



Transforming Traditional Farmers into Professionals: An Introduction to Human Resource Management in Rural

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Abstract: This research is focused on outlining experiences in rural human resource management through the introduction of a new professional farmer training process. The aim is to provide insights and references for developing countries in implementing farmer training and improving their human resource structure. The research methodology explores the literature combined with an inductive approach to describe and analyse experiences and lessons learned during training programmes to strengthen human resource capacity in the agricultural sector. The results of this study emphasise the importance of new professional farmer training in rural human resource management, with the Indonesian government prioritising the entire training process. The Indonesian government has taken strategic steps in farmer training, which include identifying appropriate training targets, selecting influential investment entities, developing practical training models, and designing supportive policies. These initiatives have significantly improved the quality and structure of rural human resources. The uniqueness of this research lies in its selection of topics that are less widely covered in the literature, especially regarding the training process and the new professional farmer model. This research is also important in enhancing the skills of rural individuals, increasing farmers' income, strengthening the role of agriculture, and supporting economic growth in rural areas. Furthermore, this research makes a significant contribution to the literature by enriching the theory of human capital investment in rural areas.

Keywords: Agricultural training; Human resources; Professional farmers; Rural farmers

Introduction

Modern farmers who are dedicated to making agriculture their main career have a certain expertise in the sector and rely on agriculture as their main source of income (Ngongo et al., 2022; Niu et al., 2023; Zhou et al., 2023). They can be classified into three broad groups: First, professional farmers who specialize in aspects of agricultural production and management. Second, farmers who have proficiency in various technical works related to agriculture. Third, farmers contribute to the provision of social services in their communities through

their agricultural activities (Hu & Li, 2018; Mockrin et al., 2017).

Professional farmers who focus on agricultural production and management are often individuals who make farming their primary occupation, having specialized capacities and capabilities for investment in this field (Mockrin et al., 2022; Zhou et al., 2023). They generally belong to groups such as large family farm business owners or cooperative leaders. Professional and vocational skilled farmers, on the other hand, are those who have specialized expertise in agriculture, are consistently involved in agricultural operations in

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entities such as cooperatives or agricultural enterprises, and depend on this work as their main source of income (Feinberg et al., 2015; Mockrin et al., 2023). It encompasses a wide range of technical and specialized occupations in agriculture, serving as the backbone of efficient and sustainable farming operations.

Social service professionals are individuals who take an active role in various aspects of agriculture-related services before, during and after production (Newburn et al., 2022; Saefudin, 2017). Their duties include providing information and resources to rural communities, farm machinery services, crop protection, and animal disease prevention and management (Gottlieb et al., 2015; Xu et al., 2022). These activities are not only essential to farming operations but also a major source of income for them.

The fundamental differences between modern professional farmers and traditional farmers can be seen through four main aspects, which are outlined in more detail in Table 1. These aspects include the methods and technologies used, management approach, level of specialization, and engagement in sustainable agricultural innovations and practices (Adam et al., 2022; Niu et al., 2023; Zhang et al., 2021). These differences signify a significant evolution in agricultural practices, shifting from traditional methods towards a more structured, science-based and sustainability-oriented approach.

Table 1. Differences between professional and traditional farmers

Indicators	Professional Farmer	Traditional Farmer
Social status	high	low
Income	high	low
Comprehensive quality	high	low
Professional	strong	weak

Source: Cui et al. (2022)

In 2019, the Indonesian government launched a massive initiative to create a new generation of professional farmers with the "Training of One Million Farmers and Extension Officers" program. Following the initiative, these new farmers have played a crucial role in driving the modernization of the agricultural sector and revitalization of rural areas. This initiative reflects a global trend where countries, albeit with different national conditions and approaches, generally support agricultural modernization through professional farmers' development. For example, in China, a highly developed country in the agricultural sector, there are agricultural colleges and experiment stations in every state, along with various agricultural education and training programs (Geng, 2020; Hu & Li, 2018). This has contributed to the formation of an extensive skilled labor force in the agricultural sector. In Poland, although conditions for agricultural development are not always

ideal, the rate of agricultural modernization is still high (Hornowski et al., 2020). This is largely thanks to an effective vocational education system, which offers training and skills development for local farmers (Ichsan et al., 2023; Xu et al., 2023). This approach demonstrates how education and training play an important role in creating an agricultural workforce that is competent and able to adapt to modern challenges.

