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Impact of Agricultural Productivity on Small Farmers' Financial Wellbeing: The Role of Microfinance

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Abstract

This study investigates the impact of agricultural productivity on farmers' financial well-being in Indonesia, focusing on the moderating role of microfinance. The research addresses the low financial well-being of farmers, which is influenced by limited financial access and fluctuating productivity. Microfinance is expected to provide credit access, enabling farmers to improve productivity and income. However, field observations suggest that the effectiveness of microfinance in improving financial well-being remains to be determined. In order to study about financial well-being of the farmers, we used a quantitative method using a survey with a sample of 531 farmers from Indonesia. The data was analyzed through SEM PLS. The results show that agricultural productivity positively impacts financial well-being, but microfinance's moderating effect is insignificant. This result implies that while microfinance supports financial well-being, market access, and infrastructure are more crucial in converting productivity gains into financial benefits. It is recommended that strategies be developed to improve market access and infrastructure to realize the full potential of agricultural productivity.

Keywords: *Agricultural Productivity, Microfinance, Financial Well-being, Farmer*

Abstrak

Penelitian ini mengkaji dampak produktivitas pertanian terhadap kesejahteraan finansial petani di Indonesia, dengan fokus pada peran moderasi mikrofinansial. Penelitian ini dilatarbelakangi oleh rendahnya kesejahteraan finansial petani yang dipengaruhi oleh keterbatasan akses keuangan dan fluktuasi produktivitas pertanian. Secara teoritis, mikrofinansial diharapkan dapat memberikan akses kredit yang memungkinkan petani meningkatkan produktivitas dan pendapatan. Namun, observasi di lapangan menunjukkan bahwa efektivitas mikrofinansial dalam meningkatkan kesejahteraan finansial belum jelas. Untuk menjawab permasalahan ini, metode kuantitatif digunakan, dengan survei yang melibatkan sampel sebanyak 531 petani di Indonesia. Data dianalisis menggunakan SEM PLS. Hasil penelitian menunjukkan bahwa produktivitas pertanian berdampak positif terhadap kesejahteraan finansial, namun efek moderasi mikrofinansial tidak signifikan. Ini mengindikasikan bahwa meskipun mikrofinansial mendukung kesejahteraan finansial, faktor lain seperti akses pasar dan infrastruktur lebih berperan penting dalam mengubah peningkatan produktivitas menjadi manfaat finansial. Disarankan agar strategi yang lebih terarah dikembangkan untuk meningkatkan akses pasar dan infrastruktur guna memaksimalkan potensi produktivitas pertanian.

Kata kunci: Produktivitas Pertanian, *Microfinance*, *Financial Wellbeing*, Petani

1. Introduction

Indonesia ranks as the second largest tropical agrarian country after Brazil, with approximately 11% of the world's tropical zone located within its borders, out of a total of 27% globally (Simarmata et al., 2021). It is referred to as an agrarian nation due to the predominance of its population engaged in the agricultural sector. Farmers are at the forefront in demonstrating Indonesia's strength as an agrarian state (Syafrial et al., 2022).

As of August 2022, the number of farmers spread across Indonesia was 38,703,996 individuals. This figure underscores the critical role of the agricultural sector in Indonesia's economy, employing a significant portion of the workforce. According to the Central Bureau of Statistics (BPS), exports of agricultural, fishery, and forestry products showed a positive trend from the fourth quarter of 2019 to the second quarter of 2021, with consistent year-on-year (Y on Y) increases (Badan Pusat Statistik, 2022a). The report also highlighted that the performance of the agricultural sector has generally exhibited steady growth, contributing sustainably to Indonesia's gross domestic product (GDP). However, despite the positive performance of the agricultural sector, Indonesia still faces challenges in food security (Tono et al., 2022). This vulnerability can be attributed to several factors, including climate change, dependency on certain imported food products, and a lack of innovation in agricultural practices.

In the Economist Impact's global food security ranking (Economist Impact, 2022), Indonesia ranks 63rd out of 113 countries. Indonesia's sustainability and adaptation aspects score poorly at 46.3, falling below the safe threshold. The Deputy for Food Security and Nutrition Vulnerability at the National Food Agency (Badan Pangan Nasional, 2022) reports that 70 districts and four cities in Indonesia have low Food Strength Index (IKP). This is attributed to inadequate local food production, high prevalence of child stunting, limited access to clean water, and a high percentage of the population living in poverty (Tono et al., 2022).

According to data from the Central Bureau of Statistics (Badan Pusat Statistik, 2022b), the prevalence of inadequate food consumption in Indonesia has increased from 2020 to 2022. In 2020, the prevalence was 8.34%, rising to 8.49% in 2021 and further increasing to 10.21% in 2022. These facts contradict Indonesia's rich natural potential and geographic conditions. This inadequacy in food consumption indicates that despite Indonesia's vast natural potential, structural problems need to be addressed. For instance, uneven food distribution, inadequate infrastructure, and inefficient storage systems. These challenges require the government and related parties to collaborate in enhancing local food production, improving distribution systems, and increasing public access to sufficient and nutritious food.

