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印尼青年農民收入影響因素之分析:YESS計畫評估

An Analysis of Factors Affecting Young Farmers'
Income in Indonesia: A YESS Program Evaluation

Alifiyya Ummu Salma

指導教授: 劉鋼 博士

Advisor: Kang Ernest Liu, Ph.D.

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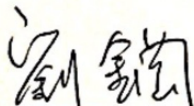
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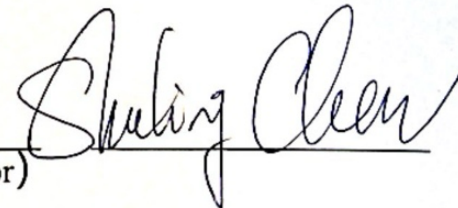
An Analysis of Factors Affecting Young Farmers' Income in Indonesia:

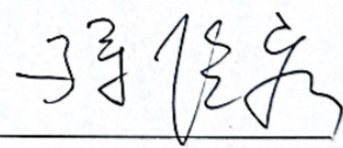
A YESS Program Evaluation

The undersigned, appointed by the Department of Agricultural Economic, College of Bioresources and Agriculture on 22nd May 2025 have examined a Master's Thesis entitled above presented by Alifiyya Ummu Salma (R12627042) candidate and hereby certify that it is worthy of acceptance.

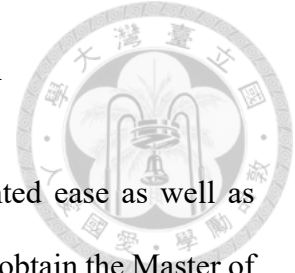
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Acknowledgement and/or Dedication



All praise is due to Allah SWT, who has guided me and granted ease as well as abundant health, enabling me to complete this thesis as a requirement to obtain the Master of Science degree. Blessings and peace be upon the Prophet Muhammad SAW. I also extend my sincere greetings to all readers. At this opportunity, I would like to express my deepest gratitude to all those who have provided support and guidance throughout the preparation of this thesis. My special thanks go to:

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I acknowledge that this thesis is not perfect and there are still many errors and shortcomings within it. Therefore, I welcome constructive criticism and suggestions from readers to improve this thesis further. I sincerely thank everyone, especially my supervisor, who has provided invaluable help in the completion of this thesis. I hope this work will be beneficial, particularly for the advancement of knowledge in the field of Agricultural Economics.



中文摘要



本研究探討影響印尼青年農民收入的因素，特別聚焦於青年創業與就業支持服務計畫（Youth Entrepreneurship and Employment Support Services, 簡稱 YESS）。本研究使用來自印尼農業部的資料，涵蓋共 82,822 名 YESS 受益者，其中包括 1,867 名競爭型補助金獲得者與 80,955 名非獲得者。資料透過定量方法進行分析，包括描述性分析、t 檢定，以及 Heckman 雙階段選擇模型。描述性分析結果顯示，性別、教育程度、所屬農業子部門、原籍省份及加入計畫的年度皆對參與者收入的增加產生影響。實證分析第一階段的 Probit 模型指出，影響參與者獲得補助的主要因素包括：省份、性別、身心障礙狀況、教育程度、先前工作經驗、作為受益者時的收入，以及是否參與培訓與實習。在考量樣本選擇偏誤後，第二階段的分析發現：省份、身心障礙狀況、先前工作經驗、參與培訓、年齡，以及所獲補助金額等因素，對 YESS 補助金受領者的收入具有顯著影響。本研究結果可作為政策制定的重要參考依據。

關鍵詞：青年、YESS、印尼、計畫評估

Abstract



This study investigates the factors influencing the income of young farmers in Indonesia, focusing on the Youth Entrepreneurship and Employment Support Services (YESS) program. Data from a total of 82,822 YESS beneficiaries, consisting of 1,867 competitive grant recipients and 80,955 non-recipients, was obtained from the Indonesian Ministry of Agriculture. The data was analyzed quantitatively using descriptive analysis, T-tests, and the heckman two-stage selection model. The result from the descriptive analysis shows that gender, education, agricultural subsector, province of origin, and year of joining the program all have an impact on participants' income increase. The probit model from the first stage of the empirical analysis revealed that participants more likely to receive grants were significantly influenced by variables such as province, gender, disabilities, education level, prior work experience, income as beneficiaries, also participation in training and internships. The second stage, after addressing the selection bias, highlighted the significance of province, disability, prior work experience, training participation, age, and the amount of grant received in influencing the income of YESS grant recipients, which could serve as a foundation for policy recommendations.

Keywords: youth, YESS, Indonesia, program evaluation

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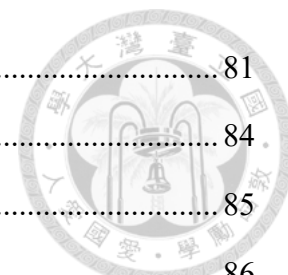
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Chapter 1 Introduction

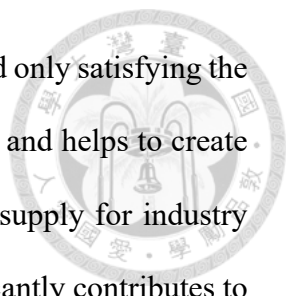


1.1 Background

As the largest archipelagic nation in the world, Indonesia had a population of 270,203,917 people according to the 2020 Population Census, positioning the country as the fourth most populous nation globally after China, India, and the United States (BPS, 2024). This remarkable demographic figure may be interpreted as both an opportunity and a challenge. In terms of age distribution, Indonesia is currently experiencing a demographic dividend, characterized by a declining number of individuals under the age of 15, a slight increase in the elderly population, and a rapid growth in the working-age population (15–64 years) (Adioetomo et al., 2014). Based on the 2020 census, the productive-age population in Indonesia has reached 187.2 million people, accounting for 69.28% of the total population (BPS, 2024).

Alternatively, the urbanization rate in Indonesia continues to rise, with approximately 56% of the population residing in urban areas (Kusumaningrum et al., 2022), and it is projected that by 2035, two-thirds of Indonesia's population will live in urban regions (Roberts et al., 2019). Among them, of the 65.82 million Indonesian youth aged 16–30 years, 57.40% have chosen to reside in urban areas (BPS, 2022).

This rapid population growth, accompanied by increasing urbanization, particularly among those under 30 years old, raises concerns from an agricultural perspective. Population growth is driving up demand for food on one hand; on the other, young Indonesians are more likely to move to cities in search of better infrastructure (BPS, 2022), education, to establish a family (King et al., 2012), and most especially, to look for job prospects (BPS, 2010).



Agriculture in Indonesia is important for economic growth beyond only satisfying the rising food need. It can even boost the non-farm economy (Addo, 2018) and helps to create jobs, foreign exchange revenues, economic development, raw material supply for industry (Khairati et al., 2023). With 12.61%, the agriculture industry still significantly contributes to the national Gross Domestic Product (GDP) (BPS, 2025). Miller et al. (2010) underlined that GDP from agriculture is twice as efficient in lowering poverty as GDP increase in non-agricultural industries.

Thus, not only to ensure food security but also to maintain Indonesia's national economy, attracting and retaining youth in agricultural careers is essential for the sector's future. Sadly, like with other emerging nations, economic growth usually coincides with a fall in agriculture and an increase in industrial and service sectors (Jones et al., 2015). This pattern is clear in Indonesia, where, although the population increased by 20.09% from 2005 to 2020, agricultural employment has actually declined by 7.46%, from 41.3 million in 2005 to 38.22 million in 2020 (BPS, 2024), while non-agricultural sectors, including industry and services, have steadily grown (Mulyana, 2014). Even though agricultural activities predominantly occur in rural areas, this does not imply that most rural residents are engaged in agriculture. In 2012, only 43% of employed males and 36% of employed females in rural areas worked in agriculture (Statistics Indonesia et al., 2013).

Furthermore, elder generations mostly dominate Indonesia's agricultural labor. Almost 60% of Indonesian farmers are 45 or older (BPS, 2023), and this number is projected to climb even further (Ngadi et al., 2023). This fits the more general pattern of young people choosing jobs in non-agricultural fields. Over half (56.82%) of young people work in the service industry. Though just 37.23% are involved in agriculture, 41.09% of young people

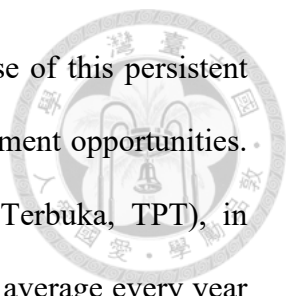
work in services even in rural areas (BPS, 2022). Put another way, the agricultural industry is lacking new labor, hence farming tasks are mostly in the hands of older generations (Gusnelly & Riskianingru, 2019).



The aging farmer trend is mostly driven by young people's view that farming is uninteresting and has no future (Leavy et al., 2014). Moreover, many studies have found that agricultural labor is low-status, low-paying, unreliable, and quite dangerous (FAO, 2021). Compared to other occupations, agriculture is often seen as a last resort, offering limited returns, high risks, and insufficient profits (Arvianti et al., 2019).

With elderly farmers dominating and few young people involved, this situation threatens productivity in agriculture, the health of rural economies, food supply stability, and the overall sustainability of the sector (Susilowati, 2016). Regenerating the agricultural workforce is thus absolutely necessary (Khairati et al., 2023), which calls for program and policy-level actions. Acknowledging these dangers, the Indonesian Ministry of Agriculture started the Youth Entrepreneurship and Employment Support Services (YESS) program through the support from the International Fund for Agricultural Development (IFAD) to foster youth expertise in agricultural activities.

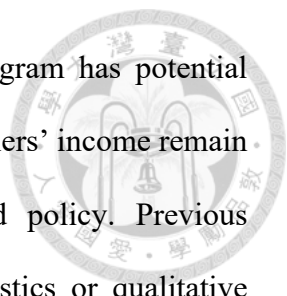
The YESS program's execution is anticipated to not only solve the problem of elderly farmers but also help to reduce the concerning youth unemployment in Indonesia. The 2022 Indonesian Labor Force Survey (Survei Angkatan Kerja, Sakernas), finds 26.82 percent of young people between the ages of 16 and 30 classified as NEET (Not in Employment, Education, and Training) because of the high national unemployment rate. This implies that one in every four young individuals is neither working, studying, nor participating in any form of training (BPS, 2022). Furthermore, the 2021 Indonesian Youth Development Index



(Indeks Pembangunan Pemuda, IPP), report indicates that the root cause of this persistent unemployment lies in Indonesia's limited success in generating employment opportunities. As a result, the Open Unemployment Rate (Tingkat Pengangguran Terbuka, TPT), in Indonesia among young people, stays regularly higher than the national average every year (BPS, 2022). Among all working young people in Indonesia, just 19.48% are involved in entrepreneurial activities; of them, only 6.67% run under the assistance of permanent or salaried employees. These figures illustrate that youth entrepreneurship tends to operate on a micro scale (BPS, 2022).

In response to the challenges, the Government of Indonesia has initiated the YESS program, which provides entrepreneurial facilities and mentorship intended to inspire young people to pursue careers as millennial farmers. The program hopes to either encourage young people to start businesses or equip them to join the agriculture industry as professional workers (IFAD, 2018). This project fits the viewpoint of Statistic Indonesia (2010), which contends that more education is part of a strategic plan to lower youth unemployment in Indonesia. Recognizing that a significant cause of the high TPT among young people is their low competitiveness in the labor market (BPS, 2022), this is especially pertinent. Moreover, national growth is much supported by the population itself. If used wisely, the size of Indonesia's population offers an opportunity to build a competent workforce that can drive production growth and support long-term development (Burhanuddin et al., 2020).

To achieve these objectives, the YESS program comprises four main components: increasing youth employment opportunities, facilitating small businesses and youths from non-agricultural sectors to initiate or expand agricultural enterprises, providing capital and access to financial institutions, and establishing supportive legal and institutional conditions



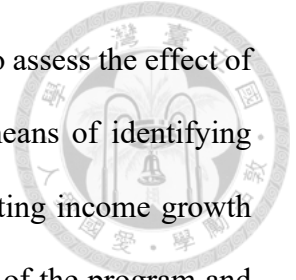
for young agricultural workers (IFAD, 2018). Though the YESS program has potential advantages, empirical studies assessing its efficacy in raising young farmers' income remain notably lacking, which impedes the formulation of evidence-based policy. Previous evaluations of the program have relied primarily on descriptive statistics or qualitative approaches (Rafani & Arsanti, 2023; Masriani et al., 2023; Lestari et al., 2024), with no studies to date employing empirical models. This highlights the importance of further research to rigorously evaluate the program's outcomes on youth performance and its broader economic impacts. Consequently, this research focuses on evaluating the YESS program's effectiveness in enhancing young farmers' income using a quantitative approach that includes descriptive analysis, T-test, and the heckman two-stage selection model. The findings are expected to serve as a foundation for effective policy formulation to enhance the wellbeing and welfare of young farmers.

1.2 Research Problems and Objectives

The research problems that can be concluded from this study include:

- 1) Does participation in the YESS program lead to changes in participants' income, and how do these changes vary based on grant reception, gender, education level, agricultural subsector, province of origin, and year of joining?
- 2) What are the key determinants that influence beneficiaries to receive YESS competitive grants?
- 3) What are the key factors impact on the income of Indonesian young farmers who receive YESS competitive grants?

By looking at how income changes fluctuate, this study intends to assess the effect of the YESS program on the income of young Indonesian farmers by means of identifying important grant-receiving drivers and an analysis of the elements affecting income growth for recipients. The results will offer analysis for enhancing the efficacy of the program and policy suggestions.



Chapter 2 Literature Review



2.1 Indonesian Agriculture and Aging Farmers

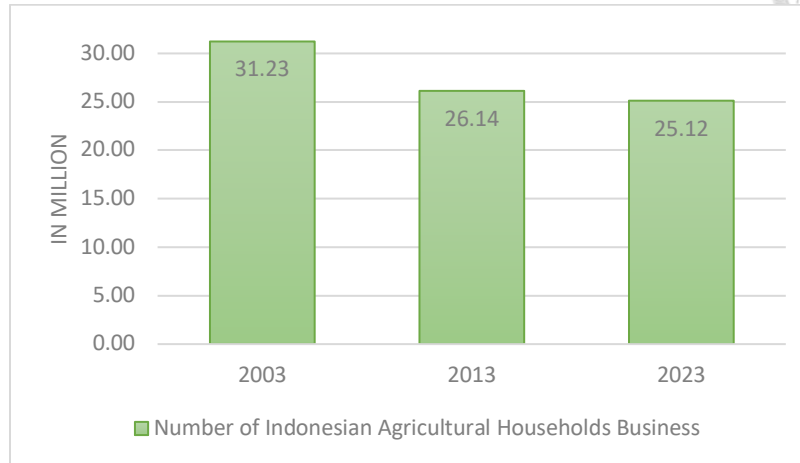
Agriculture is still a vital industry for developing nations like Indonesia, where population growth keeps rising, given the growing need for food supply (Ngadi et al., 2023). Agriculture is also acknowledged for its major contribution to economic growth, foreign exchange revenues, job creation, supply of raw materials for industry (Kahirati et al., 2023), and even its influence in raising the non-farm economy apart from attaining food security (Addo, 2018). Its share to national GDP, which stays rather high at 12.61% (BPS, 2025), further reflects the significance of agriculture in supporting Indonesia's economic growth. Roughly one-third of Indonesia's population depends mostly on agriculture, which is therefore the second-largest economic sector in the nation (BPS, 2021). This perspective is in line with the evidence provided by Millet et al. (2010), highlighting that increases in agricultural GDP are twice as impactful in alleviating poverty as those from non-agricultural growth.

As of 2003, around 31.2 million Indonesians worked in agriculture, with the sector supporting roughly 14% of the population. As shown in Figure 2.1, this figure, however, fell progressively by 16.3% to 26.1 million in 2013 (BPS, 2013) and then by further 3.9% to just 25.1 million agricultural households by 2023 (BPS, 2023).



Figure 2. 1

Indonesian Agricultural Households Business from 2003 to 2023



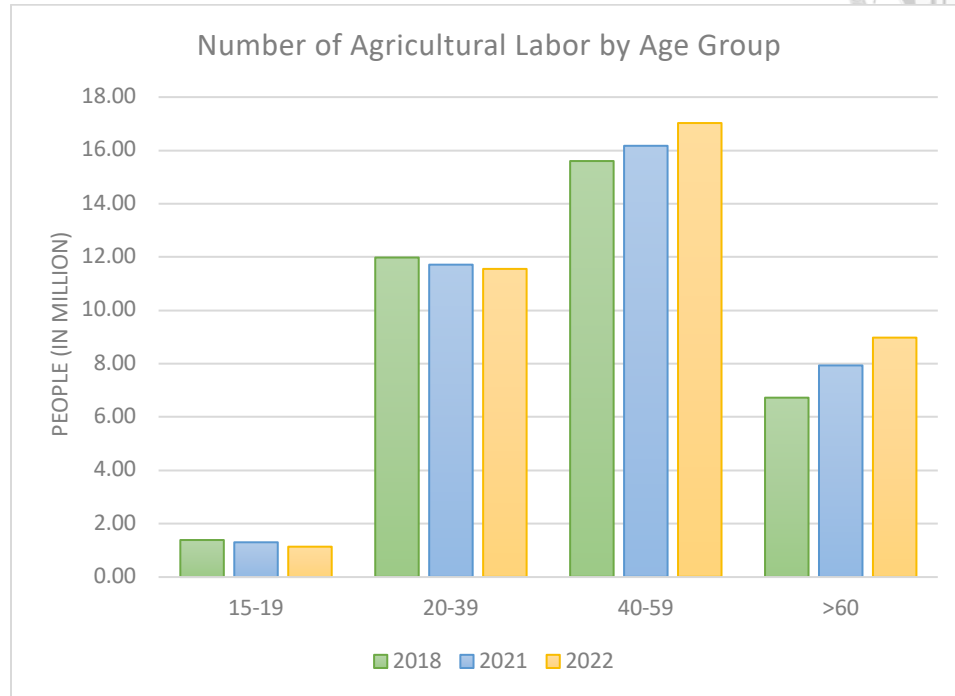
Note. Based on data from BPS, 2013; 2023.

Producing 54.6 million tonnes in 2019, Indonesia was among the top three rice producers in Asia behind China and India (FAO, 2021). Interestingly, even with such high production, domestic rice demand remained unmet. Between 2015 and 2019, Indonesia imported on average 1.03 million tonnes of rice annually (BPS, 2020). Meanwhile, the demand for food in Indonesia is predicted to continue increasing (Ngadi et al., 2023). This rise in food demand, without a corresponding increase in agricultural labor, calls for special actions to mitigate the declining enthusiasm of Indonesians toward careers in agriculture. This decline also includes young agricultural laborers in Indonesia, it was recorded that approximately 90,251 young farmers exit the sector annually, or about 2.12% per year (Pusdatin, 2019).



Figure 2. 2

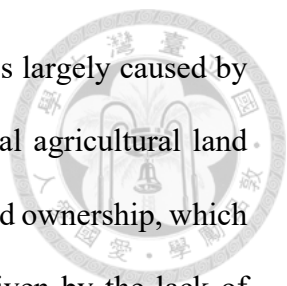
Agricultural Labor Based on Age Group from 2018 to 2022



Note. Based on data from BPS, 2022.

As can also be seen from Figure 2.2, along with the declining number of agricultural workers, between 2018 and 2022, particularly among the 15–19 and 20–39 age groups, the proportion of farmers aged 40–59 and over 60 years showed significant growth each year. In 2018, 18.84% of agricultural workers were aged over 60, but by 2022 this figure had increased to 23.20% of all agricultural workers in Indonesia (BPS, 2022). Furthermore, 60% of the total farmer population in Indonesia is aged over 45 (BPS, 2023), indicating an aging farmer population.

Census data indicate that the service sector (56.82%) uses the most young workers, followed by manufacturing (25.16%) and agriculture at 18.01% (BPS, 2022). Susilowati



(2016) claims that the declining number of young farmers in Indonesia is largely caused by the low rate of landholding. In the ten years leading to 2023, individual agricultural land ownership decreased by 7.45%, in contrast with corporate agricultural land ownership, which sharply increased by 35.54%. The decline in young farmers is also driven by the lack of growth opportunities in the sector, slow farm management development, and the limited incentives received by farmworkers (Susilowati, 2016). In their review, Rafani et al. (2020) added that the decreasing youth interest in working in agriculture is also influenced by low prestige, high risk of crop failure and price instability, unstable income, and a prevailing social perception among older generations who do not wish for their children to become low-paid farmers, along with the phenomenon of land fragmentation (narrow land ownership). This is supported by the study conducted by Widiyanti et al. (2020), which stated that a major issue faced by the younger generation is hesitation, because of social influences, agriculture is commonly seen as synonymous with poverty, educational shortcomings, and physically dirty labor, not as intellectual work.

One should underline that in Indonesia agriculture is not only a source of income but also the foundation of national economic growth and food security (Afriyanti et al., 2023). Issues of agriculture and food security should also take top priority in keeping with human development interests (Bukhtiarova et al., 2019). Therefore, the issue of elderly farmers in Indonesia has to be addressed seriously. Guaranteeing ongoing farmer regeneration is essential for anyone committed to the future stability and sufficiency of the agricultural labor force (Widiyanti et al., 2020). This means that it is essential to ensure the regeneration of farmers or successors to farming businesses. The younger generation must be more actively involved in agriculture to ensure a skilled and sufficient workforce in the sector. Without

adequate farmer regeneration, the agricultural sector may struggle to sustain food production or support Indonesia's broader regional economic development in the future (Osly et al., 2020.).



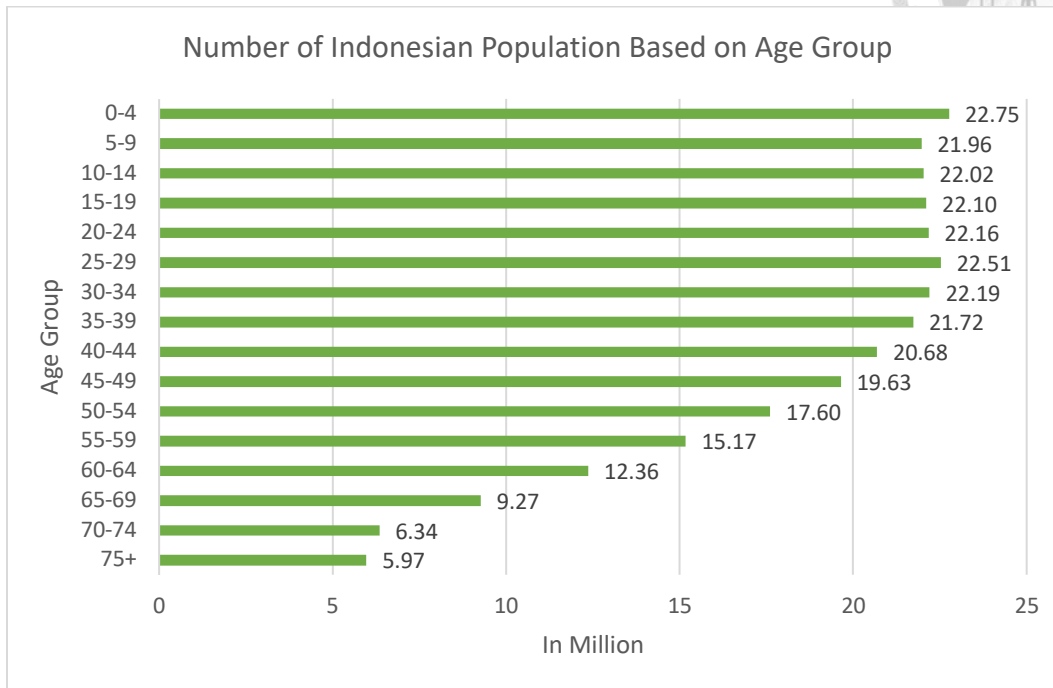
2.2 Young Farmers' Role in National and Rural Development

One of the strategic ways to advance a country's long-term development is by creating a high-quality next generation. It is also said that youth are the main human resource for development and key agents for social change, economic growth, and technological innovation (United Nations, 2010). Moreover, the demographic bonus currently experienced by Indonesia demands that young people be smart in taking roles and seizing opportunities. The definition of youth cannot be restricted to certain age limits. In Indonesia, for example, the Indonesian Law on Youth of 2009 defines youth as individuals between the ages of 16 to 30 years, which represents a crucial period of growth and development. For the purpose of international comparison, the United Nations (UN) categorizes youth as people aged 15 to 24 years. The United Nations Population Fund (UNFPA), however, makes a distinction between adolescents and youth, defining adolescents as those between 10 and 19 years old, and youth as individuals aged 15 to 24 years (BPS, 2010). However, BPS (2010) also noted that the widely accepted view is that youth signifies the transitional period between childhood and adulthood, moving from childhood dependence to adult independence. This phase of life is characterized by distinct changes in physiological, legal, psychological, economic, and social dimensions.



