

AGRICULTURAL INNOVATION AND ITS IMPACT ON FARMERS' ECONOMIC WELFARE: A CASE STUDY IN AGRO DIGITAL TASIKMALAYA

Ita Minarti^{1a}, Rina Nurul Azmi^{2b}, Ade Sri Rahmatilah^{3c}, Rendi Septiansyah^{4d}, Firza Ikhsan Mediansyah^{7e}, Yani Sri Astuti^{6f*}

^{1,2,3,4,5,6}Program Studi Pendidikan Geografi, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Siliwangi

^a222170124@student.unsil.ac.id

^b222170092@student.unsil.ac.id

^c222170005@student.unsil.ac.id

^d222170033@student.unsil.ac.id

^e2221700127@student.unsil.ac.id

^fyanisriastuti@unsil.ac.id⁶

(*) Corresponding Author

yanisriastuti@unsil.ac.id

ARTICLE HISTORY

Received : 21-08-2024

Revised : 20-09-2024

Accepted: 30-10-2024

KEYWORDS

*Agricultural Innovation;
Agricultural Digitalization;
Farmer Welfare*

ABSTRACT

This research explores the impact of agricultural innovation on the economic welfare of farmers in Agro Digital Tasikmalaya. The main challenges for the agricultural sector in Indonesia include low productivity and dependence on traditional methods. Innovation through modern technology and digitalization is a solution to increase productivity and market access. Agro Digital Tasikmalaya integrates agriculture, tourism and digital marketing, enabling farmers to sell products directly to consumers via social media. The results show increased productivity, income and market access for farmers. This research uses qualitative methods with primary and secondary data, as well as observations and interviews. Agro Digital Tasikmalaya plays an important role in creating an efficient and sustainable agricultural ecosystem, as well as providing training to farmers. Despite this, challenges such as access to subsidized fertilizer and lack of human resources, especially the younger generation, still exist. Solutions require a comprehensive approach from the government, private sector and educational institutions to improve fertilizer distribution and attract the younger generation to the digital agricultural sector.

This is an open access article under the CC-BY-SA license.



INTRODUCTION

The agricultural sector plays an important role in Indonesia's economy, contributing significantly to gross domestic product (GDP) and providing employment for millions of people. As an agrarian country, the majority of Indonesia's population depends on the agricultural sector for their livelihood. However, challenges in the agricultural sector, such as low productivity, reliance on

traditional methods, and lack of access to modern technology, often hinder the improvement of farmers' welfare. Therefore, innovation in agriculture is crucial to accelerate the transformation of the sector and improve farmers' welfare.

Overcoming these challenges requires innovation in agriculture. Innovation is not just something new, but broader than that, namely something that is considered new or can encourage renewal in society or in certain localities. (Mardikanto, 2002).

Agricultural innovation covers various aspects, such as the use of modern technology, the development of superior seeds, smart irrigation systems, the use of digitalization in agricultural management, and the development of sustainable agricultural methods. In Tasikmalaya, more precisely at Agro Digital Tasikmalaya, the application of innovation in agriculture has shown a significant impact on the welfare of farmers. With the innovations applied at Agro Digital Tasikmalaya, the farmers who work there can increase land productivity and reduce the risk of loss for the company. In addition, innovation also helps farmers access market information, better distribution, and opportunities to develop value-added products.

In the context of globalization and the industrial revolution 4.0, the agricultural sector is not only required to be able to meet domestic food needs, but also adapt to changes in an increasingly digitally connected market. This is especially important in an agrarian country like Indonesia, where agriculture plays a vital role in economic and social development. One of the fast-growing innovations in this area is the digitalization of farming and marketing systems. This innovation is becoming increasingly relevant given the challenges faced by farmers, such as fluctuating market prices, long intermediaries, and limited access to information and technology that can improve productivity.