Like workers in other sectors, agriculture workers also require equitable protection and welfare, mainly regarding financial wellbeing. Financial wellbeing can be achieved when financial health is well maintained (Kaiser et al., 2022). Financial health refers to the ability to manage finances effectively, avoid dependence on debt, and be prepared for unexpected expenses in the future (Taft et al., 2013). The wellbeing of farmers is greatly influenced by agricultural productivity and access to microfinance services. Agricultural productivity involves efficiently using agricultural resources such as land, labor, capital, and technology to maximize agricultural output (Tirkaso, 2013). Enhancing agricultural productivity is crucial for maintaining food security, reducing poverty, and significantly driving economic growth in rural areas (Glushchenko et al., 2020).

The financial well-being of farmers in Indonesia remains a critical issue, with many still facing economic hardships. Based on available data, a significant portion of Indonesian farmers remain financially vulnerable, as reflected in their limited savings, lack of access to credit, and fluctuating income due to unpredictable agricultural outputs. This research aims to explore whether increased agricultural productivity correlates with improvements in their financial well-being. However, observations in the field suggest that higher productivity does not always translate into better financial outcomes, particularly in regions where farmers face barriers such as limited market access, high operational costs, and inadequate infrastructure.

Factors affecting agricultural productivity include the availability and quality of agricultural inputs such as seeds, fertilizers, and irrigation systems. The technology applied in farming practices also plays a crucial role. Advanced technology can enhance efficiency and production outcomes. Additionally, the knowledge applied in farming practices, such as proper cultivation techniques and effective land

management, significantly impacts productivity (Staugaitis & Vaznonis, 2022). Policies and regulations governing agricultural markets also influence farmers' welfare. Supportive policies, such as subsidies for agricultural inputs, improved market access, and training programs for farmers, can boost productivity and welfare. Regulatory authorities must ensure these policies are well implemented and that farmers benefit most. In addition to productivity, access to microfinance services is vital for farmers' welfare. Microfinance provides access to credit that can be used to purchase agricultural inputs, invest in new technologies, or meet other urgent needs. With access to microfinance services, farmers can scale up their operations, increase productivity, and ultimately enhance their incomes.

The challenges in enhancing agricultural productivity in Indonesia encompass various critical aspects that hinder the growth of this sector. Firstly, farmers often need more access to credit. Many rural farmers need more collateral or assets to qualify for loans from formal financial institutions. Consequently, they need help to obtain the capital needed to purchase seeds, fertilizers, or modern equipment that could boost their productivity (Kumar & Upadhyay, 2019; Rasheed et al., 2016). Secondly, poor infrastructure poses a significant barrier. Inadequate roads and limited transportation make distributing agricultural produce from villages to markets difficult. This affects farmers' income and leads to significant post-harvest losses (Glushchenko et al., 2020). Poor infrastructure also impacts farmers' access to essential services, such as agricultural extension, which is crucial for enhancing their knowledge and skills (Kumar & Upadhyay, 2019).

Thirdly, more training is needed. Many farmers still need to rely on traditional farming techniques due to a lack of access to education and training in modern agricultural practices. Inadequate training results in limited knowledge about best practices using fertilizers, pesticides, and efficient irrigation techniques. Fourthly, substandard agricultural inputs are a significant issue. Low-quality seeds, fertilizers, and other inputs lead to low productivity and suboptimal harvests. Farmers often need more information to choose high-quality inputs or cannot afford better inputs due to financial constraints (Glushchenko et al., 2020).

In addition to these internal challenges, farmers also face external issues such as climate change and water scarcity. Unpredictable climate change causes weather variability that can disrupt planting cycles and lead to crop failures. Floods, droughts, and other extreme weather events can damage crops and reduce agricultural productivity (Tamasiga et al., 2023). Water scarcity, particularly in irrigation-dependent areas, can hinder crop growth and reduce yields (Sharma, 2020). On the other hand, microfinance plays a crucial role in addressing some of these challenges and improving farmers' income and financial wellbeing. Microfinance provides easier access to credit for smallholder farmers, enabling them to purchase high-quality agricultural inputs, such as superior seeds and more effective fertilizers. With additional capital, farmers can significantly increase their productivity and yields.

Moreover, microfinance allows farmers to invest in modern agricultural technologies, such as drip irrigation systems, machinery, and precision farming techniques. These technologies can enhance resource use efficiency and increase crop yields (Mia et al., 2022). Therefore, microfinance helps boost productivity and reduces farmers' financial vulnerability. Microfinance also improves farmers' access to markets. Farmers can diversify their products and add value through microloans through post-harvest processing. This can increase farmers' income and provide them with better bargaining positions in the market (Otilia, 2014). Addressing these challenges through access to credit and technology and enhancing farmers' knowledge and skills can improve agricultural productivity in Indonesia. This will enhance farmers' welfare, strengthen national food security, and promote more inclusive economic growth in rural areas.

Agricultural productivity plays a crucial role in enhancing the financial wellbeing of farmers and directly contributes to a country's food security. In Indonesia, where a large portion of the population depends on agriculture for their livelihoods, high agricultural productivity means more food production

is available for local consumption and export. This significantly increases food availability for the population, reduces dependence on food imports, and supports national food security. Increased agricultural productivity also directly impacts farmers' income. With higher agricultural yields, farmers have more products to sell, leading to increased income generation (Mia et al., 2022). This higher income enables farmers to meet basic needs such as food, housing, education, and healthcare, improving their financial wellbeing.