Figure 2.3

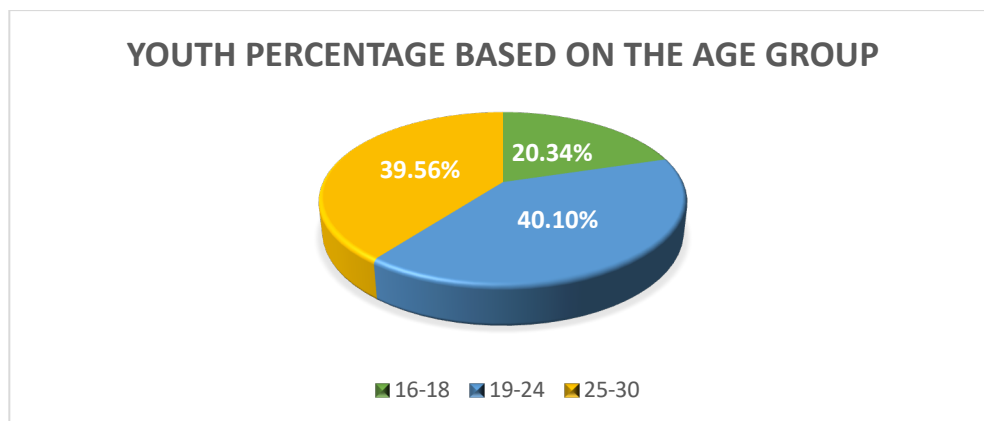
Indonesian Population by Age Group in 2024




Note. Based on data from BPS, 2024.

Figure 2.4

Indonesian Youth by Age Group in 2022



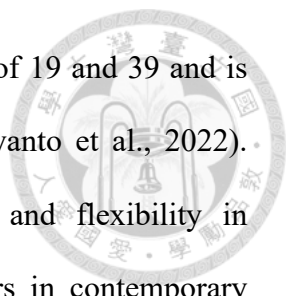
Note. Based on data from BPS, Susenas 2022.



Defined as people between 16 and 30, the 2022 National Socio-Economic Survey (Survei Sosial Ekonomi Nasional, Susenas) reported 65.82 million young people in Indonesia, or almost one-quarter of the total population, exactly 24% (Statistics Indonesia, Badan Pusat Statistik - BPS, 2022). Figures 2.3 and 2.4 show the distribution by age groups in 2024 and 2022 respectively. The data shows clearly that Indonesia is now experiencing a demographic bonus time defined by the predominance of the 15–30 age range, with those between 19 and 24 making the most noticeable segment within the young population.

The existence of youth in a country is often likened to a double-edged sword, representing both potential and challenges for development. If managed properly, this demographic can become a foundational asset for national progress and, at the same time, help overcome the challenges associated with it (Prabowo, 2021). As one of the supporting pillars of Indonesia's economy, the talent and abilities of youth within the agricultural industry must also receive proper attention. In his study, Addo (2018) emphasized that, in addressing the issue of low agricultural productivity, the youth plays a critical role; their numbers, energy, curiosity, and adaptability can be within agriculture to promote food security. Furthermore, he pointed out that although the youth bulge creates its own difficulties, it also provides a chance not only to tackle problems of youth unemployment and food security but also to address more general issues including the aging farming population, technological and digital revolutions in the agri-food sector, changing food consumption patterns, and environmental deterioration (Addo, 2018).

Inspired by industrialized countries like the Australia, Canada, United States, and countries in Europe, the Indonesian government has supported the idea of “Millennial Farmers” by stressing the need of maintaining young involvement in agricultural occupations.

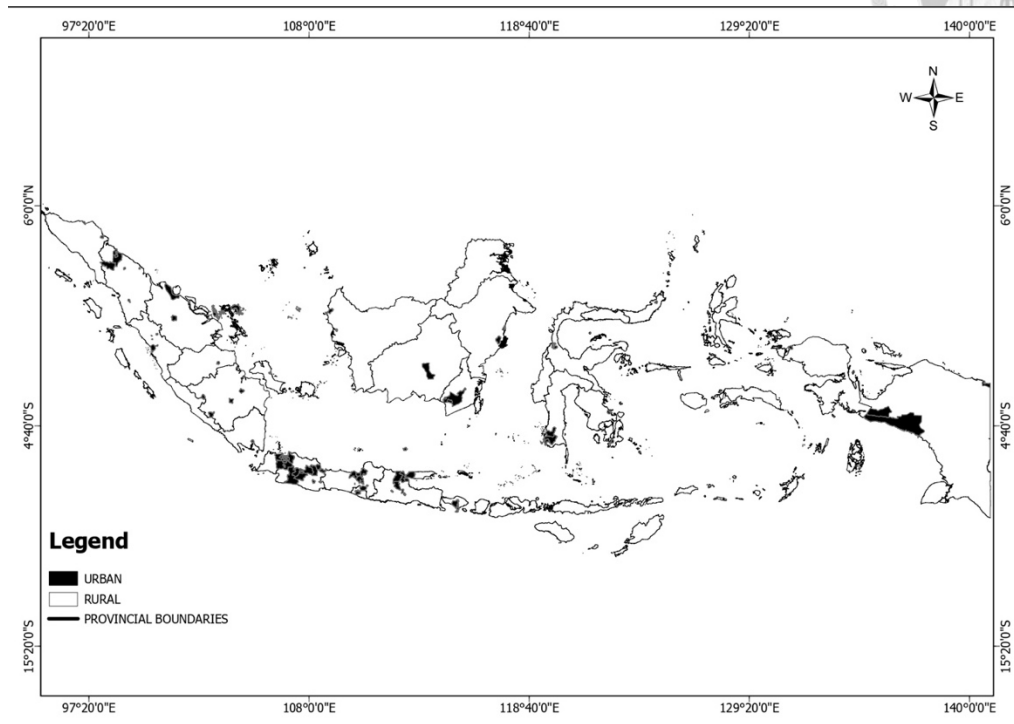


Generally speaking, this group is defined as farmers between the ages of 19 and 39 and is marked by quite high degrees of schooling (Savira et al., 2022; Haryanto et al., 2022). Millennial farmers are therefore anticipated to promote creativity and flexibility in technology and information, so placing themselves as future initiators in contemporary agriculture (Savira et al., 2022; Haryanto et al., 2022). Moreover, as a modern generation, millennial farmers can use communication tools to promote agricultural products, therefore enhancing distribution efficiency and allowing consumers and farmers to gain from more competitive prices in comparison to conventional, long marketing chains (Arvianti et al., 2022). Increasing the efficiency of agricultural businesses relies on adopting of such technology.

Given their particular benefits, Indonesian young people are more and more obviously viewed as major forces in rejuvenating the agriculture industry. In line with the continuing demographic bonus, involving young farmers in agriculture is crucial to respond to demographic shifts (Rafani & Arsanti, 2023). Young farmers possess the potential to promote more sustainable agricultural practices compared to traditional farmers (Sarkar et al., 2021). In addition, they are seen as capable of bridging generational gaps between novice and experienced farmers (Haryanto et al., & Yunandar, 2022). Moreover, youth, especially graduates, are now more than ever expected to become entrepreneurial and play active roles in addressing social and national development challenges, including the pressing issue of graduate unemployment (Addo, 2018).

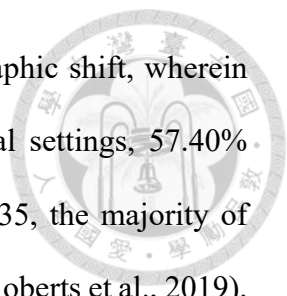
Figure 2.5

Indonesian Regional Map



Note. Adapted from Malamassam, 2022.

Efforts to advance agriculture are inherently and closely linked to the development of rural areas. Indonesia, as a developing nation, still possesses a significant number of rural administrative units, reaching 84,276 village-level administrative regions (BPS, 2024). As illustrated in the spatial distribution map (Figure 2.5), white-colored rural areas are extensively dispersed throughout the country. Additionally, Indonesia is often referred to as an agrarian nation, a designation reflecting the fact that a large proportion of its national economy remains dependent on the agricultural sector. Naturally, Indonesia also has vast agricultural lands, the majority of which are situated within rural territories (BPS, 2024).



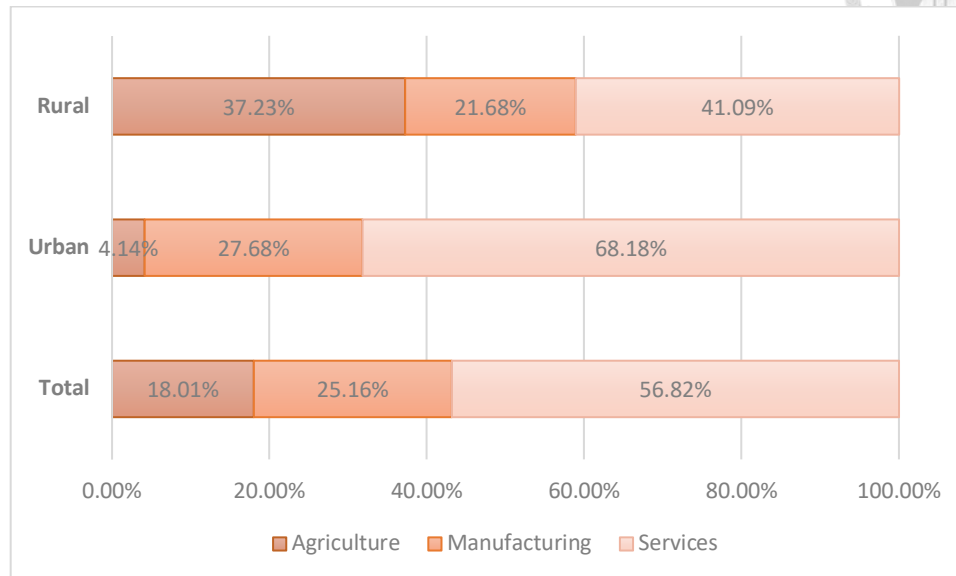
Regrettably, the current distribution of youth reflects a demographic shift, wherein the percentage of youth residing in urban areas exceeds those in rural settings, 57.40% compared to 42.60% (BPS, 2022). Projections also suggest that by 2035, the majority of Indonesia's population, about two-thirds, will be concentrated in cities (Roberts et al., 2019). Young people's growing urban migration is influenced by many factors, including the need for better infrastructure (BPS, 2022), access to better education, and the wish to have a family (King et al., 2012), and most importantly, job-related issues (BPS, 2010).

Given that Mukti et al. (2018) underline in their research that young people have more ability to organize village community components and promote citizen involvement in local development activities, this demographic trend is very regrettable. They also have group ability to use the possibilities and local resources in rural environments (Puspitasari, 2015). Furthermore, village entrepreneurship motivated by young people could be a catalyst to ignite a group spirit among villagers, hence fostering community-based value development in rural economies (Mukti et al., 2018). Irawan (2023) further supports this viewpoint by arguing that rural entrepreneurship and economic growth are crucial for allowing active participation of rural people in economic activities intended to improve their quality of life. Entrepreneurship can help rural economic development by means of good influence if one puts it differently: improving quality of life, increasing people's skills, enhancing market access, and generating new employment opportunities.



Figure 2. 6

Youth Jobs by Business Field and Rural Status in 2022



Note. Based on data from BPS, Sakernas Agustus 2022.

As illustrated in Figure 2.6, more than half (56.82%) of Indonesian youth are currently employed in the service sector. When employment data is disaggregated by regional classification, it reveals distinct patterns in youth employment sectors between urban and rural areas. Despite rural areas being the natural locus for agricultural activity, they do not demonstrate a dominant proportion of youth employment in agriculture. Although the engagement of rural youth in agriculture remains comparatively high at 37.23%, the service sector has become increasingly attractive, not only to urban youth but also to a significant share of rural youth, which has now reached 41.09%.

Multiple reasons underline the decline interest of young individuals in agricultural work, including the diversification of non-agricultural enterprises, the underdeveloped state of the agricultural industry in rural areas, the limited generational succession in farm management, and the absence of specific policies or incentive schemes tailored for young or

beginning farmers (Susilowati, 2016; Rachmawati & Gunawan, 2020). Therefore, enhancing the development of Indonesia's rural areas is one of the essential methods to sustain its agricultural economy. This includes improving agricultural systems, creating more job opportunities, increasing access to markets and capital, supporting infrastructure, and other related activities. Implementing these initiatives should help young people to stay in rural regions and to show more desire to work in agriculture.

2.3 Challenges and Government Role

The continuous decline in the number of young farmers in Indonesia, as illustrated in Figure 2.2, is influenced by a variety of internal decisions and external environmental factors. Evidently, several issues are associated with the aging workforce in the agricultural sector, most notably that agriculture has become increasingly unattractive to a significant proportion of Indonesian youth (Leavy et al., 2014). Young people often perceive farming and rural futures as unappealing. Agriculture is not regarded as a competitive sector and is frequently viewed as a last-resort occupation when no other options are available (White, 2020). Moreover, empirical studies reveal that agricultural work is commonly considered menial, offering low wages, high uncertainty, and significant risk exposure (FAO, 2021).

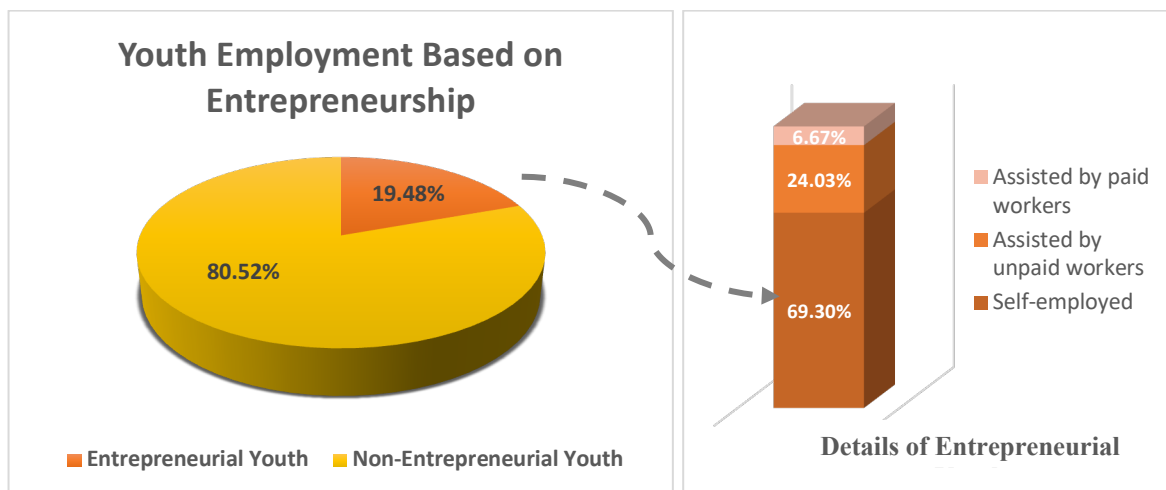
Even among young individuals who choose to pursue careers in agriculture, numerous challenges persist. These include limited access to farmland, rapid land-use change from agricultural to residential or industrial purposes, insufficient access to technical and financial aid, exposure to environmental threats and market price instability, poor availability of market information, limited integration into value chains (IFAD, 2018), as well as restricted access to credit and mentoring. Furthermore, many young farmers have little to no

prior experience and face barriers to receiving proper training (Adeyanju et al., 2020; Katrodia et al., 2018; Fayolle et al., 2015). Not all regions or youth demographics in Indonesia have equitable access to sustainable agricultural technologies, and low levels of education may further impede the adoption of improved agricultural practices (Priani et al., 2023).

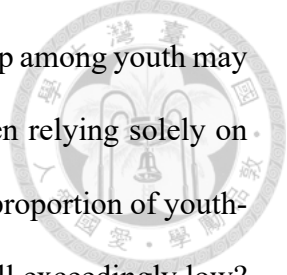
From a broader perspective, the entrepreneurial drive among Indonesian youth remains relatively low. As shown in Figure 2.7, only 19.48% of young people in Indonesia are engaged in self-employment or entrepreneurial activities. The majority (80.52%) are employed as laborers or staff, unpaid family workers, or as independent workers in sectors related to agriculture and those outside of it. Even among the small subset of youth who do pursue entrepreneurship, only 6.67% have progressed to the stage of managing a business supported by paid employees (BPS, 2022)

Figure 2. 7

Indonesian Youth Entrepreneurs in 2022



Note. Based on data from BPS, 2022.

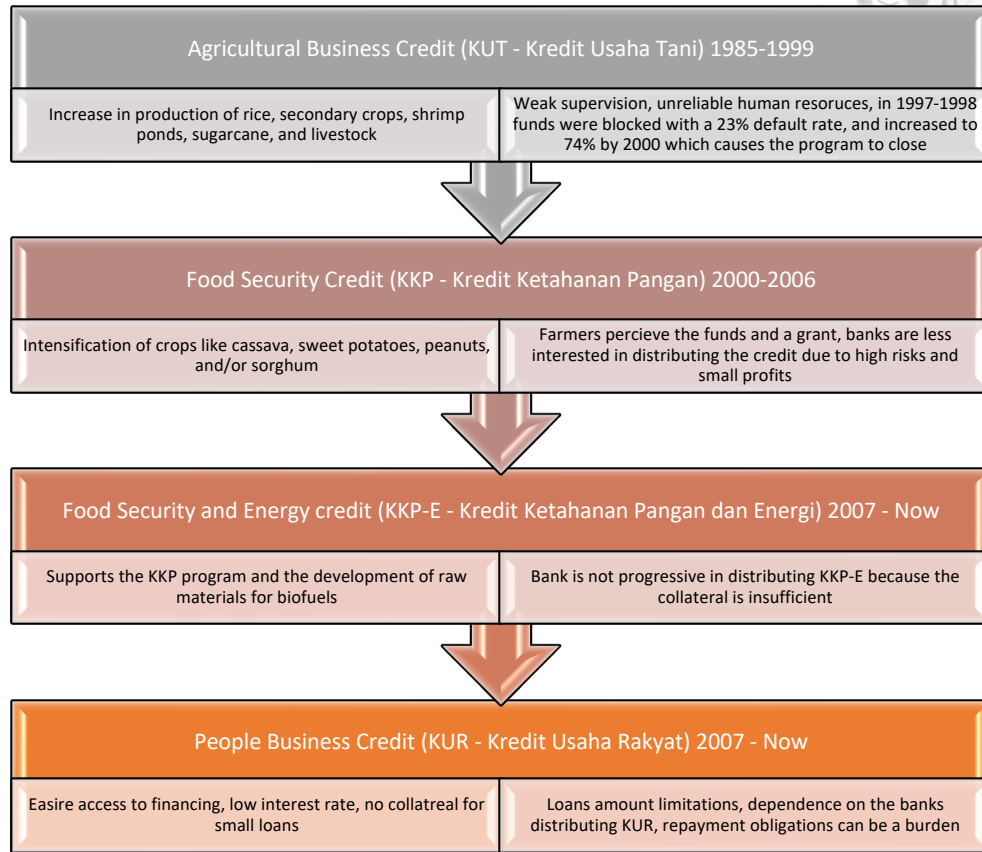


This condition reflects that although awareness of entrepreneurship among youth may be emerging, youth-led enterprises generally remain small in scale, often relying solely on personal labor or unpaid workers. It raises a critical question, why is the proportion of youth-owned businesses that expand to the level of employing paid laborers still exceedingly low? This indicates that efforts of fostering youth engagement in the agriculture industry must be complemented by strategies aimed at raising awareness and stimulating interest in entrepreneurship, particularly in the context of agricultural entrepreneurship. Many agricultural scholars have acknowledged the significant potential of agripreneurship to contribute to economic growth by creating job opportunities that directly and indirectly benefit local communities, while also strengthening food security and nutrition (Bairwa et al., 2014; Mujuru et al., 2014; Rajaei et al., 2011).

To address these challenges, the Indonesian Ministry of Agriculture has carried out a number of strategic efforts to modernize farming practices and fostering youth engagement. One such initiative involves expanding access to agricultural enterprise credit through the People's Business Credit (Kredit Usaha Rakyat, KUR), which began in November 2007 as a financing program for farmers (Wahyuni et al., 2020). Historically, this program evolved from the Farmer Business Credit (Kredit Usaha Tani, KUT) introduced in 1985, followed by the Food Security Credit (Kredit Ketahanan Pangan, KKP) in 2000, which was later enhanced into the Food and Energy Security Credit (Kredit Ketahanan Pangan dan Energi, KKP-E). However, several structural issues, including delays in fund disbursement, bureaucratic complexity, weak oversight, unskilled human resources, misalignment with needs, high delinquency rates, and limited bank profit margins, led to the discontinuation of previous credit programs (Wahyuni et al., 2020).

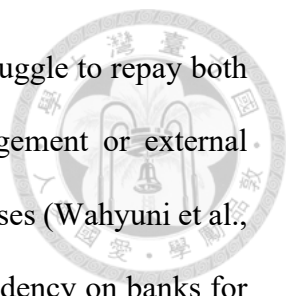
Figure 2. 8

Indonesian People's Business Credit Program



Note. Adapted from Wahyuni et al., 2020.

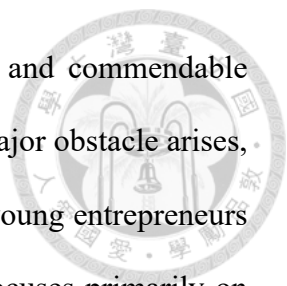
The People's Business Credit (Kredit Usaha Rakyat, KUR) program continues to be implemented to this day, offering interest rate subsidies in an effort to enhance its outreach, particularly among micro and small enterprises. The primary objective of this interest rate subsidy is to encourage new borrowers from the micro and small business segments to access KUR financing. As a result, farmers are expected to gain easier access to working capital at lower interest rates, ultimately reducing their agricultural production costs (Wahyuni et al., 2020). Mosley (2010) and Feryanto (2017) have both affirmed that the KUR program exerts a positive and significant impact on increasing farmers' income. However, it is important to



underscore that there is always a risk of loan default. Borrowers may struggle to repay both the principal and the interest due to inefficiencies in business management or external constraints such as market fluctuations, natural disasters, or economic crises (Wahyuni et al., 2020). In addition, limitations in loan amounts and the program's dependency on banks for credit distribution remain persistent challenges (Wahyuni et al., 2020).

