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Contributing Factors to Quail Farming Failures in Brebes and Potential Mitigation Strategies

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Abstract

This study aims to identify the determinant factors leading to failure and to explore potential solutions for small-scale quail farmers in Brebes Regency. The research employs a quantitative approach, distributing questionnaires directly to 59 quail farmers in the Brebes region, including both active and inactive participants in quail farming. The questionnaire instrument is designed comprehensively to identify various factors contributing to failure in quail farming enterprises. The survey indicates that quail farmers face several major challenges, including high feed costs, low egg prices, and high quail mortality due to disease. All farmers also experience difficulties in marketing, limited capital, and threats from natural disasters. Lack of knowledge and poor farm management are additional issues, while competition with large-scale farmers makes it difficult for small-scale farmers to survive. Value-added products are considered highly profitable by all respondents. quail farmers in Brebes express a significant need for and strong support of government subsidies for feed costs, marketing assistance, training programs provided by veterinary departments, and the reinforcement of farmer organizations. Additionally, they concur that the adoption of advanced technologies, the enhancement of consumer awareness, the development of value-added products, and the expansion into new markets will contribute to greater efficiency and profitability within their operations.

Keywords : Brebes; Farming; Failure; Potential strategies; Quail

Introduction

Quail farming offers significant economic potential due to several key factors. Quail are an efficient source of animal protein with a relatively short harvest cycle, typically around 6-8 weeks. This rapid turnover allows farmers to generate income more quickly compared to other livestock that require longer periods to rear and prepare for market. Additionally, quail farming is relatively straightforward in terms of care and management (Indrayani and Rahman, 2024). Quail have a high resistance to diseases and low mortality rates, which significantly reduces the health risks and financial losses for farmers. Operational costs also tend to be lower compared to larger-scale livestock farming, as quail can be housed in confined spaces and fed on relatively inexpensive feed (Wianto and Duhita, 2022).

Despite its potential, quail farming presents challenges that require strategic management. A primary concern is the risk of financial instability, which can arise from market volatility, unforeseen production costs, or inefficiencies in daily operations (Adriyanto and Rosiana, 2023). To mitigate these risks, it is essential for farmers to implement robust

marketing strategies, exercise meticulous financial planning, and maintain the capacity to adapt to environmental changes and market fluctuations. With a scientifically informed approach, the economic potential of quail farming can be maximized, yielding substantial economic benefits for farmers and local communities, while also providing an affordable source of animal protein. Additionally, this approach can contribute to the sustainability and resilience of the agricultural sector.

This study aims to identify the determining factors that lead to failure and explore potential solutions for small-scale quail farmers in Brebes Regency. By analyzing the collected data, the study seeks to uncover the key factors contributing to failures and effective mitigation strategies. The findings of this research are expected to make a significant contribution to supporting the sustainability of quail farming in the future.

Materials and Methods

This study investigates the factors contributing to the failure of quail farming development in Brebes Regency. The methodology employed is adapted from Folajinmi and Peter (2020) with specific modifications. This research utilizes a quantitative approach, involving the direct distribution of questionnaires to 59 quail farmers in Brebes, encompassing both currently active and inactive farmers. The questionnaire is meticulously designed to identify various factors contributing to the failure of quail farming ventures and includes queries related to potential solutions that farmers anticipate for enhancing their operational performance and sustainability.

Data analysis is conducted in two phases: descriptive and inferential analysis. The descriptive phase provides a comprehensive overview of data characteristics, using tools such as frequency distribution tables and percentage calculations to illustrate the variability in respondents' answers. The inferential phase analyzes the quantitative responses and explores the relationships between different data variables.

Results and Discussion

Demographics of Quail Farming

Based on interviews conducted with 59 quail farmers, it was found that only 30 individuals remained active in farming as of 2024. Of these, 3 were women, while the majority, 27, were men. The remaining 29 farmers were no longer engaged in quail farming but expressed their intention to resume the business once they had sufficient capital. The interviews also yielded demographic data, including age range, gender, and education levels of the farmers. This information is crucial for understanding the profile of quail farmers in the study area and provides insights into the factors influencing the sustainability of quail farming. More detailed demographic data can be seen in Figures 1 and 2, which present the distribution of age, gender, and education levels among the farmers.