Digital innovation, particularly through social media, has opened up new opportunities for farmers to market their products directly to consumers, cutting the distribution chain and giving them greater control over product pricing and marketing. By using platforms such as Instagram, Facebook, and WhatsApp, farmers can reach a wider market, both locally and internationally, and build their brand and product reputation. This not only increases their income, but also allows them to innovate the way they interact with consumers.

The case of Agro Digital Tasikmalaya is a clear example of how digitalization can have a positive impact on the welfare of farmers. By combining the concepts of agriculture and tourism with digital marketing, Agro Digital Tasikmalaya has succeeded in creating a more efficient and productive agricultural ecosystem. Farmers not only benefit from increased land productivity, but also from better market access and higher income stability. This model shows that agricultural innovation is not just about technology at the production level, but also covers the entire agricultural value chain, from production to marketing.

Agro Digital Tasikmalaya is a combination of concepts between tourism and digital agriculture, with the aim of increasing agricultural yields, namely with the concept of agribusiness tourism attracting people to visit and enjoy melon fruit plantations supported by digital marketing through social media.

Agricultural innovation can take many forms, from the adoption of new technologies, sustainable agricultural practices, to the development of more effective marketing systems. One of the latest innovations that is gaining popularity is the utilization of social media as a marketing platform for agricultural products. In this digital era, social media provides opportunities for farmers to reach consumers directly, reduce dependence on middlemen, and increase transparency in the marketing process (manunggaljaya, 2023).

The use of social media in agricultural marketing not only makes it easier to sell agricultural products, but also allows for brand building and product identity. By utilizing platforms such as Instagram, Facebook, and WhatsApp, Agro Digital Tasikmalaya can promote their agricultural products to a wider audience, educate consumers about the benefits of the products, and create closer relationships with customers. This can contribute to increased revenue and can improve the economic welfare of the working farmers.

Seeing the importance of marketing innovations through social media in the context of agriculture, this journal aims to examine agricultural innovations carried out by Agro Digital Tasikmalaya in improving farmers' welfare. This research is expected to provide deep insights into how innovations in marketing can increase farmers' income, reduce market risks, and ultimately contribute to better economic welfare.

Thus, this research will not only provide an overview of the current situation in the field, but also offer practical recommendations for stakeholders, including the government, non-governmental organizations, and farmer organizations, to maximize the potential of innovations in marketing agricultural products. The hope is that through the utilization of social media, farmers can be more independent, prosperous, and able to compete in the global market.

METHODS

The research method is one way to get data that will be examined in a study. According to Sugiyono (2015: 2) "The research method is basically a scientific way to get data with certain data and objectives". This research is case study research, namely research conducted directly at the institution concerned to obtain data related to writing and in this study using qualitative (Miftahur Rahman. 2021:141).

This study uses two types of data, namely primary data or the main research data and secondary data or research support data. Primary data is obtained through direct observation to the research location and interviews with respondents. Secondary data is research support data, which is obtained through a review of several literature sources related to the research objectives (Kustiawati Ningsih, 2021: 130).

Data collection techniques that can be used in this study are observation, interviews and literature studies used to obtain data. Observations made by researchers in this study are by going directly to the research location. Then the interview was conducted to the manager of Agro Digital Tasikmalaya. Furthermore, in literature studies, researchers collect data and theoretical foundations by studying books, scientific works, previous research results, related journals, related articles and

sources related to research in accordance with this research problem (Mahmudah, 2020: 71).

RESULTS AND DISCUSSION

Profile Agro Digital Tasikmalaya

Agro Digital Tasikmalaya is located at Jl. Batik Parada No.151, Mulyasari, Tamansari District,

Tasikmalaya City, West Java. With coordinates 7°22'38 "S 108°13'59 "E.



