tailored e-commerce platforms, mentorship programs, community-led digital marketing	E-commerce in agriculture is highly promoted through government and private sector collaborations (Luo Xubei, 2019)

Source: Data Processed by Author (2025)

The findings in Table 2 demonstrate that budget constraints, a lack of training, and digital literacy gaps are significant impediments to farmers' use of digital marketing. While the farmer questioned stated a desire to use digital platforms, a lack of formal education, market exposure, and financial support prevents a smooth transfer. Concerns about market dangers and the trustworthiness of digital transactions contribute to the desire for traditional selling methods.

In comparison to global case studies, numerous industrialized countries have successfully integrated farmers into digital marketplaces through targeted laws, financial help, and structured training programmes. In many cases, these countries also establish mentorship programs and cooperative-based digital platforms, enabling farmers to gradually transition to digital trade without immediate financial strain. These measures not only provide cash support, but they also help to remove psychological hurdles connected to unfamiliarity with internet platforms.

However, transitioning to digital marketing involves more than simply financial assistance, it also necessitates a fundamental adjustment in mentality. Farmers who have depended on middlemen for decades may be unwilling to connect directly with consumers due to concerns about fluctuations in markets and unfamiliarity with internet transactions. Without planned supports that address both financial and psychological hurdles, digital marketing adoption will be difficult. However, regardless of financial aid and structural improvements, farmers must first have enough access to digital resources and infrastructure in order to effectively participate in digital marketing (Fabregas et al., 2019).

The lack of ability to effectively utilize digital channels for marketing reflects a larger issue of technological adoption in rural areas. Many farmers rely on old supply channels not because digital alternatives are unavailable, but because they are unsure how to navigate sophisticated internet systems. To address this issue, user-friendly digital interfaces and customized training programs are needed to meet the demands of farmers with various degrees of digital literacy.

Integrating digital literacy into existing extension agriculture initiatives may provide a more systematic approach to training. Instead of relying solely on external workshops, incorporating digital literacy instruction into farmer cooperatives would enable ongoing learning and adaptation. Partnerships between agricultural organizations and technology companies could also help to build specialized digital solutions that address farmers' specific demands. Without such targeted initiatives, digital illiteracy would continue to hinder agricultural transformation.

Bridging the gap between trust and adoption requires locally tailored e-commerce solutions that cater specifically to farmers' needs. Instead of forcing farmers to adapt to generic digital platforms, developing agriculture-specific marketplaces with user-friendly interfaces can encourage greater participation. Additionally, community-led digital marketing initiatives, where experienced users mentor new farmers, can reduce hesitation and build trust in digital transactions.

A well-designed communication plan is essential, not only to enhance knowledge but also to drive behavioral change within the target community (Putri & Oktaviani, 2022). Without targeted interventions, the divide between traditional and digital marketing in agriculture will persist, leaving small-scale farmers at a disadvantage in an increasingly digitalized economy

In support of the need of structured intervention, Herari et al. (2024) discovered that translating information into behavior modification necessitates a thorough strategic communication strategy lasting at least 18 months. This approach must include various layers of the socio-ecological system, beginning with individual knowledge development, peer activities, and government restrictions. The author suggests that agricultural digitalization should not be a one-sided campaign aimed solely at farmers, but rather a collaborative effort engaging all society levels. This viewpoint emphasizes the importance of taking a comprehensive approach to incorporating digital marketing into rural farming areas.

This study has significant shortcomings, which should be addressed in future research. First, the study was done on a small scale, with a focus on farmers in Ngawi, which may not accurately reflect digital marketing adoption issues in other locations. A broader study that includes many agricultural sectors and geographical areas may provide more thorough insights.

Second, the research is primarily based on qualitative interviews, which, while useful for understanding attitudes, do not yield statistical generalizations. Future research should use mixed-method techniques, incorporating qualitative and quantitative data to assess digital marketing adoption rates among farmers.

