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Growing Millennial Farmers Through Entrepreneurship Ecosystem

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ABSTRACT

Agriculture plays an important role in meeting the increasing food needs of the Indonesian people. However, challenges such as limited land, the El Niño phenomenon, and the limited age span of farmers are significant obstacles. This study aims to develop an entrepreneurial ecosystem model for millennial farmers in East Java Province through the Structural Equation Modeling (SEM) approach using SmartPLS 4.0 software. Data were collected through a survey of 1,588 respondents who were beneficiaries of the Youth Entrepreneur and Employment Support Services (YESS) Program in five districts, using a purposive sampling method. The study result showed that banking and training factors had the most significant influence in encouraging the growth of young entrepreneurs in the agricultural sector. Cooperatives and business partners also contributed to increasing millennial farmers' access to capital, business assistance, and marketing of agricultural products. Meanwhile, government policies and the role of the Agricultural Extension Center (BPP) were considered less optimal in supporting the development of young entrepreneurs. Hence, policies that were more responsive to the needs of millennial farmers were needed. This study provides strategic recommendations for the government and stakeholders to strengthen the agricultural entrepreneurship ecosystem through more inclusive access to capital, sustainable training, and strengthening cooperatives and business partnerships to increase the competitiveness of millennial farmers in the agribusiness sector.

Keywords: *agriculture, cooperatives, entrepreneurship, millennial farmers, SEM*

INTRODUCTION

The agricultural sector plays a crucial role in people's lives, especially in meeting food needs. As Indonesia's population reaches 290 million, the need for food is also increasing. However, whilst the population increases, the area of agricultural land decreases. This situation has ultimately caused a decrease in agricultural production. At the same time, the El Niño phenomenon also causes prolonged drought and unpredictable climate change, which worsens agricultural production too. According to Sahara et al. (2024) the impact of El Niño can also reduce farmers' income.

In addition to land limitations and the impact of El Niño, the agricultural sector also faces other challenges. One of which is the age composition of farmers. Based on data from the Badan Pusat Statistik (2023), the majority of the Indonesian farmers are 40 years or older, while only around 21% are between 19 and 39 years old. This indicates that most farming businesses are still run based on hereditary experience without much innovation. As a result, agricultural productivity tends to decline over time.

In this condition, the role of millennial farmers is very important to increase agricultural production (Baharuddin et al., 2024). Young people who are more adaptive to technological developments have great potential to optimize agriculture, even on limited land. However, to encourage more young people to enter the agricultural sector, incentives in the form of guaranteed success and adequate support are required.

Young farmers play a crucial role in the development of future agriculture, as it is easier for them to adapt to the latest technology. The millennial farmers are likely to have the capacity to apply the knowledge gained from the training provided by training institutions, including agricultural extension centers. Millennial farmers will seek solutions to solve the obstacles in agricultural business development, such as capital, which has long been difficult to access, and partnerships with other stakeholders. Developing young farmers is crucial, given that nearly 79% of farmers are in their senior years. The development will allow faster and more widespread agricultural development by creating an environment that is appealing to young people and guaranteeing a decent living. A youth entrepreneurship ecosystem provides an environment that encourages young people to communicate in developing agriculture, which offers a promising future for farmers. According to Rogers (2003), technological innovation spreads through communication between members or between farmers. This leads to the entrepreneurial ecosystem being used as a means of communication to attract young people into the agricultural sector. In this regard, further research is needed on entrepreneurial models for millennial farmers that can be used as models so that young farmers are willing to get involved in agricultural businesses.

RESEARCH METHODS

The research was carried out in 2024 in the regions of Malang, Pasuruan, Pacitan, Banyuwangi, and Tulungagung regencies, which are the areas of the YESS PPIU East Java Program. The sampling technique in this study was the purposive sampling method, with research respondents consisting of 1,588 people. The respondents were the beneficiaries of the YESS PPIU East Java Program, aged 17-39 years, had a business in the agricultural sector, and had attended at least one training session organized by the YESS Program. This study applied a quantitative approach with the Structural Equation Modeling (SEM) method analyzed using SmartPLS4.0 software. The research sample was selected by purposive sampling with a criterion that respondents were beneficiaries of the YESS Program in five regions in East Java. The data was collected through a closed questionnaire that had been tested for validity and reliability.

RESULTS AND DISCUSSION

Respondent Characteristics

Respondent characteristics are used to determine the diversity of respondents based on age, gender, level of education, domicile, and involvement of millennial farmers in cooperatives. This is expected to provide a fairly clear picture of the conditions of respondents and their relationship to the problems and objectives of the study.