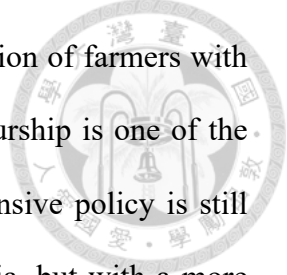
Another major initiative undertaken by the Indonesian Ministry of Agriculture is the Youth Agripreneurship Development Program (Program Penumbuhan Wirausahawan Muda Pertanian, PWMP), which was launched in 2016. This program targets students and alumni from the Agricultural Development Polytechnic (Politeknik Pembangunan Pertanian, Polbangtan), vocational agricultural schools under the Ministry of Agriculture, as well as partner universities (Rabithoh et al., 2023). The PWMP program specifically aims to cultivate awareness, self-reliance, and the entrepreneurial spirit young individuals participating in agriculture. It also seeks to develop viable business opportunities for graduates while simultaneously promoting the advancement of agricultural education institutions (Sugiarta, 2020).

In its implementation, this program is carried out through four stages. The first stage, called Awareness and Growth, encourages students and alumni from partner schools of the Indonesian Ministry of Agriculture to start a business according to the proposed plan, while providing capital for the business. The second stage, called Development, focuses on providing further guidance to participants to achieve an increase in sales. The third stage, titled Independence, aims to prepare businesses to become self-sustaining, with legal recognition under the law. The final stage, Business Incubation, focuses on activities for developing partners and community empowerment (MIS YESS, 2021).



However, despite the fact that this program represents a bold and commendable breakthrough by the Indonesian Ministry of Agriculture, in practice, a major obstacle arises, namely the lack of business networks and marketing channels for new young entrepreneurs (Sugiarta et al., 2020). This is a critical issue, given that the PWMP focuses primarily on providing capital and training but lacks efforts to create a robust market environment to balance the business ventures established each year through the program. In addition to running large-scale programs previously mentioned, the Ministry of Agriculture also continues to focus on agricultural infrastructure development, launching the farmer card program, providing fertilizer subsidies, modernizing agricultural tools, and promoting technology adoption.

However, for agricultural enterprises or activities to be successful, a supporting environment is required throughout the supply chain, from upstream (production) to downstream (distribution). Government policies aimed at streamlining agricultural supply chains are also crucial (Yeritsyan et al., 2024). It has been reported that young people in rural areas aspiring to enter the agri-business sector encounter difficulties because of the lack of well-established value chain systems, weak connections among economic players such as buyers, suppliers, service providers, and entrepreneurs, as well as limited access to business development opportunities (IFAD, 2018). The programs mentioned earlier only address or support agricultural processes at one stage, not the entire agricultural ecosystem. For instance, the People's Business Credit Program, the PWMP, the farmer card program, fertilizer subsidies, agricultural tools modernization, and technology adoption programs only address issues in the upstream sector, while agricultural infrastructure development programs focus on solving downstream problems.



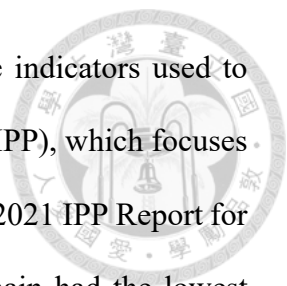
In their work, Rafani & Arsanti (2023) mentions that “the regeneration of farmers with the support of working ecosystems and holistic agricultural entrepreneurship is one of the key solutions” (Rafani & Arsanti, 2023). Therefore, a more comprehensive policy is still needed, one that aims to sustain the agricultural generation in Indonesia, but with a more holistic approach, meaning it should build and support all stages of the agricultural process, creating a complete and integrated agricultural ecosystem.

2.4 Youth Issues and the YESS Program

2.4.1 Youth Issues in Indonesia

In addition to the agricultural issues already discussed in previous sections, the Indonesian government is also facing challenges related to the quality of life of its youth. Quality of life can be measured within various factors, one of which is the high youth unemployment rate in Indonesia, which even exceeds the national open unemployment rate (Tingkat Pengangguran Terbuka, TPT). In 2022, the youth unemployment rate was 13.9%, while the national unemployment rate was only 5.86%. This means that approximately 14 out of every 100 young people in the workforce are not absorbed into the labor market (BPS, Sakernas, August 2022). Another challenge is that 54.31% of the youth are employed in precarious employment, which is characterized by temporary or unstable work.

This situation raises several critical questions, such as how to produce enough nutritious food to meet the anticipated increase in food demand and how to create decent and sustainable jobs, particularly for the large youth population (Addo, 2018). The still-high percentage of youth working with low incomes also presents a challenge in improving the quality of the youth workforce, given that around 33.05% of youth earn less than two-thirds



of the median wage. The open youth unemployment rate is one of the indicators used to measure the Youth Development Index (Indeks Pembangunan Pemuda, IPP), which focuses on employment opportunities and labor market access. According to the 2021 IPP Report for Indonesia, the employment opportunities and labor market access domain had the lowest performance among the five domains that make up the IPP (BPS, 2022). Therefore, policies that address the lack of job opportunities for youth are essential.

In addition, examining the expenditure distribution more closely highlights that 38.32% of youth live in households within the bottom 40% expenditure distribution, 41.08% within the middle 40% expenditure distribution, and only 20.60% fall into the top 20% expenditure distribution (BPS, 2022). To address the difficulties experienced by agricultural workers in Indonesia, it is crucial to pursue an economic transformation focused on creating a more flexible economy. This transformation should enhance the contributions of smallholder and young farmers to boost labor productivity in the agricultural sector. Achieving this goal involves adopting sustainable farming methods, building farmers' skills, promoting integrated agricultural systems, reinforcing institutions, and securing reliable market access (Rafani et al., 2020).

To address all the issues previously discussed, such as the increasing proportion of older-age workers in the agricultural sector, the declining interest of youth in agriculture, and the broader challenges of youth unemployment and low incomes, it is necessary to implement further policies that build upon previous initiatives. These policies should regulate and create a comprehensive agricultural supply chain environment, one that promotes efficient production activities, ensures sufficient distribution and market access, and introduces regulations that support the welfare of the agricultural ecosystem. In response, the Indonesian

Ministry of Agriculture, in collaboration with the International Fund for Agricultural Development (IFAD), launched the Youth Entrepreneurship and Employment Support Services (YESS) program.



2.4.2 YESS Program Overview

The YESS program is a youth entrepreneurship and employment development project in the agricultural sector funded by IFAD. The YESS program can be implemented as a pilot project for the youth development and revitalizing the farming sector in rural areas by providing support and mentorship to young men and women living in those communities. They are expected to become entrepreneurs or labor professionals in the agricultural sector (IFAD, 2018). The goal is to generate employment opportunities for young people in rural areas by promoting entrepreneurial development or job search in the agricultural sector (IFAD, 2018).

The YESS program focuses its efforts and the majority of its investments in four priority provinces: West Java, East Java, South Kalimantan, and South Sulawesi. These provinces were chosen based on the following criteria: (i) diverse profiles of both poverty levels, density and youth engagement in agriculture; (ii) areas of youth outmigration that have agricultural potential, as well as areas of youth immigration, mainly for education and employment; (iii) a high percentage of households estimated at being vulnerable to poverty and (iv) diverse agro-ecological zones that enable the piloting of different types of interventions (IFAD, 2018). With the creation of employment opportunities in the rural areas of Indonesia, young people in rural areas will have the opportunity to improve their economic

well-being through entrepreneurship or decent employment, while also enhancing their participation in the agricultural or rural economy (IFAD, 2018).



Table 2. 1

YESS Project Location

Province	Districts
West Java	Cianjur, Subang, Sukabumi, Tasikmalaya, and Bogor
East Java	Malang, Pacitan, Pasuruan, Tulungagung, and Banyuwangi
South Kalimantan	Banjar, Tanah Bumbu, Tanah Laut, and Hulu Sungai Selatan
South Sulawesi	Bantaeng, Bone, Bulukumba, Maros, and Gowa

Note. Based on data from IFAD, 2018.

Figure 2. 9

YESS Project Map



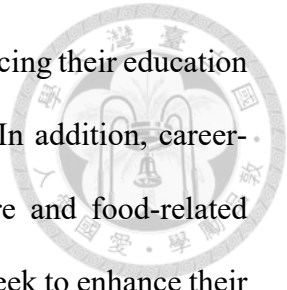
Note. Reprinted from IFAD, 2018.



The YESS received approval from IFAD’s Executive Board in December 2018. The total funding for the project amounts to USD 72.70 million, comprising the following components: (i) IFAD loan of USD 55.30 million, (ii) IFAD grant of USD 2.00 million, (iii) a contribution of the Government of Indonesia (GoI) of USD 12.09 million, and (iv) expected beneficiary contributions of USD 3.21 million. The IFAD financing agreement became effective on 17 June 2019, although implementation started effectively only in September 2019. With an implementation period of 6 years, the project is scheduled to be completed by 30 June 2025, with final closure set for 31 December 2025 (IFAD, 2018).

2.4.3 YESS Beneficiaries and Outcomes

The primary target group of YESS includes rural youth interested in entrepreneurship (creating their own business or developing an existing one) or seeking employment in the agricultural sector: (i) poor youth i.e., young people below the National Poverty Line (NPL), and (ii) vulnerable youth i.e., young people that remain vulnerable to economic shocks and are living on less than IDR 48,600 a day (USD 3.1) (IFAD, 2018). It also includes young women and men from among the economically active poor (IFAD, 2018). Young persons with disabilities and indigenous youth are also an important target group (IFAD, 2018). Among the primary target group of people living in poverty, the rural youth assisted by the YESS program are classified into two main categories: (1) young women and men who seek lucrative livelihood opportunities, specifically in their village, either through entrepreneurship or employment; and (2) young women and men who want to develop their capacity, including students from vocational high schools (Sekolah Menengah Kejuruan,

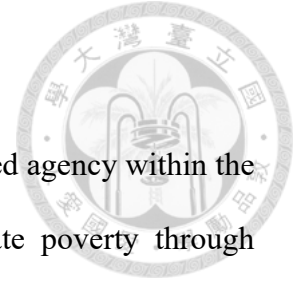


SMK) and students from agricultural colleges who are interested in advancing their education with a focus on agriculture as a means of income and related sectors. In addition, career-oriented junior high school students, potentially within the agriculture and food-related subsectors. Furthermore, young individuals with formal education who seek to enhance their skills through internships support their economic empowerment (IFAD, 2018).

The success indicators of the YESS program are to create: (1) a total of 32,500 youth gain employment in the agricultural sector; (2) a total of 33,800 young farmers/rural entrepreneurs become profitable; (3) a total of 50,600 young women and men gain employment in new enterprises; (4) an additional 100,000 rural youth use financial services, 4,300 households of which are young migrants; and (5) an additional 120,000 youth will receive financial education at the community level (IFAD, 2018).

As of December 2023, the project has benefited 85,174 individuals so far, which accounts for 38.7% of the target group of 220,000 (ages 16-30 years old) beneficiaries. The mission confirmed that the project is reaching its intended target group, all beneficiaries are under 35 years old and fall under the national poverty threshold or face economic instability. In addition, the mission is pleased to note the Project's successful inclusion of vulnerable groups such as indigenous peoples, persons with disabilities and youth living in remote areas. The total number of persons with disabilities reached is 656 of which 30% are women. The number of people from remote areas reached by the project is 4,967 (34% women) which includes indigenous people (IFAD, 2024).

2.4.4 YESS Implementation

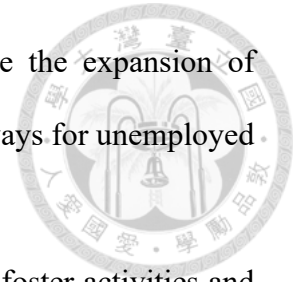


The International Fund for Agricultural Development, a dedicated agency within the United Nations (UN) that has been operating since 1977 to alleviate poverty through agricultural empowerment in developing countries, and which has been investing in Indonesia since 1980 (IFAD, 2018), acknowledges the difficulties in involving young farmers in the advancement of agriculture. These challenges include: (1) Insufficient access to knowledge, information, and education; (2) Limited access to land; (3) Inadequate access to financial services; (4) Difficulties in accessing green jobs; (5) Limited access to markets; and (6) Limited involvement in policy dialogue (FAO-CTA-IFAD, 2014). Therefore, the YESS program, through its components, is expected to address these challenges effectively.

The YESS program activities are managed by the Agricultural Development Polytechnic (Politeknik Pembangunan Pertanian, Polbangtan) in Bogor City, Gowa City, and Malang City, also Vocational High School in Banjarbaru City. In order to achieve the objectives outlined previously, the YESS program is divided into four components.

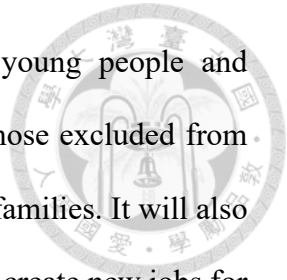
The first component, called *Rural Youth Transition to Work*, aims to increase opportunities for youth (both male and female) to secure employment. In the four focus provinces, YESS aims to implement initiatives that enhance the employability skills of agricultural students and unemployed rural youth, supporting their smooth transition into the labor market. This goal will be pursued in partnership with 30 chosen Technical Vocational Education and Training (TVET) institutions, which will be supported to strengthen their ability to deliver education and training that better meets labor market needs. Furthermore, YESS aids in broadening the national apprenticeship program to cover specific agricultural and agribusiness roles, formalized through a Memorandum of Understanding (MoU) with

the Ministry of Manpower (MoM). This initiative then also promote the expansion of apprenticeships within agribusinesses and modern farms, creating pathways for unemployed young people and school dropouts in the focus districts (IFAD, 2018).



The second component, *Rural Youth Entrepreneurship*, aims to foster activities and enterprises within the agricultural sector by supporting young farmers and small businesses, including non-agricultural entrepreneurship, ensuring that these enterprises are both responsive and sustainable. This component aims to encourage inclusive youth participation in farming and agribusiness by helping young farmers and small-scale off-farm entrepreneurs gain access to sustainable support services. This approach empowers them to recognize business opportunities, obtain land and modern technologies, establish connections with buyers and service providers, and build profitable, sustainable enterprises. These efforts are being carried out in collaboration with the Ministry of Cooperatives and Small and Medium Enterprises (MoCSME), through district-based Business Development Centers, including PLUTs (Business Incubators) as well as other potential Business Development Service Providers (BDSPs), which is being strengthened to better facilitate young people's access to their services. This involves creating a Mobilization and Outreach Network designed to leverage district resources and effectively connect with disadvantaged and vulnerable youth. Additionally, YESS is assisting in building a portfolio of SMEs and tech companies prepared for investment, aiming to expand and provide new employment, markets, and services to young farmers and entrepreneurs, thereby qualifying them for funding from venture capital and other financial institutions (IFAD, 2018).

The third component, *Investing in Rural Youth*, aims to facilitate youth access to the financial sector and expand the financial services available to them. This component



complements Component 2 by enhancing financial literacy among young people and broadening the financial services accessible to rural youth, especially those excluded from formal finance due to inexperience, as well as young migrants and their families. It will also support the growth of SMEs and Fintech/AgriTech companies aiming to create new jobs for youth or open new agricultural markets, by helping them become investment-ready and linking them to impact investment funds. Additionally, migrant remittances will be leveraged by encouraging savings and investments in rural enterprises (IFAD, 2018).

Finally, the fourth component, Enabling an Environment for Rural Youth, focuses on creating supportive conditions and institutions for the development of rural youth. This will be accomplished by encouraging collaboration among public, private, and civil society actors to boost youth involvement in agriculture within the target regions. The program will leverage successful innovative business models from these provinces to improve policies and regulations in priority areas that promote inclusive youth participation in the agriculture sector. Additionally, it will enhance the capabilities of youth organizations to engage effectively in policy discussions (IFAD, 2018).

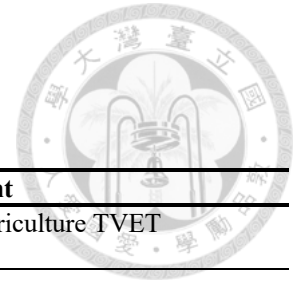



Table 2. 2

YESS Project Components and Scope

No.	Component	Sub-component	Scope of sub-component		
1.	Rural youth transition to work	Linking education and training to jobs	Capacity building for agriculture TVET institutions		
			Carrier orientation		
			Improved PWMP		
		Developing certified apprenticeship programs	Awareness campaign		
			Design of apprenticeship program		
2.	Rural youth entrepreneurship	Capacity building for business development service providers (BDSPs)	Enabling environment for young farmers and entrepreneurs		
			District outreach and mobilization network		
		Services to young farmers, entrepreneurs and smes	Business motivation and start-up training packages		
			Mentorship		
			Contract farming and business partnerships		
			SME readiness for investment		
			Capacity building for financial Inclusion	Financial education	
			3.	Investing for rural youth	Access to finance
		Assessment of rural finance environment for youth			
		Financial service partnerships			
Business plan development					
4.	Enabling environment for Rural youth	Partnerships building	Competitive grant		
			Provincial multi-stakeholder partnerships		
			Provincial mapping studies and land tenure Reviews		
		Rural youth mobilization	Land tenure and land access reviews		
			Young ambassadors		
			Digital rural youth		
		Policies and scaling up youth in agriculture	Policy development and youth participation in Policy dialogue		
			Youth participation in policy dialogue		
			Knowledge sharing, mainstreaming and scaling up		
			Capacity building moa and dinas agriculture		
			Scaling up preparations to other locations		
			Project management	Procurement of consultants and/or specialists	
				Procurement of equipment for project Management	
Studies and surveys					
			Supervision		

Note. Adopted from IFAD, 2018.

In greater detail, the activities implemented under the YESS Program are presented in Table 2.2. According to the findings of Saraswati et al. (2022), several strategic measures



must be undertaken to encourage greater youth participation in jobs or entrepreneurship in the agriculture sector. These measures include: (1) intensive efforts to establish millennial farmer forums or institutions and strengthen communication and collaboration networks among young farmers; (2) optimization of the millennial generation's potential by developing new entrepreneurs and enhancing their entrepreneurial competencies, including leadership skills, decision-making capabilities, strategic and analytical thinking, and competitiveness; and (3) local government policy support in the form of incentives, capital facilitation, access to agricultural machinery, technology adoption, marketing, and training for business activities in the agricultural sector.

It is therefore evident that the YESS Program constitutes a major policy innovation in Indonesia, with its design and implementation aligning with the recommendations outlined by Saraswati et al. (2022). However, this thesis, entitled “*An Analysis of Factors Affecting Young Farmers' Income in Indonesia: A YESS Program Evaluation*”, focuses exclusively on activities deemed empirically measurable in relation to changes in participant income, namely, apprenticeship, training, and competitive grants. Other activities, which are not directly measurable in terms of their impact on income, will be excluded from the statistical analysis.

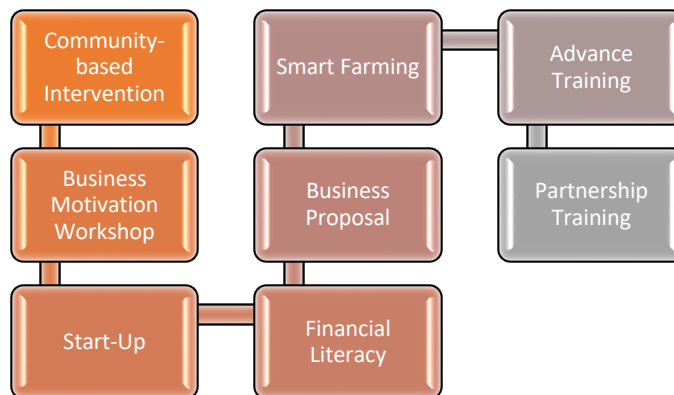
The training activities of the YESS Program are executed in several stages, delegated to regional-level implementing institutions. Although the training modules are systematically organized from foundational materials during the community-based interventions phase to more advanced training sessions (as illustrated in Figure 2.12), participants are not obligated to complete all stages. They are instead afforded the flexibility to selectively attend training sessions most relevant to the development of their business ventures. Furthermore,

beneficiaries may choose to repeat specific training modules should they find it necessary for further business enhancement.



Figure 2. 10

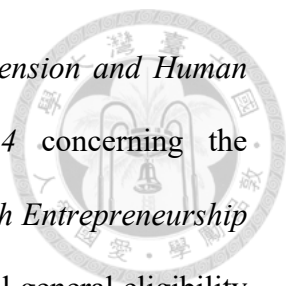
YESS Training Programs



Note. Adopted from IFAD, 2018.

As for the apprenticeship activities, the YESS Program has established a collaboration with the Ministry of Manpower of the Republic of Indonesia to expand the coverage of the existing national apprenticeship program by introducing placements in selected agricultural, agribusiness, and modern farming occupations. Upon completion of the apprenticeship period, participants are awarded official certificates as proof of their participation and skills development (IFAD, 2018).

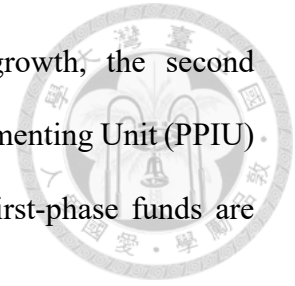
The final core activity is the provision of grant funding under the scheme known as the Competitive Grant Program. This program is termed “competitive” because not all YESS beneficiaries are automatically eligible to receive the grant. Prospective recipients must submit a comprehensive business proposal, complete with a detailed financial plan, for evaluation by the program administrators (IFAD, 2018).



According to the *Decision of the Head of the Agricultural Extension and Human Resource Development Agency Number: 106/Kpts/KL.230/I/06/2024* concerning the *Implementation Guidelines for the Competitive Grant Program for Youth Entrepreneurship and Employment Development in the Agricultural Sector (YESS)*, several general eligibility requirements apply. Applicants must be registered YESS participants between the ages of 17 and 39 at the time of application. They must not be the spouse of a previous grant recipient, and in the case that both spouses are YESS participants, only one may apply. Applicants must not be enrolled students, civil servants, employees of companies, military or police personnel, or individuals receiving a fixed monthly salary. Additional requirements include business legality documentation, submission of a business proposal in the prescribed format, and capital contributions of at least 30% for Pre-Business and Beginner categories or 50% for Developing and Advanced categories. Applicants must hold a business savings account, not be receiving other government capital assistance or financing from financial institutions, possess an active social media account and a personal email, and agree to the terms outlined in the Competitive Grant Acceptance Agreement. The proposed business location must not fall within protected or conservation forest zones.

Once all eligibility criteria are met and the applicant passes the three stages of selection, the grant disbursement is conducted in two phases, in accordance with the *Regulation of the Minister of Finance of the Republic of Indonesia Number 173/PMK.05/2016*. In the first phase, 70% of the total approved grant amount is disbursed. The remaining 30% is distributed in the subsequent year, contingent upon a performance evaluation. Eligibility for the second phase is determined based on the recipient's ability to reinvest profits into business development and demonstrate increased revenue. If evidence of

fund misappropriation arises or if the business fails to exhibit growth, the second disbursement may be denied. In such cases, the Provincial Project Implementing Unit (PPIU) is mandated to provide monitoring and guidance to ensure that the first-phase funds are utilized effectively and in accordance with the original business plan.