Finally, while this study revealed important hurdles to digital marketing adoption, future research should look into intervention techniques and their effectiveness. Pilot initiatives that combine digital training, financial aid, and cooperative-led digital marketplaces may provide useful models for implementation.

CONCLUSION

The digital marketing gap in agriculture remains a significant challenge, particularly in rural areas where traditional farming methods dominate. Despite the potential benefits of digital marketing, such as expanding market reach and increasing profitability, many farmers in Ngale Village, Ngawi District, Indonesia, continue to rely on conventional sales channels. Key barriers

include limited digital literacy, lack of infrastructure, financial constraints, and dependency on intermediaries. Addressing this issue is crucial for enhancing agricultural productivity and ensuring that farmers can compete in an increasingly digitalized economy.

This study acknowledges several limitations. The research was conducted on a small scale, focusing on a specific geographical location (Ngawi District), which may not fully represent the broader challenges in Indonesia's agricultural sector. Future research should expand to multiple regions and employ mixed-method approaches to provide quantitative insights into adoption rates. Additionally, pilot programs integrating digital literacy training, financial assistance, and mentorship initiatives should be explored to assess their impact on farmers' willingness to transition to digital platforms. Addressing these limitations can contribute to more effective policies and strategies for advancing digital inclusion in agriculture.

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REFERENCES

Akinrinde, O., Marwa, N., & Mahlaule, M. (2024). Constraints, Challenges, and Opportunities For Digital Business in Rural and Township Economy. *Indonesian Journal of Business and Entrepreneurship*. https://doi.org/10.17358/ijbe.10.3.685

APEC Finance Ministers' Process. (2017). *The Role of Digital Payments in Sustainable Agriculture and Food Security*.

Ayuningrum, W. M., & Herari, N. (2024). Comparative Analysis of Government Communication Strategies in Environmental Law Enforcement: A Case Study of Indonesia (DKI Jakarta) and Singapore. *Journal of Communication & Public Relations*, *3*(2), 83–101. https://doi.org/10.37535/105003220245

Baraka, K. (2024). Digital Divide and Social Inequality. *International Journal of Humanity and Social Sciences*, *3*(3), 30–45. https://doi.org/10.47941/ijhss.2083

Bayumi, M. R., Brutu, D., Agustina, R., & Jaya, R. A. (2024). Transforming Economies: Navigatinng Global Challenges in The Digital Era. *Journal of Economics and Development*, *1*(2), 28–45. https://doi.org/10.70656/jend.v1i2.172

Buriro, A. G., Awan, J. H., & Lanjwani, A. R. (2017). Interview: A Research Instrument for Social Science Researchers. *International Journal of Social Sciences*, *1*(4), 246–259. https://www.ijsshe.com/index.php/ijsshe/article/view/56

Chourad, R., Beeraladinni, D., K, V. N., Jamdar, R., and, A. J., & Deshmanya, J. B. (2024). Economic Impacts of Digital Transformation in Agricultural Extension Services. *International Journal of*

Agriculture Extension and Social Development, *7*(12), 197–201. https://doi.org/10.33545/26180723.2024.v7.i12c.1403

Dąbrowska, J., Almpanopoulou, A., Brem, A., Chesbrough, H., Cucino, V., Di Minin, A., Giones, F., Hakala, H., Marullo, C., Mention, A., Mortara, L., Nørskov, S., Nylund, P. A., Oddo, C. M., Radziwon, A., & Ritala, P. (2022). Digital transformation, for better or worse: a critical multi-level research agenda. *R&D Management*, *52*(5), 930–954. https://doi.org/10.1111/radm.12531

Deichmann, U., Goyal, A., & Mishra, D. (2016). Will digital technologies transform agriculture in developing countries? *Agricultural Economics*, *47*(S1), 21–33. https://doi.org/10.1111/agec.12300

European Commission. (2023, April 5). *The future of farming is here*. https://digital-strategy.ec.europa.eu/en/policies/future-farming

FAO. (2023). *The State of Food and Agriculture 2023*. FAO. https://doi.org/10.4060/cc7724en

