



Received: 8 August 2024

Revised: 31 October 2024

Accepted: 7 November 2024

YOUNG LABOR SHORT AGES IN THE FOOD AND AGRICULTURE SECTOR CASE STUDY: LIVESTOCK IN LUANG PRABANG, LAO PDR.

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(This article belongs to the Theme 1: Business & Economic in Industry 5.0)

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Abstract

The study aimed to investigate two key areas: 1) the scarcity of young workers in the agricultural sector in Luang Prabang and 2) the factors and impacts of this shortage in livestock on the province's food supply. The study is conducted in five districts of Luang Prabang: Luang Prabang City, Pak Ou District, Phon Xay District, Nam Bak District, and Phou Khoun District. The data is collected through a questionnaire and interviews. The following sample groups are utilized: the consumer group, the animal trader group, the butcher group, the slaughterhouse owner group, the pig farmers, the cattle farmers, the poultry farmers, and the goat herders. The quantitative data is analyzed using SPSS. The study on the shortage of young workers in the livestock sector in Luang Prabang, Lao PDR, revealed that the socio-economic situation in Laos is leading to a decrease in the number of young workers in this sector. This study, conducted from November 2023 to April 2024, investigates young labor shortages in Luang Prabang's agricultural sector. The high cost of living has forced domestic workers to relocate for new employment opportunities. Most of the primary workers, young people, migrate to work in big cities, special economic zones (the Golden Triangle), and minimum-wage jobs in Thailand, causing a lack of domestic workers. Most of the workers are unskilled workers, have low technical knowledge of animal husbandry, are raw workers, and many young workers are not interested in animal husbandry. In agriculture, labor is only 41.7%.

Keywords: Young Labor, Food and Agriculture, Livestock, Luang Prabang

Citation Information: Vilaiphone, S., Keohavong, B., & Choumo, Y. (2025). Young Labor Short Ages in the Food and Agriculture Sector Case Study: Livestock in Luang Prabang, Lao PDR. *Asian Administration and Management Review*, 8(1), Article 5. <https://doi.org/10.14456/aamr.2025.5>

Introduction

Labor is the main force in each country's economic and social development, including ours. The progress or regress of the economy is largely dependent on these workers. However, we have observed that many Lao workers from urban or rural areas depart annually to work abroad. This departure is often influenced by the laws of the country, their origin and destination, and their personal goals. This trend may continue due to the challenging conditions in our country and the rising inflation rate. Expensive and low wages cause many young workers to flow to the big cities. Some migrate to Thailand to earn a living and pursue stable careers, resulting in a shortage of young workers at the village level and in many local labor units. (Xinhua, 2023);

Lao PDR is a developing country that considers agricultural production the foundation of its economy. Therefore, the agricultural sector plays a crucial role in the Lao people's way of life. It produces food for the domestic market, responds to exports by the government's economic-social development plan, ensures stability along the Lao-China corridor, and creates jobs and careers for the Lao people. Agricultural production in Lao PDR is essential to socio-economic development and helps farmers generate income, especially in rural areas. In addition, agricultural production can help the country's GDP (gross domestic product) grow continuously and stably at 8.5 %/year, with an average income of 71.7 million kips, equivalent to 3,213 US dollars per person per year. Agricultural production also ensures food production stability. Produce enough food in each locality and supply it to the domestic population. Furthermore, agricultural production is a significant source of income for eradicating poverty. As a result of the new transformation, policy guidelines, and support from the public sector regarding the use of modern scientific techniques in the production base will become more and more widespread. The aim is to increase production efficiency to a higher level while maintaining the ability to respond. Producing commercial needs such as rice, corn, figs, potatoes, vegetables, fruits, and livestock is crucial. Lao PDR will be able to reduce the import of agricultural products from abroad, empowering the production of necessary goods themselves.

Agricultural production is also essential for rural development, helping alleviate poverty, reduce people's income balance, develop skills, and improve living standards. In addition, agricultural production in the country is also involved in the export of goods and international trade, such as potatoes, corn, pineapples, watermelons, and others. These exports not only generate income from foreign exchange, but they can also improve Laos' international reputation. Another aspect of agricultural production is the promotion of environmental sustainability to protect the environment, maintain the ecosystem, and maintain the country's abundance of natural resources.