Based on Table 1, the majority of respondents were aged between 26 and 34 years old, with a percentage of 54.72%, while the group of respondents aged 34 to 43 years held the smallest proportion of 21.91%. Meanwhile, the respondents aged 17 to 25 years recorded as much as 23.36%. In the context of business

development, age is one of the factors that influences productivity. Younger farmers generally have more stamina, are more agile, and easier to adapt to innovations and a changing environment compared to their older counterparts, who are unlikely to be open to innovations (Soekartawi, 2013). The younger generation suits the farming business development better due to their high level of curiosity as well as their media literacy, which enables them to look for information to solve their existing problems. They also have the desire to create products with better quality and quantity.

Table 1. Characteristics of respondents based on age

Characteristics	Number of people	Percentage
Age (Years)		
17–25 Years	317	23.36%
26–34 Years	869	54.72%
34–43 Years	348	21.91%
Gender		
Man	641	40.37%
Woman	947	59.63%
Join the Cooperative		
Join	1,236	77.83%
Not Joined Yet	352	22.17%
Education		
D4/S1	320	20.15%
S2	7	0.44%
High School/Senior High School	907	57.12%
Junior High School	354	22.29%

Source: Processed data, 2025

The majority of respondents based on gender are females, with a total of 947 people, or equivalent to 59.63% of the total respondents. This means the number of female millennial farmers is high. This signifies a positive indication of social and economic changes. With constant support, female farmers can play more roles to advance agriculture and create a bigger impact on society and the environment. Indeed, the downstream sector is still a priority since it is low-risk and makes money faster. Many downstream sectors involve females in processing the crops.

The training becomes a pilot for the YESS program, whose one of its purposes is the development of farming corporations to create more young business farmers. Corporations developed with a business entity will build cooperatives. Based on the data in Table 1, it can be seen that millennial farmer respondents, as many as 1,236 people, have joined and become active members of cooperatives. The active participation of millennial farmers is strongly needed as an effort to regenerate today's farmers who are dominated by those of senior ages as the main players in agriculture. Millennial farmers can be more open to collaborations, new knowledge, and mutual support in various aspects of the agriculture business. The establishment of cooperatives for millennial farmers can optimize the agricultural potential in the digital era, while at the same time supporting sustainable agriculture and the development of rural areas. The names of millennial farmer cooperatives in the location study are listed below.

1. Koperasi Agrimuda Jaya Bersama (Malang Regency)
2. Koperasi Petani Milenial (Pasuruan Regency)
3. Koperasi Produsen Agritama YESS (Tulungagung Regency)
4. Koperasi Agro Milenial Sejahtera (Pacitan Regency)
5. Koperasi Jetawangi Nusantara (Banyuwangi Regency)

Education level can affect farmers' ability to increase yields, work efficiently, and adapt to climate change and market conditions. All education levels have significant effects on the agricultural ecosystem, and different approaches can make valuable contributions according to their local context. Based on Table 1, the majority of millennial farmers have a high school education level, with a percentage of 57.12% of the total respondents of 1,588. Although there are millennial farmers with various levels of education, high school education is the most dominant one, which can affect their perspective, knowledge, and skills in running a farming business. Higher education level makes it easier for farmers to implement effective and efficient technological innovations. This confirms Haryanto et

al. (2022), who proposed that education level might positively influence the institutional independence of farmers. The level of education greatly influences farmers, especially in implementing technological innovations.

Analysis Results

Model Design

Information on latent and their manifest variables is as follows:

1) Exogenous latent variable X1 (Cooperative) has two manifest variables (indicators), namely X.1.1 (Agricultural Production Facility Provider) and X.1.2 (Marketing),
2) Exogenous latent variable X2 (Partner) has three manifest variables (indicators), namely X.2.1 (Planning), X.2.2 (Organizing), X.2.3 (Implementation and Effectiveness of Cooperation)
3) The exogenous latent variable X3 (Policy) has three manifest variables (indicators), namely X.3.1 (Communication), X.3.2 (Resources), X.3.3 (Disposition).
4) The exogenous latent variable X4 (BPP) has three manifest variables (indicators), namely X.4.1 (Responsiveness), X.4.2 (Responsibility), X.4.3 (Service Quality).
5) The exogenous latent variable X5 (Banking) has three manifest variables (indicators), namely X.5.1 (Socialization/education), X.5.2 (Access to capital), X.5.3 (Mentoring from banking)
6) The exogenous latent variable X6 (Training) has three manifest variables (indicators), namely X.6.1 (Knowledge Improvement, X.6.2 (Skill Improvement), X.6.3 (Behavior Improvement)
7) The endogenous latent variable Y (Young Entrepreneur) has three manifest variables (indicators), namely Y1 (Business Development), Y2 (Network), and Y3 (Income Increase).