FBN. (n.d.). *Insights*. Retrieved March 2, 2025, from https://www.fbn.com/insights

Fharaz, V. H., Kusnadi, N., & Rachmina, D. (2022). Pengaruh Literasi Digital Terhadap Literasi E-Marketing Pada Petani. *Jurnal Agribisnis Indonesia*, *10*(1), 169–179. https://doi.org/10.29244/jai.2022.10.1.169-179

Hackfort, S. (2021). Patterns of Inequalities in Digital Agriculture: A Systematic Literature Review. *Sustainability*, *13*(22), 12345. https://doi.org/10.3390/su132212345

Hillman, W. (2022). Interviews in Tourism Research. In *Encyclopedia of Tourism Management and Marketing* (pp. 782–785). Edward Elgar Publishing. https://doi.org/10.4337/9781800377486.interviews.in.tourism

Hussein, H. (2022). Interview Method. In *Principles of Social Research Methodology* (pp. 207–219). Springer Nature Singapore. https://doi.org/10.1007/978-981-19-5441-2_14

Judijanto, L., Rochman, A., & Mahdalena, M. (2024). The Role of Digital Marketing for Marketing Agricultural Products based on Agribusiness. *International Journal of Society Reviews*, *2*(8), 2276–2289. https://injoser.joln.org/index.php/123/article/view/250

Kem, D. (2024). Digital Divide: Examining Socioeconomic Inequalities in Internet Access and Usage. *International Journal For Multidisciplinary Research*, *6*(6). https://doi.org/10.36948/ijfmr.2024.v06i06.30386

Kementerian Koordinator Bidang Perekonomian. (2024, February 20). *Pemerintah Wujudkan Pertanian Berkelanjutan dan Ketahanan Pangan Melalui Peluncuran FAST Programme*. https://www.ekon.go.id/publikasi/detail/6203/pemerintah-wujudkan-pertanian-berkelanjutan-dan-ketahanan-pangan-melalui-peluncuran-fast-programme

Kementerian Pertanian. (2023, December 27). *Digitalisasi Pertanian, Solusi Petani Muda Indonesia*. https://upland.psp.pertanian.go.id/artikel/1704248896/digitalisasi-pertanian-solusi-petani-muda-indonesia

Kinanti, D. I., & Afriani, A. L. (2021). The Influence of E-WOM and Celebrity Endorser on Instagram on Ortuseight Shoes Purchase Decisions. *JCommsci - Journal Of Media and Communication Science*, *4*(3), 149–155. https://doi.org/10.29303/jcommsci.v4i3.146

Kopp, T., & Sexton, R. J. (2021). Farmers, Traders, and Processors: Buyer Market Power and Double Marginalization in Indonesia. *American Journal of Agricultural Economics*, *103*(2), 543–568. https://doi.org/10.1111/ajae.12149

Kuteesa, K. N., Akpuokwe, C. U., & Udeh, C. A. (2024). THEORETICAL PERSPECTIVES ON DIGITAL DIVIDE AND ICT ACCESS: COMPARATIVE STUDY OF RURAL COMMUNITIES IN AFRICA AND THE UNITED STATES. *Computer Science & IT Research Journal*, *5*(4), 839–849. https://doi.org/10.51594/csitrj.v5i4.1045

Kyrychenko, O., & Kyrychenko, M. (2025). The Impact of Digitalisation on The Efficiency of Business Process in The Modern Economy. *Економіка Розвитку Систем*, *6*(2), 117–122. https://doi.org/10.32782/2707-8019/2024-2-16

Lim, W. M. (2024). What Is Qualitative Research? An Overview and Guidelines. *Australasian Marketing Journal*. https://doi.org/10.1177/14413582241264619

Luo Xubei. (2019, March 19). *E-commerce for poverty alleviation in rural China: from grassroots development to public-private partnerships*. World Bank Blogs. https://blogs.worldbank.org/en/eastasiapacific/e-commerce-poverty-alleviation-rural-china-grassroots-development-public-private-partnerships