The background of the establishment of Agro Digital was in 2020 during the Covid-19 pandemic, many people lost their jobs, which prompted Mr. Hj.Ohan as the owner to create a job opportunity for the community. Agro Digital was established based on opportunities in the form of vacant land and investors who funded this Tasikmalaya Agro Digital. The land used is not private land but a rental system, the AgroDigital land is about 3 hectares and not only in Tamansari but the land is in Cijulang and Cineam. In AgroDigital there is a cultivation of chili plants and melons. The sale of melon cultivation results is sold to the fruit center in Bandung and every week must send a fantastic amount.

There are about 30 permanent workers at Agro Digital and most of them come from Tasikmalaya Regency. However, during harvest time many local people come to work as farm laborers. Agro Digital Tasikmalaya is a pioneer for the community to create a farm that can continue to grow in the middle of the city, often Agro Digital is also an educational tour for kindergarten children and a research object for students in Tasikmalaya.





Concept of Agricultural Innovation at Agro Digital Tasikmalaya

The agricultural innovations at Agro Digital Tasikmalaya, particularly in Mulyasari Village, reflect a significant transformation in the way farmers manage their land. Utilizing digital technology, this Agro Digital has succeeded in improving the efficiency, productivity and welfare of the farming community. This innovation not only changes the traditional farming paradigm but also realizes a more sustainable and empowered agriculture.

The traditional farming innovation at Agro Digital Tasikmalaya is an important step in integrating modern technology with existing farming practices. By utilizing local resources and digital technology, the initiative aims to improve the productivity, efficiency and poverty of the agricultural sector in the area, particularly in the context of melon farming, which is one of the mainstays.

Agro Digital Tasikmalaya is a concept that combines agriculture, tourism and digital technology. Known as a melon farming development center in Mulyasari Village, Tamansari District, this initiative not only focuses on increasing agricultural yields but also attracts the public to visit and learn about farming firsthand. This concept is an attraction in itself, where visitors can pick melons directly from the tree at a certain rate. In addition to melon farming at Agro Digital Tasikmalaya, there is also a chili farm that is quite abundant.

The innovation carried out at Agro Digital Tasikmalaya City uses a traditional system and has not fully used modern technology. The selection of the right seeds and the use of appropriate fertilizers are two important factors in melon farming innovation. One example is the selection of seeds to be used for both melons and chili peppers, which according to the manager, the selection of seeds can be obtained from the company, of course, with good quality and high competitiveness. Therefore, the selection of good melon seeds is very important, because when it will be marketed later it can be the best and also has an affordable price. Fertilizers play an important role in supporting the growth of melon plants, fertilization must be done properly according to the growth phase of the plant.

Another innovation is that when the melon harvest is finished, they plant chilies and other vegetables, this is an innovation so that there is no idle land and can be utilized for planting again

by farmers. Agro Digital Tasikmalaya still uses a manual system, for example in watering, and monitoring still uses a manual system by farmers or workers.

Agro Digital Tasikmalaya also emphasizes the importance of sustainable agricultural practices. Farmers are encouraged to use organic methods in pest and disease control and apply environmentally friendly fertilization techniques. This not only maintains soil health but also improves the quality of the products produced. Farmer empowerment through training and education is key in implementing sustainable agricultural innovations. In Mulyasari Village, for example, the village government provides counseling on traditional as well as modern farming techniques and the use of organic fertilizers to farmers. This helps them to adopt more effective and sustainable methods. With better knowledge, farmers can increase their yields while preserving the environment.

Impact of Agricultural Innovations.

Farming in Agro Digital Tasikmalaya has brought great changes to the agricultural sector in this region, providing a very good impact on agriculture, both in terms of increased productivity, market access, and increased farmer income. This change comes from the use of digital technology in collaboration with traditional farming, which has opened up new opportunities for farmers in Tasikmalaya.

The impact of the existence of Agro Digital Tasikmalaya is an increase in agricultural productivity. Increased agricultural productivity is an effort to increase agricultural yields in a sustainable and efficient way. The application of digital technology combined with traditional farming methods has a very good impact on agriculture. The presence of digital technology at Agro Digital Tasikmalaya allows farmers to utilize data to make more informed decisions in land management. For example, farmers can use sensors to monitor soil conditions, moisture, and crop water needs, so that they can manage irrigation more efficiently and only apply water when needed. Farmers at Agro Digital Tasikmalaya also use a sustainable farming system, at first they grow various types of melons. After the melons have been harvested, the farmers change to planting chilies due to weather factors, this way farmers can increase their agricultural productivity.