When a measurement model was conducted for respondents through Partial Least Squares Structural Equation Modeling (PLS-SEM) Analysis, the appropriate measurement model (outer model) for this study was obtained as follows:

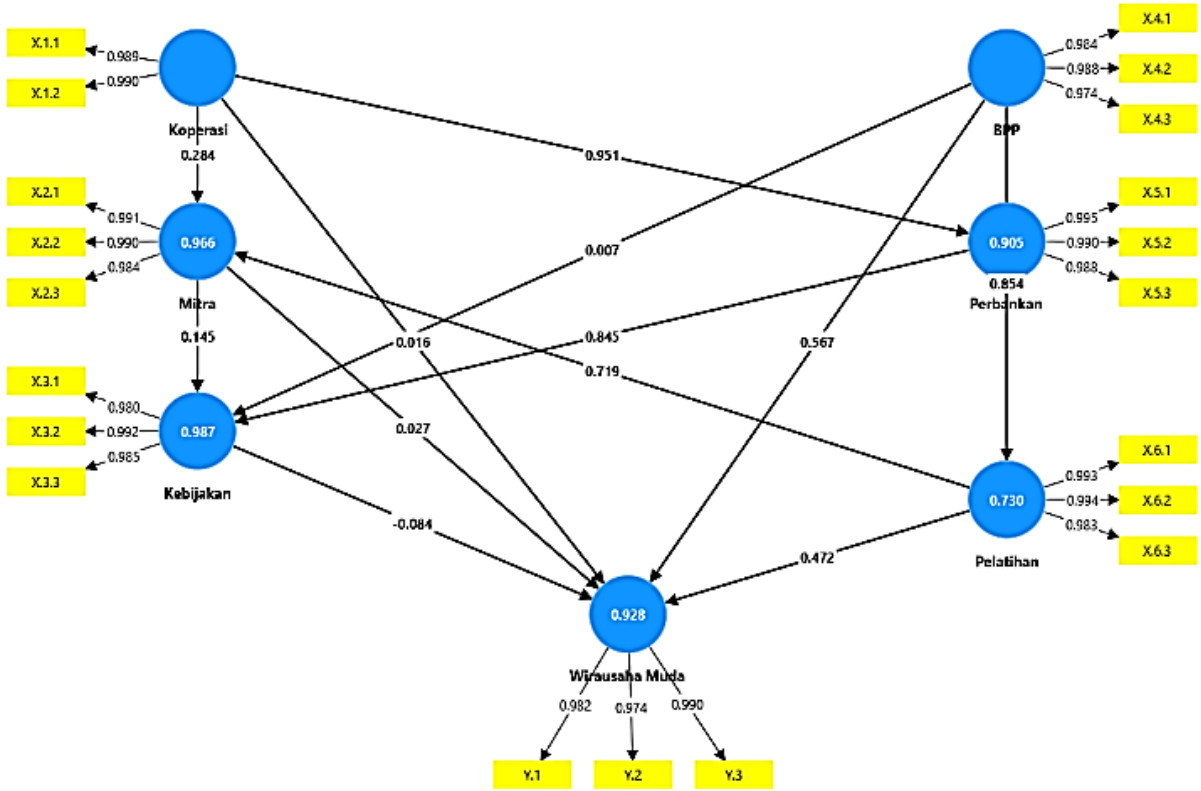

Figure 1. Young Farmers Development Model Through an Entrepreneurship Ecosystem

Source: Processed data, 2025

Based on the results of the measurement model, the following is an interpretation of the path coefficient (β), which describes the influence of each latent variable on Young Entrepreneurs (Y):

Farmer Institutions (Cooperatives)