In addition to these direct benefits, increased agricultural productivity positively affects local and national economies. Locally, increased agricultural production can boost economic activity in rural areas through increased demand for labor and consumption of local goods and services. Increasing productivity can alleviate inflationary pressures by stabilizing food prices and supporting overall economic growth (Glushchenko et al., 2020). Therefore, strategies to enhance agricultural productivity must consider various factors, from access to modern technology, education, and training in effective farming practices to infrastructure improvements and market access. Investment in research and development of innovative agricultural technologies and promoting policies that support agricultural sustainability are also crucial in achieving these goals.

Furthermore, microfinance in Indonesia is crucial in enhancing agricultural productivity. Many farmers in Indonesia need help accessing capital through formal financial institutions due to a lack of collateral or adequate credit history. Microfinance provides a solution by offering farmers more access to capital. With this access, farmers can obtain loans to purchase better seeds, fertilizers, modern agricultural tools, and other technologies to boost their productivity. Access to microfinance enables farmers to adopt more efficient and productive farming practices. For example, with additional capital, farmers can purchase high-quality seeds that yield better and are more resistant to pests and diseases. They can also buy more effective fertilizers to enhance soil fertility and crop yields. Moreover, modern agricultural tools such as tractors, drip irrigation systems, and advanced pest control technologies can improve efficiency and production outcomes (Obialor et al., 2022).

Over time, this increased productivity can directly impact farmers' income. With higher crop yields, farmers have more products to sell in the market, which increases their income. This higher income helps farmers meet their basic needs, such as food, housing, education, and healthcare and allows them to reinvest in their agricultural enterprises, creating a sustainable cycle of productivity and income growth. In addition to individual farmer impacts, increased agricultural productivity through microfinance can reduce poverty in rural areas. As more farmers succeed in increasing their productivity and income, the local economy can grow, creating more jobs and economic opportunities for the surrounding community. Therefore, agricultural productivity directly impacts farmers' financial wellbeing and overall food security. By investing in productivity enhancements through agricultural technology development, infrastructure, education, and access to capital via microfinance, Indonesia can improve food security and enhance the wellbeing of farmers and the wider community. Investments in these areas not only support farmers in the short term but also lay a strong foundation for sustainable and inclusive economic growth in the future (Otilia, 2014).

In the context of Indonesia, the relationship between financial wellbeing and food security is very close and can be elaborated through several key aspects (Hasanah & Riyanti, 2019). Firstly, through a personal behavioral finance approach, good financial understanding and management enable farmers to plan and manage their resources more efficiently. Effective financial management means farmers can budget well, manage cash flow, and strategically allocate funds for investments in more efficient agricultural technologies or diversifying their agricultural enterprises. For instance, with good financial management, farmers can purchase modern agricultural tools and technologies such as drip irrigation systems, tractors, or high-quality seeds to increase crop yields. These investments boost productivity and aid in agricultural sustainability, ultimately supporting food security by enhancing food availability and diversification.

Secondly, financial wellbeing plays a role in farmers' access to the agricultural resources necessary to boost production. When farmers have adequate financial wellbeing, they are more capable of accessing business capital, such as loans from financial institutions or government assistance programs. This capital is crucial for purchasing high-quality agricultural inputs like fertilizers, pesticides, and superior seeds. Moreover, with access to capital, farmers can improve their agricultural infrastructure by upgrading irrigation systems or building better storage facilities. All these contribute to increased agricultural productivity. For example, farmers can significantly increase their crop yields by using superior seeds and effective fertilizers. Therefore, enhancing farmers' financial wellbeing can increase agricultural productivity and support food security by improving the quantity and quality of available food production.

Furthermore, financial wellbeing influences farmers' resilience to economic and environmental risks that can impact food security. Farmers with better financial wellbeing can face and manage risks such as price fluctuations, poor growing seasons, or natural disasters. For instance, farmers with financial reserves can use these funds to cover losses during poor growing seasons or natural disasters. Farmers with access to agricultural insurance products can also protect their investments from unforeseen risks. Agricultural insurance can provide financial compensation that helps farmers recover more quickly from losses and continue production without significant financial hardship. Therefore, financial wellbeing can enhance farmers' resilience to risks, ultimately helping to strengthen food security by providing economic protection to farmers and ensuring the continuity of food production. Thus, farmers' financial wellbeing, understood through a personal behavioral finance approach, significantly impacts food security in Indonesia. Through effective financial management, access to business capital, and increased resilience to risks, farmers' financial wellbeing can support increased food production, food accessibility, and broader economic resilience within the country's food system. Investing in financial education for farmers, better access to financial services, and policy support that encourages capital access and risk protection are crucial steps to improve farmers' financial wellbeing and, in turn, strengthen national food security. This study aims to find out the impact of agricultural productivity on farmers' financial well-being in Indonesia, focusing on the moderating role of microfinance.

2. Literature Review

2.1 Agricultural Productivity

Agricultural productivity is critical to enhancing farmers' welfare and national food security. According to (Maizunati, 2018), several main factors influence agricultural productivity, including the availability and quality of seeds, using fertilizers, irrigation systems, technology levels, knowledge of agricultural practices, and policies and authorities regulating markets. The availability and quality of seeds play a crucial role because high-quality seeds can increase crop yield potential and reduce the risk of crop failure. Proper use of fertilizers is also critical, as fertilizers provide essential nutrients for plants to thrive, ultimately increasing crop yields. Effective irrigation systems ensure that crops receive adequate water, especially in drought-prone areas, which is crucial in boosting agricultural productivity. Additionally, the level of technology used in agriculture significantly impacts productivity. Modern agricultural technologies, such as farm machinery, agricultural sensors, and information technology, can improve production efficiency and resource management. Farmers' knowledge in applying effective agricultural practices is equally important. With adequate knowledge, farmers can select appropriate crop varieties, control pests and diseases, and implement sustainable farming practices that support long-term productivity.

