

Empowering Millennial Farmers To Improve The Competitiveness Of Agricultural Products In Domestic And Global Markets

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INDEXING	ABSTRACT
Keywords: Keyword 1; Empowerment Keyword 2; Farmers Keyword 3; Millennials Keyword 4; Competitiveness Keyword 5; Market	The purpose of this study is to determine the importance of the role of millennial farmers as a new generation that can bring innovation, technology and entrepreneurial spirit to the world of agriculture. This research method uses qualitative descriptive analysis with literary comparison, namely comparing various literature sources such as scientific journals, books, and relevant articles to explore the perspectives and practices of empowering millennial farmers. The results show that the success of empowering millennial farmers is greatly influenced by the active involvement of the younger generation in agricultural innovation. Millennial farmers are identified as an important group that brings innovative roles, digital technology, and entrepreneurial spirit to the world of agriculture, thereby increasing the competitiveness of agricultural products in domestic and international markets.

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INTRODUCTION

The Indonesian economy currently still faces many challenges such as low productivity, limited technology and dependence on elderly farmers. However, on the other hand, Indonesia has agricultural potential that is very large, both to meet domestic needs and for export. Therefore, a generation is needed that is capable of driving the progress of this sector, namely the young generation who are often called millennial farmers. This generation can be the driving force behind agricultural transformation, improve their own welfare, and strengthen Indonesia's position as a strong agricultural country in the era of globalization.

The characteristics that can differentiate millennial farmers from previous farmers can be seen in terms of openness to technology, enthusiasm for entrepreneurship, and the tendency to adapt more easily to developments in the era. However, the level of participation of millennial farmers in Indonesia is still very low, because the agricultural sector is not yet seen as a field that has promising economic prospects.

According to Arvianti et al. (2019), the lack of interest of the younger generation to enter the agricultural sector and the large number of agricultural graduates who do not work in the agricultural sector are one of the causes of the decline in the number of workers in the agricultural sector. This is inseparable from the stigma regarding agriculture which is considered not to promise decent jobs and wages, even considering

working in this sector as dirty, tiring, and identical to people with less education. With this mindset, many young people prefer to work in modern and prestigious places. Thus, this could worsen regeneration and cause a productive workforce in the agricultural sector, even though the need for food and the demand for agricultural innovation continue to increase. Therefore, serious efforts are needed to change this negative perception, including agricultural modernization, improving farmer welfare, and providing incentives and support that can attract the interest of the younger generation to be willing to work in the agricultural sector. As a solution to this challenge, Harahap et al. (2024) stated that digitalization in the agricultural sector is an innovative approach to overcoming various challenges in increasing the efficiency and productivity of agribusiness. This initiative involves the use of information technology such as the Internet of Things (IoT), data-based applications, and the use of drones to help durian farmers optimize harvest yields, minimize human error, and provide more accurate predictions regarding weather and crop conditions.

Previous research explained how the perception of the younger generation who look down on the profession of farmer, this is a challenge that must be overcome immediately. Meanwhile, this research discusses how to empower millennial farmers to help increase competitiveness, especially in the agricultural sector. For the purpose of previous research focused on how to attract interest and develop millennial farmers, this study discusses how important the participation of this young generation is for the progress of the agricultural sector in Indonesia. Previous research studies used qualitative studies using a qualitative approach with descriptive analysis of available secondary data. This research method uses qualitative descriptive analysis with literary comparison, namely comparing various literature sources such as scientific journals, books, and relevant articles to explore the perspectives and practices of empowering millennial farmers.

This study aims to analyze the empowerment strategies that have been implemented in increasing the productivity and quality of agricultural products by millennial farmers. In addition, this study also identifies the role of technology, training, and institutional support in strengthening the capacity of millennial farmers to be able to compete in domestic and international markets. Furthermore, this study examines the various challenges and opportunities faced by millennial farmers in developing highly competitive agricultural businesses. Based on these findings, this study is expected to formulate policy recommendations or strategies that can encourage the active involvement of the younger generation in the agricultural sector in a sustainable manner.

