

Performance evaluation of high-quality farmer training-survey data of farmers' training in Jiangxi province, China

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ABSTRACT

This study aims to identify and evaluate key performance indicators of high-quality farmer training by employing the Analytic Hierarchy Process and factor analysis. This is crucial to serve as a reference for effective resource allocation for the training programs by the government. Data were collected through face-to-face interviews with the experts and an online questionnaire survey with participating farmers in the training. The analysis revealed five primary factors influencing the effectiveness of high-quality farmer training: training intention, overall satisfaction, professional quality, economic benefit, and social benefit. Social benefit emerged as the most significant indicator, while overall satisfaction was the least influential factor. The study comes to the conclusion that judging the effectiveness of good farmer training should include both short-term and long-term benefits. This fills in a gap in the research that has been caused by evaluating training based on quantity rather than quality. The study's results suggest that training programs should use a multi-level index system that balances short-term and long-term benefits. This would help fix the problem with the current way of judging the effectiveness of training, which is that it isn't very thorough and can lead to evaluation subjects being put in the wrong place. By emphasizing social impact and delayed benefits, training institutions can enhance the overall quality and effectiveness of their programs, ultimately leading to more sustainable agricultural development.

Contribution/Originality: This study employs a multi-level index system using the Analytic Hierarchy Process and factor analysis to identify key performance indicators for evaluating high-quality farmers. It looks at both the short-term and long-term effects of training. Unlike other evaluation methods, it does this by looking at both quantitative and qualitative social and economic effects at the same time.

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1. INTRODUCTION

Agriculture is the foundation of a national economy, and its development is the key for any country in the world to solve the problem of food security (Pawlak & Kołodziejczak, 2020). Farmer training is a series of formal or informal, short-term or long-term educational activities that are prepared for farmers to achieve established goals as individuals or groups. It is also an important measure for the country to achieve rural human resources development and rural revitalization (Khodabandehlo, Farahani, Einali, & Cheraghi, 2024; O'Donoghue & Heanue, 2018; Pretty, 2003).

In rural revitalization, farmers are the main players; talent is the key (Anwar, Jatsiyah, Zahari, Saefudin, & Nofirman, 2023; Yin, Chen, & Li, 2022). In 2019, the Central Committee of the Communist Party of China issued the Regulations on Rural Work of the Communist Party of China, emphasizing the need to "cultivate a team of high-quality farmers with culture, technical knowledge, good operation, and management skills". Data show that in recent years, the central government has invested a total of 18.29 billion yuan to support agricultural and rural departments at all levels to cultivate nearly eight million high-quality farmers (Zhang, 2024). With such a large amount of capital investment, it is urgent for government departments to clearly understand the training performance of farmers, which can be used to gauge the degree of achievement of training objectives and also serve as the policy basis for optimizing the allocation of training resources in future.

2. LITERATURE REVIEW

The training of high-quality farmers is an important way to help complete rural revitalization (Liu, Qiao, Xiao, Han, & Pan, 2022). Scholars in related fields have rich research results on the training of high-quality farmers, and their research directions are mainly training status, training problems, training methods, and training intentions. Nevertheless, theoretical research on "precise training" of high-quality farmers and research on the performance evaluation of high-quality farmer training have not attracted enough attention from relevant scholars (Biswas & Islam, 2019; Hossain, Islam, Akhter, & Rashiduzzaman, 2021; Li, Zhao, & Ma, 2023; Sancho, Ramos-Rodriguez, & Vega, 2022). Performance evaluation is an important part of farmer training, but also the most difficult part. At present, the research on "training performance evaluation" mainly focuses on enterprise employees (Ajo, Gran, Kanyan, & Lajim, 2021; Xayavong, Kingwell, & Islam, 2016). Most of the research on training performance evaluation of high-quality farmers is a summary of practical experience in various places (Hossain et al., 2021; Ubong & Okpor, 2019; Zhang, Ye, & Yu, 2021) which lacks an empirical objective evaluation of training performance by constructing a scientific training index system. Some relevant research only focuses on the comparison of "input-output" in economics, the difference in farmers' agricultural income before and after training, and training satisfaction (Lu, Wang, & Mo, 2018; Weng & Guo, 2014; Zhang & Liu, 2022). The research on the training performance evaluation of high-quality farmers from a holistic perspective by taking into account the whole process of training is rarely seen.