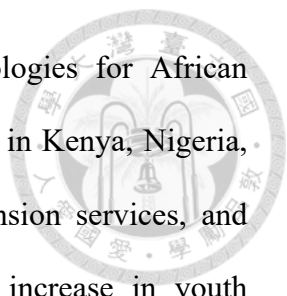


It is also important to note that recipients of the Competitive Grant are required to submit monthly progress reports through a dedicated application developed by the YESS Program. These reports must include a planned grant utilization outline, actual fund usage, revenue targets achieved, business income and expenditure statements, profit and loss reports, balance sheets, and bank records.

2.5 Studies on Young Farmers' Income

The phenomenon of aging farmers is not only prevalent in Indonesia but has become a global issue in the agricultural sector, affecting both developing and developed countries alike. The average age of farmers globally is estimated to be 60 years (BBC, 2019). Therefore, all efforts to sustain generational continuity in agriculture have become increasingly vital, particularly in ensuring farmers' welfare (Adeyanju et al., 2021). Consequently, a substantial body of prior research has evaluated various government programs aimed at enhancing farmers' income.

One of the few studies focusing on agripreneurship was carried out by Addo et al. (2018) in Ghana, which revealed that regardless of educational background, young participants in agricultural programs showed a higher likelihood of active participation in the agri-food sector compared to their non-participating peers. Beyond Indonesia, several countries have implemented initiatives similar to the YESS program. For instance, the

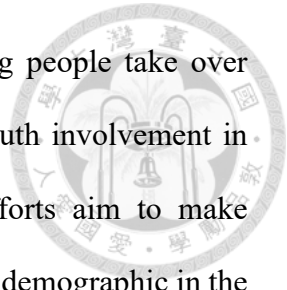


Empowering Novel Agri-Business-Led Employment through Technologies for African Agricultural Transformation (ENABLE-TAAT) initiative, implemented in Kenya, Nigeria, and Uganda, employed business incubation, training, advocacy, extension services, and access to finance and resources. Results showed a significant 7% increase in youth agripreneurs' income and a 75% improvement in food security in pooled data. Specifically, income rose by 54% in Nigeria and 37% in Uganda (Adeyanju et al., 2023). Based on these findings, Adeyanju et al. (2023) strongly recommend the formulation of policies that empower youth agribusiness, address credit access barriers, and support agricultural innovation among the youth.

Brazil has also launched a comparable initiative known as the Rural Young Entrepreneurs Program (RYEP), which offers entrepreneurship training to youth (Arguinzoni et al., 2017). Participants reported enhanced knowledge in business topics, improved capacity to run various business activities, and better access to credit. Moreover, although not statistically significant, an increase in participants' income was also documented (Arguinzoni et al., 2017).

In the European Union, policymakers have implemented the Common Agricultural Policy (CAP), aimed at income stabilization and sustainable agricultural development. Public subsidies under CAP have demonstrated positive and significant impacts on agricultural economic performance. Additionally, this policy has helped reduce economic disparities between central and peripheral regions, thereby improving the relative welfare of the agricultural sector within national economies (Castris et al., 2018).

The CAP also supports young farmers through initiatives like the “Young Farmers Scheme” offering financial aid, training, and advisory services. It also provides direct




payments, subsidies, and generational renewal programs to help young people take over farms. CAP funds training for sustainable agriculture and promotes youth involvement in rural development, such as agribusiness and agro-tourism. These efforts aim to make agriculture more appealing to younger generations and address the aging demographic in the sector. CAP's measures are successfully helping to revitalize the agricultural sector by integrating younger generations into farming and rural development (European Commission, 2018).

Comparable programs have also been adopted in Pakistan and the Philippines under the Training for Rural Economic Empowerment (TREE) Project. Activities included training, the establishment of savings and credit groups, and capacity building for partner organizations. In Pakistan, the project effectively lowered youth unemployment while tackling economic and social disparities affecting small households also women. In the Philippines, participants reported a 20% increase in household monthly income, thereby contributing to broader poverty alleviation and employment generation (Webb et al., 2005).

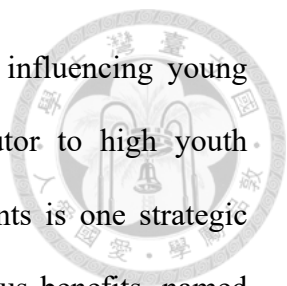
From these international experiences, it can be concluded that youth-focused agricultural programs consistently yield positive impacts on participants' income levels, though additional investigation is required to establish the significance and sustainability of these effects. In addition to evaluating program impacts, it is crucial to identify specific factors contributing to increased income among young farmers. This understanding will enable policymakers to tailor future agricultural initiatives more effectively.

In the context of the YESS program, although it encompasses numerous projects, this study focuses on three key components hypothesized to significantly influence income changes among young farmers: training, apprenticeship, and competitive grant distribution.



Training and mentoring are common features in government agribusiness programs. This stems from the observation that, generally, millennial farmers possess strong technical skills but often lack managerial and social competencies necessary for business development (Haryanto et al., 2022). Moreover, they frequently lack knowledge in cropping pattern management and farm financial planning (Zalukhu et al., 2022). Ongoing transformations in the agrifood landscape, spurred by technological advancement, evolving consumer demand, and environmental shifts, necessitate advanced professional skills for stakeholders across the agri-food value chain (Addo, 2018). Consequently, the development of small-scale farmers must begin with capacity-building through technical and managerial training rooted in agribusiness principles (Rafani et al., 2020).

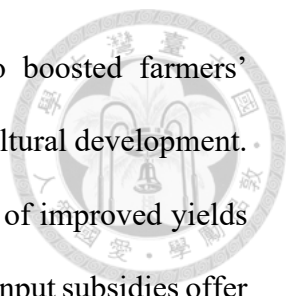
According to Ahmed et al. (2017), entrepreneurship training equips beneficiaries with essential business management skills by (1) raising awareness of customer needs and market-responsive product development, (2) enhancing marketing plan formulation, and (3) improving basic financial management. Additionally, Adeyanju et al. (2021) it is observed that, because of the swift progress in science and technology, farmers who have access to consulting or training services, whether from the government, academic institutions, associations, or private sector, tend to be more productive. Their analysis confirmed that those who sought expert advice reported higher incomes. Training has also been identified as an effective mechanism for enhancing workforce competence and supporting enterprise development (Mukaila et al., 2021). It is expected to enhance field-specific skills, increase self-confidence and job satisfaction, shorten learning curves, and deepen understanding of work environments (IFAD, 2018).



Beyond training, apprenticeship is another crucial component influencing young farmers' income. Limited work experience is a significant contributor to high youth unemployment rates. Investing in the technical education of adolescents is one strategic response to this challenge (BPS, 2010). Apprenticeships offer numerous benefits, named aligning theoretical and practical knowledge, fostering professional work habits, enhancing interpersonal skills, building networks, and preparing participants for full-time employment (Henneberry et al., 2019). Henneberry et al. (2019) also emphasized that internships provide experiential learning, leadership exposure, and career development opportunities, thereby reinforcing career interests and resume strength. According to Warinda (2013), hands-on experience obtained through internships is a critical complement to classroom learning and essential for career preparedness.

Henneberry et al., (2019) confirmed that students who completed internships outperformed their peers academically. Internships enhance students' knowledge base and learning motivation. Moreover, longer internship durations significantly impact participants' personal, academic, professional, and civic performance. For international agricultural interns, extended placements enable them to overcome cultural and language barriers, enhance technical competencies, and build social connections, ultimately improving productivity and income (Henneberry et al., 2019).

Among the YESS program's components, the competitive grant scheme stands out as a strategic intervention to enhance business capacity and directly impact income. Rafani et al. (2020) highlighted the allocation of village funds as a key opportunity for small-scale farmer development. Several studies support the effectiveness of grants and subsidies. For example, Li et al. (2022) reported that agricultural subsidies in China significantly increased

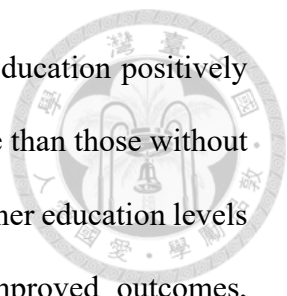


total planting area, yields, and farmer income. These subsidies also boosted farmers' willingness to continue farming, a vital mechanism for sustainable agricultural development. Ton et al. (2013), in a review of grant effectiveness, presented evidence of improved yields and income, with long-term impacts on household well-being. Similarly, input subsidies offer direct support to farmers' income, which is especially crucial during market fluctuations or adverse weather events (Madhu, 2022).

However, despite the documented benefits, such programs are not without criticism. Castris et al. (2018) found that while public subsidies positively influence economic performance, their marginal impact is four times lower than labor-related factors. Furthermore, overreliance on subsidies may reduce farmers' motivation to innovate or adopt sustainable agricultural practices, suggesting the need to balance short-term income gains with long-term innovation incentives (Madhu, 2022).

Beyond programmatic interventions, internal factors may also affect young farmers' income. These include location, age, gender, education level, marital status, family background, work experience, access to financial services, occupation type, and agricultural commodity involvement. Several studies have shown that farm income is influenced by socioeconomic variables such as education, credit access, age, land ownership, housing conditions, livestock ownership, extension services, and gender (Yusuf et al., 2018).

Location also plays a significant role. Based on Adeyanju et al. (2021), rural residency significantly enhances agripreneurship performance, likely because most agricultural activities are based in these areas and rural residents avoid transportation costs associated with commuting from urban areas.



In terms of education, Mukaila et al. (2021) found that formal education positively correlates with income. Farmers with high school education earned more than those without formal schooling. However, Adeyanju et al. (2021) argued that while higher education levels may increase program participation, they do not always lead to improved outcomes, suggesting that performance is not solely determined by formal education.

2.6 State of the Art

The phenomenon occurring within the agricultural sector, particularly in relation to young farmers, is not unique to Indonesia but has become a global challenge. Previous studies indicate that the global average age of farmers has climbed to 60 years (BBC, 2019), highlighting a serious issue concerning the sustainability of agriculture. In response, various countries have implemented policies and programs aimed at addressing this concern, including the YESS program in Indonesia, alongside comparable initiatives in countries such as Kenya, Nigeria, Uganda, Brazil, China, the Philippines, and others.

To date, empirical research specifically evaluating the effectiveness of YESS, especially in relation to the distribution of competitive grants, remains limited. Although numerous studies have assessed the impacts of various youth agribusiness interventions, few have rigorously examined the YESS program while accounting for potential selection bias arising from the non-randomized process of grant recipient selection. This selection bias may distort analytical outcomes, as individuals with certain characteristics, such as higher levels of education, greater work experience, or advantageous geographic locations, may be more likely to receive grants than others. Therefore, this research aims to address that gap by

undertaking a more comprehensive and empirical assessment of the impact of the YESS competitive grants, while explicitly considering the influence of selection bias.

Several relevant studies have identified the generally positive effects of youth agribusiness empowerment programs, including increased income and improved food security. However, despite these encouraging findings, there remain several limitations and challenges that warrant further investigation. Factors such as program effectiveness, grant accessibility, and youth engagement in agribusiness training activities still require closer scholarly attention. Table 2. 3 presents a table reviewing studies on youth agribusiness development and policy interventions to improve program effectiveness.



Table 2. 3

Review of Related Studies

Author	Data	Methodology	Output Measured	Key Findings
Adeyanju et al. (2021)	Survey of 455 participants from the Fadama GUYS program and 522 non-participants.	Endogenous Treatment Effect Regression (ETER) model	Average income of the program's participants	<ul style="list-style-type: none"> • Participation in the program was strongly influenced by age, years of formal education, marital status, current residence, employment type, and perception of training • Participation positively impacted youth agripreneurship performance, with participation increasing average income by 46% • Factors significantly influence agripreneurship performance include asset ownership and living in rural areas. Meanwhile job search activities have a negative impact on performance
Adeyanju et al. (2023)	Survey of 747 participants (2018) from the ENABLE-TAAT program and 716 non-participants	Endogenous Treatment Effect Regression (ETER) model	Agribusiness income and food security	<ul style="list-style-type: none"> • Participation significantly increased youth agripreneurship income by 7% and improved food security by 75% in the pooled analysis • Participation in the program was strongly influenced by awareness of agribusiness empowerment programs and perceptions about the programs • Factors significantly influence the youth agripreneurship income are gender (male), years of experience, land size, asset value, credit, extension, and residence
Ogbanje et al. (2015)	Survey of 360 respondents	Heckman's two-stage selection model	Off-farm income invested in farming	<ul style="list-style-type: none"> • Participation in the off-farm work was strongly influenced by education and household size • Age and farm capital significantly reduced the amount of off-farm income invested in farming • The ratio of farm asset to household asset and having farming as the primary occupation significantly increased the amount of off-farm income
Abdullah et al. (2017)	Survey of 360 small-scale farmers	Heckman's two-stage selection model	Farmers' agricultural output sold in the market and farmer welfare	<ul style="list-style-type: none"> • Factors influencing the level of commercialization include market access, access to credit, farmer education, farm size, and farming experience • Rice output, off-farm income, access to credit, and income from the sale of rice were important factors influencing the welfare of the household.

Chapter 3 Data and Metodology



3.1 Research design

To tackle the specified research questions, this study adopts a descriptive approach combined with quantitative estimations in its analysis. The descriptive approach is used to outline the characteristics of participants in the YESS program, as well as the activities they engage in. This study intends to deliver a deeper insight into the effects that relevant program activities may have on changes in participants' income.

As part of the research design, the analysis emphasizes empirical examination of activities that are directly associated with income changes among YESS participants. Based on literature reviews and program evaluations, several core activities within YESS are believed to exert a direct influence on income enhancement, namely apprenticeship, training, and competitive grants (IFAD, 2018). These three components are selected for in-depth analysis due to their potential to equip participants with improved skills and access to economic resources, which are expected to lead to increased income.

Nonetheless, it is crucial to highlight that this study empirically assesses only the impact of these three activities on income changes. Other activities within the YESS program, although potentially important for broader capacity development, cannot be directly linked to income changes and are therefore excluded from the statistical analysis. This approach ensures the research remains focused and analytically robust.

Quantitative data are obtained from participants who have engaged in these selected activities, using a structured survey conducted by the YESS program that includes questions on income, work experience, and involvement in the program. For more advanced

quantitative analysis, the study utilizes Stata version 16.1. By integrating descriptive and quantitative approaches, this research seeks to provide a clear depiction of the extent to which specific YESS activities contribute to changes in income. The overall analysis is expected to support a more comprehensive understanding of the program's effectiveness in improving the economic welfare of youth in Indonesia.

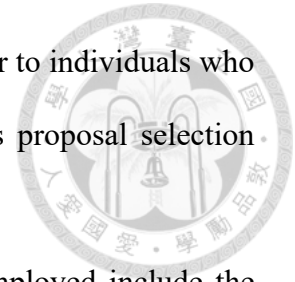
3.2 Data Collection

The population of this study comprises beneficiaries of the YESS program, limited to the period from 2021 to 2023, amounting to a total of 82,822 individuals. Among them, there are 1,867 individuals or about 2.2% who received competitive grants. The key dataset for this study is the program participant registry, which records individual profiles, grant recipient status, and other program-related information for all participants involved in the YESS program. In addition, monthly income were also collected specifically for individuals who received competitive grants, through a digital application developed by YESS. By integrating these multiple data sources, this study seeks to offer an in-depth understanding of the program's impact on its beneficiaries and to evaluate its effectiveness in improving the income of youth in Indonesia.

3.3 Methodology and Analytical Framework

The treatment group in this analysis consists of individuals who received competitive grants between 2021 and 2023. In contrast, YESS beneficiaries who registered during the same period but did not receive competitive grants are considered the control group. YESS beneficiaries refer to individuals who enrolled in the YESS program and received any form

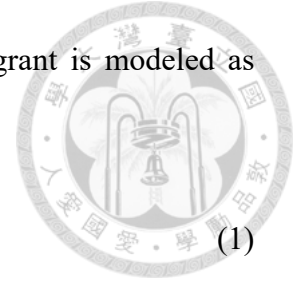
of benefit thereafter. In contrast, YESS grant recipients specifically refer to individuals who received competitive grants after submitting and passing the business proposal selection process.



To analyze the data in this study, the analytical techniques employed include the independent T-test to provide a valid understanding of the descriptive statistics (Balde et al., 2019) and the heckman two-step selection model to effectively addresses the issue of sample selection bias (Greene, 2003). Selection bias may occur when latent factors influence the error terms in both equations, namely v_i which is the error term in the income equation for individual i , reflecting unobserved factors that affect income, and ϵ_i which is the error term in the competitive grant receipt status equation for individual i , reflecting unobserved factors that influence whether the individual receives the competitive grant or not. This results in a correlation between the error terms of both equations, which can ultimately lead to biased estimates of income effects caused by the non-random assignment of competitive grant recipients.

According to Heckman (1979), this approach is only valid when the correlation between the two error terms is greater than zero, thereby allowing for correction of the selection bias. Additionally, as stated by Abdullah et al. (2019), this approach depends on the limiting assumption that the error terms are normally distributed. This study also assumes that the beneficiaries are risk-neutral. The risk-neutral assumption is used in this model to disregard more complex risk factors and not involving many variables related to individual risk preferences. This allows individuals to maximize the expected outcome without considering the fluctuations or uncertainties that may exist in those outcomes. With this assumption, the focus of the analysis can be more directed towards policies or larger external

factors. The income received from obtaining the YESS competitive grant is modeled as follows:



$$C_i = \gamma_0 + \gamma_1 D_i + \gamma_2 X_i + v_i \quad (1)$$

Where:

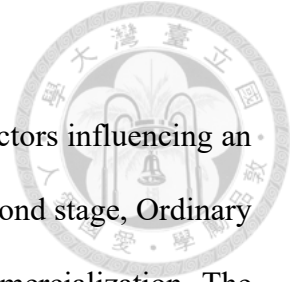
- C_i : average monthly income
- $\gamma_1 D_i$: the effect of receiving a competitive grant on the farmer's average monthly income, where D_i is a dummy variable equal to 1 if the farmer received a competitive grant from YESS, and 0 otherwise
- $\gamma_2 X_i$: the effect of explanatory variables on the farmer's average monthly income
- v_i : the error term in the outcome equation

The decision to apply for a grant-rests entirely with the farmers; if a farmer chooses to participate, it is a matter of self-selection. Therefore, this study assumes that farmers are risk-neutral. The probability of farmers receiving the grant can be estimated using an index function, as expressed below:

$$D_i^* = \beta_0 + \beta_1 Z_i + \epsilon_i \quad (2)$$

Where:

- D_i^* : a latent variable showing the difference in utility between receiving grant U_{IA} and not receiving the grant U_{IN} (determines whether a farmer receives the grant or not).
- $\beta_1 Z_i$: the effect of explanatory variables on the farmer's likelihood of receiving a grant



- ϵ_i : error term

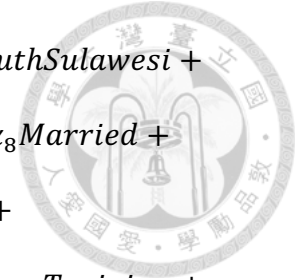
In the first stage, the Probit model is employed to identify the factors influencing an individual's likelihood of receiving a competitive grant, while in the second stage, Ordinary Least Squares (OLS) is applied to evaluate the welfare effects of commercialization. The Probit model also generates the Inverse Mills Ratio (IMR), which is utilized to correct for selection bias by accounting for non-random selection into the grant recipient group. In the context of the YESS program, this method is particularly crucial to ensure that unobserved factors influencing grant selection do not bias the estimation results, thereby enhancing the validity and reliability of the analysis. The IMR, represented by lambda (λ), is defined as the ratio of the value of the standard normal distribution's density function to the probability in the distribution's tail (Greene, 2003).

$$\lambda_i = \frac{\varphi(z)}{\Phi(z)} \quad (3)$$

Where:

- $\varphi(z)$: standard normal density function
- $\Phi(z)$: standard normal cumulative distribution function

Greene (2003) explains that when the parameter λ_i lacks statistical significance, sample selection bias is not considered problematic (Heckman, 1979). However, a significant λ_i suggests a notable difference between farmers awarded the competitive grant and those who were not. The two-step heckman method starts with the selection equation, which models the likelihood of farmers receiving the competitive grant, specified as follows,



$$\begin{aligned} \text{GrantRecipient} = & \alpha_0 + \alpha_1 \text{EastJava} + \alpha_2 \text{SouthKalimantan} + \alpha_3 \text{SouthSulawesi} + \\ & \alpha_4 \text{Age} + \alpha_5 \text{Man} + \alpha_6 \text{Disability} + \alpha_7 \text{Education} + \alpha_8 \text{Married} + \\ & \alpha_9 \text{Family} + \alpha_{10} \text{WorkBefore} + \alpha_{11} \text{IncomeBefore} + \\ & \alpha_{12} \text{IncomeBeneficiaries} + \alpha_{13} \text{FinancialBefore} + \alpha_{14} \text{Training} + \\ & \alpha_{15} \text{Internship} + \alpha_{16} \text{AgriSupport} + \alpha_{17} \text{FoodCrops} + \alpha_{18} \text{Horti} + \\ & \alpha_{19} \text{Livestock} \end{aligned}$$

(4)

The outcome equation (second step), which examines the effect of receiving the grant on farmers' monthly income, will be analyzed using the dependent variable: the average monthly income received by the respondent after receiving the competitive grant in 2024. The equations are estimated using OLS as follows,

$$\begin{aligned} \text{Income2024} = & \gamma_0 + \gamma_1 \text{EastJava} + \gamma_2 \text{SouthKalimantan} + \gamma_3 \text{SouthSulawesi} + \\ & \gamma_4 \text{Age} + \gamma_5 \text{Man} + \gamma_6 \text{Disability} + \gamma_7 \text{Education} + \gamma_8 \text{Married} + \\ & \gamma_9 \text{Family} + \gamma_{10} \text{WorkBefore} + \gamma_{11} \text{IncomeBefore} + \\ & \gamma_{12} \text{IncomeBeneficiaries} + \gamma_{13} \text{FinancialBefore} + \gamma_{14} \text{Training} + \\ & \gamma_{15} \text{Internship} + \gamma_{16} \text{GrantProposed} + \gamma_{17} \text{GrantRecieved} + \\ & \gamma_{18} \text{AgriSupport} + \gamma_{19} \text{FoodCrops} + \gamma_{20} \text{Horti} + \gamma_{21} \text{Livestock} + \\ & \gamma_{22} \text{IMR} \end{aligned} \tag{5}$$

In this analysis, the variables used in the selection model include factors that influence the likelihood of an individual being selected as a participant in the program. Meanwhile, the outcome model will focus on variables that measure changes in income for participants after engaging in activities within the YESS program, such as apprenticeship, training, and

competitive grants, as well as profile data that could also potentially influence income changes. A detailed compilation of the variables included in this study, along with their definitions, is provided in Table 3.1.