Studies on farmer training practices abroad have been ongoing for many years, resulting in a significant range of research findings. International academics have reached a consensus that to improve the economy of the agricultural sector and ensure the sustainability and quality of food production; it is imperative to develop farmers with high professional capabilities on a large enough scale (Geng, 2020; Randrianarison et al., 2017; Zeng et al., 2023). Research conducted by Zhang and his colleagues provides deep insights into the effect of training on farmers (Zhang et al., 2021). The results show that the application of innovative training methods not only improves farmers' literacy but also has the potential to increase their income.

Based on these important findings from international research, academics in China began to shift their research focus to include cultivation experiences and practices from abroad (Xu et al., 2022; Zeng et al., 2023). They realize that adopting and adapting successful methods and techniques from other countries can bring about positive changes in local farming practices. This involves studying different approaches and strategies used by farmers in different parts of the world to improve farming efficiency, productivity and sustainability.

Farmer development in Indonesia has gone through three distinct phases: first, farmer education, which aims to improve their literacy and knowledge base; second, new farmer coaching, which focuses on introducing modern agricultural practices and technologies; and third, professional farmer coaching, which places more emphasis on improving farming skills and specialization (Adam et al., 2022). Research by international scholars has been in-depth on this farmer coaching. For example, Xu and colleagues found a positive correlation between farmers' labor productivity and their literacy level, suggesting that education can improve the quality of rural labor and directly impact their income (Xu et al., 2023). In the context of innovation in training, Xu stated that coaching new farmers should combine vocational education with practical skills training, adopting a school approach model with a special focus on entrepreneurship training to strengthen education management and improve the quality of coaching.

Xu and his colleagues suggested that in the coaching of new professional farmers, it is important to consider the efficiency of adaptation in institutional

structure. They also emphasize that the government's delay in adjusting to market demands can be an obstacle to meeting the development needs of today's farmers. To address this, they propose the adoption of an institutional design that combines government mechanisms with market mechanisms to achieve an effective balance between government policies and market dynamics (Randrianarison et al., 2017; Xu et al., 2023; Zeng et al., 2023).

The available literature often discusses the evolution of new professional farmers but often lacks a systematic analysis of their training and coaching processes. To successfully mould new professional farmers, an important first step is to set specific cultivation goals and, after that, define key areas for investment (Yu et al., 2022). Of the previous studies, none have discussed the growth of the new economy in Indonesia. This research is important because it discusses the education and training programme for new professional farmers. This foundation is essential before embarking on education and training programmed, which should be complemented by the creation of a conducive policy environment to support the growth of new professional farmers. As such, this study applies literature analysis and an inductive approach to illustrate in detail how Indonesia has successfully nurtured new professional farmers, focusing on the four key aspects previously mentioned.

Method

This research is dedicated to exploring the field of human resource management in rural Indonesia, specifically focusing on the development and implementation of training programmes for new professional farmers. The research aims to provide a detailed and comprehensive account of the experiences encountered in human resource management in Indonesian regions. The research also intends to provide valuable insights and references for developing countries looking to implement similar farmer training initiatives and improve the human resource structure in the agricultural sector.

The research methodology included an extensive literature review to thoroughly examine the processes involved in training new professional farmers in Indonesia (Creswell & Creswell, 2018). This literature exploration combined with an inductive approach to describe and analyse the experiences and lessons learned during these training programmes. The aim is to present in-depth observations and findings that can guide and inspire other countries in building and strengthening human resource capacity in the agricultural sector.