Agro Digital Tasikmalaya also has a positive impact in terms of market access. Market access is the ability of farmers to sell their agricultural products to various markets in an efficient and profitable manner. One of the main problems that farmers often face is the difficulty of selling their crops at a fair price because if they sell their crops to collectors or middlemen, they will be bought at a price that is much lower than the market. However, Agro Digital Tasikmalaya has its own market where it has collaborated with related parties so that the selling price of farm produce is very good and also does not differ much from the existing market price. Agro Digital Tasikmalaya can also receive or buy farm produce from other people and buy at the appropriate price in the market. Agro Digital Tasikmalaya is used to supply its agricultural products to various markets and to culinary entrepreneurs in Tasikmalaya.

In this advanced era, Agro Digital Tasikmalaya has utilized social media to open access to a wider market. This social media can help farmers to market their products directly through online

platforms. This not only opens up access to local markets, but can also help reach national, even international markets. With this, farmers in Agro Digital Tasikmalaya can sell their produce at a more competitive or fair price, and avoid selling to collectors or middlemen who are often detrimental because they like to buy at very low prices from the market.

Agro Digital Tasikmalaya has also seen an increase in farmers' income. With increased productivity and greater access to markets, Agro Digital Tasikmalaya farmers now have the opportunity to significantly increase their income. The use of technology such as water pumps for watering, as well as using good quality fertilizers can increase agricultural yields at harvest time and thus increase farmers' income. Direct access to markets through social media also greatly helps farmers to obtain higher prices for their products. Since Agro Digital does not sell to middlemen, Agro Digital farmers can sell their crops directly to consumers or large buyers, who can earn higher profits. In fact, with access to a wider market, farmers also have the opportunity to export their products to a wider market. This opportunity clearly has a big impact on increasing the income of farmers in Agro Digital Tasikmalaya.

The presence of Agro Digital Tasikmalaya has had a very positive impact on agriculture in this region. Through increased productivity, wider market access and increased farmer income, and digital media has opened up new opportunities for the agricultural sector that were previously difficult to reach. Although there are still challenges in terms of implementing this technology, with good cooperation between farmers and related parties Agro Digital Tasikmalaya can continue to be a successful example in the application of digital technology to advance the agricultural sector in Indonesia.

Challenges and Obstacles

1. Fertilizer Subsidy

The Indonesian government originally provided five types of subsidized fertilizers, but three of these have been revoked, leaving only two types still available. Despite this, access to these subsidized fertilizers is still difficult, and often misdirected. According to a report by the Supreme Audit Agency (BPK), the distribution of subsidized fertilizers is still not effective and efficient, with many farmers who should be beneficiaries not getting access. (Finance, 2022)

An evaluation of fertilizer subsidy policy in Indonesia found that although the program aims to increase agricultural productivity, its implementation still faces various challenges. Further analyzing the effectiveness of this policy on rice productivity in Indonesia, it shows that although fertilizer subsidies have a positive impact, there is still room for improvement in distribution efficiency (Maulia et al., 2023).

The difficulty of obtaining subsidized fertilizers is one of the challenges faced by the managers at Agro Digital Tasikmalaya, to overcome this problem the Agro Digital has taken the initiative to buy non-subsidized fertilizers at a higher price. As a consequence, they sell agricultural products at relatively high prices to cover production costs. This strategy aims to ensure the availability of quality fertilizer for farmers, albeit at a higher price.