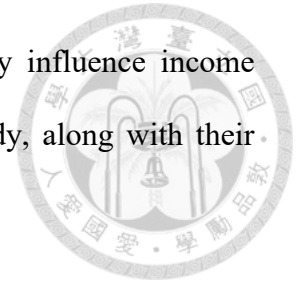




Table 3. 1

Variables used in the two-step Heckman model

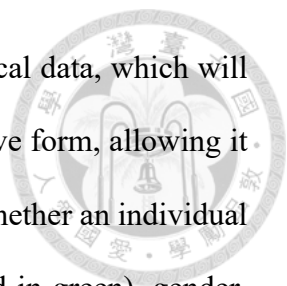
Variable	Definition
GrantReceptient	1 if the respondent received competitive grants from YESS, 0 otherwise
WestJava	1 if the respondent resides in West Java Province, 0 otherwise
EastJava	1 if the respondent resides in East Java Province, 0 otherwise
SouthKalimantan	1 if the respondent resides in South Kalimantan Province, 0 otherwise
SouthSulawesi	1 if the respondent resides in South Sulawesi Province, 0 otherwise
Age	respondents' age (years)
Man	1 if man, 0 otherwise
Disability	1 if the respondent has a disability, 0 otherwise
Education	level of education (years)
Married	1 if the respondent is married, 0 otherwise
Family	number of family members (person)
WorkBefore	1 if the respondent had a job before participating in YESS, 0 otherwise
IncomeBefore	respondents' monthly income before participating in YESS (in 100.000 Indonesia rupiah)
IncomeBeneficiaries	respondents' monthly income after being YESS beneficiaries (in 100.000 Indonesia rupiah)
FinancialBefore	1 if the respondent had access to a financial institution before participating in YESS, 0 otherwise
Training	the number of YESS training sessions participated in by the respondent
Internship	the number of YESS internships participated in by the respondent
GrantProposed	the nominal competitive grant proposed by the respondent (in 100,000 Indonesian rupiah)
GrantRecieved	the nominal competitive grant received by the respondent (in 100,000 Indonesian rupiah)
SelfEmployedAgri	1 if the type of job the respondent undertakes after become a beneficiary is classified as Self-Employed in the Agricultural Sector, 0 otherwise
SelfEmployedNon	1 if the type of job the respondent undertakes after become a beneficiary is classified as Self-Employed in the Non Agricultural Sector, 0 otherwise



Table 3. 1 (Continued)

Variable	Definition
WorkAgri	1 if the type of job the respondent undertakes after become a beneficiary is classified as Working in the Agricultural Sector, 0 otherwise
WorkNon	1 if the type of job the respondent undertakes after become a beneficiary is classified as Working in the Non Agricultural Sector, 0 otherwise
NotWork	1 if the respondent is not working after become a beneficiary, 0 otherwise
AgriSupport	1 If the business operated by the respondent after becoming a YESS beneficiary is in the Agricultural Support Products sector
FoodCrops	1 If the business operated by the respondent after becoming a YESS beneficiary is in the Food Crops sector
Horti	1 If the business operated by the respondent after becoming a YESS beneficiary is in the Horticulture sector
Livestock	1 If the business operated by the respondent after becoming a YESS beneficiary is in the Livestock sector
Plant	1 If the business operated by the respondent after becoming a YESS beneficiary is in the Plantation sector
Income2022	the average monthly income received in 2022 by the respondent who had received a competitive grant (in 100,000 Indonesian rupiah)
Income2023	the average monthly income received in 2023 by the respondent who had received a competitive grant (in 100,000 Indonesian rupiah)
Income2024	the average monthly income received in 2024 by the respondent who had received a competitive grant (in 100,000 Indonesian rupiah)

Note. In the heckman selection regression, *WestJava* and *Plant* will be treated as reference variables.



In addition to numerical data, the analysis also includes categorical data, which will be treated as dummy variables to convert qualitative data into quantitative form, allowing it to be incorporated into the empirical analysis. These variables include whether an individual has received a competitive grant, the province of residence (highlighted in green), gender, disability status, marital status, employment status prior to joining YESS, whether the individual had access to financial institutions before joining YESS, the type of job the respondent undertakes after becoming a beneficiary (highlighted in red), and the agricultural sector they are involved in (highlighted in blue).

Chapter 4 Results and Discussion



4.1 Summary Statistics

Summary statistics in Table 4.1 provides descriptive statistics for YESS beneficiaries from 2021 to 2023. In general, the table presents the mean, standard deviation, sample size, and percentage for each variable. This section displays summary statistics that illustrate the distribution of key variables such as region, gender, education level, marital status, income, and specific characteristics related to program participation.

In Table 4.1, a comparison of data among YESS beneficiaries is presented, which includes both grant recipients and non-grant recipients. It is important to note that out of the total sample size of 82,822 individuals, only 1,867 received grants. The majority of the population resides in East Java Province, which accounts for 37.08% of the total. Furthermore, the YESS beneficiaries are predominantly male, with a percentage of 61.69%. Looking briefly at the variable *IncomeBeneficiaries*, the average monthly income of grant recipients is significantly higher, at IDR 4,645,000,000, compared to non-grant recipients, who only have an average of IDR 1,659,900,000. This indicates that, at a glance, receiving a grant leads to a substantial increase in income. Moreover, in the *SelfEmployedAgri* variable, it is evident that YESS focuses on boosting young agricultural entrepreneurs, as demonstrated by the high percentage of grant recipients in this group, which reaches 89.45%. When looking at the agricultural subsectors they are engaged in, the majority of beneficiaries are involved in livestock farming, with a percentage of 33.83%, followed by food crops with 31.03%.

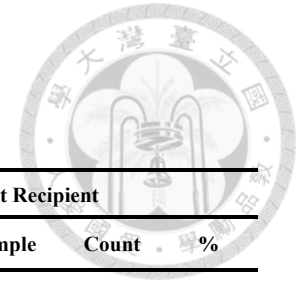


Table 4. 1

Summary Statistics of Beneficiaries

Variable	YESS Beneficiaries					Grant Recipient					Non-grant Recipient				
	Mean	Std. Dev	Sample	Count	%	Mean	Std. Dev	Sample	Count	%	Mean	Std. Dev	Sample	Count	%
GrantReceipient	0.023	0.148	82,822	1,867	2.25										
WestJava	0.274	0.446	82,822	22,691	27.4	0.217	0.412	1,867	405	21.69	0.275	0.447	80,955	22,286	27.53
EastJava	0.371	0.483	82,822	30,709	37.08	0.322	0.467	1,867	601	32.19	0.372	0.483	80,955	30,108	37.19
SouthKalimantan	0.12	0.325	82,822	9,955	12.02	0.179	0.383	1,867	334	17.89	0.119	0.324	80,955	9,621	11.88
SouthSulawesi	0.235	0.424	82,822	19,467	23.5	0.282	0.45	1,867	527	28.23	0.234	0.423	80,955	18,940	23.4
Age	27.288	5.958	82,822			28.891	5.139	1,867			27.251	5.97	80,955		
Man	0.617	0.486	82,822	51,094	61.69	0.747	0.435	1,867	1,395	74.72	0.614	0.487	80,955	49,699	61.39
Disability	0.006	0.079	82,822	515	0.62	0.018	0.132	1,867	33	1.77	0.994	0.077	80,955	482	0.6
Education	11.664	2.508	82,822			12.576	2.776	1,867			11.643	2.497	80,955		
Married	0.51	0.5	82,822	42,231	50.99	0.521	0.485	1,867	1,160	62.13	0.507	0.5	80,955	41,071	50.73
Family	3.396	1.292	82,822			3.242	1.304	1,867			3.399	1.291	80,955		
WorkBefore	0.521	0.5	82,822	43,181	52.14	0.8	0.4	1,867	1,493	79.97	0.515	0.5	80,955	41,688	51.5
IncomeBefore	10.383	15.116	82,822			9.314	21.394	1,867			10.408	14.939	80,955		
IncomeBeneficiaries	17.272	31.614	82,822			46.450	120.000	1,867			16.599	25.918	80,955		
FinancialBefore	0.615	0.487	82,822	31,873	38.48	0.426	0.495	1,867	796	42.64	0.384	0.486	80,955	31,077	38.39
Training	1.593	1.011	82,822			2.66	1.442	1,867			1.569	0.985	80,955		
Internship	0.017	0.131	82,822			0.029	0.168	1,867			0.017	0.13	80,955		
GrantProposed	382	244	1,867			382	244	1,867							
GrantRecieved	341	219	1,867			341	219	1,867							
SelfEmployedAgri	0.521	0.5	82,822	43,167	51.12	0.894	0.307	1,867	1,670	89.45	0.513	0.5	80,955	41,497	51.26
SelfEmployedNon	0.032	0.177	82,822	2,673	3.23	0.008	0.089	1,867	15	0.8	0.033	0.178	80,955	2,658	3.28

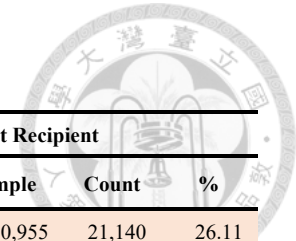


Table 4. 1 (Continued)

Variable	YESS Beneficiaries					Grant Recipient					Non-grant Recipient				
	Mean	Std. Dev	Sample	Count	%	Mean	Std. Dev	Sample	Count	%	Mean	Std. Dev	Sample	Count	%
WorkAgri	0.257	0.437	82,822	21,297	25.71	0.084	0.278	1,867	157	8.41	0.261	0.439	80,955	21,140	26.11
WorkNon	0.104	0.305	82,822	8,637	10.43	0.009	0.095	1,867	17	0.91	0.106	0.308	80,955	8,620	10.65
NotWork	0.085	0.279	82,822	7,048	8.51	0.004	0.065	1,867	8	0.43	0.087	0.282	80,955	7,040	8.7
AgriSupport	0.004	0.064	42,960	175	0.41	0.007	0.081	1,667	11	0.66	0.004	0.063	80,955	164	0.4
FoodCrops	0.31	0.463	42,960	13,329	31.03	0.111	0.314	1,667	185	11.1	0.318	0.466	80,955	13,144	31.83
Horti	0.275	0.447	42,960	11,831	27.54	0.343	0.475	1,667	571	34.25	0.273	0.445	80,955	11,260	27.27
Livestock	0.338	0.473	42,960	14,535	33.83	0.49	0.5	1,667	817	49.01	0.332	0.471	80,955	13,718	33.22
Plant	0.072	0.258	42,960	3,090	7.19	0.05	0.218	1,667	83	4.98	0.073	0.26	80,955	3,007	7.28
Income2022	160	309	252			160	309	252							
Income2023	330	477	1,522			330	477	1,522							
Income2024	322	431	1,293			322	431	1,293							

Note.

- Green shade represents the group of provincial variables.
- Red shade represents the group of employment type variables.
- Blue shade represents the group of agricultural sector employment variables.



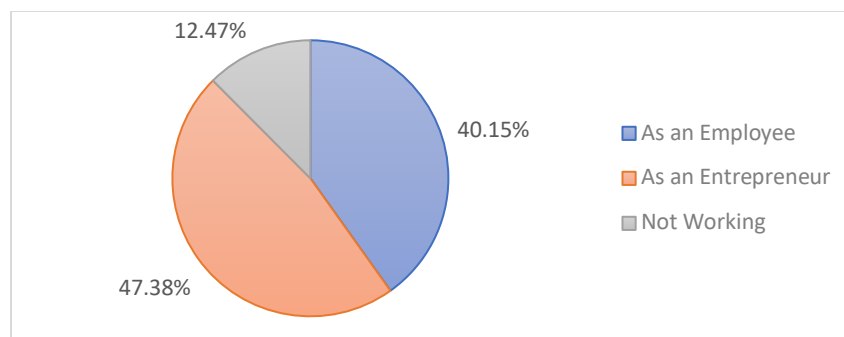
4.2 Descriptive Analysis

4.2.1 Beneficiaries Jobs After YESS Program

The employment status of YESS beneficiaries before joining the program is divided into two categories which are Employed and Not Employed, with 39,641 individuals (48%) being unemployed and 43,181 individuals (52%) employed. This indicates a significant number of individuals were not employed before joining YESS. However, from the Figure 4.1, the YESS program has proven to be effective in reducing unemployment, especially among the youth, which is the target demographic of the program. After joining YESS, of the 39,641 individuals who were previously not employed, only 4,944 individuals (12.47%) remain unemployed. The remaining individuals have either started their own businesses or are now employed in various sectors. Specifically, 15,917 individuals (40.15%) are now working as employees, and 18,780 individuals (47.38%) have become entrepreneurs. Therefore, 34,697 individuals successfully transitioned out of unemployment after joining YESS, or approximately 87.5% of the total who were previously unemployed, this shows that YESS has made a positive impact in enhancing employment opportunities and fostering entrepreneurship among young people in Indonesia.

Figure 4. 1

Job Distribution of Formerly Unemployed Beneficiaries



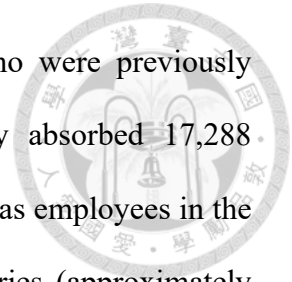
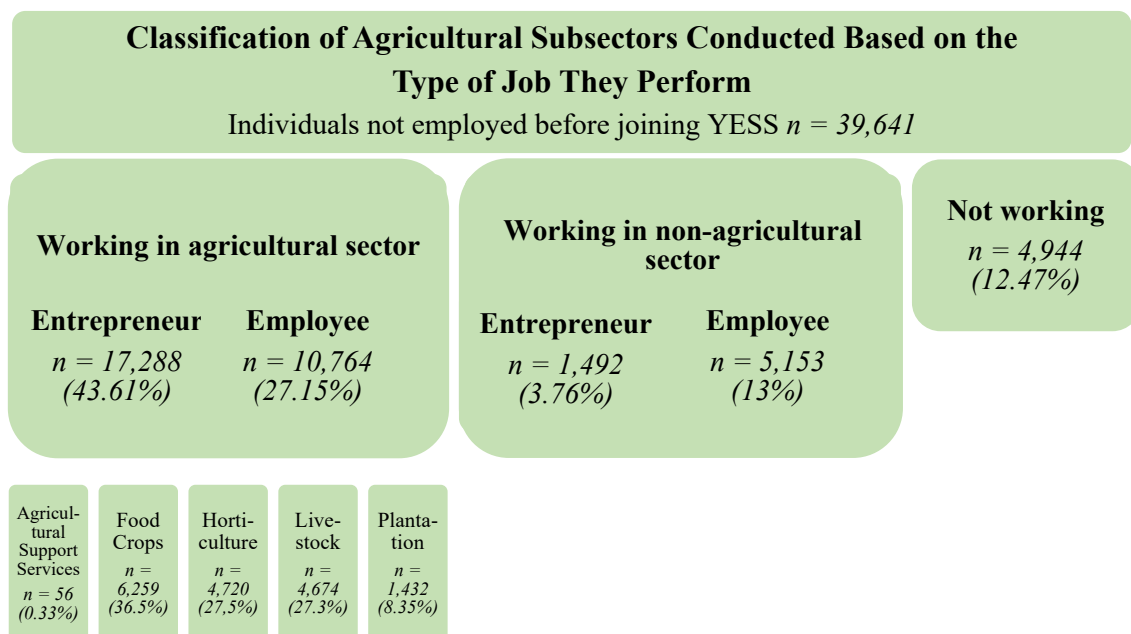


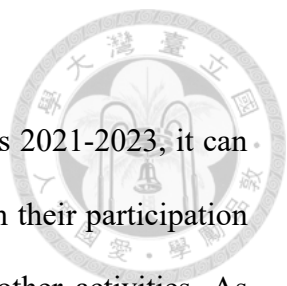
Figure 4.2 shows that out of the total 39,641 individuals who were previously unemployed before joining YESS, the YESS program successfully absorbed 17,288 individuals (43.61%) as entrepreneurs and 10,764 individuals (27.15%) as employees in the agricultural sector, representing a combined total of 28,052 beneficiaries (approximately 70.76% of the unemployed individuals) who have now found employment in this sector. The agricultural sector is further classified into various subsectors. Among these, the largest number of beneficiaries are employed in food crops (6,259 individuals, or 36.5%), followed by those working in horticulture (4,720 individuals, or 27.3%), and livestock (4,674 individuals, or 27.3%). These statistics indicate that the YESS program has successfully provided young Indonesians with opportunities to pursue careers in agriculture, a vital sector for the country's economy. This demonstrates that YESS has effectively addressed youth unemployment and contributed to the growth of the agricultural workforce in Indonesia.

Figure 4. 2

Formerly Unemployed Beneficiaries Jobs by Agricultural Subsectors



4.2.2 Beneficiaries Income Changes



Out of the total 82,822 YESS program beneficiaries for the years 2021-2023, it can be observed that the majority of participants have indeed benefited from their participation in the program, whether through training, apprenticeships, grants, or other activities. As shown in Figure 4. 3, about 63.2% of participants have experienced an increase in their monthly income. However, there are still about 28.1% of participants who have experienced a decrease in income and about 8.7% who have seen no change. But when we compare the changes in more detail, as seen in Table 4.2, although there is a significant decline on the decrease group of 61.21% for the non-grant recipients and 60.23% for the grant recipients, the rise for the Increase group is quite remarkable, with an average of 276.27% for the non-grant recipients and 654.26% for the grant recipients. This demonstrates that the YESS program has significantly improved the income of many beneficiaries, showing that the program is having a very positive impact. In the long term, this program can also contribute to Indonesia's economy on a global scale, especially considering that currently, YESS is only implemented in a few rural areas spread across 4 provinces. Given the vastness of Indonesia's rural areas, this program holds great potential. It can play a crucial role in supporting and advancing the nation's economy, helping to drive growth and prosperity in areas that are often underrepresented.



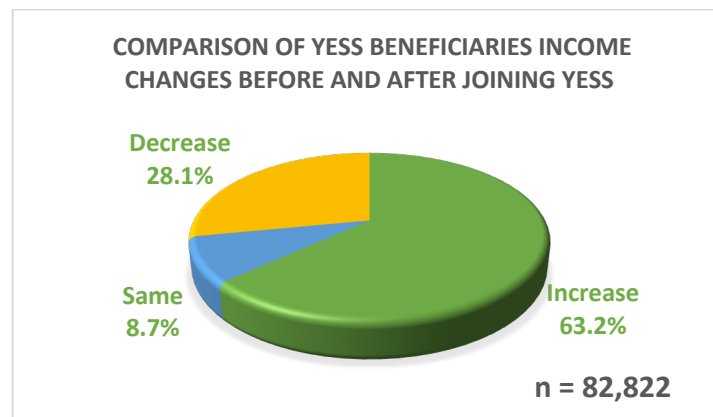
Table 4. 2

Beneficiaries Income Changes (in Rp 100,000)

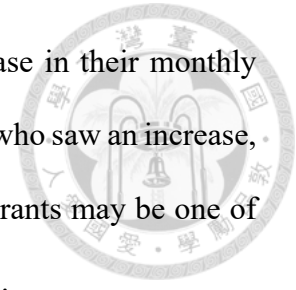
Income Change	Counts	Income before joining YESS	Income after joining YESS	% Changes
Non-grant Recipient (n = 80,955)				
Increase	50,765	5.68	21.37	276.27
Same	7,140	10.08	10.08	0.00
Decrease	23,050	20.92	8.12	-61.21
Grant Recipient (n = 1,867)				
Increase	1,579	7.03	53.00	654.26
Same	79	11.23	11.23	0.00
Decrease	209	25.87	10.29	-60.23

Figure 4. 3

Income Before and After YESS



The changes in the average income of YESS beneficiaries, specifically those who received competitive grants, can be seen from Table 4.3 and Figure 4.4. Upon visual inspection, it is clear that this group has experienced significant income growth at each phase. Initially, before joining the YESS program, the average income was only Rp 931,392. After participating in various program activities, the average income increased to Rp 4,644,996. The most significant increase occurred when this group received the competitive grant, boosting their income by an impressive 574.65% compared to the previous phase. Although



some participants did not experience any change or even saw a decrease in their monthly income, the number of such participants is very small compared to those who saw an increase, which are 1,579 participants or 84.57%. This indicates that providing grants may be one of the most influential activities in driving income growth for beneficiaries.

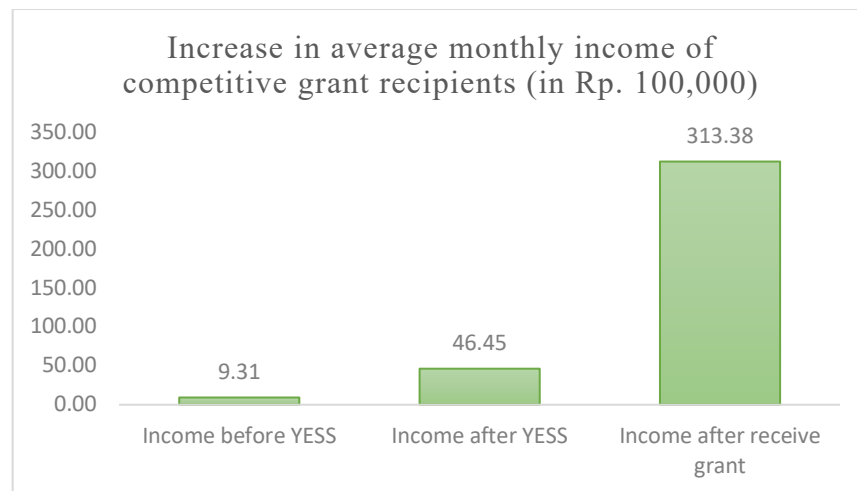
Table 4. 3

Grant Recipient Income Changes (in Rp 100,000)

Income Change	Counts	Income after receive grant	% Changes compared to before YESS	% Changes compared to after YESS
Grant Recipient (n = 1,867)				
Increase	1,579	320.48	654.26	504.59
Same	79	186.64	0.00	1562.26
Decrease	209	305.44	-60.23	2868.22

Figure 4. 4

Average Income of Grant Recipients



The income changes of YESS program participants, specifically reviewed by gender is displayed from Table 4.4. Based on the comparison for both non-grant recipient and grant recipient groups, it is evident that male participants experienced the highest percentage increase in income. For the non-grant group, the increase was 78.08%, while for the grant

recipient group, the increase reached 3,390.79%. Meanwhile, female participants experienced a lower increase in income, with a 31.14% increase in the non-grant group and 2,925.70% in the grant recipient group. The higher percentage of income growth among males suggests that they are generally more productive within the program, potentially leading to better outcomes in their businesses or activities.

Table 4. 4

Income by Gender (in Rp 100,000)

Gender	Non-grant recipient = 80,955				Grant recipient = 1,867			
	Counts	Before	After	% Change	Counts	Before	After	% Change
Man	49,699	10.24	18.23	78.08	1395	9.09	317.21	3390.79
Woman	31,256	10.68	14.00	31.14	472	9.98	302.09	2925.70

Table 4.5 display the income changes of YESS program participants, specifically reviewed by their education level. Based on the comparison for both non-grant recipient and grant recipient groups, it is evident that participants with no school education experienced the lowest percentage, even negative changes in income, with a decrease of -13.38% for the non-grant group. On the other hand, participants who did not complete elementary school had a significant income increase of 84.39% for the non-grant group, and for the grant recipient group, the increase was 4,917.98%. The data shows that participants with higher educational levels tend to experience higher income growth, especially those with higher education, who saw the greatest percentage increase. Conversely, participants with no school education or those who did not complete elementary school had significantly lower or even negative income growth, especially in the non-grant group.