Maceviciute, E., & D. Wilson, T. (2018). Digital Means for Reducing Digital Inequality: Literature Review. *Informing Science: The International Journal of an Emerging Transdiscipline*, *21*, 269–287. https://doi.org/10.28945/4117

McCown, R. L. (2002). Changing systems for supporting farmers' decisions: problems, paradigms, and prospects. *Agricultural Systems*, *74*(1), 179–220. https://doi.org/10.1016/S0308-521X(02)00026-4

McFadden, J., Njuki, E., & Griffin, T. (2023). *Precision Agriculture in the Digital Era: Recent Adoption on U.S. Farms*.

Mewangi, M., Ramadhan, F., Bimantara, J. G., Ato, S., & Susilo, H. (2024, June 12). *Ngawi, a National Rice Industry Magnet that Attracts Big Players*. Kompas. https://www.kompas.id/baca/english/2024/06/03/en-ngawi-magnet-industri-beras-nasional

Mhlanga, D., & Ndhlovu, E. (2023). Digital Technology Adoption in the Agriculture Sector: Challenges and Complexities in Africa. *Human Behavior and Emerging Technologies*, *2023*, 1–10. https://doi.org/10.1155/2023/6951879

Pratiwi, G. S. A., & Witono, A. (2024). Lark: As a Medium of Interpersonal Communication for TNS Employees to Manage Work Stress Amidst the Covid-19 Pandemic. *Journal of Communication & Public Relations*, *3*(1), 41–62. https://doi.org/10.37535/105003120244

Pusat Data dan Sistem Informasi Pertanian Kementerian Pertanian. (2023). *Analisis PDB Sektor Pertanian Tahun 2023*.

Ranjan, J. (2022, March 29). *Here's how India can unlock the power of agricultural technology through private public partnerships*. The World Economic Forum. https://www.weforum.org/stories/2022/03/unlock-the-power-of-agricultural-technology-through-private-public-partnerships

Sakkarina. (2025, March 3). *Mengenal Lebih Dekat Kabupaten Ngawi, Tuan Rumah #DemiIndonesia Mandiri Pangan* . Detik Jatim. https://www.detik.com/jatim/berita/d-7803557/mengenal-lebih-dekat-kabupaten-ngawi-tuan-rumah-demiindonesia-mandiri-pangan#:~:text=Lumbung%20Padi%20Nasional,(GKG)%20sebanyak%20771.251%20ton.

Shamshiri, R. R., Sturm, B., Weltzien, C., Fulton, J., Khosla, R., Schirrmann, M., Raut, S., Basavegowda, D. H., Yamin, M., & Hameed, I. A. (2024). Digitalization of Agriculture for Sustainable Crop Production: A Use-Case Review. *Frontiers in Environmental Science*, *12*. https://doi.org/10.3389/fenvs.2024.1375193

Snyder, H. (2024). Designing the Literature Review for A Strong Contribution. *Journal of Decision Systems*, *33*(4), 551–558. https://doi.org/10.1080/12460125.2023.2197704

Taiminen, H. M., & Karjaluoto, H. (2015). The usage of digital marketing channels in SMEs. *Journal of Small Business and Enterprise Development*, *22*(4), 633–651. https://doi.org/10.1108/JSBED-05-2013-0073

University of California Davis. (n.d.). *Digital Literacy, Output Market Access, and Demand for Rural e-commerce in Nigeria*. Retrieved March 15, 2025, from Digital Literacy, Output Market Access, and Demand for Rural e-commerce in Nigeria

Wanda, T., Mado, T. W., & Mado, Y. J. (2024). Transformasi Agribisnis melalui Teknologi: Peluang dan Tantangan untuk Petani Indonesia. *HOAQ (High Education of Organization Archive Quality) : Jurnal Teknologi Informasi*, *15*(2), 146–150. https://doi.org/10.52972/hoaq.vol15no2.p146-150