Farmer institutions (cooperatives) have a positive influence on the growth of young farmers. This shows that cooperatives, as farmer economic institutions, provide production facilities, assistance, and marketing. According to Wereh (2019), limited capital is one of the main constraints in agricultural management, which, in the end, causes low productivity. In relation to this, cooperatives can contribute to the development of young entrepreneurs. Cooperatives help millennial farmers provide quality production facilities at competitive prices. Koib & and Simamora (2022) argued that cooperatives are essential in consolidating the farmers to have a better position to determine the price of their goods. The cooperatives also support farmers' social and economic welfare in general. Cooperatives also help millennial farmers promote their agricultural products. Millennial farmers are assisted with product information needed by the market and product prices on the market. Besides, cooperatives provide guidance to millennial farmers both online and face-to-face. Online guidance is done through several WhatsApp groups based on commodities or by creating communication clusters to share solutions should any problem emerge. This is in line with Dakhi et al. (2023), who argued that the role of cooperatives through their services has a significant and positive influence on farmers' income. Meanwhile, face-to-face guidance is carried out through cluster communication or general meetings that are often held by cooperatives, especially if there is a bulk order. Through corporations, product consolidation can be carried out for larger markets. Small-scale agricultural production requires collaboration with other farmers. Cooperatives can consolidate agricultural products for larger markets.

Partnership

Partners have a positive but relatively small influence on young entrepreneurs. The factors of planning, organizing, and cooperation effectiveness might provide support for the young entrepreneurs, although their influence is not dominant. Partnership with business partners is one of the key factors in supporting the development of young entrepreneurs. A close relationship between business partners and banks and cooperatives is an important factor in facilitating access to capital and expanding the reach of product marketing. According to Muflih in Saparuddin & Badoasri (2011), partnership involves several aspects, such as human resource training, redistribution of productive assets from a bigger party to the smaller ones, and easier access to funding, information, technology, and markets. Banking plays a strategic role in providing financial access for young entrepreneurs. A well-established partnership between business partners and banks provides several benefits, including easy access to capital. Business partnerships with a good financial record will find it easier to obtain funding through various schemes, such as People's Business Credit (KUR), sharia financing, or other funding programs. According to Alea Casta Supriyadi et al. (2024), banks and financial institutions play a crucial role in facilitating financial access for MSMEs (Micro, Small, and Medium Enterprises). Numerous studies, including the one conducted by Beck and Demirguc-Kunt (2006), confirmed that the availability of financing is one of the main factors of MSMEs' success as well as their growth. Banking can provide training to business partners on financial literacy, business management, financial reporting, and investment strategies to ensure the sustainability of their businesses. Financial institutions tend to be more confident in providing loans to businesses that have partnerships with cooperatives or farmer groups that already have a clear and systematic business structure.

Cooperatives act as a bridge between millennial farmers and the market, both locally, nationally, and internationally. In order to function optimally, the relationship between business partners and cooperatives needs to be directed towards creating an efficient and competitive supply chain. Business partners and cooperatives must work together to ensure that agricultural products can be absorbed by the market at competitive prices. Cooperatives should be able to provide effective marketing services for young entrepreneurs, but to date, this role has not been running optimally. In relation to this, Mustangin, et al (2018) noted that cooperatives have a function of providing access for farmers to capitalize their agricultural business. Cooperatives also contribute to the efforts of public empowerment by making it easier for farmers to obtain capital. Effective partnerships between business partners, banks, and cooperatives are key elements in strengthening the young entrepreneurship ecosystem. Halik et al (2020)stated that partnerships have an influence on business development and increasing business income. With easier access to capital and an organized marketing system, young entrepreneurs can develop further and compete in a wider market. Therefore, further efforts are needed to strengthen the synergy between these three components so that the system formed is more solid and sustainable.

Policy

Policy has a negative impact on young entrepreneurs (β = -0.084). This may indicate that the policies implemented, such as communication aspects, resource allocation, and implementation mechanisms, are less supportive of the development of young entrepreneurs or have not been optimized effectively. This means that there are no policies in place to support young people in becoming entrepreneurs. According to Selly (2024), in many developing countries, government policies have been shown to negatively affect youth entrepreneurship. The complexity of the regulatory framework, lack of adequate support structures, and limited access to resources hinder the entrepreneurial potential of young people. Meanwhile, according to Yanto Rukmana et al (2023), overcoming the impact of negative policy on the young businessman shall require a comprehensive strategy. The government has the responsibility to create an entrepreneurship ecosystem and support the business incubators in Indonesia. Through provisional funding, infrastructure strengthening, and the creation of a conducive environment for entrepreneurs, the government can push the development of business incubators and, at the same time, contribute to local startup growth. The government has implemented numerous policies to enhance the attractiveness of the agricultural sector, including transforming traditional farming into modern farming, monitoring profitable prices for dried paddies, ensuring adequate availability of fertilizer, and providing supervision and support from agricultural extension workers. Another policy is the establishment of the Brigade Pangan (BP), which involves young people in managing rice farming businesses professionally and modernly. While the government has implemented numerous policies, their implementation requires collaboration from all stakeholders to attract young people to the agricultural sector.