LITERATURE REVIEW

Definition

Millennial farmers are farmers who are in the age range between 19–39 years. This age range is included in the millennial generation group which has the characteristic of an adaptive soul towards digital technology so that it does not encounter difficulties in identifying and verifying technology. Therefore, millennial farmers are an important subject for improving the quality of agricultural human resources. Millennial farmers manage various types of businesses, ranging from horticultural cultivation, food crops, and livestock, to processing products from the agricultural, livestock, and plantation sectors. In addition, they are also involved in providing agricultural equipment and machinery services and developing agro-edutourism. The success achieved by these millennial farmers is expected to inspire other young generations to participate in developing businesses in the agricultural sector

and play an active role in encouraging the progress of the national agricultural sector.

The important role of millennial farmers is to bridge the gap between young farmers and older farmers. Millennial farmers can bring technological innovation and new ideas to the agricultural sector, while leveraging the expertise and experience of older farmers. Thus, millennial farmers can help renew and increase productivity in agriculture and ensure the transfer of knowledge and skills between generations. This intergenerational collaboration is essential in creating a sustainable agricultural system. Innovations from millennial farmers, such as the use of digital applications, precision farming systems, and e-commerce-based marketing, can complement traditional practices that have proven effective over the years. In addition, the involvement of millennial farmers can also help accelerate adaptation to climate change and other global challenges that require a more modern, flexible and efficient agricultural approach. With the synergy between experience and innovation, the agricultural sector will become more resilient and able to compete in domestic and international markets.

Explanation

According to Petani digital.id (2020), the millennial generation is a demographic group that does not have a definite age limit to define it. Because basically, the characteristics of millennials vary between regions depending on the social, cultural and economic conditions that influence them. However, it can generally be characterized by an increase in the intense use of communication devices, media, and digital technology.

Because agriculture is the backbone of human life, over time there will be more and more changes along with technological advances. Amidst this transformation, the millennial generation of farmers has emerged as agents of change who bring a spirit of innovation to the world of agriculture. The use of technology by millennial farmers not only reflects adaptation to global trends, but also creates a new paradigm in managing resources and meeting increasingly complex market demands (Rozan et al., 2024). The technology used is not limited to modern agricultural tools, but also includes the use of the Internet of Things (IoT), big data, drones, and digital applications for land monitoring, irrigation management, and product marketing. This enables millennial farmers to increase production efficiency, reduce operational costs, and reach wider markets directly. With these capabilities, millennial farmers are not only producers, but also decision makers and innovators in a more modern and sustainable agricultural value chain.

RESEARCH METHOD

This study uses a qualitative descriptive method with a library research approach and literary comparison. This method was chosen to gain a deep understanding of the concepts, strategies, and practices of empowering millennial farmers and their impact on the competitiveness of agricultural products based on relevant scientific sources. Since this research was not conducted in the field, data collection was carried out through books, scientific journals, research articles, policy reports, and trusted online sources. Literary comparison means that researchers will compare various previous research results, look for similarities and differences, then draw conclusions or new findings based on the patterns that emerge.

RESULT AND DISCUSSION

Based on the results of literature studies from various sources, there are a number of approaches that can be used to empower millennial farmers. According to data published by Kompas.com on November 20, 2024, village development based on Law Number 6 of 2014 concerning Villages aims to improve the standard of living and

welfare of village communities. This policy also focuses on ensuring that villages are able to contribute to achieving sustainable development goals in line with the Sustainable Development Goals (SDGs). One of the key elements in this effort is the involvement of millennial farmers who are competitive and capable of implementing agricultural technology and innovation. Through vocational education, millennial farmers are expected to not only act as job seekers, but also be able to create new jobs and strengthen sustainable agriculture. Based on 2020 data, of the total 33 million farmers in Indonesia, around 29 percent are millennial farmers under the age of 40. Although smaller in number, their contribution to agricultural productivity reaches 50 percent. The graph from Mahendra, Rozaki, Wulandari and Azzahra (2024) presents data on the level of youth interest in work in the agricultural sector. This information is important for understanding the challenges of farmer regeneration and determining the right strategy in attracting the interest of the younger generation to the sustainable agricultural sector.