Furthermore, policies and authorities regulating markets significantly affect agricultural productivity. Government policies that support market access, price stability, and agricultural sector support can motivate farmers to enhance their productivity. (Bangura et al., 2020) highlight that microfinance is critical in boosting agricultural productivity by providing smallholder farmers with access to capital,

which they previously could not access through formal financial institutions. Farmers can purchase better seeds, fertilizers, modern farming tools, and other technologies to increase their productivity with this access. Moreover, (Nicastro et al., 2022) emphasize that microfinance interventions in agriculture not only enhance productivity but also positively impact food security and nutrition, particularly for vulnerable populations such as those living with HIV in Kenya. This underscores the importance of integrating technology, knowledge, policies, and agricultural inputs to increase agricultural productivity sustainably. Effective implementation of these factors can support the improvement of farmers' welfare and national food security, making agricultural productivity a cornerstone of rural and national economic development.

2.2 Financial Wellbeing

Financial wellbeing is when individuals feel satisfied with their current financial situation, have a comfort level with their present financial state, and do not experience excessive financial pressure. (Lusardi et al., 2002) explain that financial wellbeing encompasses three main aspects: satisfaction with the current financial situation, comfort level with the present financial state, and the current financial pressure experienced. Satisfaction with the current financial situation reflects how individuals evaluate their financial condition, whether they feel sufficient or satisfied with their income, savings, and investments. The comfort level of the present financial state refers to the feeling of security and stability with the existing financial condition, including the ability to manage routine expenses and save for the future. Meanwhile, current financial pressure experienced reflects the level of stress or concern individuals have regarding financial issues, such as debt or income uncertainty. Research by (Jaggar & Navlakhi, 2021) adds that financial wellbeing is crucial for overall individual wellbeing and is often overlooked in holistic approaches to wellbeing. Good financial wellbeing enables individuals to focus more on other aspects of their lives, such as health, social relationships, and personal development, without financial worries.

Financial wellbeing significantly impacts their productivity and overall welfare. Farmers satisfied with their current financial situation are more likely to invest their resources in better and sustainable farming practices. For instance, they can purchase high-quality seeds, effective fertilizers, and modern agricultural technology to enhance crop yields. The comfort level with their financial condition is also essential because farmers who feel financially secure are better able to take the necessary risks to improve productivity, such as crop diversification or the adoption of new farming techniques. Furthermore, low financial pressure allows farmers to focus on managing their farms without being distracted by concerns about debt or income uncertainty. This is crucial because financial stress can hinder farmers' ability to make rational and strategic decisions in managing their agricultural enterprises. Therefore, improving farmers' financial wellbeing can enhance agricultural productivity and overall food security.

2.3 Microfinance

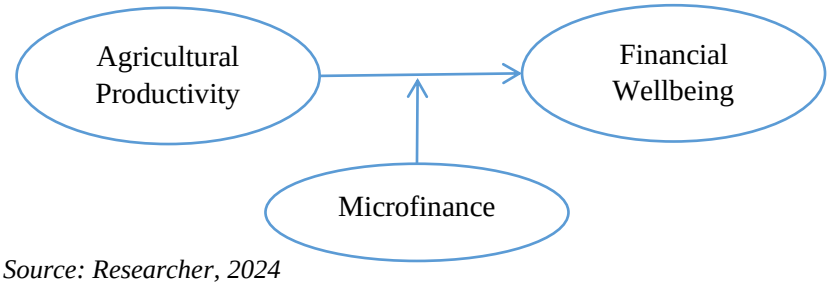
Microfinance provides financial services, including credit, savings, and insurance, to individuals or small enterprises that do not have access to traditional banking services. According to research by (De Aghion & Morduch, 2005), microfinance is crucial in providing financial support to the agricultural sector, especially for smallholder farmers. Sources of agricultural finance through microfinance can come from various institutions, including private and formal financial institutions. Sources of agricultural finance through microfinance include various financing available to farmers to support their agricultural activities. This includes microcredit, savings, and insurance products specifically designed to meet the needs of smallholder farmers. This financing helps farmers obtain the capital needed to purchase seeds, fertilizers, and agricultural tools to enhance their productivity. Private financial institutions play a significant role in financing the agricultural sector through microfinance. These institutions include commercial banks, microfinance institutions, and non-governmental organizations providing farmers financial services. Research by (Fadeyi et al., 2021) shows that private financial

institutions can improve smallholder farmers' access to the capital needed to develop their agricultural businesses. These institutions often have greater flexibility in setting loan terms and conditions, making them more accessible to smallholder farmers. Formal financial institutions such as state banks, credit cooperatives, and government-regulated financial institutions also finance the agricultural sector. Research by (Obialor et al., 2022) indicates that government policies often support financing from formal financial institutions to increase agricultural productivity and farmer welfare. These institutions typically offer financial products with lower interest rates and more structured terms, helping farmers manage financial risks and improve agricultural output.