High-quality farmers are the main force to implement the rural revitalization strategy, and the quality of farmers is crucial to the process of the rural revitalization strategy (Fei & Feng, 2022; Lv, 2022). The government-led training of high-quality farmers in China has the following three characteristics: First, in practice, the training of high-quality farmers is mostly short-term or phased training, and it is difficult to integrate all evaluation activities into a certain training process (Chilemba & Ragasa, 2020; Mizik, 2023). Therefore, the performance of high-quality farmer training is usually not immediately visible. Instead, only when the work content of the trained farmer intersects with the training content, it can gradually become apparent (Bagamba, Ntakyio, Otim, Spielman, & Van Campenhout, 2023; Fasting, RSO, & Klerkx, 2022; Tufan et al., 2021). This shows that the training performance of high-quality farmers reflects the characteristics of time lag, and existing studies only focus on "immediate benefit" (Castelein et al., 2022; Gong, 2023; Hill & Pamphilon, 2024) while this study paid attention to both "immediate performance" and "delayed performance" when evaluating the training performance of high-quality farmers. Secondly, high-quality farmer training is different from general enterprise training (Lei & Yang, 2024; Mizik, 2023). As the primary provider of training services, the government not only pursues cost and economic benefits like those of enterprises, but they must also focus on the social benefits derived from its economic expenditures (Goloshchapova, Yamashev, Skornichenko, & Strielkowski, 2023). Therefore, the existing "input-output" method to evaluate the performance of high-quality farmer training is not comprehensive, and it is difficult to achieve the government's goals. This study carried out the performance evaluation of the whole process of high-quality farmer training from three stages: before, during and after training. Thirdly, high-quality farmer training is different from general technical training (Kangogo, Otieno, Okello, Mwenye, & Kapalasa, 2024; Tamsah & Yusriadi, 2022). As an important measure to link and consolidate the achievements of poverty alleviation and rural revitalization, its main purpose is to change the status quo of "low quality", "low income" and "low status" of farmers (Pan, Ye, & Wang, 2023). Existing studies only assess whether "quality and skills are improved" and "income is increased" after the training of high-quality farmers (Adhvaryu, Kala, & Nyshadham, 2023; Ashraf et al., 2020; Forsythe, 2017). This study added the subjective feelings of "whether farmers' status is more respected" and "whether their social status is improved".

The authors believe that the ideal quality farmer training performance evaluation standard should emphasize the main role of the trainee farmers and highlight the actual benefits of the training activities. The evaluation standard can not just evaluate the immediate performance of the trainee farmers' mastery of knowledge and skills throughout the training. Instead, it should also evaluate the contribution of the training to the personal and social development and other delayed benefits. The performance evaluation of high-quality farmers' training should not just evaluate the results only, but it should also evaluate the willingness before training and the process evaluation during training, forming a whole process and multi-index evaluation system (Ying et al., 2023; Zhang, Yang, & Zeng, 2023).

3. METHODS

3.1. Data Collection

Steiner and Sven (2013) indicated that interviews were a common basic mode of interpersonal communication, an important research method and technique in social research, and they were also the entry point for the specific operation of qualitative research. In this study, two important provincial training institutions were selected: Jiangxi Vocational College of Biotechnology, which is the earliest and largest provincial farmer training institution in Jiangxi Province, and Jiangxi Academy of Agricultural Sciences, the unit with the largest number of expert teachers for farmer training in Jiangxi Province. The reason for this selection is that the high-quality farmer training of these two units is the most representative.