Agricultural Extension Center

The Agricultural Extension Center (BPP) has very little influence on young entrepreneurs. This shows that the responsiveness, accountability, and quality of service of the BPP still need improvement to contribute more to supporting the growth of young farmers. The BPP has a strategic task to supply technical support and information for millennial farmers in the development of young entrepreneurs in the agricultural sector. As a government agency at the sub-district level, the BPP functions as a center for agricultural extension and information that contributes to the development of the capacity of farmers and agricultural entrepreneurs. According to Indriani Gusnella &and Suriani (2024) the optimization of the 5 Roles of the BPP in the Implementation of Agricultural Extension in the sub-district can be done by (a) providing accurate data and information, (b) establishing collaboration in activity development agriculture, (c) implementing the learning programs for the business farmers, (d) implementing the agribusiness consultation, and (e) increasing the effectiveness of agribusiness consultation to support the development of agriculture.

BPP is responsible for providing and disseminating information related to agricultural technology, access to production facilities, financing schemes, and market opportunities for young entrepreneurs. To increase the competitiveness of young entrepreneurs, BPP implements various learning strategies, including preparing for pilot models and the development of farming businesses based on best practices. In addition, BPP is also tasked to strengthen the institutions and partnerships between key actors and business actors to create a more sustainable agricultural ecosystem. BPP is also expected to focus more on mentoring and providing assistance to young farmers, since many millennial farmers rarely access BPP. Millennial farmers feel that BPP's role in business development is still not optimal because BPP's mentoring and support focus is on farmer groups. Studies conducted by Nurida et al (2024) discovered that agricultural extension workers in the Bangka Belitung Islands Province have an important and influential role in growing the millennial farmers. To optimize the role of millennial farmers, a collaboration should be done between the government, extension institutions, and the private sector to provide broader support and training for extension workers and farmers. Millennial farmers are expected to join groups so that they can get mentoring and assistance from BPP. Many millennial farmers have not joined farmer groups because they do not understand the benefits of joining a farmer group (Razak et al, 2024) Millennial farmers will gain many benefits when joining farmer groups, including learning processes, collaboration, and business development, which will provide wider partnership access. The BPP can continue to provide mentoring to millennial farmers by involving existing farmer groups and tailoring the mentoring to the characteristics of young people. This approach includes using media tailored to the characteristics of millennial farmers. Sugihono et al (2024) stated that social media has become a primary tool for extension workers to provide consultation services, build social networks, and share agricultural content, making it more accessible to millennial farmers.

Banking

Banking has a very significant influence on the growth of young farmers. This shows that socialization, access to capital, and mentoring programs from banks might accelerate the development of young entrepreneurs. Ashari (2009) stated that national banking has great potential as a supporter of agricultural financing. However, credit distribution to this sector is still below 6% of the total credit distributed. This indicates the need to increase the role of banking in providing access to capital for farmers, especially young farmers who often face capital constraints. Capital is often an obstacle for young people to start a business or develop a business. Banking institutions help farmers develop their businesses with KUR loans. Banking and BPP collaborate in socializing banking access to farmers. Socialization is carried out at BPP by letting the financial institutions deliver their presentations before the farmers. Farmers can ask about the credit application mechanism and its repayment. A more flexible repayment mechanism adjusted to the conditions of the farmer's business has caused many farmers to want access to capital. The repayment of the harvest payment model (payment after harvest) makes it easier and helps farmers who cannot make monthly loan repayments, such as for consumption.

The close relationship between banking and the growth of young farmers shows that access to capital and mentoring programs contribute significantly to the growth and sustainability of young entrepreneurs. In addition, an inclusive financial system also strengthens the effectiveness of government policies and collaboration with business partners in creating a more conducive and sustainable entrepreneurial environment, as stated by Muharni (2018), that banks have a significant role in supporting the agricultural sector through easy access to financing and flexible credit products. Capital assistance has been proven to increase agricultural yields, farmer incomes, and encourage local economic growth.

Banking plays an active role in improving financial literacy for young entrepreneurs through various socialization programs. These programs include education on financial management, business risk mitigation, and capital management strategies so that business actors can manage their finances more effectively. In addition, several banks also hold special seminars and training for MSMEs to improve business skills and strengthen their competitiveness in the market.