Microfinance significantly impacts the agricultural sector, particularly in supporting smallholder farmers. With better access to financing sources, farmers can enhance their productivity through investments in agricultural technology, high-quality seeds, and effective fertilizers. This boosts crop yields and aids in crop diversification and more sustainable farming practices. Moreover, with support from private and formal financial institutions, farmers have broader access to financial services that can help them manage risks, such as agricultural insurance, protecting them from losses due to natural disasters or market fluctuations. Thus, microfinance plays a crucial role in strengthening food security and improving the economic welfare of farmers.

H1: Agricultural Productivity is positively significant on Financial Wellbeing
H2: Microfinance moderates the relationship between Agricultural Productivity and Financial Wellbeing

Figure 1. Research Framework



Source: Researcher, 2024

3. Research Method

This study aims to examine the influence of variable X (Agricultural Productivity) on variable Y (Financial Wellbeing) while considering the moderating role of variable M (Microfinance). The primary focus of this research is to explore how agricultural productivity can impact farmers' financial wellbeing and, in turn, enhance food security in Indonesia. Additionally, this study will investigate whether microfinance can moderate the relationship between agricultural productivity and the financial wellbeing of farmers.

Agricultural productivity in this study encompasses several key factors, including the availability and quality of seeds, the use of fertilizers, irrigation systems, and the level of technology employed. These factors are crucial as they directly affect crop yields and efficiency in farming processes. Furthermore, the knowledge applied in agricultural practices and the policies and authorities regulating the market will also be evaluated to understand how regulations support or hinder agricultural productivity. Financial wellbeing will be measured through three main aspects: satisfaction with the current financial situation, comfort level with the present financial state, and current financial pressure. These aspects are essential to understand financial wellbeing holistically and how they affect farmers' ability to invest and improve their productivity. Microfinance in this study includes sources of agricultural finance, the role of private financial institutions, and formal financial institutions such as banks and credit

cooperatives. Microfinance is expected to provide farmers with better access to capital, enabling them to invest in more efficient agricultural technologies and practices.

The population of this study is farmers across Indonesia. Data will be collected using a Likert scale questionnaire, which will then be analyzed using the Structural Equation Model (SEM) method with the help of Lisrel software. SEM will be used to simultaneously examine the relationships between agricultural productivity, financial wellbeing, and the moderating role of microfinance. This research aims to provide a better understanding of how agricultural productivity can enhance farmers' financial wellbeing and food security in Indonesia. By exploring the role of microfinance as a moderating variable, this study aims to offer practical policy recommendations to improve farmers' access to finance and enhance their productivity and financial wellbeing.

We use a reflective model to assess both the exogenous and endogenous variables. As outlined by Bollen (1989), the mathematical equations for the structural model in the outer model are as follows:

$$X = \Lambda_X.\xi + \delta$$
$$Y = \Lambda_y.\eta + \varepsilon$$

In this context, X represents the indicator effects of the exogenous variable, while Y denotes the indicator effects of the endogenous variable. ΛX and ΛY symbolize the loading matrices, functioning as simple regression coefficients that describe the relationship between latent variables and their corresponding indicators. The symbols δ and ε represent the residuals or measurement errors associated with the indicators.

The mathematical equations of structural model inner model is :

$$\eta = \Gamma_1.\xi_1 + \xi$$
$$\eta = \Gamma_1.\xi_1 + \Gamma_2.\xi_2 + \xi$$

Symbol description:
η = Financial Wellbeing (as exogenous variable)
β = coefficient matrix
ξ1 = Agricultural Productivity
Γ1 = coefficient matrix for Agricultural Productivity and Financial Wellbeing relationship
ξ2 = Microfinance
Γ2 = coefficient matrix for Microfinance as moderating variable

4. Result and Discussion

4.1 Characteristics of Respondents

In this study, a total of 531 farmers were surveyed. The data analysis shows that most respondents are male, with 439 male and 92 female farmers. Regarding age, most farmers are between 28 and 37 years old, followed by those between 38 and 47 years old, indicating that most respondents are adults. The smallest age group is those over 67 years old, with only four respondents. Regarding farming types or products, the most significant respondents are horticultural farmers, accounting for 36.5% of the total. Rice farmers follow them at 25.2% and plantation farmers at 22.2%. The smallest group comprises mixed-crop farmers, making up only 7% of the respondents. This indicates that most respondents are involved in producing fruits, vegetables, and ornamental plants.

Table 1. Respondent Characteristics

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	439	82.7	82.7	82.7
	Female	92	17.3	17.3	100.0
	Total	531	100.0	100.0	
Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	17 - 27 y.o	30	5.6	5.6	5.6
	28 - 37 y.o	205	38.6	38.6	44.3
	38 - 47 y.o	193	36.3	36.3	80.6
	48 - 57 y.o	82	15.4	15.4	96.0
	58 - 67 y.o	17	3.2	3.2	99.2
	> 67 y.o	4	.8	.8	100.0
	Total	531	100.0	100.0	
Types of Farms					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Horticulture	194	36.5	36.5	36.5
	Secondary Crops	37	7.0	7.0	43.5
	Plantation	118	22.2	22.2	65.7
	Rice Plants	134	25.2	25.2	91.0
	Other	48	9.0	9.0	100.0
	Total	531	100.0	100.0	
Farm Location					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aceh	3	.6	.6	.6
	Bali	18	3.4	3.4	4.0
	Banten	4	.8	.8	4.7
	DKI Jakarta	9	1.7	1.7	6.4
	Jambi	6	1.1	1.1	7.5
	Jawa	283	53.3	53.3	60.8
	Kalimantan	41	7.7	7.7	68.5
	Kepulauan Bangka Belitung	2	.4	.4	68.9
	Kepulauan Bangke Belitung	1	.2	.2	69.1
	Lampung	1	.2	.2	69.3
	Maluku	6	1.1	1.1	70.4
	NTB	1	.2	.2	70.6
	Nusa Tenggara Timur	17	3.2	3.2	73.8
	Papua	21	4.0	4.0	77.8
	Sulawesi	56	10.5	10.5	88.3
	Sumatra	62	11.7	11.7	100.0
	Total	531	100.0	100.0	