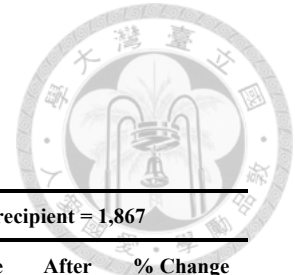


Table 4. 5

Income by Education (in Rp 100,000)

Education Level	Non-grant recipient = 80,955				Grant recipient = 1,867			
	Counts	Before	After	% Change	Counts	Before	After	% Change
No School	142	12.27	10.63	-13.38	2	10.00	100.50	905.00
Not Complete Elementary School	844	8.93	16.46	84.39	18	5.58	280.17	4,917.98
Completed Elementary School	4,095	10.95	16.62	51.74	70	21.92	270.42	1,133.60
Completed Junior High School	13,952	10.51	16.43	56.41	225	9.24	305.37	3,206.49
Completed Senior High School	50,643	10.52	16.34	55.34	972	8.81	299.22	3,297.20
Completed Higher Education	11,279	9.67	18.04	86.49	580	8.78	347.06	3,851.01

This pattern may be explained by the fact that individuals with higher education levels generally possess better literacy, numeracy, and business management skills, which enable them to more effectively utilize the resources, training, and financial support provided by the YESS program. Moreover, educated participants are likely to have greater access to information, networks, and technology, allowing them to innovate and adapt more easily within the agricultural sector. In contrast, those with little to no formal education may face challenges in understanding and applying the knowledge or technical aspects offered by the program, thereby limiting the potential impact on their income. This suggests that education level plays a key role in determining the extent of income growth, with more educated participants having access to better opportunities and support, thereby leading to more substantial income improvements through the YESS program.

Table 4.6 display the income changes of YESS program participants, specifically reviewed by agricultural sub-sector. Based on the comparison for both non-grant recipient and grant recipient groups, it is evident that participants in the Agriculture Supporting sub-sector experienced the highest percentage increase in income. For the non-grant group, the

increase was 133.54%, while for the grant recipient group, the increase reached 6,553.10%. Other agricultural sub-sectors also showed significant income increases. For instance, participants in the Food Crops sub-sector saw a 72.95% increase for the non-grant group and 4,598.68% for the grant recipient group. Horticulture also had a strong income increase with a 94.77% rise in the non-grant group and 3,536.07% in the grant recipient group. Participants in the Livestock sub-sector had a 82.72% income increase for the non-grant group and 2,665.25% for the grant recipient group. Plantation participants saw an income increase of 93.75% in the non-grant group and 3,721.12% for the grant recipient group.

Table 4. 6

Income Change by Agricultural Sub-sector (in Rp 100,000)

Agricultural Sub-sector	Non-grant recipient = 41,293				Grant recipient = 1,667			
	Counts	Before	After	% Change	Counts	Before	After	% Change
Agriculture Supporting	164	10.08	23.53	133.54	11	6.82	453.62	6553.10
Food Crops	13,144	10.53	18.21	72.95	185	8.31	390.37	4598.68
Horticulture	11,260	10.57	20.59	94.77	571	9.12	331.65	3536.07
Livestock	13,718	10.53	19.23	82.72	817	10.02	276.96	2665.25
Plantation	3,007	9.58	18.56	93.75	83	9.46	361.62	3721.12

This remarkable income growth across sub-sectors, especially in the Agriculture Supporting sub-sector, can be attributed to several factors. Participants in this sub-sector often engage in value chain-related services such as processing, distribution, machinery, or input supply, which tend to have higher income margins and scalability potential compared to traditional farming activities. Additionally, these enterprises may be more responsive to grant support, allowing participants to invest in equipment, expand services, or improve efficiency more effectively. The significantly higher increase among grant recipients indicates that financial assistance plays a crucial role in enabling participants to optimize

their businesses. Furthermore, this pattern may reflect the growing importance of agribusiness services in modern agricultural development, where support sectors are essential for improving productivity and competitiveness across the entire agricultural system.



Table 4. 7 display the income changes of YESS program participants, specifically reviewed for each province. Based on the comparison for both non-grant recipient and grant recipient groups, it is evident that participants residing in East Java experienced the highest percentage increase in income. For the non-grant group, the increase was 73.76%, while for the grant recipient group, the increase reached 4,240.77%.

Table 4. 7

Income Change by Province (in Rp 100,000)

Province	Non-grant recipient = 80,955				Grant recipient = 1,867			
	Counts	Before	After	% Change	Counts	Before	After	% Change
West Java	22,286	10.61	18.08	70.42	405	10.54	302.82	2,772.25
East Java	30,108	10.48	18.21	73.76	601	8.01	347.64	4,240.77
South Kalimantan	9,621	11.50	15.73	36.71	334	9.79	216.47	2,112.12
South Sulawesi	18,940	9.50	12.74	34.09	527	9.56	342.99	3,488.20

The reason for such significant changes among participants in East Java could be attributed to several factors. For instance, based on the Table 4. 8, showing employment status before joining YESS, it can be seen that participants from East Java have the highest average work experience (measured by whether they had worked before joining YESS) compared to other provinces (62.47%). Additionally, looking at the average joining year of participants from Table 4. 9, East Java had a higher number of participants joining in the early year, 2021. Therefore, these two factors likely contributed to the significant increase in income in East Java.



Table 4. 8

Employment Status Before YESS by Province

Province	Working Status Before YESS (%)	
	Yes	No
East Java	62.57	37.43
West Java	46.49	53.51
South Kalimantan	49.37	50.63
South Sulawesi	43.67	56.33

Table 4. 9

Joining Year by Province

Province	Counts	Average Year Join as Beneficiaries
East Java	30,709	2021.915
West Java	22,691	2022.034
South Kalimantan	9,955	2022.047
South Sulawesi	19,467	2022.102

Table 4.10 display the income changes of YESS program participants, specifically reviewed for each year of joining the program. Based on the comparison for both non-grant recipient and grant recipient groups, it is evident that participants who joined the program in 2021 experienced the highest percentage increase in income. For the non-grant group, the increase was 118.29%, while for the grant recipient group, the increase reached 3,791.08%. In comparison, participants who joined in 2022 and 2023 experienced lower percentage changes, with the increase for non-grant recipients in 2022 and 2023 being 57.77% and 26.57%, respectively, and for grant recipients, the increase was 3,758.36% in 2022 and 2,636.22% in 2023. This indicates that the highest growth in income occurred in the earlier years of program participation.

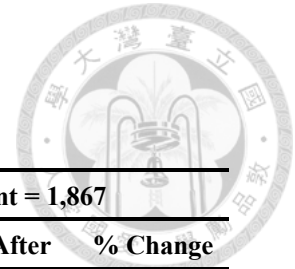


Table 4. 10

Income by Joining Year (in Rp 100,000)

Year Join	Non-grant recipient = 80,955				Grant recipient = 1,867			
	Counts	Before	After	% Change	Counts	Before	After	% Change
2021	19,950	8.05	17.57	118.29	225	7.91	307.83	3,791.08
2022	39,606	10.52	16.60	57.77	952	8.31	320.49	3,758.36
2023	21,399	12.39	15.68	26.57	690	11.16	305.40	2,636.22

The percentage increase in income may also be influenced by several other factors such as gender. In 2021, there were 73.04% male participants, which likely contributed to the higher productivity levels, aligning with the statistical calculation previously shown in Figure 4.6, which also displays that the income increase was significantly higher among males compared to females.

Table 4. 11

Gender by Joining Year

Year Become Beneficiaries	Gender (%)	
	Man	Woman
2021	73.04	26.96
2022	58.64	42.36
2023	56.38	43.62

Additionally, when considering the type of employment by looking at Table 4.12, the 2021 group had the highest agricultural productivity rate (a combination of participants who are entrepreneurs and those working as employees in the agricultural sector) at 79.71%. This indicates a higher level of involvement and contribution to the agricultural economy. Moreover, from Table 4.13, it can be seen that the 2021 group had the lowest percentage of

non-working participants compared to other years, at only 5.75%, further supporting their higher productivity.



Table 4. 12

Pre-YESS Employment Status by Year Joined

Year Become Beneficiaries	Working Status Before YESS (%)	
	Yes	No
2021	61.32	38.68
2022	49.33	50.67
2023	48.47	51.53

Table 4. 13

Type of Job by Year Joined

Type of Employment	Year Become Beneficiaries (%)		
	2021	2022	2023
Self-employed in agriculture sector	52.29	51.87	52.42
Self-employed in non-agriculture sector	3.13	3.49	2.83
Employee in agriculture sector	27.42	25.94	23.64
Employee in non-agriculture sector	11.32	11.08	8.24
Not working	5.75	7.61	12.87

Another factor is the longer duration of participation in the YESS program, which offers more opportunities to engage in various program activities, such as training and internship. It is evident that the 2021 group had the highest average participation in both training and internship programs, with 1.72 training sessions and 0.63 internship sessions on average, compared to the other groups. This suggests that the sooner someone joins the YESS program, whether as a beneficiary or receiving grants, the more developed their business

tends to be compared to those who joined later. Early participation allows individuals to take advantage of the program’s opportunities and support, contributing to faster business growth.

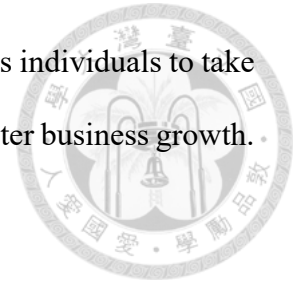


Table 4. 14

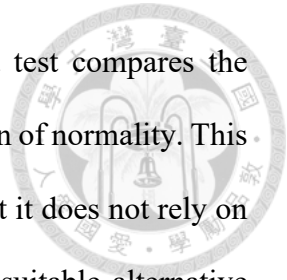
Training and Internship by Year Joined

Year Become Beneficiaries	Counts	Average Training Participations
2021	20,915	1.718
2022	40,386	1.544
2023	21,521	1.567

4.3 T-test Results

To perform a T-test on the characteristics of grant recipients compared to YESS beneficiaries, it is crucial to first ensure that two main assumptions are met: normality and homogeneity of variances. These assumptions are necessary for the validity of the T-test, which compares the means of two independent groups. The normality assumption checks whether the data for each group follows a normal distribution. This assumption was tested using the Shapiro-Wilk test. The null hypothesis for this test is that the data is normally distributed, and if the p-value is greater than 0.05, the data is considered to be normally distributed. The homogeneity of variances assumption, also known as homoscedasticity, tests whether the variance within each group is approximately equal. To assess this assumption, Levene’s test was applied. For this test, the null hypothesis is that the variances are equal between the groups. If the p-value is greater than 0.05, the assumption of equal variances is considered satisfied.

If either of these assumptions is violated, specifically, when the normality assumption is violated, the T-test cannot be applied directly. In these situations, a non-parametric



alternative like the Mann-Whitney U test is utilized. This rank-based test compares the distributions of two independent groups without relying on the assumption of normality. This test evaluates whether the two groups differ in their central tendency, but it does not rely on the assumption of normal distribution or equal variances, making it a suitable alternative when normality is not met. Thus, for variables where normality is not achieved, the Mann-Whitney U test provides a robust approach to comparing the groups, ensuring the analysis remains valid despite the violation of parametric assumptions.

Table 4.15 and Table 4.16 present the results of the normality and homogeneity of variance tests. As shown, after conducting the Shapiro-Wilk test, only a subset of variables meet the assumption of normality (those shaded in green). The variables that passed the normality test were then subjected to Levene's test, which indicates that all variances are significantly different (reject null hypothesis). As a result, the variables are treated as unequal variances in the subsequent t-test. This approach is necessary because when variances are unequal, a standard t-test may lead to inaccurate results. Instead, an unequal variance t-test (also known as Welch's t-test) is used to ensure more reliable statistical conclusions.

For the variables that have met both assumptions, a one-sided t-test will then be conducted with a 5% significance level to answer the question of whether YESS competitive grant recipients have higher or lower levels of a certain variable compared to non-recipients. In this test, the following definitions will apply:

- μ_{Grant} = the average of the specific variable for YESS grant recipient
- $\mu_{nonGrant}$ = the average of the specific variable for the non-recipients of the YESS grant

The hypotheses for the test are as follows:

- $H_0: \mu_{Grant} = \mu_{nonGrant}$

$$H_1: \mu_{Grant} > \mu_{nonGrant} \text{ or } H_1: \mu_{Grant} < \mu_{nonGrant}$$



Table 4. 15

Shapiro-Wilk Test Results

Variable	Obs	p-value	Interpretation
WestJava	82,822	0.40531	Normally distributed
EastJava	82,822	0.99614	Normally distributed
SouthKalimantan	82,822	0.00001	Not normally distributed
SouthSulawesi	82,822	0.10826	Normally distributed
Age	82,822	0.00000	Not normally distributed
Man	82,822	1.00000	Normally distributed
Disability	82,822	0.00000	Not normally distributed
Education	82,822	0.00000	Not normally distributed
Married	82,822	1.00000	Normally distributed
Family	82,822	0.00000	Not normally distributed
WorkBefore	82,822	1.00000	Normally distributed
IncomeBefore	82,822	0.00000	Not normally distributed
IncomeBeneficiaries	82,822	0.00000	Not normally distributed
FinancialBefore	82,822	0.99927	Normally distributed
Training	82,822	0.00000	Not normally distributed
Internship	82,822	0.00000	Not normally distributed
SelfEmployedAgri	82,822	1.00000	Normally distributed
SelfEmployedNon	82,822	0.00000	Not normally distributed
WorkAgri	82,822	0.24951	Normally distributed
WorkNon	82,822	0.00000	Not normally distributed
NotWork	82,822	0.00000	Not normally distributed
AgriSupport	42,960	0.00000	Not normally distributed
FoodCrops	42,960	0.60785	Normally distributed

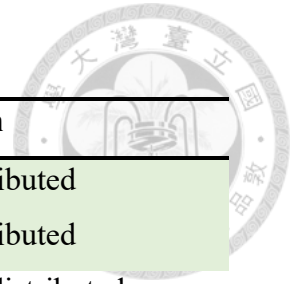


Table 4. 15 (Continued)

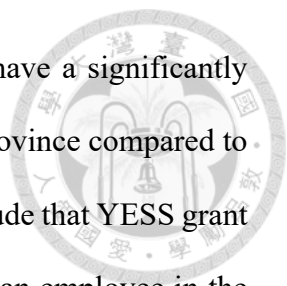
Variable	Obs	p-value	Interpretation
Horti	42,960	0.25164	Normally distributed
Livestock	42,960	0.86438	Normally distributed
Plant	42,960	0.00000	Not normally distributed

Table 4. 16

Levene's Test Results

Variable	W0	df	Pr > F	Interpretation
EastJava	109.618	1, 82820	0.000	Variances are significantly different (reject null).
SouthSulawesi	79.022	1, 82820	0.000	
WestJava	157.850	1, 82820	0.000	
Man	1294.033	1, 82820	0.000	
Married	4303	1, 82820	0.000	
WorkBefore	38650	1, 82820	0.000	
FinancialBefore	37.668	1, 82820	0.000	
SelfEmployedAgri	119300	1, 82820	0.000	
WorkAgri	2217.011	1, 82820	0.000	
FoodCrops	3005.372	1, 42958	0.000	
Horti	114.959	1, 42958	0.000	
Livestock	210.034	1, 42958	0.000	

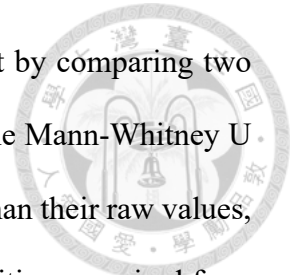
From Table 4.17, it can be observed that the results of the t-test regression indicate significant differences between all the groups tested, with all p-values below 0.05. Additionally, we can see that the variables such as EastJava, WestJava, WorkAgri, and FoodCrops have negative t-values with $\Pr(T < t)$ is less than 0.05, which suggests that we can reject the null hypothesis and accept the alternative hypothesis. In other word it means



that there is enough evidence to conclude that YESS grant recipients have a significantly lower proportion of participants living in the East Java and West Java Province compared to non-grant recipients. It shows also that there is enough evidence to conclude that YESS grant recipients have a significantly lower proportion of participants work as an employee in the agricultural sector and lower proportion of participants engaged in employment or entrepreneurship within the food crops subsector, compared to non-recipients.

Alternatively, variables like SouthSulawesi, Man, Married, WorkBefore, FinancialBefore, SelfEmployedAgri, Horti, and Livestock with positive t-values and $\Pr(T > t)$ is less than 0.05, which indicate that we can reject the null hypothesis and accept the alternative hypothesis. In other word it means that there is enough evidence to conclude that YESS grant recipients have a significantly higher proportion of participants living in the South Sulawesi Province compared to non-grant recipients. It shows also that YESS grant recipients have a significantly higher proportions of male participants, higher proportions of married participants, higher proportions of participants who were employed before joining YESS, higher proportions of participants who already had access to financial institutions before joining YESS, higher proportions of participants who are self-employed in the agricultural sector, and higher proportions of participants engaged in employment or entrepreneurship within the horticulture and livestock subsector, compared to non-recipients.

Subsequently, for variables that fail to meet the assumptions of normality and homogeneity of variances, a non-parametric test will be used in place of the t-test. Unlike parametric tests, non-parametric methods do not assume a normal distribution or equal variances, making them more appropriate when these assumptions are not satisfied. A widely used non-parametric alternative is the Mann-Whitney U Test, also known as the Wilcoxon



rank-sum test, which serves a similar purpose to the independent T-test by comparing two independent groups, but without the need for normality assumptions. The Mann-Whitney U-Test compares the distribution of ranks between the two groups, rather than their raw values, making it an appropriate alternative when the data do not meet the conditions required for a parametric test.

Table 4. 17

T-test Results

Variable	Grant Recipient		Non-grant Recipient		df	t	P	Interpretation
	Mean	Std. Dev	Mean	Std. Dev				
	EastJava	0.322	0.467	0.372				
SouthSulawesi	0.282	0.450	0.234	0.423	1942.86	4.590	0.00	
WestJava	0.217	0.412	0.275	0.447	1968.37	-6.036	0.00	
Man	0.747	0.435	0.614	0.487	1975.46	13.059	0.00	
Married	0.621	0.485	0.507	0.500	1958.48	10.029	0.00	
WorkBefore	0.800	0.400	0.515	0.500	2002.48	30.192	0.00	
FinancialBefore	0.426	0.384	0.495	0.486	1950.09	3.669	0.00	
SelfEmployedAgri	0.894	0.307	0.513	0.500	2100.48	52.130	0.00	
WorkAgri	0.084	0.278	0.261	0.439	2087.56	-26.794	0.00	
FoodCrops	0.111	0.314	0.318	0.466	1974.16	-25.821	0.00	
Horti	0.343	0.012	0.273	0.002	1786.40	5.904	0.00	
Livestock	0.490	0.500	0.332	0.471	1787.39	12.667	0.00	

From Table 4.18, it can be observed that only on the variable named AgriSupport, the p-value is more than 0.05 and z-value lower than 1.96, which indicates that the null hypothesis fails to be rejected. This means that there is no enough evidence to state that YESS grant recipients have a higher proportion of participants engaged in employment or

entrepreneurship within the agriculture support services subsector compared to non-grant recipients.

On the other hand, for the relationship with other variables, we surely can reject the null hypothesis due to p-values below 0.05 and z-values above |1.96|. Specifically, the variables Family, IncomeBefore, SelfEmployedNon, WorkNon, NotWork, and Plant have negative z-values, which indicate that there is enough evidence to state that YESS grant recipients have a significantly lower average number of family members, lower average monthly income before joining YESS, lower proportion of participants who are self-employed in the non-agricultural sector, lower proportion of participants working as employees in the non-agricultural sector, lower proportion of participants who are not working, and also lower proportion of participants engaged in employment or entrepreneurship within the plantation sector, compared to non-recipients.

As for the variables SouthKalimantan, Age, Disability, Education, IncomeBeneficiaries, training, and Training, they have positive z-values, which indicate that there is enough evidence to state that YESS grant recipients have a significantly higher proportion of participants living in the South Kalimantan Province, higher average age of participants, higher proportion of participants with disabilities, higher average years of education, higher average monthly income while being a YESS beneficiary, also higher average number of training and internships attended, compared to non-grant recipients.

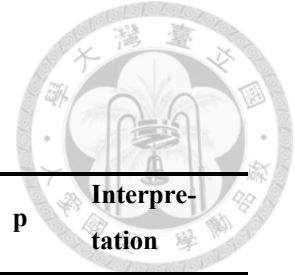


Table 4. 18

Mann-Whitney U Test Results

Variable	Rank Sum		z	p	Interpre- tation
	Grant	Non-grant			
SouthKalimantan	81,853,552	3,348,000,000	7.889	0.0000	
Age	90,294,534	3,339,000,000	12.723	0.0000	
Disability	78,201,081	3,352,000,000	6.370	0.0000	
Education	91,474,806	3,338,000,000	16.009	0.0000	
Family	71,692,749	3,358,000,000	-5.730	0.0000	
IncomeBefore	71,139,935	3,359,000,000	-6.133	0.0000	Statistically
IncomeBeneficiaries	114,100,000	3,316,000,000	36.185	0.0000	significant
Training	113,100,000	3,317,000,000	39.140	0.0000	difference
Internship	78,250,721	3,352,000,000	4.112	0.0000	
SelfEmployedNon	75,441,190	354,000,000	-5.994	0.0000	
WorkNon	69,956,618	3,360,000,000	-13.610	0.0000	
NotWork	71,067,251	3,359,000,000	-12.658	0.0000	
Plant	35,015,319	887,800,000	-3.568	0.0004	
AgriSupport	35,898,411	886,900,000	1.651	0.0987	Not statistically significant difference

The implications of the previously conducted regression can be seen in Table 4.19. Based on the provinces, the results show a significant finding that grant recipients are less likely to come from West Java and East Java provinces, whereas they are more likely to come from South Kalimantan and South Sulawesi provinces. This aligns with the main objective of the YESS Program itself, which is to increase the number of rural youth engaged in agriculture-based sectors through employment and entrepreneurship (IFAD, 2018).