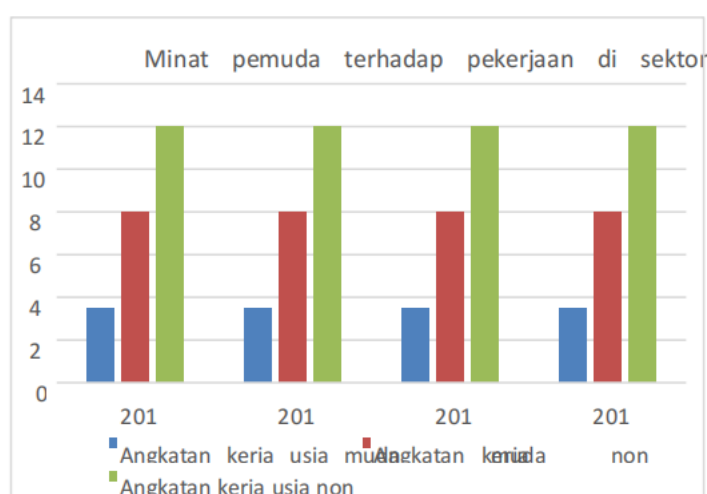


Figure 1. Graph Of Youth Interest In Jobs In The Agricultural Sector

The graph above illustrates the fluctuation of interest of the younger generation in the agricultural sector. Most farmers today are 60 years old and above, so the contribution from the younger generation to the next generation is still limited. However, we cannot conclude that young people are not interested in agriculture, because there is still a certain percentage of Indonesian youth who show concern for this sector. If awareness of the importance of agriculture continues to increase, this interest is expected to increase in the future.

However, seeing the great potential of millennial farmers, various empowerment efforts continue to be carried out by the government and various parties to encourage the active involvement of the younger generation in the agricultural sector. One approach that is currently being widely developed is strengthening farmer capacity through technology-based training, increasing access to capital, and creating a competitive farming business ecosystem. As reported by Kompas.com, a number of regions have successfully implemented young farmer empowerment programs, including training in agricultural digitalization, post-harvest management, and community-based agribusiness development.

Based on the UPLAND Project report on November 23, 2023, in order to have global competitiveness, the government continues to improve agricultural products. The government is trying to increase the competitiveness of the agricultural sector by expanding the scale of business through integration of production areas and integration between upstream and downstream sectors. During the 2020 pandemic, agricultural

exports showed a significant increase, reaching 3 percent of total national exports, with a value of around 0.4 billion US dollars—up 16.2 percent per year and 20.8 percent per month. This increase in exports is expected to encourage growth in farmers' income. To be able to compete in the global market, farmers need to be supported by technology, capital and adequate distribution access. The government also highlighted various strategic programs such as developing seed logistics, increasing land production, and strengthening human resource capacity. In addition, other important aspects include strengthening agricultural economic institutions, increasing access to plantation financing, digitalization, and utilizing e-commerce and export transformation. One concrete initiative is the UPLAND program from the Ministry of Agriculture, which aims to strengthen agricultural institutions to encourage local products to enter the global market. The program also includes export management training for farmer corporations in target areas. The Ministry of Agriculture through the Directorate General of Infrastructure and Facilities emphasized that the main goal is not only to increase production, but also to ensure that farmers get the best selling price so that their income increases. Increasing the global competitiveness of agricultural products can be achieved by building an integrated agricultural system between farmers, land, and types of crops, so that production cost efficiency can be achieved and the selling value of products is more optimal.