From the report of the Department of Agriculture and Forestry (2023) in Luang Prabang, it is known that Luang Prabang, apart from being a famous tourist city in the world, Luang Prabang is also a province that can produce animals for export products to foreign countries, significantly: raising cattle for export to China, every year, the people of Luang Prabang can make more than 312,557 cows, 58,740 buffaloes, 96,670 pigs, 44,268 goats, 833,550 poultry and not less than 30,331 cattle have been exported to China, livestock condition in Luang Prabang is growing day by day to meet the demands of the market, especially China, which needs to import 500,000 cattle from Lao PDR annually. According to the Department of Labor and Social Welfare (2023) report in Luang Prabang, the province is home to 482,609 citizens, including 236,715 women. Of these, 296,650 falls within the 14-60-year age range, accounting for 61.4% of the total population. The system employs 108,948 laborers, 36.7% of the total population, while 45,431 workers are used in the agricultural sector, accounting for 41.7% of the labor force. While data from the Northern Agricultural and Forestry College indicates that the average number of students graduating in agriculture and livestock each

year does not decrease by 1,500, it is essential to note that these students are not employed as farmers in agriculture or animal husbandry. Because livestock farming requires a substantial investment budget, a large land area, and a lengthy time to raise animals for sale, the younger generation often lacks the motivation to engage in this business. Most individuals who operate a livestock business come from families with a history in livestock, and this business follows a family-oriented approach handed down from one generation to the next. It involves raising livestock naturally without hiring workers or requiring technical knowledge of livestock. A family can raise 400-500 animals (cows, buffaloes, goats, and pigs) with only 3-4 people, and a family can raise 500-100,000 poultry using only 2-3 workers. The province has 84 cattle-buffalo farms, 45 pig farms, four goat farms, 27 chicken and egg farms, and production farms. There are four duckling farms, nine egg duck farms, one meat duck farm, and 22 meat chicken farms. Each farm is a family farm and employs only 2-3 workers. As a result, many young workers find themselves unemployed and often transition to other occupations that suit their needs, such as working on rubber plantations, providing services in restaurants and hotels, or engaging in construction work. This has led to a scarcity of youthful laborers in the livestock industry of Luang Prabang.

Thus, it will be appropriate to study the shortage of agricultural labor in Lao PDR since it faces the set test owing to the characteristics of its socio-economic system and the high rate of migration of youths in search of better opportunities in Thailand and other countries. Lao PDR's agriculture sector also has structural issues to contend with—low levels of mechanization and highly traditional practices—which means it is heavily dependent on labor, and consequently, a workforce shortage impacts it.

Therefore, given the reasons, conducting a thorough study and research on the shortage of young workers is imperative. This research should focus on identifying the causes of this shortage, exploring potential solutions, and identifying both positive and negative impacts on the youth sector. Based on these considerations, this study aims to investigate the shortage of young workers in the agricultural industry in Luang Prabang, as well as the factors and effects of this shortage in livestock on the food supply in the province.

Literature Review

The Shortage of Young Workers in the Agriculture Sector

The labor shortage has become a major global problem. Countries are facing a skills shortage in 2023. According to a new survey report published by the Department of Labor and Social Welfare in 2023, "This Manpower Survey was conducted in 41 countries among 39 0007 employees". You may also not know that countries facing a shortage of highly skilled workers will impact employment, resulting in higher wages for skilled workers.

This labor shortage problem occurred after the COVID-19 epidemic. The COVID-19 epidemic caused a great divide in the American workforce, which many call the "Great Resignation.". In 2022, more than 50 million workers quit their jobs; in 2023, this trend has gradually decreased, with 30.5 million workers quitting their jobs in 2023.

The restaurant industry is experiencing an unprecedented labor shortage, which has resulted in the number of people resigning from work at an all-time high. Even though most restaurants have reopened after COVID-19, most restaurants still have a labor demand of 1.5 million positions, or 12%, compared to 2021. 84% of entrepreneurs say their number of employees is much lower than usual. Restaurants across the U.S. are doing everything to recruit and retain workers while facing a labor shortage that has not been seen in decades and is focused on ending the labor shortage by 2023.