Table 4. 19

Test Results Summary Implications

Variable	Implication
Statistically Significant Difference	
Lower Group	
WestJava	YESS grant recipients are less likely to come from West Java Province compared to non-grant recipients
EastJava	YESS grant recipients are less likely to come from East Java Province compared to non-grant recipients
Family	YESS grant recipients tend to have less family members compared to non-grant recipients
IncomeBefore	YESS grant recipients tend to have a lower average monthly income before joining YESS compared to non-grant recipients
SelfEmployedNon	YESS recipients are less likely to come from participants who are self-employed in the non-agricultural sector compared to non-grant recipients
WorkAgri	YESS recipients are less likely to come from participants who work as an employees in the agricultural sector compared to non-grant recipients
WorkNon	YESS recipients are less likely to come from participants who work as an employees in the non-agricultural sector compared to non-grant recipients
NotWork	YESS recipients are less likely to come from participants who are not working compared to non-grant recipients
FoodCrops	YESS recipients are less likely to be engaged in the food crops subsector compared to non-grant recipients
Plant	YESS recipients are less likely to be engaged in the plantation subsector compared to non-grant recipients
Higher Group	
SouthKalimantan	YESS grant recipients are more likely come from South Kalimantan Province compared to non-grant recipients
SouthSulawesi	YESS grant recipients are more likely come from South Sulawesi Province compared to non-grant recipients
Age	YESS grant recipients tend to be older than to non-grant recipients
Man	YESS grant recipients tend to be men compared to non-grant recipients
Disability	YESS grant recipients are more likely to have disabilities compared to non-grant recipients

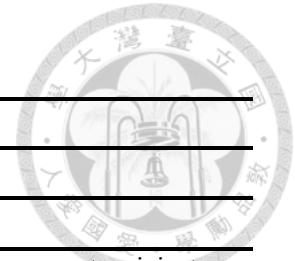


Table 4. 19 (Continued)

Variable	Implication
Statistically Significant Difference	
Higher Group	
Education	YESS grant recipients tend to be more educated than non-grant recipients
Married	YESS grant recipients are more likely to be married compared to non-grant recipients
WorkBefore	YESS grant recipients tend to have worked before joining YESS compared to non-grant recipients
IncomeBeneficiaries	YESS grant recipients tend to earn a higher average monthly income after joining YESS compared to non-grant recipients
FinancialBefore	YESS grant recipients are more likely to have access to financial institutions before joining YESS compared to non-grant recipients
Training	YESS grant recipients tend to attend more YESS training sessions compared to non-grant recipients
Internship	YESS grant recipients tend to attend more YESS internship activities compared to non-grant recipients
SelfEmployedAgri	YESS recipients are more likely to come from participants who are self-employed in the agricultural sector compared to non-grant recipients
Horti	YESS recipients are more likely to be engaged in the horticulture subsector compared to non-grant recipients
Livestock	YESS recipients are more likely to be engaged in the livestock subsector compared to non-grant recipients
Not Statistically Significant Difference	
AgriSupport	YESS recipients are not more involved in agriculture support services subsector than non-grant recipients

Notes:

- **Lower group:** This group includes the variables with negative z-values, indicating that YESS grant recipients have a significantly lower average or proportion compared to non-grant recipients
- **Higher group:** This group includes the variables with positive z-values, indicating that YESS grant recipients have a significantly higher average or proportion compared to non-grant recipients

If we compare the number of agricultural workers in these four provinces, as shown in Table 4.20, according to data from Statistics Indonesia (BPS, 2022), South Sulawesi and South Kalimantan indeed have significantly lower numbers of agricultural manpower,

approximately 1.46 million in South Sulawesi and only 619 thousand in South Kalimantan, compared to 3.38 million agricultural workers in West Java and 6.49 million in East Java. Therefore, it can be concluded that the YESS Program tends to allocate grants to provinces with relatively low numbers of agricultural workers, in order to boost the agricultural sector in those regions.

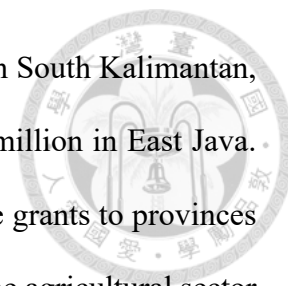


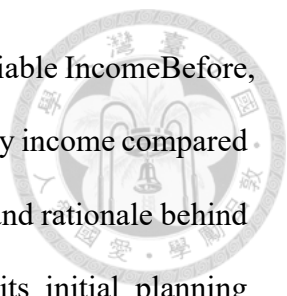
Table 4. 20

Agricultural Workforce by Province in 2022

Province	Agricultural Man Power
West Java	3,382,402
East Java	6,485,323
South Kalimantan	619,325
South Sulawesi	1,459,474

Note. Based on data BPS, 2022.

Furthermore, when we examine the variable related to family size, it can be concluded that there is a statistically significant result indicating that YESS grant recipients tend to have fewer family members compared to non-grant recipients. This finding is strongly related to the program’s strategy for targeted and effective intervention. Smaller households are often considered more economically vulnerable, and therefore may be prioritized as grant beneficiaries since the financial support is likely to generate a more immediate and visible impact. Additionally, individuals from smaller families may have greater flexibility and availability to participate in agricultural training, entrepreneurship programs, or other YESS-related activities. With fewer household responsibilities, they are often more logistically prepared and committed to fully engage with the program, making them more suitable candidates to achieve the intended outcomes of the YESS initiative.



In addition, there is also a statistically significant result for the variable `IncomeBefore`, indicating that YESS grant recipients tend to have a lower average monthly income compared to non-grant recipients. This finding aligns closely with the background and rationale behind the development of the YESS program in Indonesia. According to its initial planning document (IFAD, 2018), around 29% of Indonesia's population is classified as vulnerable to poverty, as their income levels are just marginally above the national poverty threshold, meaning over 100 million people are at risk. Furthermore, evidence of poverty and limited economic opportunities is reflected in the high rate the movement of rural youth toward urban centers. The YESS program was also designed to support the Indonesian government's efforts in promoting long-term economic growth and social well-being through a fair and sustainable transformation of rural areas. Therefore, based on these considerations, the program naturally tends to prioritize individuals with lower incomes as grant recipients, with the aim of increasing their earning capacity, reducing poverty rates, and fostering sustainable rural progress across Indonesia.

Then, for the job type variable group after becoming YESS beneficiaries, out of the 5 dummies, only the `SelfEmployedAgri` showed a significant result implying that YESS grant recipients are more likely to come from participants who are self-employed in the agricultural sector compared to non-grant recipients. Meanwhile, for the other dummies, those who are self-employed in the non-agricultural sector, working in the agricultural sector, working in the non-agricultural sector, and not working, all of them significantly indicate that they are all less likely to receive grant funds. This condition can be linked to the objectives set by the YESS program, which states that YESS activities are aimed at supporting youth agriculture and entrepreneurship (IFAD, 2018), with one of the success indicators of this program being

their goal to support 33,500 young farmers/rural entrepreneurs who report financial statements. Therefore, it is clear that once someone joins as a YESS beneficiary and chooses to build their own agricultural business, they will be strongly supported by the YESS program. Hence, many grant recipients come from young entrepreneurs in the agricultural sector.

Next, if we analyze the agricultural subsector groups engaged in by YESS beneficiaries, categorized into five dummy variables, it can be observed that the variable AgriSupport does not show statistically significant results. This implies that YESS recipients are not more involved in the agriculture support services subsector than non-grant recipients. Meanwhile, the other four dummy variables show statistically significant regression results, which can be further grouped into two categories. The FoodCrops and Plantation variables indicate that YESS recipients are less likely to be engaged in the food crops and plantation subsectors compared to non-grant recipients. On the other hand, the Horti and Livestock variables show that YESS recipients are more likely to be engaged in the horticulture and livestock subsectors compared to non-grant recipients.

This situation may be linked to the contribution distribution of each subsector in Indonesia. As shown in Table 4.21, the horticulture and livestock subsectors are the lowest contributors to agricultural GDP each year, with average contributions of only 1.53% and 1.60%, respectively. In comparison, the food crops subsector contributes an average of 2.70%, and the plantation subsector contributes 3.54%. This suggests that the horticulture and livestock subsectors still require significant development in terms of productivity, possibly due to limited infrastructure, market access, or technological adoption. Therefore, in line with the regression results, the YESS program tends to provide grants to participants working or

running enterprises in the horticulture and livestock sectors, as these are still relatively underdeveloped in Indonesia.



Table 4. 21

Agricultural Subsectors GDP (2019-2022)

Sub Sector	2019	2020	2021	2022	Average
Food Crops	2.82	3.07	2.60	2.32	2.70
Horticulture	1.51	1.62	1.55	1.44	1.53
Plantation	3.27	3.63	3.94	3.76	3.65
Livestock	1.62	1.69	1.58	1.52	1.60

Note. Based on data from Sabarella et al., 2023.

In addition, if we examine participants' engagement in training sessions facilitated by the YESS program, as shown in Table 4.22, it becomes quite evident that participants pursuing careers in the horticulture and livestock subsectors tend to have a higher average training participation rate, at 1.78 and 1.79 times respectively. This is in contrast to participants in other subsectors such as food crops and plantation, which have lower average participation rates of 1.60 and 1.68 times, respectively. This condition aligns with the requirements set by the YESS program, which stipulate that in order to be eligible to submit a grant proposal, participants must first actively engage in the YESS-organized training sessions. Therefore, this is another possible reason that may explain why YESS grant recipients tend to pursue careers in the horticulture and livestock subsectors, which also supported by their higher level of active participation in the training sessions.



Table 4. 22

Training by Agricultural Subsectors

Sub Sector	Counts	Average Training Participations
Food Crops	13,329	1.604
Plantation	3,090	1.681
Horticulture	11,831	1.777
Livestock	14,535	1.788

Furthermore, when examining the variable of Age, the results imply that YESS grant recipients tend to be older than non-recipients. It is important to note that the minimum age for YESS grant recipients is 17 years, and the maximum is 40 years. The tendency for competitive grant recipients to be older participants may be linked to the study by Skirbekk (2008), which concluded that worker productivity generally peaks between the ages of 35 and 44, and this peak tends to decline only if the demand for experience also decreases. In addition, research by Aubert & Crépon (2006) also indicated that productivity increases with age up to around 40 years and then remains stable, consistently so until around the age of 55. Therefore, one possible reason why older individuals are more likely to receive the grant is because, from a productivity standpoint, the maximum eligible age of 40 falls within the peak of human productivity. With the support of this grant, it is expected that recipients can further develop their agricultural enterprises and contribute to strengthening the Indonesian economy.

Moreover, if we look at Table 4.23, which presents the average age for each type of employment, it can be seen that participants who are self-employed in the agricultural sector also have the highest average age. This may serve as another reason why grant recipients tend to be older, as participants of older age are more likely to have established their own businesses in the agricultural sector.



Table 4. 23

Beneficiaries Age by Employment Type

Type of Employment	Counts	Average Beneficiaries Age
Self-employed in agriculture sector	43,167	27.775
Self-employed in non-agriculture sector	2,673	27.573
Employee in agriculture sector	21,297	27.227
Employee in non-agriculture sector	8,637	26.504
Not working	7,048	25.344

Furthermore, when examining the dummy variable Man, the results show a significant tendency for YESS grant recipients to be men compared to non-recipients. It is important to note that the program targets an equal distribution of beneficiaries, 50% women and 50% men. Therefore, up until 2023, which marks the scope limit of this study, it has indeed been evident that, from a gender perspective, more men have been involved in agriculture. However, this became a reference point for the YESS program to further increase women’s participation in the following years. One possible contributing factor can be seen in Table 4.24, which shows that the self-employed in the agricultural sector category is predominantly occupied by men. This may imply that the ability to independently develop a business becomes a key consideration in grant selection, and in reality, this type of work is more frequently undertaken by men, accounting for 53.60%. Another strong factor is the population composition of YESS beneficiaries from 2021 to 2023, which was also male-dominated, with men making up 61.69% and women only 38.31% of total recipients. As a result, given this existing population distribution, the probability of male participants submitting grant proposals is naturally higher.



Table 4. 24

Employment Type by Gender

Type of Employment	Gender (%)	
	Man	Woman
Self-employed in agriculture sector	53.60	49.74
Self-employed in non-agriculture sector	2.62	4.20
Employee in agriculture sector	26.66	24.19
Employee in non-agriculture sector	10.91	9.65
Not working	6.20	12.22

When examining the variable Disability, the results are significant and imply that individuals with disabilities are more likely to receive the YESS grant compared to those without disabilities. This finding aligns with the objectives of the YESS program, which specifically includes people with disabilities as part of its targeted social sub-groups, ensuring they can also access the program’s benefits (IFAD, 2018). The YESS program also recognizes the insufficient access to special education in Indonesia. There is a lack of comprehensive data on persons with disabilities, and they are often not recorded as part of the labor force (IFAD, 2018). A high level of awareness regarding the lack of attention toward people with disabilities may be one of the reasons why their likelihood of receiving the YESS grant is relatively high. From the total YESS beneficiaries, there were 0.62% people with disabilities. However, among YESS grant recipients, 1.77% were persons with disabilities. This further supports the indication that individuals with disabilities are more likely to receive grants under the program’s inclusive approach.

For the variable Education, the results are significant, implying that YESS grant recipients tend to be more educated than non-recipients. As shown in Table 4.25, which

presents the average number of trainings attended by education level, participants with a college degree have the highest average training participation compared to other education levels. This may help explain why more educated individuals are more likely to receive the YESS grant, they may place greater value on training and knowledge-building processes, leading to higher engagement and participation in program activities. As a result, they are more visible to facilitators and have greater opportunities to be selected as grant recipients. In addition, higher education is often associated with greater productivity and income potential. Educated individuals tend to have stronger problem-solving, managerial, and technical skills, which allow them to manage their agricultural businesses more efficiently and profitably. Thus, selecting more educated participants aligns with the goal of empowering young agripreneurs to boost agricultural development and economic growth.

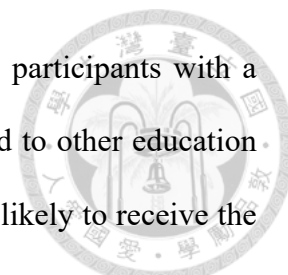


Table 4. 25

Education by Training Participations

Education Level	Counts	Average Training Participations
No School	144	1.313
Not Complete Elementary School	862	1.550
Completed Elementary School	4,165	1.556
Completed Junior High School	14,177	1.595
Completed Senior High School	51,615	1.578
Completed Higher Education	11,859	1.677

When examining the variable Married, the results are significant and imply that YESS grant recipients are more likely to be married compared to non-recipients. This condition may be associated with the fact that, as shown in Table 4.26, married participants attended



more training on average than unmarried ones. This suggests higher engagement, which increases their likelihood of receiving a grant. Additionally,

Table 4. 26

Training Participations by Marital Status

Marital Status	Counts	Average Training Participations
Married	42,231	1.641
No	40,591	1.544

Table 4.27 also shows that the average age of married participants is significantly higher than that of unmarried participants. This could be another factor contributing to their selection, as older participants are often considered more productive and more capable of managing grant funding effectively.

Table 4. 27

Beneficiaries' Age by Marital Status

Marital Status	Counts	Average of Beneficiaries' Age
Married	42,231	30.875
No	40,591	23.556

Moreover, Table 4.28 indicates that participants who are self-employed in the agricultural sector are predominantly those who are married. Since self-employment in agriculture is one of the main target groups of the YESS grant, given its focus on fostering agripreneurship and encouraging youth to build sustainable agricultural enterprises, this overlap may explain why married individuals are more frequently selected as grant recipients. Their status as self-employed agripreneurs positions them as key agents in achieving the program's objectives.



Table 4. 28

Employment Type by Marital Status

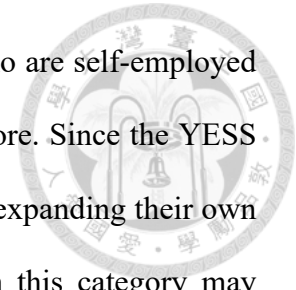
Type of Employment	Marital Status (%)	
	Married	No
Self-employed in agriculture sector	56.23	47.85
Self-employed in non-agriculture sector	3.33	3.12
Employee in agriculture sector	25.51	25.92
Employee in non-agriculture sector	8.41	12.53
Not working	6.52	10.58

Next, when examining the variable WorkBefore, the results are significant and indicate that YESS grant recipients tend to have had prior work experience before joining YESS, compared to non-recipients. One possible explanation lies in training participation. As shown in Table 4.29, participants who had previous work experience attended more trainings on average than those who had not worked prior to joining YESS. This suggests a higher level of engagement, which may have increased their visibility and selection probability for receiving the grant. Also further supported by Table 4.29, which shows that individuals with prior work experience also tend to be older on average. Older participants are often perceived as more productive and mature, which may have contributed to their being considered more eligible or capable of managing a grant-funded enterprise.

Table 4. 29

Training Participations and Age by Pre-YESS Working Status

Working Status Before YES	Counts	Training Participations (Avr)	Beneficiaries' Age (Avr)
Yes	43,181	1.670	28.405
No	39,641	1.510	26.071



Additionally, Table 4.30 also clearly shows that participants who are self-employed in the agricultural sector are predominantly those who had worked before. Since the YESS program particularly emphasizes supporting youth who are building or expanding their own agribusinesses, the dominance of previously employed individuals in this category may explain why they are more likely to be selected as grant recipients.

Table 4. 30

Employment Type by Pre-YESS Working Status

Type of Employment	Working Status Before YESS (%)	
	Yes	No
Self-employed in agriculture sector	59.93	43.61
Self-employed in non-agriculture sector	2.73	3.76
Employee in agriculture sector	24.39	27.15
Employee in non-agriculture sector	8.07	13.00
Not working	4.87	12.47

Furthermore, when examining the variable IncomeBeneficiaries, the results are significant and indicate that YESS grant recipients tend to earn a higher average monthly income after joining YESS compared to non-grant recipients. This suggests that, even without the grant itself, these participants were already able to effectively utilize the various facilities and support provided by the YESS program, such as trainings, mentoring, and business development services, to improve their economic outcomes. Their ability to translate program resources into tangible income gains demonstrates a strong level of initiative, capability, and engagement. As a result, these participants are more likely to be perceived as ready and reliable candidates for receiving the competitive grant. Their proven

capacity to apply YESS interventions successfully serves as a form of trust-building evidence, making them more likely to be selected for further support in the form of grant funding.

Other possible explanations for this phenomenon can also be found in supporting data. As shown in Table 4.31, participants who are self-employed in the agricultural sector have the highest average income compared to other employment types. This is likely because self-employed individuals in agriculture tend to have direct control over their production, income streams, and business strategies, allowing them to scale their activities and increase profitability over time. Moreover, they often benefit more directly from the knowledge and resources provided by the YESS program, as they are actively applying them in their own enterprises. Supporting self-employed, which also has the highest monthly income, aligns closely with the program’s core objective of fostering rural entrepreneurship and creating job opportunities in agriculture.

Table 4. 31

Beneficiaries’ Income by Employment Type

Type of Employment	Counts	Average Beneficiaries Monthly Income
Self-employed in agriculture sector	43,167	2,037,660
Self-employed in non-agriculture sector	2,673	1,678,926
Employee in agriculture sector	21,297	1,499,383
Employee in non-agriculture sector	8,637	1,777,060
Not working	7,048	471,618.5

In addition, Table 4.32 also shows that beneficiaries with higher income levels tend to participate in more training sessions. This suggests a link between program engagement and income improvement, participants who are more active in utilizing available training opportunities are more likely to acquire skills and knowledge that enhance their productivity

and business outcomes, thus increasing their income. As a result, they are perceived as more proactive and capable, making them more likely to be selected as grant recipients.

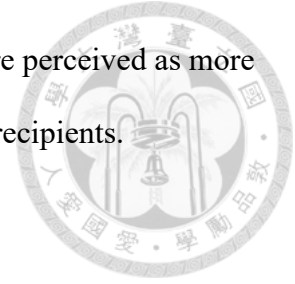


Table 4. 32

Beneficiaries Monthly Income by Training Participations

Training Session Attendance	Counts	Average YESS Beneficiaries' Income
0	3,137	1,543,117
1	47,099	1,623,427
2	19,965	1,806,893
3	7,486	1,991,516
4	3,603	2,773,426
5	1,229	2,224,935
6	247	2,406,802
7	53	2,427,547
8	11	2,681,818
9	1	3,000,000

Furthermore, Table 4.33 reveals that participants who hold a college degree have the highest YESS average income. This supports the notion that higher education levels are associated with stronger problem-solving, technical, and management capabilities, which likely contribute to better utilization of program resources and greater business success. These factors combined may help explain why these individuals were not only able to increase their income after joining YESS but were also more likely to be trusted as grant recipients.

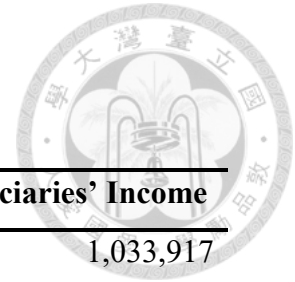


Table 4. 33

Beneficiaries Monthly Income by Education

Education Level	Counts	Average YESS Beneficiaries' Income
No School	144	1,033,917
Not Complete Elementary School	862	1,679,520
Completed Elementary School	4,165	1,788,548
Completed Junior High School	14,177	1,682,877
Completed Senior High School	51,615	1,681,466
Completed Higher Education	11,859	1,969,264

When examining the variable financialbefore, the results are significant and indicate that YESS grant recipients are more likely to have had access to financial institutions before joining the YESS program, compared to non-recipients. Several possible explanations can help contextualize this outcome. First, as shown in Table 4.34, participants who had prior access to financial institutions also attended more training sessions on average. This may reflect a higher level of awareness and initiative; individuals who are familiar with formal financial systems may better understand the value of capacity building and are thus more motivated to engage in training opportunities. Their active participation in program activities makes them more visible and trusted candidates for receiving grants.

Second, this group also has a higher average education level, as indicated in Table 4.34 Higher education often correlates with better financial literacy and greater familiarity with administrative processes, making it easier for individuals to navigate requirements associated with both training and financial access. Educated individuals may also present more structured and feasible grant proposals, increasing their chances of selection. Third, Table 4.34 shows that participants with prior financial access tend to be older. Older youth

are often viewed as more mature, experienced, and capable of managing financial responsibilities, all traits that evaluators may consider favorable when selecting grant recipients.



Table 4. 34

Training, Education, and Age by Pre-YESS Access to Financial Institution

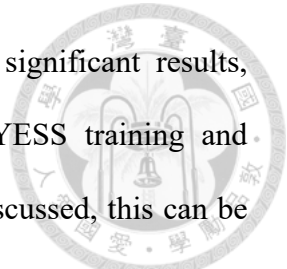
Financial Inst. Access	Counts	Training Participations (Avr)	Years of Education (Avr)	Age (Avr)
Yes	31,873	1.621	12.095	27.787
No	50,949	1.576	11.394	26.047

Finally, Table 4.35 reveals that participants who were self-employed in the agricultural sector are more likely to have had prior access to financial institutions. This makes sense, as running an agribusiness often requires access to credit, savings, or capital. These self-employed individuals are directly aligned with the YESS program’s goal of promoting rural agriprenurship. As such, their established financial access, coupled with demonstrated entrepreneurial activity, strengthens their profile as strong candidates for grant funding.

Table 4. 35

Employment Type by Pre-YESS Access to Financial Institutions

Type of Employment	Access to Financial Institutions Status (%)	
	Have Access	No Access
Self-employed in agriculture sector	54.27	50.78
Self-employed in non-agriculture sector	3.02	3.36
Employee in agriculture sector	24.94	26.20
Employee in non-agriculture sector	9.88	20.77
Not working	7.90	8.89



The final two variables, Training and Training, also yielded significant results, indicating that YESS grant recipients tend to participate in more YESS training and internship activities compared to non-grant recipients. As previously discussed, this can be attributed to their higher level of engagement and commitment to the program. Participants who actively take part in these capacity-building activities are more likely to develop relevant skills, build professional networks, and demonstrate readiness to implement agricultural business initiatives. This active participation not only reflects their motivation and seriousness but also aligns with the grant selection criteria, which emphasize involvement in program activities as a key eligibility factor. Therefore, those who consistently engage in trainings and internships are more likely to be perceived as strong, promising candidates, and are consequently more likely to be selected as YESS grant recipients.