In his journal, Wibowo et al. (2025) felt that there was great potential in the agricultural sector, one of the areas, namely Mundu Village, held an empowerment activity for millennial farmers through the production of quality independent seeds, namely avocados. This activity was successfully implemented through a program of socialization of quality seeds, seed sowing training, grafting techniques, good seed care training as well as digital marketing and personal branding workshops. With this activity, the Mundu Village Community can increase the productivity of local potential from avocado plants by empowering millennial farmers through these trainings. To overcome the low interest of millennial farmers in the agricultural sector, a series of solutions are needed to change the mindset of the younger generation. According to Nanawi, Alfira and Anneja (2022), one way that can be done is by involving young farmers who have been successful in the agricultural sector to share their experiences through social media - platforms that are very popular with the younger generation today, such as TikTok and Instagram. This communication approach is expected to be able to break down the negative stigma towards the agricultural sector which is still strong in Indonesia. This needs to be supported by competent speakers and effective delivery, including good mastery of public speaking techniques. By harnessing the power of social media convergence and engaging visuals, this communication can be an effective educational tool for the younger generation. In addition to increasing their knowledge and skills, this approach can also be a first step in building experience in the world of agriculture.

The rapid growth of technology in recent years has formed a new paradigm in various sectors, including agriculture and plantations. The millennial generation, who grew up in the digital era, has a key role in driving technological progress and implementing it effectively in the agricultural sector. The application of technology in agriculture, as exemplified by automatic fertilization and spraying systems, has had significant positive impacts. This system not only improves the efficiency of resource use, but also helps overcome some of the problems faced by farmers, such as time management and optimal fertilizer use. Various studies show that this technology has increased agricultural yields, contributed to food security, and opened up new opportunities for innovation in sustainable agriculture.

The key role of youth does not only stop at the technological aspect, but also involves them in introducing agricultural products to the wider community. Through social media, young people can create understanding and appreciation for local agricultural products. This not only provides an economic boost to farmers, but also forms a closer relationship between producers and consumers, creating a mutually beneficial ecosystem. Taking all this into consideration, it can be concluded that the contribution of youth, especially the millennial generation, in connecting agriculture with technology and social media is very important. Youth bring innovation, efficiency, and awareness of the importance of the agricultural sector in facing the challenges of an ever-evolving era. They are not only the guardians of change, but also pioneers in shaping the future of sustainable agriculture.

The export performance of agricultural commodities showed quite good growth in the plantation sector. The plantation sub-sector has always been a leading one because it is considered capable of contributing a significant amount of foreign exchange to the country, for example coffee, rubber, vegetable oils and fats, sugar, cocoa and cocoa products, tea, and spices. Based on data, around 8% of rubber plant production is used for export (Alinda 2013). According to BPS data, agriculture contributes the second highest after the industrial sector to Indonesia's GDP, namely 13.45%. Figure 2 shows that during the 2010-2019 period, economic growth in the agricultural sector was quite fluctuating, where in 2010 it was 12.25%, while in 2016 it decreased drastically to -9.98% (BPS 2020). In the period 2011-2019, almost all developed and developing countries showed a trend of fluctuations in the value of agricultural exports. In 2018, economic turmoil occurred throughout the world due to China's economic growth weakening due to the trade war with the United States. The impact of the trade war between the two superpowers is being felt in all sectors, including the agricultural sector. Foreign trade activities with partner countries in Asia and Europe were also affected. Global financial market conditions have also contributed to the economic slowdown in a number of developing countries. Exports in the agricultural sector in 2019 experienced a fairly good increase to reach US\$ 784.8 million with the highest contributing commodities coming from plantation crops, namely coffee at US\$ 194.6 million, followed by exports of medicinal plants, aromatics and spices reaching US\$ 135.1 million (BPS 2019).