According to the needs of the research objectives, the authors developed a semi-structured interview questionnaire for farmer and expert interviews in six training classes. One expert was selected for each training class, and a total of six experts were interviewed. The authors studied six training classes, observed the performance of the trainees, and used the purposive sampling method to select three farmer trainees from each class according to the three levels of good, medium, and poor performance. A total of 18 farmer trainees were interviewed. The selected respondents had the following characteristics: First, as consumers or participants of training, the trainees had the greatest say, and they were able to objectively answer the questions that the researchers wanted to know, based on their real experiences and feelings. Secondly, the interviewed farmers had different basic demographic and operational information, such as age, educational background, industry scale, and number of trainings attended, and all of them had participated in more than one training course at the ministry, provincial, and municipal levels. Moreover, various training institutions hired some of the interviewed farmers as "local experts," serving as both trainees and trainers. The training institutions classified some of the surveyed farmer cooperatives or family farms as field schools, assigning them specific training tasks. They have a wealth of practical experience and are very knowledgeable about the organization and implementation of training, which is representative to a certain extent. After obtaining the interviewee's consent, we recorded each 30-minute interview. We then converted the recorded interview contents into text using the "xun fei hearing" software on a recording device.

3.2. Data Coding

The data analysis in this study primarily employed the three-level coding method of grounded theory, which involved encoding, classifying, and summarizing the interview data step-by-step until no new concepts and relationships emerged, ultimately forming an indicator system. The first is open coding. The main task of this stage is to define the concept, discover the category, and form the categorization. This is a process of operationalizing and regrouping in a new way. It involves breaking up the transcribed interview data, figuring out the structure of the discourse and the links between the different parts based on context, grammar, theme, and content, and then giving them new ideas and meanings. Thus, discovering thinking units, coding them, and searching for "native concepts" were involved throughout this series of processes of disassembling, reassembling, and endowing concepts and meanings. Limited by space, this paper chooses one of the interview clips as an example to illustrate the coding process of localization concepts (see Table 1). To get the initial localization concepts from the original source statements, similar concepts were gathered into a categorization process based on how they related to each other and made sense (Chen, 2013). This study ultimately summarized 37 independent categories.

Table 1. Concept coding of interview content localization.

Interview snippets	Localization concepts
One is the interpretation of this new policy by experts every year, which is also a factor that is necessary to understand the new types of agricultural operators, including family farms, not only cooperatives like ours, but also agricultural companies, which are agricultural operators (A1). For our country's agricultural policy environment, it is still necessary to understand something: it is the state to give some support or give some rewards, including at the national level, to the local level, he will talk about. When you go to study, you will find that many people, for example, meet the requirements and can benefit from this incentive policy. If you don't go, you will not be able to enjoy the incentive policy because you don't know about it, which I think is rather unfair. (A2) The second group consists of experts, including those who train teachers. (A3) Interpretation and tracking services for new varieties and technologies. The introducers are of high significance for us to really engage in this kind, especially planting or breeding. (A4) Because experts and scholars, such as the Academy of Agricultural Sciences, we are closely connected with the Academy of Agricultural Sciences, and their channels of information communication must be more diversified, right? (A5)	A1 Pertinence of training content A2 Participating in the training can learn agricultural policy knowledge A3 Training teachers are agricultural technology experts A4 Participating in the training can help you learn new technologies and enjoy tracking services A5 Participating in training can get to know experts and learn information.

Next, we perform the selection coding. At this stage, the main task is to figure out how concepts relate to categories by looking at the order of events, meaning, similarity, difference, and causality between the categorized concepts. The relationship between the categorized concepts must then be summed up into more advanced categories. This study identifies 15 categories by repeatedly comparing 37 categorical concepts, and then further classifies these categorization concepts using core/selective coding. The basic framework finally classifies them into five dimensions through repeated comparison and classification, a process known as three-level coding (see Table 2).

Table 2. Classification of categorization concepts.