Length of Farming Time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	> 30 years	29	5.5	5.5	5.5
	1 - 5 year	73	13.7	13.7	19.2
	10 - 15 year	128	24.1	24.1	43.3
	15 - 20 year	72	13.6	13.6	56.9
	20 - 25 year	69	13.0	13.0	69.9
	25 - 30 year	10	1.9	1.9	71.8
	6 - 10 year	150	28.2	28.2	100.0
	Total	531	100.0	100.0	

Source: data processing (2024)

Geographically, most respondents are located in Java, with 283 farmers. The second-largest group is in Sumatra, with 62 farmers, followed by Sulawesi. The smallest number of respondents is in West Nusa Tenggara, with only one respondent. This data suggests that most farming activities in Indonesia are concentrated in Java, where infrastructure access is more developed. Regarding farming experience, the largest group of respondents has between 6 to 10 years of farming experience, with 150 farmers. The second-largest group has between 10 to 15 years of experience. This indicates that the majority of respondents have substantial experience in agriculture.

This study provides a comprehensive overview of the characteristics of farmers in Indonesia, including distribution by gender, age, types of products produced, geographic location, and farming experience. This information is crucial for understanding farmers' social and economic context and the challenges and opportunities they face in enhancing agricultural productivity and financial wellbeing.

4.2 Validity Convergent Test

The analysis results in the table 2. indicate that all variable items have a loading factor value greater than 0.50. This suggests that each variable item significantly contributes to the measured construct, implying that all variable items in the study have passed the convergent validity test.

Table 2. Validity Convergent Test Result

Item Questions	Financial Wellbeing	Microfinance	Agriculture Productivity
M.10		0.784	
M.11		0.808	
M.12		0.816	
M.13		0.754	
M.14		0.762	
M.15		0.817	
M.4		0.775	
M.5		0.751	
M.6		0.797	
M.7		0.807	
M.8		0.779	
M.9		0.705	
X1.1			0.737
X1.12			0.709

Item Questions	Financial Wellbeing	Microfinance	Agriculture Productivity
X1.14			0.728
X1.16			0.717
X1.18			0.698
X1.19			0.704
X1.2			0.778
X1.20			0.704
X1.4			0.745
X1.5			0.741
X1.8			0.734
X1.9			0.736
Y.1	0.783		
Y.10	0.804		
Y.11	0.781		
Y.14	0.745		
Y.2	0.810		
Y.3	0.826		
Y.4	0.787		
Y.7	0.759		
Y.8	0.808		
Y.9	0.810		

Source: data processing (2024)

Convergent validity assesses the extent to which an item truly reflects the intended construct and whether all items that should be related to the construct indeed have a strong correlation. In addition to using the loading factor value, convergent validity can be assessed by examining the Average Variance Extracted (AVE) value. AVE is a measure that indicates the amount of variance captured by the construct relative to the amount of variance due to measurement error. Generally, an AVE value greater than 0.50 indicates good convergent validity, as the underlying construct can explain more than 50% of the variance from the items.

Table 3. AVE Score

Item Variable	Average Variance Extracted (AVE)
Financial Wellbeing	0.627
Microfinance	0.609
Agriculture Productivity	0.530

Source: data processing (2024)

The analysis results above indicate that all variables have an Average Variance Extracted (AVE) value greater than 0.50. An AVE value greater than 0.50 suggests that more than half of the variance measured by the items within each variable can be explained by the underlying construct rather than by measurement error. Therefore, the convergent validity of all variables in this study is promising.

4.3 Realibility Test

Based on the results below, it can be observed that the values of Cronbach's alpha and composite reliability for each variable are more significant than 0.70. A Cronbach's alpha value exceeding 0.70 indicates good internal consistency of the items within each variable.

Table 4. Realibility Test Result

Item Variable	Cronbach's Alpha	rho_A	Composite Reliability
Financial Wellbeing	0.934	0.934	0.944
Microfinance	0.942	0.946	0.949
Agriculture Productivity	0.919	0.920	0.931

Source: data processing (2024)

This means that the items consistently measure the same construct, providing high reliability for measuring that variable. Similarly, a composite reliability value greater than 0.70 indicates that the variables in this study possess good reliability. Composite reliability considers the number of indicators and the variance extracted by the construct, offering a more holistic view of the variable's reliability. With high reliability, it can be assured that the instruments used in this study can produce stable and consistent results in measuring the investigated variables.

4.4 Path Coefficient Analysis

The Influence of Microfinance on Financial Well-beingThe research results indicate that the coefficient of the influence of Microfinance on Financial Well-being is 0.276. With a t-statistic value of 4.290 and a p-value of 0.000, it can be concluded that the influence of Microfinance on Financial Well-being is positive and significant. This is evidenced by the positive coefficient and the t statistic value being more significant than the t table value (4.290 > 1.96), as well as the p-value being less than the 5% significance level (0.000 < 0.05). This means increased access to or use of microfinance services improves farmers' financial well-being.