The main challenge faced is how to balance the needs of farmers for affordable fertilizers with the sustainability of agricultural businesses, while ensuring that government subsidies are well-targeted and effective in supporting the national agricultural sector. In addition, this issue also impacts overall agricultural productivity. Limited access to subsidized fertilizers and high prices of non-subsidized fertilizers can reduce farmers' yields and income. This could potentially threaten national food security and the welfare of the farming community.

To overcome this challenge, a comprehensive approach involving various stakeholders is needed. The government needs to improve the effectiveness of the subsidized fertilizer distribution system, for example by leveraging digital technology to monitor and manage fertilizer distribution. The private sector, including companies like Agro Digital, can play a role in developing innovative solutions to improve fertilizer use efficiency and agricultural productivity. (Gobel et al., 2023)

2. Lack of Human Resources

The second challenge faced in developing Agro Digital in Tasikmalaya is the lack of human resources, especially among the younger generation. The location of the Agro Digital business in the middle of Tasikmalaya City creates difficulties in recruiting workers who are willing and able to manage the farm.

Many young people are reluctant to develop agriculture because they still view farming as a less prestigious and economically unpromising occupation. This is exacerbated by a lack of understanding of the potential of digital technology in modernizing agriculture. Furthermore, urbanization and the attractiveness of the non-agricultural sector where the tendency of the younger generation to migrate to cities and choose jobs in the non-agricultural sector is also an important factor. Lack of exposure and education on modern agriculture, the vocational education and training system in Indonesia has not fully integrated the concept of digital agriculture, resulting in a gap between industry needs and graduate skills (Azis & Suryana, 2023).

According to Mas Bayu as the manager of Agro Digital, there are many investors in Tasikmalaya who entrust the land and money they have but the Agro Digital for now cannot accept the offer because of the lack of human resources. Mas Bayu has high hopes that the younger generation can continue the business in agriculture, because of course the younger generation has the potential to develop agriculture.

To overcome this challenge, some strategies that can be implemented include:

- a) Development of education and training programs that integrate digital technology in the agriculture curriculum
- b) Awareness campaign to change perceptions of modern agriculture among the younger generation
- c) Incentives and internship programs to attract young people to the Agro Digital sector
- d) Collaboration between Agro Digital businesses, educational institutions, and government in developing digital agriculture human resources
- e) Development of incubators and startup hubs specifically for agrotech to foster innovation and entrepreneurship in digital agriculture

CONCLUSIONS

This research focuses on the importance of agricultural innovation in improving economic welfare. Challenges in the agricultural sector in Indonesia, such as low productivity and reliance on traditional methods, are addressed through the adoption of modern technology and digitalization. This provides the benefits of higher incomes and fairer prices by minimizing the role of middlemen.

Agro Digital Tasikmalaya is a clear example of how digitalization can improve farmers' productivity, market access and income. Innovations such as marketing through social media, sustainable farming systems, and a combination of modern technology and traditional practices have had a positive impact on the welfare of farmers in Tasikmalaya.

Agro Digital Tasikmalaya, with its concept of combining agriculture, tourism and digital marketing, has succeeded in creating something new that is more efficient and profitable for farmers. While there are still challenges such as limited access to subsidized fertilizers and a lack of human resources, especially from the younger generation, this innovative approach shows great potential in improving the economic welfare of farmers and advancing the agricultural sector in the era of globalization and digitalization.

However, the solutions needed to overcome these challenges include improving the fertilizer distribution system, increasing education and training related to agricultural technology, and changing the perception of the younger generation towards modern agriculture. With the right strategy, the agricultural sector can be more advanced and competitive in the digital era.