Categorization (Level 1 coding)	Category (Level 2 coding)	Core class (Level 3 coding)
Whether to volunteer for training	Training needs	Willingness to train
Family support		
Attend all training activities on time		
Government policies to encourage		
Training organizations	Training organization management	Training satisfaction
Training management		
Training services		
Training content		
Form of training	Training content	
Duration of training	Form of training	
Training location		
Training teachers	Training time and space	
Continuity services	Trained teachers	
Participation	Tracking service	
Participation enthusiasm	Participation performance	
Agricultural expertise and skills	Advancement of vocational knowledge and skills	Professional literacy
Other occupational knowledge and skills		
Innovative ideas	An update of career ideas	
Ecological philosophy		
A new understanding of agriculture		
Increased willingness to farm	An increased sense of professional identity	
Hope children to farming		
Marketability		
Information gathering ability	The formation of professional development ability	
Decision-making ability		
Use of new technologies/New varieties/New models	A change in professional behavior	
Research and development of new systems/Extension of the industrial chain		
Personal accolades	Personal benefits	Economic benefits
Farm (Co-op) honors		
Broaden your mind		
The expansion of social capital		
Cost reduction		
Increased efficiency		
The promotion of farmers' status	Social benefits	Social benefits
Demonstration drive		
Ecological benefit		
Increased awareness of social responsibility		

3.3. Data Application

The index system cannot be established in one setting, but it needs to be constantly adjusted, amended, and optimized according to the actual situation. Indicators developed based on interviews may have repeated content and logical confusion, which requires constant comparison, screening, classification, and combination of the constructed evaluation index system and further verification and optimization to ensure the accuracy and completeness of the performance evaluation index of high-quality farmer training constructed by us.

First of all, based on the expert consultation method, the performance evaluation index of high-quality farmers training is revised. It is a method to listen to the opinions of experts on a certain issue and verify them with the help of the knowledge, experience, and judgement of experts (Bike & Ruichang, 2023). The key to the expert consultation method lies in the selection of experts. The selected experts should not only be familiar with the content of this study but also have certain authority. Therefore, 10 experts were selected from the research field of "agriculture, rural areas", the field of empirical research methods, the training organizer, the training teacher, and the trainees. We asked the experts in person for their opinions on the listed performance evaluation indicators of high-quality farmers' training. The index system was then changed based on the experts' suggestions, and the final performance evaluation index system of high-quality farmers' training is shown in Table 3.

Table 3. Performance evaluation index system of high-quality farmer training.

First-level index	Second-level index
Willingness to train	Very willing to attend
	Family support
	Attend all training activities on time
	Government policies to encourage
Overall satisfaction	Training content
	Training mode
	Training teachers
	Training services
	Tracking services
Professionalism	Knowledge of thought, accounting, law, e-commerce, etc.
	Agricultural expertise
	Agricultural practice ability
Economic efficiency	New technology new projects
	Increased production of produce
	Improved product quality
	Cost reduction
	Increased family income
Social benefits	Less medicine for weight loss
	Guide and drive surrounding farmers
	Ecological environment improvement

Secondly, based on the questionnaire survey method, the performance evaluation index of high-quality farmers training is revised. Based on the interviews with the high quality farmers and the expert consultation, the performance evaluation index system of high-quality farmers training was designed, the questionnaire was prepared, and the project analysis and factor analysis were carried out by issuing the prediction questionnaire so as to amend the performance evaluation index system of high-quality farmers training.

The subjects of this questionnaire are farmer trainees who participated in the high-quality farmer training of Jiangxi Vocational College of Biotechnology and Jiangxi Academy of Agricultural Sciences in 2023. There are six training courses with 100 people in each class, but some trainees did not attend the full session due to leave or other reasons. Online questionnaire survey data recorded responses from 514. All the items in the project have a T-value greater than 3,000, a correlation coefficient of at least 0.4 between all the items and the total score, a commonality of at least 0.2, and a factor load of at least 0.45. This is based on the critical ratio method and the homogeneity test. This means that all the items are effective at telling the difference between people. Exploratory factor analysis was used to find the factors that the variables had in common. In the end, seven factors with eigenvalues greater than one were found (see Table 4). Through α coefficient test, the internal consistency reliability coefficient of the questionnaire is higher than 0.8, indicating that the reliability of the questionnaire is good.