As a financial service provider, banks offer various financing schemes to support the growth of young entrepreneurs. Various credit options, such as KUR loans with low interest rates, commercial credit for MSMEs, and sharia-based financing, are available to help entrepreneurs obtain working capital. With easy access to financing, entrepreneurs can develop their businesses, expand their marketing networks, and increase competitiveness in the industries they operate in. The existence of accessible financial institutions, added with credit program micro provided by the government, such as KUR loans, can gradually reduce the practice of loan sharks in society. In this case, the synergy between government, state-owned enterprises, and private sectors, including Islamic financial institutions, might have a critical role in eradicating the practice of loans with unreasonable interest and, at the same time, supporting the empowerment of small and micro businesses (Muheramtohadi, 2017)..

In addition to providing access to capital, banks should also guide entrepreneurs through various business incubation and mentorship programs. These mentoring programs include assistance in preparing business plans, optimizing financial management, and developing effective marketing strategies. With ongoing coaching, young entrepreneurs can be better prepared to face business challenges and ensure the sustainability of their businesses in the long term. In strengthening the entrepreneurial ecosystem, banks often collaborate with the government and business partners. One form of this collaboration is realized through the Macroprudential Inclusive Financing Ratio (RPIM) policy, which allows banks to channel credit to MSMEs directly or through partnership schemes with cooperatives and other financial institutions. This synergy aims to expand access to financing for business actors, increase their capacity, and create a more inclusive and sustainable business environment.

Training

Training has a fairly strong positive influence on young entrepreneurs. This indicates that increasing knowledge, skills, and behavioral changes through training programs might encourage the development of young entrepreneurs. Training can increase the capacity of young entrepreneurs, especially in terms of knowledge and skills. A study by Kartikaningrum (2021) showed that entrepreneurship training has a significant influence on entrepreneurial orientation. Muhammad Ramdhan (2023) also found that

training entrepreneurship, the utilization of technology, and the level of education have a positive and significant influence on the improvement of MSME actors' productivity, with a contribution of 75.9%. The implementation of training is closely related to government policies and support from business partners, since the success of the training program is greatly influenced by regulations and synergy with various stakeholders. Hence, training not only has an impact on increasing the competence of young entrepreneurs but also contributes directly to increasing their income, thus strengthening a more sustainable entrepreneurial ecosystem.

One of the Youth Entrepreneurship and Employment Support Services (YESS) programs for the 2021–2024 period has successfully increased the capacity of young farmers through various training programs. Based on available data, 82,478 beneficiaries have participated in various trainings designed to encourage the development of entrepreneurship in agriculture. The training provided covers various aspects, ranging from agricultural product processing, financial literacy, cultivation management, and digital marketing. Some of the trainings with the largest number of participants include the Business Motivation Workshop, which was attended by 25,265 participants, followed by the Financial Literacy training with 16,072 participants. Next, the Business Proposal training also received great attention with a total of 19,494 participants, reflecting the high interest of young farmers in strengthening their entrepreneurial skills.

The program also includes technical training, such as Agricultural Technical, which was attended by 2,424 participants, as well as agribusiness-based training, such as chili plant cultivation, animal feed, and chip processing, which reached hundreds to thousands of young farmers. The diversity of these types of training shows a comprehensive approach to increasing the competitiveness and independence of young farmers in various agricultural sectors. Training is very necessary, especially since many young farmers have just entered the agricultural sector and therefore have little understanding of agricultural businesses. Training methods must be a concern because they have a significant impact on increasing farmers' knowledge (Iriani Putri et al., 2023)

Recommendations Implications

Although some variables in this study did not show a strong influence, these variables still play a role as part of the efforts to support young entrepreneurs in the YESS PPIU Program in East Java. The results of this study also highlight the weak influence of policies on young entrepreneurs, so that policy revisions are needed by the government to be more in line with the needs and challenges faced in the field, and policies are needed that support the growth of millennial farmers.

CONCLUSION

Based on the results of the measurement model analysis, banking and training are the main factors to encourage the growth of millennial farmers in business development. Banking is closely related to access to capital and educational support, while training contributes to improving the skills and knowledge of young entrepreneurs. Business partners (X2) and government policies (X3) also have a significant influence on creating a conducive business ecosystem. Meanwhile, BPP (X4) and cooperatives (X1) function as supporting elements that indirectly strengthen the entrepreneurial ecosystem. Therefore, efforts to strengthen the young entrepreneurial ecosystem need to be focused on increasing financial access, providing sustainable training, and implementing policies that are more responsive to the needs of young entrepreneurs.

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