4.4. Heckman Selection Regression Result

4.4.1. Regression Result

Table 4.36 presents the results of the heckman two-step regression, which is divided into two stages. The first stage identifies the determinants of beneficiaries receiving YESS Competitive Grants, while the second stage examines the factors influencing the average monthly income in 2024 of those who received the grant. An estimate of the correlation coefficient (ρ) between the error terms in the selection equation (grant received) and the outcome equation (income earned after receiving the grant) yields -0.305 . This negative and significant correlation suggests that unobserved factors influencing the likelihood of receiving a grant are systematically related to those affecting income, justifying the presence of selection bias and supporting the use of the heckman model. In addition, the likelihood ratio test produces a statistically significant result ($p = 0.0004$), demonstrating the strong

explanatory power of the model. Consequently, the null hypothesis of no correlation between the selection and outcome equations is rejected, validating the suitability and robustness of the heckman selection model for this analysis

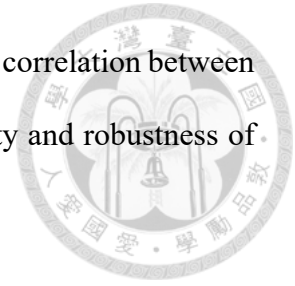


Table 4. 36

Heckman Selection Regression Result

Variable	Outcome Model		Selection Model	
	Coef.	S.E	Coef.	S.E
EastJava	-0.167	0.367	0.008	0.040
SouthKalimantan	-1.700 ***	0.448	0.160 ***	0.047
SouthSulawesi	-0.554	0.460	0.225 ***	0.042
Age	-0.057 **	0.027	0.012 ***	0.003
Man	-0.031	0.286	0.200 ***	0.032
Disability	-1.170 ***	0.385	0.440 ***	0.121
Education	0.010	0.049	0.060 ***	0.006
Married	0.380	0.274	0.083 **	0.037
Family	0.013	0.091	-0.019	0.012
WorkBefore	-0.772 **	0.351	0.312 ***	0.034
IncomeBefore	0.128	0.437	-0.053	0.158
IncomeBeneficiaries	0.155	0.168	0.315 ***	0.059
FinancialBefore	0.251	0.261	0.014	0.029
Training	-0.236 **	0.111	0.257 ***	0.010
Training	0.053	0.543	0.213 **	0.093
GrantProposed	0.081	0.132		
GrantRecieved	0.538 ***	0.170		
AgriSupport	1.050	2.080	0.375 **	0.181
FoodCrops	0.339	0.770	-0.230 ***	0.067
Horti	-0.192	0.722	0.253 ***	0.063
Livestock	-1.060	0.703	0.276 ***	0.060
Constant	7.010	1.860	-4.175	0.121
Observation		1,867		80,955

Rho = -0.305; Wald test of indep. eqns. (rho = 0): chi2(1) = 12.48 Prob > chi2 = 0.0004

Note.

- p < 0.1 = *
- p < 0.05 = **
- p < 0.01 = ***.

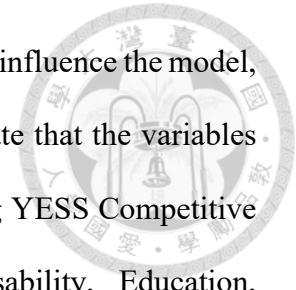


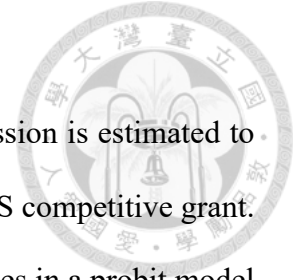
Table 4.37 presents the distribution of variables that significantly influence the model, categorized by their levels of statistical significance. The results indicate that the variables significantly associated with the determinants of beneficiaries receiving YESS Competitive Grants include SouthKalimantan, SouthSulawesi, Age, Man, Disability, Education, WorkBefore, IncomeBeneficiaries, Training, FoodCrops, Horti, and Livestock, all significant at the 1% level. Additionally, Married, Training, and AgriSupport are significant at the 5% level.

Meanwhile, the variables that are statistically significant in influencing the income of YESS Competitive Grant recipients include SouthKalimantan, Disability, and GrantReceived, all at the 1% significant level. Moreover, Age, WorkBefore, and Training also show a significant effect at the 5% level.

Table 4. 37

Results on the Significant Variables

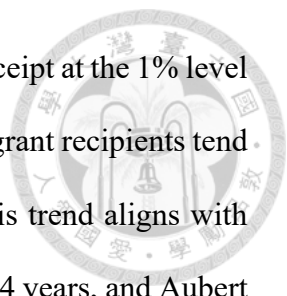
Significant Level	Outcome model	Selection model
p-value < 0.01 ***	SouthKalimantan, Disability, GrantRecieved	SouthKalimantan, SouthSulawesi, Age, Man, Disability, Education, WorkBefore, IncomeBeneficiaries, Training, FoodCrops, Horti, Livestock
p-value < 0.05 ** p-value < 0.10 *	Age, WorkBefore, Training,	Married, Training, AgriSupport



4.4.2. Grant Recipient Determinants

In the first stage of the heckman two-step model, a probit regression is estimated to identify the determinants influencing the probability of receiving a YESS competitive grant. It is important to note that, unlike linear regressions, the coefficient values in a probit model cannot be directly interpreted as the magnitude of effect on the dependent variable. This is because the coefficients represent changes in the z-score (the latent propensity to receive the grant), not in the actual probability. Therefore, the focus should be placed on the sign and statistical significance of the coefficients rather than their absolute values. A positive coefficient indicates that an increase in the corresponding variable is associated with a higher likelihood of receiving the grant, while a negative coefficient suggests the opposite. Interpretation at this stage centers around the direction and significance of relationships, which help explain which factors are positively or negatively associated with grant receipt.

When examined individually, as previously discussed, the variables SouthKalimantan and SouthSulawesi show positive and significant effects at the 1% level ($p < 0.01$), indicating that participants from South Kalimantan and South Sulawesi are more likely to receive YESS grants than those from other provinces. This aligns with the previous t-test results and supports the YESS Program's goal of increasing rural youth engaged in agriculture-based sectors through employment and entrepreneurship (IFAD, 2018). Notably, these two provinces have fewer agricultural workers, around 1.46 million in South Sulawesi and 619 thousand in South Kalimantan, compared to 3.38 million in West Java and 6.49 million in East Java. This suggests that the program strategically focuses on areas with lower agricultural workforce to boost sector development and youth participation.



The variable Age is positively and significantly related to grant receipt at the 1% level ($p < 0.01$), consistent with earlier t-test results. This indicates that YESS grant recipients tend to be older within the program's eligibility range of 17 to 40 years. This trend aligns with Skirbekk (2008), who found worker productivity peaks between 35 and 44 years, and Aubert & Crépon (2006), who noted productivity rises until around 40 and remains stable until 55. Thus, recipients near the age limit are likely at peak productivity, making them strong candidates for grants to help develop their agricultural businesses and support Indonesia's economic growth.

The Man variable is positive and significant at the 1% level ($p < 0.01$), confirming that YESS grant recipients are more likely to be male, consistent with earlier t-test results. It is important to note that the program targets an equal distribution of beneficiaries, 50% women and 50% men. Therefore, up until 2023, which marks the scope limit of this study, it has indeed been evident that, from a gender perspective, more men have been involved in agriculture. However, this became a reference point for the YESS program to further increase women's participation in the following years. One plausible explanation is the dominance of men in self-employment within the agricultural sector, a key focus area of the program, data shows that 53.60% of those self-employed in agriculture are male. Additionally, the demographic composition of YESS beneficiaries (2021-2023) shows that 61.69% of YESS beneficiaries were male, compared to 38.31% female, which likely leads to more male grant applications and higher selection rates.

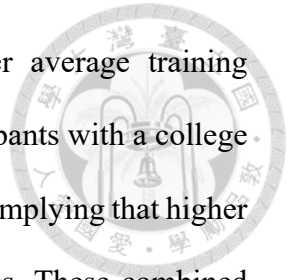
The Disability variable is positive and significant, indicating that individuals with disabilities are more likely to receive YESS grants, as supported by earlier t-test results. This aligns with YESS's explicit identification of persons with disabilities as a priority social

subgroup (IFAD, 2018). Given the limited availability of education services and underreporting in labor force data, the program's focus on this group increases their chances of receiving grants. This is evidenced by the fact that the share of grant recipients with disabilities is higher than their overall presence among beneficiaries, confirming the program's commitment to inclusion.

The Education variable shows a positive and significant correlation, indicating that individuals with higher education are more likely to receive YESS grants. College graduates also have the highest average training participation, reflecting greater engagement in capacity building. This suggests that more educated participants value learning opportunities and are seen as strong candidates by facilitators. Higher education is linked to better productivity, problem-solving, leadership, and technical skills, which help manage agricultural businesses effectively. Thus, prioritizing educated beneficiaries supports YESS's goal of empowering young agricultural entrepreneurs and promoting rural economic development.

The WorkBefore variable is positively and significantly linked to receiving the YESS grant, showing that participants with prior work experience are more likely to be selected. While this may seem inconsistent with YESS's goal to reduce unemployment (IFAD, 2018), it can be explained by the fact that this group participate in more training sessions, they also have an older age, and predominance in self-employed agriculture, factors aligned with the program's focus on youth agribusiness. These connections explain why prior work experience significantly influences grant receipt.

The IncomeBeneficiaries variable is positively significant, indicating that YESS grant recipients tend to have higher average monthly incomes after joining the program as a beneficiaries. This suggests that even without receiving the grant, they effectively utilize

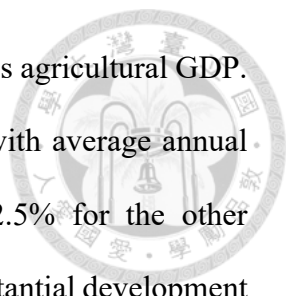


YESS support such as training, which is supported by their higher average training participation, to improve their economic outcomes. Additionally, participants with a college degree report the highest average income after becoming a beneficiaries, implying that higher education enhances their ability to make the most of program resources. These combined factors help explain why YESS beneficiaries with higher incomes are more likely to be selected as grant recipients.

The Training and Training variables also show a significant and positive relationship, suggesting that YESS grant recipients are more actively involved in these activities than non-recipients. This indicates stronger motivation and preparedness, as active participants are more likely to build relevant skills and demonstrate readiness for business development. Since program involvement is a key criterion for grant eligibility, those who consistently attend trainings and internships are more likely to be seen as capable candidates and thus more likely to receive grants.

The Married variable is also positive and significant, indicating that married participants are more likely to receive YESS grants than unmarried ones. This may be due to higher training participation among married individuals, reflecting stronger engagement. The average age of married participants is also significantly older than that of unmarried participants, which may be linked to greater perceived productivity and capability in managing grants. Additionally, a larger share of self-employed agricultural participants are married, a key target group of the YESS program which further explains their higher likelihood of being selected.

The FoodCrops variable shows a significant negative relationship, while Horti and Livestock show significant positive relationships, consistent with previous t-test results. This



pattern may be related to the contribution of each subsector to Indonesia's agricultural GDP. The horticulture and livestock subsectors are the lowest contributors, with average annual shares of only 1.53% and 1.60%, respectively, compared to over 2.5% for the other subsectors. This indicates that horticulture and livestock still require substantial development in productivity. Therefore, the YESS program tends to allocate grants to participants involved in horticulture and livestock enterprises, as these sectors remain relatively underdeveloped in Indonesia.

The last variable, AgriSupport, shows results that are less consistent with the t-test findings. This variable is positive and significant in the heckman model implying that involvement in the agriculture support subsector increases the likelihood of receiving the YESS grant. However, this effect was not apparent in the t-test, which only compares group means without accounting for such controls. In the heckman's model the regression already corrects for selection bias, allowing its true effect on grant receipt to emerge. Meanwhile, the t-test only compares group means without accounting for these factors, which can obscure the variable's significance. Therefore, we can choose to rely on the heckman model results. This finding is also related to the Horti and Livestock variables, as the agricultural support services contribution to Indonesia's GDP is only about 0.19%. Consequently, the YESS program tends to allocate grants to participants involved in these subsectors, as they remain relatively underdeveloped in Indonesia.

4.4.3. Income Determinants

From the outcome model regression results in Table 4.40, several variables show significant relationships with income. The variable SouthKalimantan is significant at the 1% level ($p < 0.01$) and has a negative relationship. Similarly, Disability is also significant at the

1% level with a negative effect. The grant received variable shows a positive and significant effect at the 1% level ($p < 0.01$). Meanwhile, Age, WorkBefore, and Training variables are all significant at the 5% level ($p < 0.05$) and exhibit negative relationships with income. These findings indicate that while receiving the grant positively influences income, residing in South Kalimantan, however having a disability, being older, having prior work experience, and participation in training are associated with lower income outcomes within this model.

The variable SouthKalimantan is statistically significant at the 1% level ($p < 0.01$) and shows a negative relationship, implying that being located in South Kalimantan is associated with lower income among YESS grant recipients compared to those in other regions. With a coefficient of -1.700, resulting from the rescaling by dividing the original value of -1.70e+07 by 10,000, it indicates that, on average, recipients in South Kalimantan earn approximately IDR 1.7 million less in income compared to those in other provinces, holding other factors constant. This result can be explained by Table 4.38, which shows that among YESS grant recipients, participants from South Kalimantan are the fewest, comprising only 18% of the 1,867 grant recipients.

Table 4. 38

Type of Employment by Province

Type of Employment	Province			
	East Java	West Java	South Kalimantan	South Sulawesi
Self-employed in agriculture sector	549	394	305	3
Self-employed in non-agriculture sector	2	2	5	422
Employee in agriculture sector	42	7	20	6
Employee in non-agriculture sector	5	2	2	88
Not working	3	0	2	3

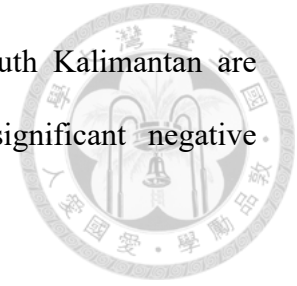
Additionally, the number of participants who are self-employed in the agricultural sector from South Kalimantan is also the lowest, with only 305 individuals, though this group should be the highest income earners compared to other groups, as shown in Table 4.39 where their average income reaches 4.9 million, compared to other employment types, which range only between 1 and 2 million. However, because the number of participants from South Kalimantan in this group is very small, the overall impact on the region's average income then become limited, which may contribute to the lower profitability observed among grant recipients from this province.

Table 4. 39

Beneficiaries' Monthly Income by Type of Employment

Type of Employment	Counts	Average Beneficiaries Monthly Income
Self-employed in agriculture sector	1,670	4,904,768
Self-employed in non-agriculture sector	15	2,672,800
Employee in agriculture sector	157	2,488,239
Employee in non-agriculture sector	17	2,382,353
Not working	8	1,250,000

Furthermore, data from the Indonesian Central Statistics Agency (2024) confirms that this province has the lowest agricultural productivity compared to the other three provinces as seen in Table 4.40. Since there is no available data for overall productivity across all types of agricultural commodities, therefore, productivity data for two major commodities produced in Indonesia, rice and corn, are presented. The productivity measured in quintals per hectare for these two commodities in South Kalimantan is indeed the lowest, at 41.83 for rice and 58.32 for corn. However, further research on overall agricultural productivity by province is needed to fully support the regression results obtained. Therefore, these factors



help explain why agricultural productivity and income levels in South Kalimantan are comparatively lower, which likely contributes to the observed significant negative relationship in the regression results.

Table 4. 40

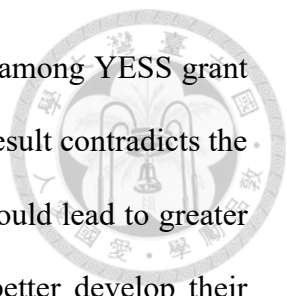
Rice and Corn Productivity by Province (in Quintals per Hectare)

Province	Rice Productivity	Corn Productivity
West Java	58.47	72.35
East Java	57.33	62.18
South Sulawesi	50.65	59.24
South Kalimantan	41.83	58.32

Note. Based on data from BPS, 2024.

Another significant variable is Disability, which is also significant at the 1% level with a negative effect, with a coefficient of -1.170, resulting from the rescaling by dividing the original value of $-1.17e+07$ by 10,000, it implies that, on average, YESS grant recipients with disabilities earn approximately IDR 1.17 million less in income than those without disabilities, all else being equal. This can be explained by the fact that individuals with disabilities may continue to face various structural challenges in running their agricultural enterprises, such as limited access to resources, technology, markets, and inclusive support services. Despite being prioritized as a social group in the YESS program, these barriers may still hinder their ability to maximize the benefits of the grant, ultimately resulting in lower income compared to their non-disabled counterparts.

Training also shows a significant negative effect with a coefficient of -0.236, resulting from the rescaling by dividing the original value of -2,361,684 by 10,000, this implies that



increased training participation is associated with a decrease in income among YESS grant recipients by approximately IDR 0.236 million (or IDR 236,000). This result contradicts the initial hypothesis, which assumed that active participation in training would lead to greater business understanding and insight, thereby enabling participants to better develop their enterprises. However, this hypothesis is not supported by the findings here. This condition could suggest that training does not always have a positive impact due to several internal factors, such as the quality and relevance of the training curriculum. Additionally, other factors may include the participants' ability to effectively apply the training content. Hal ini sejalan dengan penelitian oleh Cho dan Honorati (2014) yang mengassessed the relationship between income and entrepreneurship program based on a meta-analysis of 37 impact assessment studies. The authors found that, generally, entrepreneurship programs (which focus on training only or a combination of training and micro-finance), such as those implemented by the YESS program, do not significantly impact income. Therefore, there is a need for more targeted, practical, and context-specific training that aligns with the participants' business commodities and meets their specific needs, ensuring that they can effectively apply the knowledge and skills gained to improve their enterprises.

Another variable, Age, is also statistically significant with a coefficient of -0.057, resulting from the rescaling by dividing the original value of -564,543 by 10,000. This implies that as the age of YESS grant recipients increases, their income tends to decrease by approximately IDR 0.057 million (or IDR 57,000). This may indicate that although the selection results suggest that individuals approaching the age of 40 are at their peak productivity, this does not align with the findings of the regression analysis. However, this condition can be explained by Table 4.42, which shows the distribution of grant amounts by

age group. From the table, it can be seen that the largest grants were awarded to participants aged 17–20, with a average amount of IDR 38.2 million, compared to other age groups. As a result, these younger recipients, who received the highest grant amounts, may have been able to utilize the capital more effectively, which in turn contributed to their tendency to earn higher income.

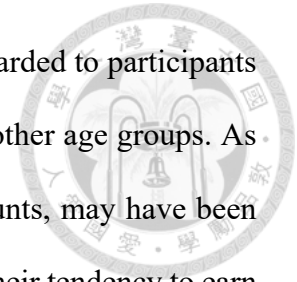


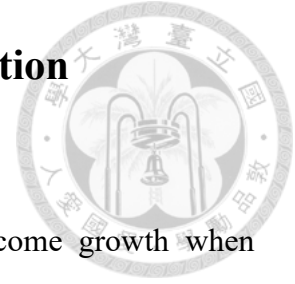
Table 4. 41

Grant Received by Age Group

Age Group	Counts	Average of Grant Recieved
17-20	86	38,200,000
21-24	339	34,600,000
25-28	456	33,400,000
29-32	480	34,400,000
33-36	366	34,500,000
37-40	140	37,700,000

The last variable that produces a significant effect is grant received, with a coefficient of 0.538. Implying that increased amount of grant received by the participant is associated with an increase in income by approximately IDR 0,538. This indicates that receiving the YESS grant is positively associated with a higher income, highlighting the financial support’s important role in improving the economic outcomes of young agricultural entrepreneurs participating in the program. This finding reinforces the notion that access to capital is a critical constraint for youth-led agribusinesses, and targeted grant support can enable them to scale up operations, invest in productive assets, or improve market access, ultimately leading to increased profitability.

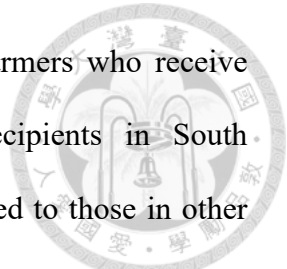
Chapter 5 Conclusion and Recommendation



5.1 Conclusion

The majority of participants have experienced significant income growth when comparing their earnings before and after joining the YESS program as beneficiaries. When viewed from a gender perspective, male participants, in particular, have shown higher income increases compared to their female counterparts. Additionally, higher levels of education are associated with greater income growth. Also, those working in the Agricultural Supporting sub-sector, experienced the highest income growth compared to those in other sub-sectors named Food Crops, Horticulture, Livestock, and Plantation. Furthermore, participants residing in East Java experienced the greatest income growth compared to those living in other provinces such as West Java, South Kalimantan, and South Sulawesi. Moreover, participants who joined the program earlier in 2021 experienced greater income growth than those who joined in the subsequent years, 2022 and 2023.

The key determinants that influence a participant's likelihood of receiving a YESS competitive grant include several factors. Participants from South Kalimantan and South Sulawesi are more likely to receive YESS grants. Additionally, male participants, individuals with disabilities, those with higher levels of education, participants with prior work experience, married participants, and engagement in the agricultural support, horticulture, and livestock subsectors is linked to a higher likelihood of receiving grants. However, involvement in the food crops subsector is associated with a lower likelihood of receiving grants. Once in the program, YESS grant recipients tend to have higher average monthly incomes compared to other beneficiaries. They also tend to be more actively involved in training and internship activities.



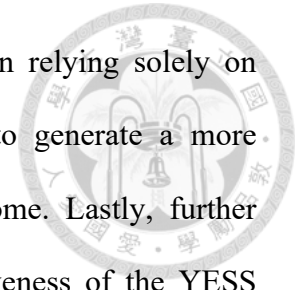
The key factors impacting the income of Indonesian young farmers who receive YESS competitive grants include several important elements. Recipients in South Kalimantan earn approximately IDR 17 million less in income compared to those in other provinces, holding other factors constant. Additionally, recipients with disabilities earn about IDR 11.7 million less than those without disabilities, holding other factors constant. Interestingly, increased participation in training is associated with a decrease in income of around IDR 2.3 million among recipients, holding other factors constant. Age also plays a role, as increased age is linked to a decrease in income by approximately IDR 564,543, holding other factors constant. Lastly, the amount of grant received is positively correlated with income, with an increase in the grant amount associated with a rise in income by about IDR 0.538, when other factors remain constant.

5.2 Recommendation

The implementation of the YESS Program in Indonesia from 2021 to 2023 has generally shown observable impacts, particularly in terms of the income received by its beneficiaries, including both grant recipients and non-recipients. However, the program's execution requires more systematic and consistent monitoring to ensure the completeness of key variables, especially the data on average monthly income, which is currently very limited. Given that income is a crucial indicator to assess the program's effectiveness in achieving its intended goals, more complete data would also lead to more accurate regression results.

Furthermore, there is a strong need to develop more targeted, practical, and context-specific training programs that are aligned with the beneficiaries' business commodities and tailored to their specific needs. This would allow participants to more effectively apply the

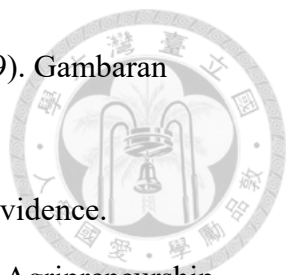
knowledge and skills gained to improve their enterprises, rather than relying solely on repeated general training sessions. Such an approach is expected to generate a more significant and positive impact of the training on participants' income. Lastly, further research is essential to comprehensively evaluate the overall effectiveness of the YESS Program. Since the program contract is set to run until 2025, the current research only covers roughly the first half of its duration. Therefore, post-program evaluation is crucial to provide a more holistic and accurate assessment of the program's true long-term impact.



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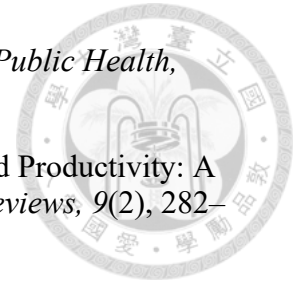
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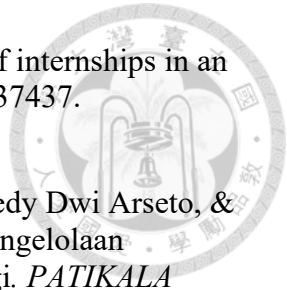
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