Exports of agricultural commodities are expected to continue to increase and provide significant foreign exchange for the country. The development of innovation and product diversification as well as improving the quality of export commodities to be competitive in the international market needs to be continuously developed. Based on Table 2, it can be seen that in 2017, coffee has become a leading agricultural sector with an export value reaching US\$ 1.18 billion. Furthermore, medicinal and aromatic plant commodities native to Indonesia are also a unique attraction with a value reaching US\$0.50 billion or an increase of around 25.72% from the previous year. The decline in the value of agricultural commodities in 2018 occurred in almost all commodities except for cocoa commodities which increased by 35.51%. In 2019, agricultural sector exports contributed foreign exchange of up to US\$784.8 million, with the highest contributing commodity being coffee at US\$194.6 million, followed by exports of medicinal plants, aromatics and spices at 135.1 million (BPS 2019b).

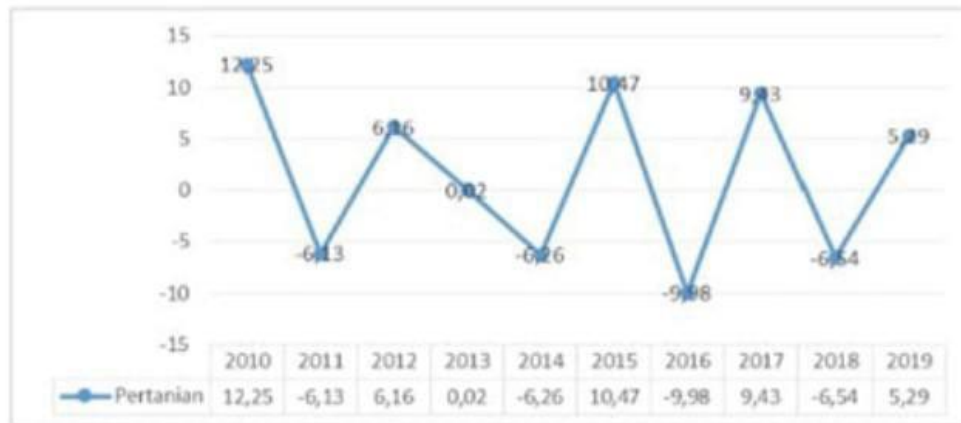


Figure 2. Growth of Indonesian agricultural product exports, 2010-2019
(Sources : BPS, processed)

Indonesia experienced a significant increase in foreign exchange from export activities through 10 leading export commodities, namely textiles and textile products (TPT), electronics, rubber, palm oil and palm oil products, forest products, footwear, automotive, shrimp, cocoa and coffee. Of all the export commodities, the largest contributor to foreign exchange is palm oil, reaching 28% with a total export value of US \$ 81,636,136 in 2010-2014 (Rachmawati & Gunawan, 2020). Indonesia is known to have many potential agricultural export commodities, namely food crop groups such as corn, soybeans, wheat, rice, other cereals, legumes, nuts, and cereal products. The next export potential is horticultural commodities, namely vegetables, fruits, flowers, ornamental plants, and plant seeds. Indonesia must maintain the export conditions of plant-based agricultural commodities and needs to encourage the export of potential animal-based agricultural commodities to maximize profits (Indonesian Embassy in Tokyo 2019). In the future, in order for Indonesia's agricultural export activities to continue to develop, it is necessary to start looking at new market share destinations outside the regions that have been trading partners. Export destination countries that are considered to have good prospects are Africa and South Korea. Trade potential can be carried out through free trade agreements. With this trade agreement, it is hoped that Indonesia can benefit from the implementation of preferential tariffs in the form of reducing product costs and increasing industrial competitiveness (Cali et al., 2019).

Indonesia has conducted bilateral trade with China, Japan, and South Korea. However, unlike several of these countries, Indonesia still shows a gap in technology and product cycles. The technological gap is reflected in the existence of Indonesian export products to China, Japan, and South Korea in the form of raw/primary products. This product was then re-imported by Indonesia in semi-processed and ready-to-use product form (Ghosh, 2014). Currently, Indonesia must compete with Thailand, Malaysia and Vietnam as the top five exporting countries. These three countries have similar agroecosystem typologies to Indonesia, thus producing the same agricultural commodities. The progress in agricultural technology that differentiates Indonesia's export achievements from other countries is in terms of quality, quantity and continuity (3K) (Indonesian Embassy in Tokyo 2019). This is a challenge as well as an opportunity to make agricultural commodities into competitive superior products that are able to compete in the world market.