Table 5. Path Coefficient Test Result

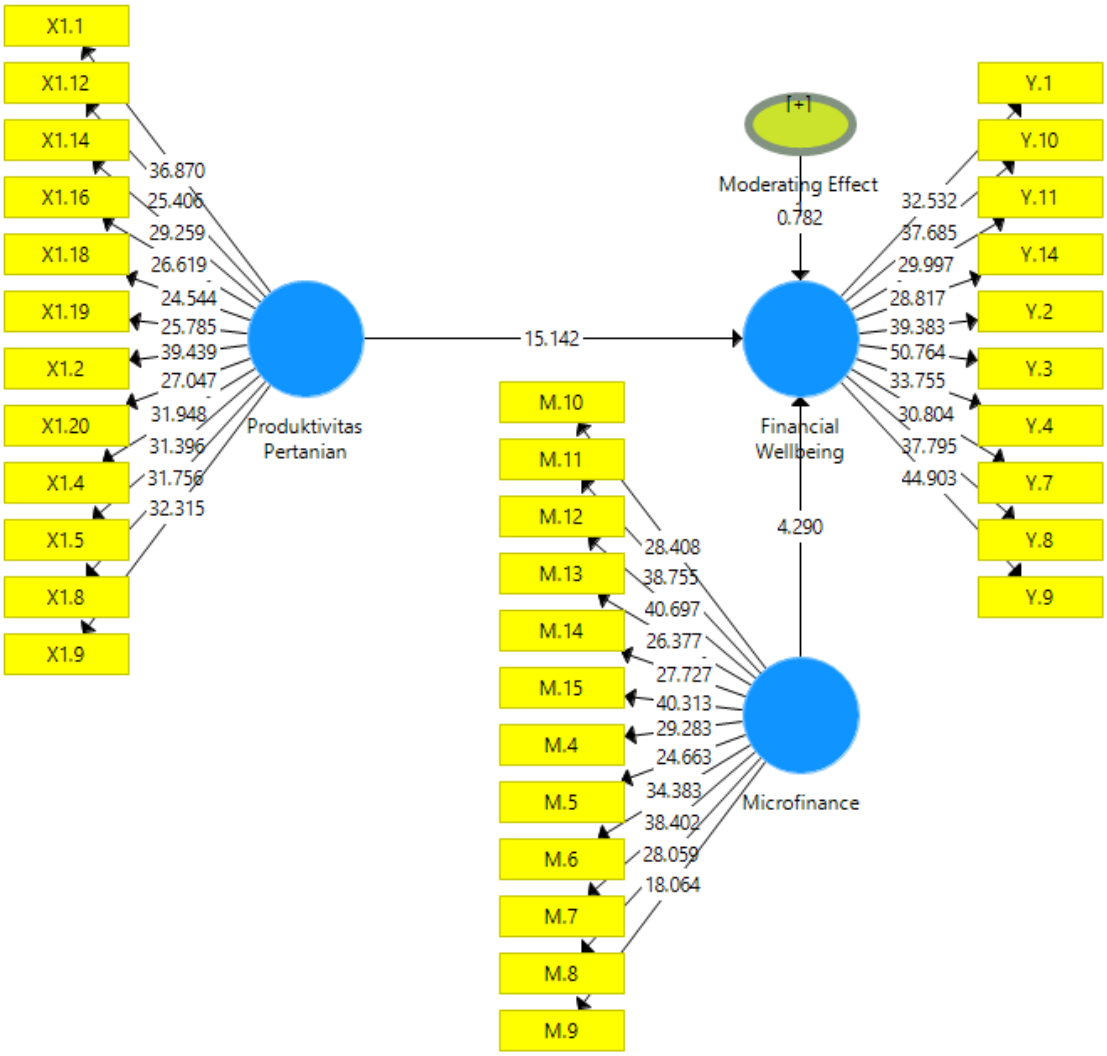
Item Variables	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Microfinance -> Financial_Wellbeing	0.276	0.275	0.064	4.290	0.000
Moderating Effect 1 -> Financial_Wellbeing	-0.035	-0.031	0.045	0.782	0.435
Agriculture Productivity -> Financial_Wellbeing	0.568	0.568	0.038	15.142	0.000

Source: data processing (2024)

The Influence of Agricultural Productivity on Financial Well-beingThe coefficient of the influence of Agricultural Productivity on Financial Well-being is 0.568 with a t statistic of 7.152 and a p-value of 0.000, indicating a positive and significant influence. The positive coefficient, along with the t statistic being much greater than the t table value (7.152 > 1.96) and the p-value being less than the 5% alpha level (0.000 < 0.05), suggests that increased agricultural productivity has a direct positive impact on farmers' financial well-being. This means efficient use of agricultural resources and increased crop yields can enhance farmers' financial conditions.

The Influence of Moderating, Effect 1 on Financial Well-beingThe coefficient of the influence of Moderating Effect 1 on Financial Well-being is -0.035 with a t statistic of 0.782 and a p-value of 0.435, indicating that this influence is not significant. With a negative coefficient, a t statistic less than the t table value (0.782 < 1.96), and a p-value more significant than the 5% significance level (0.435 > 0.05), it can be concluded that Moderating Effect 1 does not influence Financial Well-being.