Table 4. Component matrix after rotation.

Questionnaire dimensions	Question items	Ingredients				
		1	2	3	4	5
Willingness to train	PXYY1	0.659				
	PXYY2	0.637				
	PXYY3	0.739				
	PXYY4	0.568				
Overall satisfaction	MYNR1		0.672			
	MYNR2		0.549			
	MYNR3		0.634			
	MYNR4		0.576			
	MYNR5		0.575			
	MYJS1		0.478			
	MYJS2		0.527			
	MYJS3		0.606			
	MYJS4		0.641			
	MYJS5		0.583			
	MYJS6		0.532			
	MYJS7		0.729			
	MYFW1		0.775			
	MYFW2		0.728			

Questionnaire dimensions	Question items	Ingredients				
		1	2	3	4	5
	MYFW3		0.767			
	MYFW4		0.674			
	MYGZ1		0.554			
	MYGZ2		0.718			
	MYGZ3		0.773			
	MYGZ4		0.734			
Professional quality	SYSX1			0.472		
	SYSX2			0.575		
	SYSX4			0.583		
	SYSX5			0.539		
	SYSX6			0.462		
	SYSX7			0.535		
	SYSX8			0.700		
	SYZJ2			0.559		
	SYZJ3			0.563		
	SYZJ4			0.591		
	SYZJ5			0.605		
	SYZJ6			0.701		
	SYZJ7			0.719		
	SYZJ8			0.598		
Economic benefit	JJXY1				0.802	
	JJXY2				0.785	
	JJXY3				0.679	
	JJXY4				0.684	
	JJXY5				0.786	
	JJXY6				0.750	
	JJXY7				0.788	
	JJXY8				0.763	
	JJXY9				0.790	
	JJXY10				0.813	
Social benefit	SHXYYC1					0.611
	SHXYYC2					0.691
	SHXYYC3					0.636
	SHXYYC4					0.644
	SHXYYC5					0.728
	SHXYYC6					0.727
	SHXYFD1					0.757
	SHXYFD2					0.758
	SHXYFD3					0.689
	SHXYFD4					0.618

4. RESULTS

4.1. Index System Determination

Exploratory factor analysis shows that the four original dimensions of "I am very willing to participate," "family support," "participating in various training activities on time," and "government policy encouragement" have been combined into one dimension: "voluntary participation in training." The two dimensions of "knowledge of ideology, finance, law, and e-commerce" and "specialized knowledge of agriculture" have been combined into one dimension: "theoretical knowledge." The social benefit has been changed from "reducing weight and reducing medicine" to "improving ecological benefit." By combining the findings of theoretical research, suggestions from experts, and exploratory factor analysis, this study changed the training intention dimension from its original four secondary indexes to one secondary index called "voluntary participation in training." It also changed the professional quality dimension from its original three secondary indexes to two secondary indexes called "theoretical knowledge" and "practical ability." The three original indicators of "reducing weight and reducing medicine," "guiding surrounding farmers," and "improving ecological environment" were changed to two secondary indicators of "improving ecological

benefits" and "guiding surrounding farmers." This led to the creation of a high-quality training performance evaluation index system, which can be seen in Table 5.

Table 5. Performance evaluation index system of high-quality farmers' training.