The literature is extended to include recent global underpinnings of agriculture and related sectors' labor shortages to create a full theoretical foundation. However, many activities undertaken as a part of labor migration are due to economic factors that are exacerbating the

situation by withdrawing workforce availability in numerous countries. Ferguson (n.d.) also highlights the importance of demographic changes in agriculture, particularly aging populations, for labor dynamics and agricultural productivity. Studies specific to Southeast Asia, like Manikham (2018), also confirm labor shortages, such as youth migration toward urban areas and restricted access to agricultural education & training. These studies provide a broader comparative context, showing while labor shortages are rife worldwide, unique local economic migration patterns and wage disparities mean Lao PDR's case is more complicated. This wider lens makes the case of Luang Prabang useful for more extensive regional and international conversations regarding ethical labor sustainability in agriculture.

The Factors of the Lacking Young Workers

The reasons and problems of the shortage of skilled labor. First, let's understand why countries have been facing the issue of a shortage of skilled labor in recent years, and the answer to this question is evident if we look at technological progress and high economic growth due to the high demand for goods and services in the country.

The lack of labor in the last few years has been caused by many factors, one of which is the continuous decrease in the population. When divided by age, it is found that the population of children and youth is decreasing. In contrast, the population in old age tends to increase, especially in the agricultural sector. (Fongmul, 2020)

Lao PDR has 70% of the young population living in rural areas; 48.9% of young people are 15-19, and 83.7% are 20-24. The literacy rate of 15-24-year-old females is much lower than that of males, and early marriage is seen more among females than males. The proportion of the population in rural areas is 62%, and the population in urban areas is 43%. The working-age population in rural areas has low education; about 2/3 have completed primary education or are illiterate. (Manikham, 2018)

The young working-age population has decreased, and there is an increase in middle-aged and elderly workers between the ages of 15 and 64, decreasing from 19.5 million people, or 59.7% of the total workforce, to 42.9%. In addition, working conditions in the agricultural sector are primarily seasonal, which is hard, dirty, and dangerous. (Ferguson, n.d.)

The Effects of the Shortages of Young Workers in the Livestock

The most apparent effect of the agricultural labor shortage is less and more expensive food; the scarcity of skilled labor may hinder the expansion of production and may result in lower productivity.

The lack of labor in the agricultural sector affects food security because the labor in the farming sector is decreasing. The number of family members aged 65 years is constantly increasing. As a result of the increase in the elderly population, the proportion of older adults still in the labor force is also growing, while the population of young workers is decreasing, and there is a problem of a shortage of young workers. Because of this problem, older workers can still come to work, unlike young workers. Therefore, this elderly population is increasingly important and will affect the country's economic and social system and Thailand's food security in the future. (Fongmul, 2020)

Research Methodology

The tools used in this study include a questionnaire, which comprises five parts. Part 1: General information about the respondents; Part 2: Livestock conditions in Luang Prabang; Part 3 delves into the issue of a shortage of young workers in the livestock sector, while Part 4 explores the reasons behind this shortage. Part 5 focuses on the impact of this shortage on the industry. Part 6 outlines guidelines for addressing the shortage of young workers in the livestock sector, incorporating 53 questions categorized as either closed-ended or open-ended. Randomize a specific sample and distribute a simple questionnaire.

The details of the sampling and data analysis approach have been made explicit. "We conducted the study in 5 districts of Luang Prabang (Luang Prabang City, Pak Ou, Phon Xay, Nam Bak, and Phou Khoun) using purposive sampling to select respondents. A survey of 139 respondents comprising consumers, traders, and livestock farmers was conducted with SPSS software for quantitative analysis. Not only did a variety of laborers think through this, but a series of statistical approaches were also applied, including frequency distribution, mean, and standard deviation, to give an in-depth look at the view on labor shortages between every demographic group within the population. This comprehensive approach adds transparency and facilitates replication.