In the literature review process, the study started with the identification of key databases and information

sources to collect relevant literature, including scientific journals, books, conferences, and reports. Keywords such as "professional farmer training," "human resource development in the agricultural sector," and "agricultural training programmes in Indonesia" were determined to facilitate an effective literature search. Next, literature search and selection were conducted based on the relevance, novelty, and credibility of the sources, followed by data extraction and analysis to identify findings relevant to the research objectives.

In an inductive approach, this study adopted a qualitative research design that allowed for the collection of in-depth data on the experiences and lessons from the professional farmer training programme. Through interviews with farmers who have attended the training. Data analysis involved codifying data from interviews, and document studies to identify key themes, patterns and categories. Further thematic analysis was conducted to develop a deeper understanding of the experiences and lessons learned from the training programme. Data triangulation techniques were used to validate the findings, by comparing data from different sources and data collection methods, ensuring the accuracy and reliability of the research results (Miles et al., 2014).

As such, this study not only highlights the specifics of Indonesia's approach to training new professional farmers but also provides a framework that can be adapted and applied by other regions according to their unique contexts and needs in agriculture. This comparative analysis is expected to make a significant contribution to the global discourse on effective human resource management in rural and agricultural environments.

Result and Discussion

Determining the Best Programme

To achieve success in molding reliable professional farmers, an essential first step is to determine the most suitable group of individuals to be molded into professional farmers. This process becomes effective only after the right target group is identified. Factors such as their willingness and potential to pursue a career as a new professional farmer play an important role. According to human capital theory, individuals who are younger and have better learning capacity tend to be more open to education and training (Gao et al., 2019; Prasetyo & Saefudin, 2023). Typically, those with higher formal education backgrounds tend to have better learning capabilities and spend lower training costs compared to those with lower education. This makes them more likely candidates to invest in further vocational training.

Furthermore, the ideal professional farmer should have in-depth knowledge of the soil, climate, and

various aspects of planting and harvesting. People with extensive experience in agricultural production tend to have a higher learning capacity in agricultural education and training and, hence, are better able to receive more agricultural training (Cui et al., 2022; Ferine et al., 2023; Randrianarison et al., 2017; Wu et al., 2023). As such, groups such as large farming families, secondary school graduates in rural areas, and college and university graduates are key targets for the development of new professional farmers in Indonesia (Puspitasari & Yanto, 2013). For example, large farming families are more likely to be involved in the formation of new professional farmers as they have better education, are younger, have higher learning capacity, and have experience in agricultural production and management, which can be seen in Table 2.

Table 2. Age and education structure of farmers

Indicators	Characteristics	Large professional farmers (%)	General agricultural operators (%)
Age structure	< 35	19.1	21.2
	36–54	59.4	48.4
	> 55	21.5	30.4
Education structure	No formal schooling	4.7	7.4
	Primary school	40.7	37.3
	Junior high school	42.1	44.8
	Senior High school	9.9	8.1
	College	2.6	2.4

Professional Farmer Development Capital Investment

Human capital investment theory emphasises the vital role of various entities, including individuals, families, organisations and governments, in the human capital investment process (Andini, 2020; Zhou et al., 2023). In the scope of developing farmers as competent professionals, the contribution of each of these entities is crucial. According to a psychological perspective, the drive or motivation to take certain actions often arises from perceived needs (Yu et al., 2022). Thus, in this context, each entity, be it an individual, family, organisation or government, will conduct an in-depth evaluation of their needs in investing in human capital. The decision to invest will ultimately depend on the existence of a clear and tangible demand. Investments in human capital, especially in the context of nurturing professional farmers, will be made only if there is a clearly identified need and specific demand for the development of such competencies.