LITERATURE

- Adam, L. 2014. Kinerja Ekonomi Pangan Nasional: Dinamika dan Reformulasi Kebijakan. *Jurnal Ekonomi & Kebijakan Publik*, 5(2), 173-192.
- Azhimah, F., Saragih, C. L., Pandia, W., Purba, B., Sitepu, E. R., & Tambunan, A. (2024). Pelatihan Manajemen Kewirausahaan Petani Di Desa Ajibuhara Kabupaten Karo. *Jurnal Pengabdian Masyarakat Bangsa*, 2(5), 1462-1468.
- Azis, M., & Suryana, E. A. (2023). Komparasi Dan Implementasi Kebijakan Digitalisasi Pertanian: Peluang Dan Tantangan. *RISALAH KEBIJAKAN PERTANIAN DAN LINGKUNGAN Rumusan Kajian Strategis Bidang Pertanian Dan Lingkungan*, 10(3), 179-198. <https://doi.org/10.29244/jkebijakan.v10i3.51083>
- Fega Abdillah dan Sisca Vaulina. (2023). "Akselerasi Hasil Penelitian dan Optimalisasi Tata Ruang Agraria untuk Mewujudkan Pertanian Berkelanjutan". Seminar Nasional dalam Rangka Dies Natalis ke-47 UNS Tahun 2023. Vol 7, No. 1.
- Gobel, Y. A., Djibran, M. M., Djaini, A., & Hamidah, E. (2023). Analisis Kelayakan Ekonomi dan Manfaat Lingkungan Pertanian Organik untuk Keberlanjutan Jangka Panjang. *Jurnal Multidisiplin West Science*, 2(10), 895-907. <https://doi.org/10.58812/jmws.v2i10.700>
- Hidayati, F., Yonariza, Y., Nofialdi, N., & Yuzaria, D. (2019, January). Intensifikasi lahan melalui sistem pertanian terpadu: Sebuah tinjauan. In *Unri Conference Series: Agriculture and Food Security* (Vol. 1, pp. 113-119).

- I Gede Chaitanya Indra Supraptha, Sri Palupi Prabandari,. 2024. STRATEGI INOVASI PERTANIAN SEBAGAI UPAYA MEWUJUDKAN KETAHANAN PANGAN. JURNAL KEWIRAUSAHAAN DAN INOVASI. VOLUME 3 NO 2 2024.
- Ihsan, D. A., Prawiranegara, B. M. P., Asdak, C., & Sugandi, W. K. (2024). Inovasi Ekonomis Pengolahan Bio-Briket Berbahan Limbah Ampas Kopi untuk Meningkatkan Pendapatan Petani di Pedesaan Garut. *Prosiding Semnastek*.
- Keuangan, B. P. (2022). Penyerahan LHP Subsidi Pupuk, Anggota VII BPK: Terdapat Biaya yang Tidak Terkait dengan Produk Subsidi.
- Megasari, L. A. (2019). *Ketergantungan petani terhadap tengkulak sebagai patron dalam kegiatan proses produksi pertanian (studi di Desa Baye Kecamatan Kayen Kidul Kabupaten Kediri)* (Doctoral dissertation, UNIVERSITAS AIRLANGGA).
- Maulia, T., Fathurrahman, R., Claudia, P. C., Sidauruk, T., & Rahmadi, M. T. (2023). Analisis Kelangkaan Pupuk Bersubsidi untuk Petani Padi (Studi Kasus Dusun VIII Desa Pematang Setrak Kecamatan Teluk Mengkudu). *JoullLaGe: Journal of Laguna Geography*, 2(1), 18.
- Putra, D. T., Wahyudi, I., Megavitry, R., & Supriadi, A. (2023). Pemanfaatan E-Commerce dalam Pemasaran Hasil Pertanian: Kelebihan dan Tantangan di Era Digital. *Jurnal Multidisiplin West Science*, 2(08), 684-696.
- Rahayu, S. A. (2024). Inovasi dalam Sektor Pertanian dan Dampaknya terhadap PDB. *Circle Archive*, 1(5), 1-13.
- Sofyan, I. (2019). Strategi Komunikasi Inovasi Dalam Perubahan Sistem Pertanian Jagung Hibrida Madura-3 Di Kabupaten Pamekasan. *Jurnal Komunikasi*, 13(2), 109-120. <https://doi.org/10.21107/ilkom.v13i2.6295>