This current research employs a quantitative method of data analysis to have an elaborate understanding of the labor situation in the Luang Prabang agricultural market. This approach of interviewing multi-stakeholders (such as consumers, traders, and livestock producers) is appropriate as it provides a holistic perspective of labor's impacts on agriculture's productivity. Employing the results in statistical software like SPSS gives the study the capacity to conduct a stable investigation of the patterns and the impact of the identified worker shortage with the socio-economic characteristics of Lao PDR.

This research employs quantitative methods to identify three target population groups: the consumer, entrepreneur, and livestock breeder group in five districts of Luang Prabang. These districts include Luang Prabang City, Pak Ou District, Nam Bak District, Phon Xay District, and Phou Khoun District. A total of 350 samples were selected to represent the target group, with data collection commencing from November 2023 to April 2024. Overall, the research collected a total of 139 samples. After collecting the data, we used IBM SPSS Statistics 26 to analyze it for different statistical values like frequency, percentage, mean, and standard deviation, all for the research's purpose.

Conceptual Framework of Research

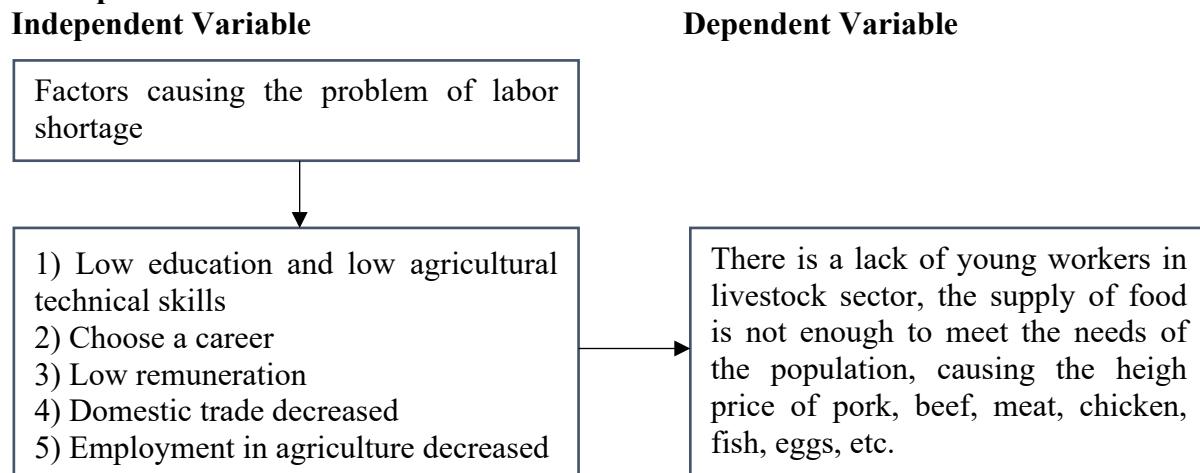


Figure 1 Conceptual framework

Research Results

The operators from the sample population of 139 people are more male than female; the average percentage is 82.7% male and only 17.3% female; The average age is 41 years up, more over than 51.8% and 9.4% of primary education, 66.9% of secondary education, 17% of high school and 16% of graduates, 83.5% of livestock entrepreneurs have never studied farming technical and 21% of other graduates; Livestock breeders with 4-7 years of experience is 44% and those with 8-10 years of experience is 37%. Most children are 3 in a family, and 69% of children aged 14-35 live with their parents. 23% of young people go to work in the big city, and 10% of young people go to work abroad. 21.6% of livestock are raised as a family, 78.4% are raised as a farm, and most of the livestock are raised as products

for sale in the market, such as 33.8% for sale in the local market and 7.9% for export to foreign markets (for export, cattle are 100%). The livestock in Luang Prabang are cattle (54%), pigs (29.5%), buffalo (4.3%), poultry (10.8%), and goats (none). The outbreak of animal diseases each year is found at a moderate level, with 56.8%. Poultry farming mainly raises meat and egg breeding, which cannot breed babies; pig farming also raises meat pigs that cannot give birth.

The animals that can breed are cows and local pigs, which can give birth to 95 babies on average per year, and the minimum is five animals per year. On average, a family keeps the most cattle, 500 and 250 pigs, 100 buffaloes, and the most poultry, which is 6,000. On average, the highest income is 3,768,000,000 kip/year, and the minimum income is 45,000,000 kip/year.