In the context of individuals and families, the factors influencing the decision to invest in training for new professional farmers often involve careful consideration and detailed analysis of the potential

benefits or returns compared to the costs of such investment. Particularly in a country like Indonesia, this situation is made more attractive by the fact that vocational education tends to be more affordable (Adam et al., 2022; Farouk & Husin, 2015). Many vocational education programs are offered for free or at least at a very low cost, making this option very attractive and affordable for farmers. As a result, this creates a strong impetus and increased interest among farmers to invest in vocational training. This situation, where vocational education becomes more financially accessible, potentially paves the way for more farmers to improve their skills and knowledge, with the hope that this will lead to an improvement in their quality of life and work efficiency.

Companies that are major and influential players in the realm of human resource development usually have a strong orientation towards achieving profit maximization. This is evident in the agricultural sector, where many companies choose to implement strategies such as providing internships and on-the-job training as part of their human capital development efforts (Gao et al., 2019; Wu et al., 2023). This approach allows companies to not only improve workers' skills and knowledge in agriculture but also to increase overall efficiency and productivity.

Moreover, in an era where technological advancements continue to move at a rapid pace, many companies in the agricultural sector are beginning to realize the importance of investing in human talent. They are now increasingly allocating resources to more intensive and quality training programs. The main objective of this move is to improve employees' skills and competencies, which in turn can contribute to increased productivity and, of course, revenue (Lembong et al., 2021; Niu et al., 2023; Umari & Frinaldi, 2022). Such initiatives signal a shift in corporate priorities, where they focus not only on the short-term profit aspect but also on long-term investments in human capital that will provide sustainable benefits for the company as well as for the individuals involved.

Governments have a unique perspective in the context of developing new professional farmers, where they consider not only the financial return on investment but also the broader social benefits that may result (Adam et al., 2022; Supriatna, 2015). Economic returns do not solely drive government decisions in this regard but also consideration of significant social impacts, such as the strengthening of the agricultural sector, increased stability and harmony in rural areas, and efforts to reduce disparities between urban and rural areas. This represents a holistic and integrated approach.

As a concrete example, since 2019, the Agricultural Extension and Human Resource Development Agency (BPPSDMP) have organized various One Million Farmer and Agricultural Extension Trainings with various

interesting themes. This million training has reached 12 million participants across Indonesia. The One Million Farmers and Extension Workers Training has had a tremendous impact. One example is the access to KUR, which is certainly an indication that agricultural development is running smoothly. This training can boost farmers' ability to get KUR. Until now, 4 million people have accessed KUR with a total of Rp 80 trillion. KUR is the main driver in reviving and encouraging the progress of farmers' agribusiness so that the agricultural sector develops and has a tremendous positive impact (Ferine et al., 2023; Rony et al., 2023; Supriatna, 2015). This move reflects the government's serious commitment to the agricultural sector, not only in the context of economic development but also as part of a larger strategy to improve welfare and sustainability in rural areas. The investment is geared towards supporting various programmes aimed at improving farmers' skills and knowledge, ensuring that they not only become more efficient in agricultural practices but can also contribute to social and economic development in rural areas (Adam et al., 2022; Murliasari et al., 2023). Thus, the government is demonstrating their role as an important stakeholder in fostering holistic growth and development in the agricultural sector.

Building a Rational Development Model

Education and training for modern farmers go beyond traditional methods such as classroom teaching. This includes the application of distance education methods, which are increasingly relevant and effective with the rapid advancement of information technology in Indonesia. Technologies such as the internet, cloud computing, and big data have become an integral part of various aspects of social and economic development, making a significant impact in various sectors, including agriculture. In 2019, the Agricultural Extension and Human Resource Development Agency (BPPSDMP) organized a variety of One Million Farmer and Agricultural Extension Training with various interesting themes. This million training has reached 12 million participants throughout Indonesia. The One Million Farmers and Extension Workers Training has had a tremendous impact. One example is the access to KUR, which is certainly an indication that agricultural development is running smoothly. This training can boost farmers' ability to get KUR. Until now, 4 million people have accessed KUR with a total of Rp 80 trillion. KUR is the main driver in reviving and encouraging progress.