First-level index	Secondary indicators
Willingness to train	Volunteer for training
Overall satisfaction	Training content
	Training method
	Training teachers
	Training services
	Tracking services
Professionalism	Theoretical knowledge
	Practical ability
Economic effectiveness	New technology, new project adoption
	Increased production of produce
	Improved product quality
	Cost reduction
	Increased family income
Social benefits	Improvement of ecological benefits
	To guide and motivate surrounding farmers

4.2. Index System Empowerment

Since each index has different importance in evaluating the training performance of high-quality farmers, in order to accurately reflect the difference in the importance degree of each indicator, it is necessary to assign weight coefficients to evaluation indicators at all levels (Du, Liu, Li, & Liu, 2024). The method of determining the weight of the index is very important, and the credibility of the evaluation results largely depends on the scientificity of determining the weight of the evaluation index. When conducting multi-index comprehensive evaluation, different evaluation methods should be selected according to the emphasis of specific problems, giving full play to the advantages of information technology and making the evaluation results objective and easy to understand as far as possible. According to the above analysis, considering the particularity of the research purpose and object, this study adopts the subjective and objective Analytic Hierarchy Process (AHP) to determine the index weights on the basis of the availability of evaluation data, the simplicity of evaluation procedures, and the objectivity of evaluation results. The weight coefficients of each evaluation index of the training performance of high-quality farmers were determined by constructing the judgment matrix, scoring by experts, and using AHP (Analytic Hierarchy Process) method (Nik Hashim, Dali, & Alias, 2023) to calculate the importance ranking and consistency test with the help of the SPSSPRO (Scientific Platform Serving for Statistics Professional) software. Table 6 displays the final weight of each index.

Table 6. Results of the AHP hierarchy analysis of the performance evaluation of high-quality farmers training.

Results of AHP hierarchy analysis				
Item	Feature vector	Weight value (%)	Maximum feature root	Confidence Interval (CI) value
Willingness to train	0.549	10.98	5.392	0.098
Overall satisfaction	0.53	10.59		
Professionalism	1.127	22.533		
Economic benefit	1.131	22.612		
Social benefit	1.664	33.284		

In Table 6, it can be seen that the weight value of all indicators in the performance evaluation index system of high-quality farmer training is above 10%. The weight value of "social benefit" is the largest, while the weight value of "overall satisfaction" is the smallest, indicating that the current training of provincial-level high-quality farmers in Jiangxi Province attaches more importance to the social benefit of training. Farmers who participate in the training are adults over the age of 18. They attach less importance to training services than professional literacy, economic benefits, and social benefits. To improve the training of good farmers, it is thought to be more important to go beyond immediate, observable effects and focus on making farmers more professional and increasing the economic and social benefits of farming. We should take necessary policy measures, particularly to enhance the social benefits of high-quality farmer training. The authors believe that with the continuous implementation of the new education reform in recent years, the level of education among farmers is getting higher and higher. As a result, farmers are becoming more motivated to participate in training programs. There is greater awareness and more and more in-depth understanding of "one rich is not rich; everyone rich is really rich.". Additionally, there has been progress in developing a deeper ideological understanding of energy conservation, reducing emissions, and protecting the ecological environment. Therefore, the "social benefits" index weight value is the largest. Table 6, reveals that the largest characteristic root is 5.392, with a CI value of 0.098. Generally, CI = 0 means "there is complete consistency," CI close to 0 means "there is satisfactory consistency," and the larger CI is, the more serious the inconsistency is. Based on the results in Table 6, the CI = 0.098

in this study means that the system for judging the performance of good farmers that was made in this study is very consistent.

5. DISCUSSION

The findings of this study indicated that the high-quality farmer training effect evaluation index design should pay attention to both immediate effect and delayed benefit (Szott & Motamed, 2024). Training is a form of education, and education is different from other types of investment. The effect of education investment is usually not immediately visible, but it can be gradually revealed after a period of time, especially when the work content of the trained farmers intersects with the training content (Lee, Yoo, & Bailey, 2020; Ogunode, Onyekachi, & Ayoko, 2023) say that it's important to think about the lag characteristics of the training effect and the public welfare characteristics of high-quality farmer training led by the government. The ideal performance evaluation standard for high-quality farmer training should be a multi-level index system, including both the immediate effect index and the delayed benefit index (Elias, Nohmi, Yasunobu, & Ishida, 2016).