From the research on the lack of young workers in the livestock sector in Luang Prabang, it was found that there is enough labor for the actual work, which has a value of $\bar{X} = 3.89$, $SD = 0.93$, and most entrepreneurs do not have a problem with the lack of labor, which has a value of $\bar{X} = 3.47$, $SD = 1.11$, and it is noted that they do not need young workers to help in animal husbandry, which has a value of $\bar{X} = 2.66$, $SD = 0.83$. 2.19 , $SD = 0.53$, the farm does not have enough equipment to meet the animal husbandry, which has a value of $\bar{X} = 2.30$, $SD = 0.58$, livestock farms lack labor in cutting grass for animals with a value of $\bar{X} = 1.47$, $SD = 0.65$, animal farms lack labor in cleaning animal cages with a value of $\bar{X} = 1.88$, $SD = 0.45$, lack of labor in treating animals with a value of $\bar{X} = 1.99$, $SD = 0.33$, labor efficiency affects livestock with a value of $\bar{X} = 2.03$, $SD = 0.36$, lack of labor in livestock resulting in insufficient response of animals to the market demand with value $\bar{X} = 2.74$, $SD = 0.55$, lack of labor in livestock resulting in livestock not being of the expected quality with value $\bar{X} = 2.84$, $SD = 0.55$, lack of labor in livestock increasing the price of various types of meat with value $\bar{X} = 3.19$, $SD = 0.40$.

Table 1 Results of the research

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Males	115	82.7	82.7	82.7
	Females	24	17.3	17.3	100.0
	Total	139	100.0	100.0	

Overall, it is seen that most of the livestock is male labor, and there is enough labor for the actual job position, which does not require additional labor in animal husbandry, whether cutting grass for animals, cleaning animal cages, treating animals, selling animals and does not need effective labor or having knowledge about animal farming.

The study of the factors and effects of labor shortage shows that the cause of labor shortage is due to the change in the population with a decrease in the birth rate, with $\bar{X} = 4.62$, $SD = 0.65$, because young people prefer to choose a comfortable profession with $\bar{X} = 4.53$, $SD = 0.60$, because of the low education of workers, with $\bar{X} = 4.75 = 0.75$, because of the low knowledge and experience of raising livestock with $\bar{X} = 3.12$, $SD = 0.61$, cause young laborers to prefer to choose a career with a high salary and $\bar{X} = 4.50$, $SD = 0.69$, due to low labor compensation with $\bar{X} = 1.88$, $SD = 0.88$, cause young people to move to work elsewhere with $\bar{X} = 4.70$, $SD = 0.58$, cause young people are not interested in raising livestock with $\bar{X} = 4.47$, $SD = 0.56$, cause young people do not have the patience to work with $\bar{X} = 4.58$, $SD = 0.60$, and the effect of shortage Young workers in the livestock result in a shortage of labor in livestock with an $\bar{X} = 3.17$, $SD = 0.64$, resulting in livestock not going according to plan $\bar{X} = 2.96$, $SD = 0.788$, wasting time in solving the problem $\bar{X} = 2.78$, $SD = 0.74$, not being able to estimate the selling price of animals accurately or close to the reality,

causing more expectations $\bar{X} = 3.09$, SD = 0.66, having to increase the cost of high risks due to labor shortage $\bar{X} = 3.19$, SD = 0.63, the low efficiency of production has the effect of wasting the opportunity to distribute to the market with the value of $\bar{X} = 3.04$, SD = 0.57.

In conclusion, the factors that affect the labor shortage are the change in population and the cause of the labor migration to work in other places, which results in the lack of young workers and wasting time in solving the problem of productivity not according to the goals.