The Indonesian Ministry of Agriculture specifically highlighted the importance of using online education and training platforms as a key component in the process of developing new professional farmers. The plan document details how information technology can be utilized to improve farmers' access to educational

resources, provide more flexible and inclusive training, and enable farmers in remote areas to access the latest training and information resources. This initiative demonstrates recognition of the important role of technology in supporting and enhancing the capacity of farmers, especially in the face of modern challenges and competition in the agricultural sector. As such, this strategy reflects the government's commitment to integrating information technology to expand and enrich farmers' learning experiences, helping them become more efficiently informed and adapt to changes in the agriculture industry.

The current policy implemented by the Indonesian government clearly emphasizes that online education and training have evolved into the main and dominant method in training programmed for new professional farmers in the country (Adam et al., 2022; Wahyuni & Qodir, 2021). This significant change not only reflects adaptation to modern technology but is also expected to contribute substantially to the advancement and development of a more modern agricultural sector, as well as innovative rural development in Indonesia. This approach is evidence of the government's efforts to integrate the latest information technology with human resource development strategies in the agricultural sector.

Through the implementation of online education and training, the Indonesian government seeks to provide wider and more flexible access for farmers to improve their skills and knowledge. This allows farmers in various regions, including remote ones, to utilise information technology to get up-to-date training and information relevant to the needs of modern agriculture (Klinck & Swanepoel, 2019; Ndevu & Muller, 2018). The initiative also highlights the government's commitment to the renewal and improvement of the agricultural sector through the utilisation of advanced technology. The overall effort is expected to result in more dynamic developments in the agricultural sector while supporting more inclusive and sustainable social and economic development in rural Indonesia (Cui et al., 2022). This approach also demonstrates the recognition that information technology can play a crucial role in improving the effectiveness and efficiency of learning and human resource development in the agricultural sector.

The use of "big data" in the realm of online education and training offers two main benefits of particular importance (Riyadi et al., 2023). The first benefit lies in the ability to create synergies and facilitate efficient resource sharing between the various parties involved. In the scenario of professional farmer development, this includes coordination between various government departments responsible for sectors such as agriculture, science and technology, education, and social security. This cooperation enables the

integration of resources and knowledge from different fields to support the overall development of farmers.

The second benefit of applying big data in online education and training is the active role played by social organisations in this process. These organisations, which include companies, educational institutions and public welfare training institutions, contribute significantly to providing the necessary resources, knowledge and support. They work with the government to provide access to relevant and high-quality training and ensure that farmers receive education that aligns with market needs and the latest technology. This whole process reflects effective multi-sectoral collaboration, where big data technologies enable more careful and targeted information collection, analysis and distribution (Saefudin et al., 2023; Sulistianingsih et al., 2022) This, in turn, increases the effectiveness of training and education program for farmers, ensuring that they receive relevant and up-to-date information and the support they need to thrive in a changing and evolving agricultural sector.

The use of big data in this context facilitates cross-sectoral collaboration, enabling a wider and more efficient exchange of information and resources between

these various bodies, all of which contribute to a joint effort in educating and training new professional farmers. This approach demonstrates how modern technology can improve efficiency and effectiveness in human resource development in the agricultural sector.

The government plays a crucial role in these systems and has access to the most complete and quality data resources (Cui et al., 2022). However, other social institutions often do not have the same access to this information. In addition, various departments within the government often have unclear authorities and responsibilities, storing abundant but fragmented public data, which makes information integration and sharing inefficient (Anwar, 2016; Hariandi et al., 2022).

The application of big data technologies in developing new professional farmers can help overcome these information barriers, both among different government departments and between the government and other social entities. It enables more effective and mutually beneficial collaboration among various subjects (Lubis et al., 2022; Prasetyo & Saefudin, 2023). From another point of view, it also enhances the ability to meet talent needs more accurately and makes the development process more efficient.