Figure 2. PLS-SEM Bootstrapping Result



This means that Microfinance does not moderate the influence of Agricultural Productivity on Financial Well-being. In other words, although Microfinance directly impacts financial well-being, its moderating role in the relationship between agricultural productivity and financial well-being is not significant.

4.5 R-Square Analysis

Financial Well-being has an R Square value of 0.497. This indicates that Agricultural Productivity and Microfinance variables can explain 49.7% of the variation in Financial Well-being.

Table 6. R-square Score

	R Square	R Square Adjusted
Financial Wellbeing	0.497	0.495

Source: data processing (2024)

In other words, nearly half of the variation in Financial Well-being can be accounted for by these two variables within the research model. However, 50.03% of the variation in Financial Well-being is influenced by other variables not included in this research model.

4.6 Discussion

The study reveals that microfinance significantly and positively impacts farmers' financial wellbeing, while agricultural productivity also shows a substantial positive influence. However, microfinance does not significantly moderate the relationship between agricultural productivity and farmers' financial wellbeing.

1. Impact of Microfinance on Financial Wellbeing
   The significant positive effect of microfinance on farmers' financial wellbeing underscores its crucial role in enhancing agricultural workers' economic stability and overall welfare. Microfinance provides farmers with essential access to credit, which enables them to invest in quality agricultural inputs such as seeds, fertilizers, and advanced farming equipment. This investment is vital for improving agricultural productivity and farmers' income levels. By offering financial resources that are otherwise difficult to access through formal banking channels, microfinance facilitates better financial management and reduces reliance on high-interest loans. This improved financial capacity allows farmers to manage their cash flows more effectively, cope with unforeseen expenses, and improve their quality of life. Therefore, the positive influence of microfinance on financial wellbeing aligns with previous studies that emphasize the importance of financial services in supporting economic development and poverty alleviation in rural areas Kumar & Upadhyay, (2019) and Mia et al., (2022).

2. Impact of Agricultural Productivity on Financial Wellbeing
   The positive and significant impact of agricultural productivity on financial wellbeing highlights the essential role of efficient farming practices in improving farmers' economic conditions. Agricultural productivity encompasses the effective use of resources, such as land, labor, and technology, to enhance crop yields. Increased productivity leads to higher incomes from the sale of surplus produce, directly improving financial wellbeing. This relationship is supported by the theory of agricultural productivity, which suggests that higher productivity contributes to economic growth by increasing food availability, reducing poverty, and enhancing the livelihoods of rural communities (Glushchenko et al., 2020). Farmers can achieve better harvests and more excellent financial stability by optimizing resource use and adopting modern farming techniques. This finding is consistent with research that links agricultural efficiency with improved economic outcomes for farmers Staugaitis & Vaznonis, (2022) and Tirkaso, (2013).

3. The Non-significant Moderating Role of Microfinance
   The lack of a significant moderating effect of microfinance on the relationship between agricultural productivity and financial wellbeing suggests that while microfinance positively affects financial wellbeing directly, it does not necessarily enhance the impact of agricultural productivity on financial outcomes. This result indicates that the benefits of microfinance and agricultural productivity operate independently rather than synergistically. Microfinance may provide immediate

financial relief and support, but fundamentally altering the underlying mechanisms through which agricultural productivity affects financial wellbeing is still needed. For instance, even though farmers with access to microfinance can invest in better agricultural inputs, the fundamental relationship between productivity and financial outcomes remains direct and unaffected by additional financial services. This finding may imply that while microfinance is crucial for improving farmers' financial conditions, its role in amplifying the effects of productivity improvements on financial wellbeing may be limited by other factors such as market access, infrastructure, and training Glushchenko et al., (2020) and Kumar & Upadhyay, (2019).

5. Conclusion

This study reveals several critical insights into factors affecting farmers' financial wellbeing in Indonesia, focusing on the roles of microfinance and agricultural productivity. The findings indicate that microfinance has a significant positive impact on farmers' financial wellbeing. Access to microfinance services provides farmers with the necessary credit to invest in high-quality agricultural inputs, such as seeds, fertilizers, and modern equipment. This investment enhances agricultural productivity and farmers' income, thereby improving their financial conditions. Similarly, increased agricultural productivity is positively correlated with financial wellbeing. Higher productivity leads to greater crop yields and increased income from the sale of agricultural products. This aligns with agricultural economic theory, which suggests that efficient resource use and modern technology adoption can boost productivity and economic outcomes for farmers. However, the study also finds that microfinance does not significantly moderate the relationship between agricultural productivity and financial wellbeing. This suggests that while microfinance contributes directly to financial wellbeing, it does not substantially enhance the effect of agricultural productivity on financial outcomes. Other factors, such as market access, infrastructure, and training, may play a more significant role in influencing this relationship.

These findings highlight the need for a comprehensive approach to improving farmers' financial wellbeing, which should not rely solely on microfinance but also address agricultural productivity. Programs focused on enhancing agricultural technology, improving infrastructure, and providing farmer training are crucial to maximizing the benefits of increased productivity. Policies supporting market access and reducing post-harvest losses will further enhance outcomes. Overall, this study underscores the essential roles of microfinance and agricultural productivity in improving farmers' financial wellbeing. While microfinance directly benefits financial conditions, its moderating effect on the relationship between productivity and financial wellbeing is limited. A holistic approach integrating financial support and productivity improvements is vital for sustainable enhancements in farmers' financial wellbeing and economic growth.

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