Livestock sector in Luang Prabang: The government must improve the wages to suit the current economic situation. Value $\bar{X} = 4.62$, SD = 0.65. Relevant parties should organize training in scientific livestock techniques and marketing training for young people. Value $\bar{X} = 4.53$, SD = 0.60. Public and private organizations must encourage and promote livestock as a commodity. Measures in labor management according to the prescribed law with a value of $\bar{X} = 3.90$, SD = 0.66, all parts are Officials in the strict implementation of the labor-management law and have a value of $\bar{X} = 3.47$, SD = 0.41, stakeholders should consider increasing labor costs appropriately, have a value of $\bar{X} = 3.40$, SD = 0.67, entrepreneurs should increase labor costs that exceed the specified time value and have a value of $\bar{X} = 3.14$, SD = 0.42, should have a clear labor strategy, have a value of $\bar{X} = 3.27$, SD = 0.59, and the public and private sectors should have a source of support. Animals have a value of $\bar{X} = 3.24$, SD = 0.53, there is training for entrepreneurs or workers to develop labor in SME business $\bar{X} = 3.10$, SD = 0.42, the public and private sectors should develop and cooperate to create links between educational institutions that create quality personnel $\bar{X} = 3.40$, SD = 0.59. The needs of the valuable labor market $\bar{X} = 3.04$, SD = 0.57.

The aging workforce presents unique challenges to agriculture where it becomes increasingly unfeasible; physically demanding tasks had better be relinquished or, in other words, undemented. These challenges could be addressed through ergonomic improvements or machines/services that ease physical workloads. Some machines, like automated milking systems and lifting aids, can help address the problem. In addition, policies that help farms buy age-friendly equipment and train older workers in effective labor practices might lessen the challenges posed by this demographic shift. Adaptations like this should ensure seasoned older workers contribute valuably to bringing capacity back into balance with labor demands and productivity.

The reduction of job opportunities in agriculture suppresses the rural economic base. These challenges have contributed to a decline in rural community populations and decreased local trade as social cohesion has been weakened with less young farm labor. Among these policies are those that would make agriculture more appealing—and sustainable—not just for its profits but as an excellent way to earn a living from the land, such as strategic investment programs in rural areas; incentives on taxation requirements, especially concerning young farmers; and targeted subsidies. To the point that young farmers where incentives have been tried entering in numbers, often leading to a near total reversal of the breakdown of the rural economy and the maintenance of community life. Such initiatives not only tackle the labor problem but also help in bringing economic strength to rural areas.

In summary, solving the problem of a lack of young workers is a problem for all parties, and they must cooperate in protecting, promoting, and developing labor skills, marketing, and creating incentives for young people to become more interested in livestock in the future.

Discussion

Most livestock entrepreneurs in Luang Prabang are males aged 41 years and above, contributing to the shortage of young workers in the livestock sector. This observation aligns with Fongmul's (2020) research findings, which suggest that various factors, including the ongoing population decline, have contributed to the labor shortage in recent years. According

to the results, dividing the population by age reveals a decrease in the childhood and youth population and an increase in the elderly population, particularly in the agricultural sector. Ferguson's (n.d.) research confirmed that, according to the 2017 United States Agricultural Survey, the average age of North American farmers is close to 60 years old, and only 9% of food producers are under 35. Most workers and entrepreneurs in the livestock sector have low education, lack a degree in agriculture or livestock, have only completed primary or secondary school, or are illiterate. This is consistent with research by Manikham (2018), which shows that these individuals comprise 70% of the total population of young people aged 15-19 years, accounting for 48.9%, and those aged 20-24, accounting for 83.7%. Young people aged 15-24 have a significantly lower literacy rate than men, and young women are more likely to marry prematurely than men; 62% of the population resides in rural areas, while 43% inhabits urban areas. Of these, the working-age population in rural areas has a low level of education. Despite lacking knowledge in agriculture or animal farming, workers can still raise animals as products, relying on their experience growing and treating animals. When animals fall ill, such as when raising cattle, most farmers raise them on grass farms, allowing the animals to graze naturally without cutting the grass. When animals are sick, they find their own medicine based on the symptoms of the disease. We divide the animals based on age and gender, conduct greenhouse-style pig and poultry farming, administer vaccinations, and regularly clean their cages. When the animals become sick, their owners seek traditional medicine, and they rarely find animals with serious diseases.