Secondly, the high-quality farmer training performance evaluation index system constitutes five first-level indexes and 15 second-level indexes, including training intention, training satisfaction, professional quality, economic benefit, and social benefit (Zhou, Zhong, & Yin, 2023). The design of the evaluation index is the most important link in the training performance evaluation. The choice of the evaluation index shows how scientific the content of the evaluation is and how reliable and valid it is (Cai, Cheng, & Ke, 2022; Xin, Shu-Jiang, Nan, ChenXu, & Dan, 2022; Yang, 2022). In order to build an ideal performance evaluation index system of high-quality farmers' training, this study developed five first-level indexes, including training intention, training satisfaction, professional technology, economic benefit, and social benefit, using the three-level coding method of rooted theory (Barrera-Osorio, Kugler, & Silliman, 2023; Song & Wang, 2023). Some of the 15 second-level indicators are: willingly participating in training; training content; training methods; training teachers; training services; tracking services; theoretical knowledge; practical skills; adoption of new technology and projects; increase in crop yield; improvement in crop quality; cost reduction; increase in family income; improvement in environmental benefit; and the ability to guide and drive farmers in the area. All these indicators of the high-quality farmer training performance evaluation index system have passed the reliability and validity tests.

Thirdly, the study establishes the weight sequence for the quality farmer training performance evaluation index. We found the weight rankings of training performance indicators for high-quality farmers after training by using a judgment matrix, expert ratings, computational importance rankings, and a consistency test. The social benefit had the most weight, followed by economic benefit, vocational skill, training willingness, and finally training satisfaction. The weight of quality farmer training performance evaluation index shows that training performance should pay more attention to social benefits, that is, the delayed benefits of training.

6. CONCLUSION

The purpose of this study was to establish a scientific training performance evaluation system for high-quality farmers and then evaluate their training performance at the provincial level in Jiangxi. Through on-site face-to-face interviews with the farmers of Jiangxi Academy of Agricultural Sciences and Jiangxi Vocational College of Biotechnology, the training indicators of high-quality farmers were preliminarily determined. Next, we established the evaluation index system for high-quality farmer training performance using the expert consultation method and the AHP approach. Later, through an online questionnaire survey, the high-quality farmer training performance from Jiangxi Vocational College of Biotechnology and Jiangxi Academy of Agricultural Sciences in 2023 was evaluated. The weight value of the five first-level indicators is as follows: social benefit has the largest weight value, followed by economic benefits, vocational skills, training willingness, and lastly training satisfaction. So, social benefit should be the first important thing that is looked at when judging the quality of good farmer training. At the same time, evaluations of delayed benefits after the training should be made stronger. At the same time, the evaluation subjects of high-quality farmer training institutions should be replaced by the participating farmers rather than the evaluation executed by the training providers themselves. The training providers should not be both "athletes" and "referees." When inspecting the training performance of high-quality farmers, policymakers, that is, the relevant government departments, should not only look at the quantitative indicators nor take the satisfaction percentage as the only indicator. Instead, they should measure the training performance from the multi-dimensional standards of training willingness, training satisfaction, training skill level, and economic and social benefits so as to strive to maximize the effectiveness of the government target's special funds for high-quality farmer training, as also highlighted by Rahayu, Juwita, Bintariningtyas, Rini, and Wahyuni (2024).

The authors recognize the shortcomings of this study, and these provide areas for future study. First, the study only looked at six high-quality farmer training courses from two provincial training units. Also, the performance evaluation of provincial high-quality farmer training doesn't have a strong enough effect on explaining things. Secondly, the research process encountered certain limitations due to the absence of ChatGPT or AI intelligent tools. The authors will rectify these aspects of limitation in future research.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

Competing Interests: The authors declare that they have no competing interests.

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