Table 3. Indicators of making new professional farmers

Indicator	The 2015 year	The 2020 year	Average annual growth
Number of new professional farmers	12.72 million	20.00 million	1.46 million
Percentage of high school and above education level	30 %	≥ 35%	1 %
A number of modern young farmer training	13,000	≥ 63,000	≥ 10,000
Number of rural practical talent leader training	67,000	167,000	≥ 20,000
Number of farm machinery cooperative leaders training	10,000	≥ 50,000	10,000
Online education and training development	Pilot development	Improve the online education platform, carry out online training courses no less than 30 % of the total training courses, and carry out online tracking services	≥ 6 %

Big data enables in-depth analysis of large data sets, such as farmers' education levels, age distribution, geographical distribution, regional agricultural development characteristics, and labour numbers. These analyses reveal correlations in the data and their application value, enabling a better assessment of farmers' specific needs and market demand for talent. As a result, big data can provide customised and targeted development programmes to effectively implement farmer development.

Support for National Policy

The Indonesian government has implemented various supporting policies to support the development of new professional farmers. One example is the utilisation of modern agricultural and industrial

technology systems in training agricultural talents. Farmer and Extension Training organised by the Ministry of Agriculture (MOA) through the Agricultural Extension and Human Resource Development Agency (BPPSDMP) continues to be conducted. For example, in Medan, in the 14th batch held at Polbangtan, Medan, as one of the UPT BPPSDMP, had the opportunity to facilitate virtual training. Through this training, the Ministry of Agriculture strengthens the improvement of agricultural productivity. Farmers, as the main actors in agriculture, are invited to utilise modern technology.

Farmers will be encouraged by agricultural extension workers as the frontline. Farmer and Extension Training is conducted in stages with 18 batches of training facilitated by UPT within the scope of

BPPSDMP spread throughout Indonesia to improve the quality of human resources and agricultural management to be more advanced, independent and modern. The Government of Indonesia also actively encourages new vocational farmer development projects (Anwar, 2021; Edison et al., 2021; Riyadi et al., 2023). Since 2014, the Ministry of Agriculture and the Ministry of Finance have initiated a project to develop new professional vocational farmers. In 2019, the central government allocated a large budget to support this initiative, successfully training more than 12 million people, which significantly supported the development of high-quality agriculture and the transformation and upgrading of the sector. In addition, the Indonesian government has drafted other policies such as land transfer policies, agricultural subsidies, and continuing education support to further support the development of new professional farmers, demonstrating a broad commitment to the sector.

Conclusion

This research is important because it contributes to the upskilling of individuals in rural areas, advances farmers' income, strengthens agriculture's position as a key pillar of the economy, and spurs economic growth in rural areas. It also adds value to the literature by expanding the understanding of investment in human capital in rural areas. While there is a wealth of literature discussing human resource management in rural Indonesia, this research is unique in that it focuses on the process of training and developing new professional farmer models, which is a relatively under-explored topic. The innovation in this research lies in its selection of a new and under-discussed topic. In addition, Indonesia, in this case, the Ministry of Agriculture, has managed to accumulate important experience in training new professional farmers. For example, the Indonesian government is highly focused on the entire training process, achieving impressive results in defining training targets, selecting investment areas, developing training models and drafting supporting policies. This experience can serve as a reference for other countries in farmer training. However, it is important to remember that every country is different, so Indonesia's experience may not always be directly applicable to every country and must be adapted to local conditions.

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Author Contributions

Conceptualisation, Yohny Anwar; methodology, Yohny Anwar; validation, Venti Jatsiyah and Arif Saefudin; formal analysis, Yohny Anwar; investigation, M. Zahuri, Nofirman;

resources, Arif Saefudin.; data curation, M. Zahuri.; writing – original draft preparation, Yohny Anwar.; writing – review and editing, Arif Saefudin.

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Conflicts of Interest

The authors declare no conflict of interest.

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