Therefore, the need for young workers to participate in livestock production is minimal, as the existing labor force is sufficient for the job position, which may not align with Morgan (2023), who noted that the agricultural production process requires skilled workers to enhance product production. However, this observation contradicts the findings of Jens Horbach and Christian Rammer's (2020) research, which suggests that a shortage of skilled labor could impede production expansion, reduce productivity, and lead to project termination and dissolution. The results of our research indicate that companies are increasingly experiencing a shortage of skilled workers, a situation that is not consistent with Chanthaphong & Angsriprasert's (2011) research. Chanthaphong and Angsriprasert confirmed that entrepreneurs cannot find qualified workers in addition to a lack of quality labor because their skills are not valued under any wage conditions. The state of livestock in Luang Prabang, which provides food for its population, is as follows: Luang Prabang primarily raises livestock as a commodity, distributing items such as poultry, pigs, and buffalo to various local markets and exporting them to other provinces at a moderate level. The province also sells cattle breeding in large quantities abroad and at a medium level in the local market, which indicates that livestock includes cattle, pigs, and both large and small poultry. Poultry and pig farms are the primary sources of income. Other livestock also generate a high income for traditional agriculture. The province of Luang Prabang views livestock as sufficient to meet the food supply needs of local consumers and tourists visiting the province. Additionally, this study discovered that a single farm raises buffaloes to sell their milk for exportation abroad. Livestock can generate significant income for the people of Luang Prabang, thereby improving the family economy. This is consistent with the research results of Manikham (2018), which highlight the significant contribution of the property sector. Agriculture plays a natural role in reducing national poverty and fostering economic growth. Currently, national economic development has the potential to be more effective, indicating that livestock is a pillar of the global food system and contributes to poverty reduction, food security, and agricultural development.

According to the FAO, livestock accounts for 40% of global agricultural production and supports the livelihoods of nearly 1.3 billion people with food security and nutrition. However, there are significant limitations in enhancing the livestock sector to ensure

sustainability and safety for both animal and human health. The ASEAN Agricultural Research Committee Report highlights that the production of poultry and pork products in ASEAN is increasing, resulting in a mere 5% import. However, livestock is essential in reducing poverty and creating food security, nutrition, and gender equality.

Factors affecting the labor shortage found: The main factor affecting the shortage of young workers is the migration of young workers, who mostly move to work in other places with a better economy and receive higher wages, which is in line with the research of Lanui et al. (2016), which indicates that workers will move from low-income sources and a lack of job positions to new job sources with job positions and working conditions that will have better jobs and higher incomes. The results of the research also found that if there is a shortage of labor, it will affect animal farming, such as not being able to evaluate the selling price of animals correctly or close to the reality, causing more expectations, increasing the cost of the risk that may occur due to the shortages of labor, the productivity will be low, resulting in abusing the opportunity to distribute to the market has confirmed the discovery of clear evidence that the shortage of labor has hurt the food and agriculture industry as well as a threat to food safety, animal welfare and the mental health of workers in this sector; businesses are severely affected, causing wages to increase, food prices to increase, eventually, food production is not exported abroad, and imports will increase accordingly.

A lack of a regular supply of young labor could and will stifle the innovation capacity in the agricultural sector as younger workers tend to bring new ideas, technological prowess, and adaptive thinking. Collaboration with educational partnerships, internships, and modernized training programs attract young talent to the agricultural sector. For example, incorporating tech-centered curricula into agriculture education can arm the next generation of workers with the capabilities to innovate farming. Fortunately, the potential returns (both financial and social) of modernizing agriculture are immensely promising — with technology that creates new opportunities for career advancement in a sector appealing to people from every walk of life.

The study aims to identify solutions and offer suggestions for increasing the number of young workers in the livestock sector of Luang Prabang. The study reveals that the government should collaborate with various stakeholders to encourage young individuals to cultivate animals as commodities. Additionally, relevant parties should arrange scientific training in animal farming's technical methods to enhance productivity. In addition, the government must improve the minimum wage to suit the actual situation, increase measures to manage young workers to be active by the labor law and create incentives for young people to be more interested in the animal farming business. This is in line with the research of Batphanthana (2018) that said that should create incentives that motivate workers to be interested in this work, the organization must organize training and develop new technologies to increase the knowledge of personnel and should plan to create a career for employees to progress so that they can progress in the following work, it's also in line with the scientific article of Chaisrirungrot et al. (2022) which said that the public and private sectors should provide support by considering adjusting the wages by the skills of the workers because in the past the employment conditions, the salaries or remunerations are at a lower level than the skill levels and The Agricultural Development Plan of 2016 establishes that the agricultural sector requires consistent support in the form of knowledge, funds, and policies. The resolution should prioritize boosting labor productivity to establish equitable wages and compensation. It should develop an appropriate welfare and protection system for workers and consider fundamental rights and human security.