A dynamic agricultural system is needed by diversifying commodities (Aboah et al., 2021). A farming system that integrates various fruits, vegetables and livestock will

be more profitable. Processing agricultural products is important to increase added value, thereby increasing state foreign exchange and profits for agricultural actors (Trienekens, 2011). To increase exports of Indonesian agricultural products, millennial farmers need special efforts so that their products can be accepted in the international market. The main commodities that make a positive contribution are the plantation sub-sector, namely palm oil, rubber, coffee, cocoa and coconut commodities. The large value of agricultural export commodities in Indonesia focuses on plantation products, while agricultural products such as horticultural commodities and secondary crops still experience obstacles in export. Farmers often encounter obstacles in exporting.

Problems often encountered in the field include: (1) the high cost of transportation using international ships which require refrigerated containers which cost up to IDR 35,000,000,000. Farmers have to pay this high price even though the vegetables to be exported do not reach 1 ton. While exports using airplanes, farmers only need to pay IDR 15,000/kg of vegetables; (2) limited human resource capacity of farmers in terms of education and knowledge regarding handling organic vegetables; (3) the amount of operational funds to process raw materials into finished products ready for sale, for example, depreciation costs for machines, equipment, raw material costs, auxiliary material costs, employee salary costs, seeds, fertilizers, medicines and tools used during the planting process to harvesting such as cultivators; (4) the inability of farmers to achieve production targets set by the importing country, (5) the return of nutrients to vegetable land requires quite a large cost (Pratiwi 2015); and (6) the high content of chemical residues causes Indonesian vegetables to be less able to penetrate the export market and less competitive (Irawan and Ariningsih 2015).

CONCLUSION

The existence of millennial farmers is very important in efforts to increase the competitiveness and productivity of the agricultural sector in Indonesia. Millennial farmers are known as innovative agents who are able to bring modern technologies, such as digitalization, Internet of Things (IoT), drones, and digital applications that help land efficiency, farm management, and product marketing. They also have the potential to change the paradigm of world agriculture by integrating traditional and innovative practices to produce sustainable and globally competitive agriculture.

Efforts to empower millennial farmers are carried out through various programs such as digitalization training, developing quality seeds, increasing access to capital, and strengthening institutions and human resource capacity. The importance of cross-generational collaboration, including the transfer of knowledge and experience from senior farmers to millennials, is a key aspect to ensure traditional agricultural practices remain relevant and adaptable to climate change and other global challenges.

However, the main challenge faced is the low interest of the younger generation to enter the agricultural sector because of the perception that this sector is not yet seen as economically promising and the lack of incentives. Therefore, a strategic agenda is needed that focuses on improving the welfare of young farmers through the development of technology-based businesses, market digitalization, and the development of a competitive farming business ecosystem.

In addition, government support through strategic programs such as seed logistics development, land expansion, and export management training is needed to strengthen the position of millennial farmers in the international market. The participation and success of millennial farmers in increasing agricultural exports shows great potential to boost national income and strengthen Indonesia's position as a strong agricultural country in the era of globalization. Overall, empowering millennial farmers is the main

key to realizing more advanced, modern, innovative, sustainable and competitive agricultural development in the future.

Millennial farmers play an important role in increasing the competitiveness and productivity of Indonesia's agricultural sector through innovation, digital technology, and entrepreneurial spirit. The success of their empowerment is greatly influenced by government support, capacity development, access to technology and capital, and cross-generational collaboration. Despite having great potential to bring positive change and strengthen Indonesia's position in the global market, the participation of millennial farmers is still low due to the perception that the agricultural sector is less economically promising and the existence of social stigma. Therefore, a strategy is needed that focuses on empowerment, developing a competitive farming ecosystem, and increasing the interest of the younger generation in pursuing a career in agriculture.

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