The observations made in this research employ the general trends that have been observed in the global market. For example, the migration behavior of youth in the labor market in Luang Prabang issues like those described by Horbach & Rammer (2020): low wages, a lack of

opportunities for training, and young people leaving agricultural sectors. That is why, defining these outcomes within the context of other studies, this discussion overlines the general consequences of labor deficits for agriculture. They also indicate the policy recommendations for Lao PDR, where the directions proposed include reforming rural wages or providing training centers for young farmers. Such measures respond to the current lack of personnel demand and must adjust to the agricultural market by stabilizing it. This study thus also benefits from embedding these local findings in a global context to add value and provide perspectives for improving the applicability of workforce policies within the region that would be more appropriate regarding cultural sensitivity.

Conclusion

This research shows that labor is an essential factor in agricultural production. The livestock sector in Luang Prabang, where families still raise livestock using abundant natural resources, cannot rely on electronic equipment to replace human labor. Currently, changes in demographics among the young workers in the livestock sector in Luang Prabang have a trend of continually decreasing due to young workers migrating to other industries and working elsewhere, where there are more comfortable, higher-paid workers, including young workers who lack interest and are impatient in raising animals due to a lack of motivation in raising animals, resulting in an increase in elderly workers, which will result in the problem of a lack of young labor in the livestock sector in the future. Even though the lack of young labor has not severely impacted the livestock sector, it will affect food security in the future. The lack of workers in agriculture significantly affects productivity in labor sectors like livestock farming. Solving this problem involves focusing on tasks and improving farm efficiency through automation and better workforce management practices. Introducing schedules and concentrating on labor areas can help alleviate strain and uphold productivity levels effectively. Moreover, gleaning from examples in sectors where labor scarcity has been effectively addressed may offer lessons in conquering productivity hurdles efficiently.

The implications of this study go beyond the Lao PDR, considering trends that hamper the availability of labor in the agricultural sector, whereby low wages and little training impeded the availability of labor. In line with the evidence presented by Horbach & Rammer (2020), these insights indicate that rural wage reform and farmer-orientated youth training effectively minimize turnover. Not only are these recommendations relevant for addressing the current demand for labor, but they also help build the agricultural labor force's future stability trends. The integration of this study with global research reveals how solutions must align with the local context and the international labor market to build a robust and culturally sensitive evidence-based policy framework.

Targeted Training: The government could offer young workers some operating skill stations to retain their awareness and authority and enhance their technical expertise in practicing and managing livestock. **Economic Incentives:** Young farmers could be motivated to invest significantly in agriculture, and hence, the government could offer subsidies or low-interest loan financing. **Career Development Pathways:** Such collaborations between the LEAs and farms could have internships where theory and practice would be used to train future industry stakeholders.

Therefore, the government must find a way to solve the problem.

- 1) The government must have an appropriate policy to support all parties as authorities in implementing management laws for intensive labor.
- 2) The public sector must cooperate with the private sector to find funding sources to support livestock.
- 3) There should be training for entrepreneurs or workers to develop labor in SME business.

- 4) All parties should develop and cooperate to create links between educational institutions that create quality personnel based on the needs of the labor market.
- 5) It is necessary to increase the measures and guidelines for good and efficient labor management along with strengthening the livestock sector by using the potential of older people who have an agricultural business and have experience in animal husbandry as a supporter, supporting their children to become interested in the animal farming business.
- 6) We must motivate them to see the importance of the animal husbandry sector because, besides being a producer of food for the population in the province, the animal husbandry sector is also the primary sector in exporting goods to foreign countries.

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Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Conflicts of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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