According to the data presented in Figure 1a, the educational attainment of quail farmers in Brebes exhibits notable variation. Specifically, 41% of the farmers have completed junior high school, 32% have only completed elementary school, 24% have graduated from senior high school, and a mere 3% possess a bachelor's degree. Notably, the data indicate that none of the bachelor's degree holders were actively engaged in quail farming as of 2024. The primary reasons provided include limited access to capital and competing commitments from other occupations. Conversely, the majority of farmers who remain actively involved in quail farming are those with junior high school and senior high school educations, for whom quail farming represents their principal source of livelihood. In contrast, those with higher educational qualifications often consider quail farming as a supplementary activity. These findings suggest a correlation between educational attainment and sustained engagement in

quail farming, highlighting a potential area of focus for policymakers aiming to enhance the sustainability of quail farming operations in Brebes.

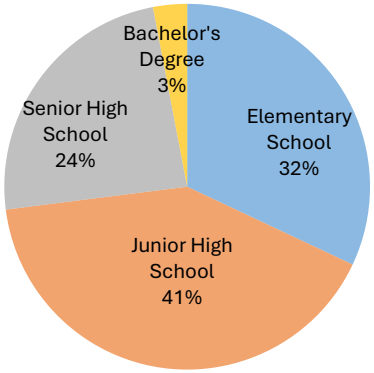

Figure 1a. Education level of quail farmers

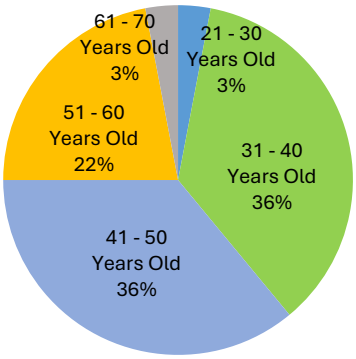

Figure 1b. Age range of quail farmers

Data presented in Figure 1b reveal that the majority of quail farmers in Brebes are in the age ranges of 31-40 years and 41-50 years, each constituting 36% of the population. This suggests that these age groups may possess sufficient experience and stability in managing quail farming operations. However, it is also noted that some farmers in this age range may start quail farming after resigning from previous jobs with minimal experience, posing a challenge as they must rapidly acquire new skills to achieve success in quail farming. Conversely, the proportion of farmers aged 51-60 years is lower, at 22%. This may be attributed to factors such as physical decline or a propensity towards retirement. While farmers in this age group may have extensive experience, physical limitations could present obstacles in performing tasks that require physical strength and endurance.

The age groups of 21-30 years and 61-70 years each represent only 3% of the quail farming population, indicating that both younger and older generations are less involved in quail farming. For the younger generation, this may be attributed to a lack of interest or knowledge about quail farming. They might be more inclined towards careers in other sectors that are perceived as more modern or offering better career prospects. Conversely, for the older age group, physical limitations or a preference to avoid physically demanding work may be the primary reasons. Additionally, individuals in this age group may feel content with their achievements and choose to enjoy retirement.

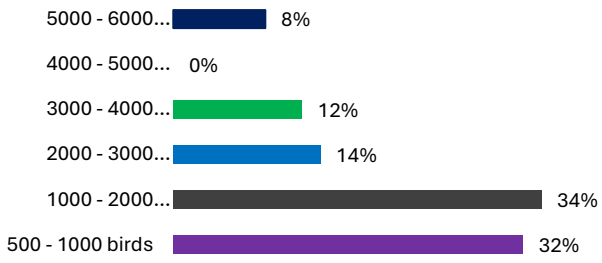

Figure 2a. Population of quail in each farmer

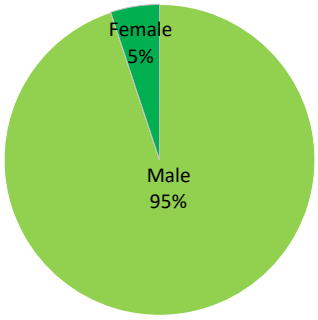

Figure 2b. Comparison of male and female farmers

Figure 2a illustrates the distribution of quail populations among farmers in Brebes and the influencing factors. A total of 34% of farmers manage flocks of 1,000-2,000 birds, making

this the largest group. This suggests that many farmers operate at a medium scale, likely because this number is manageable in terms of both capital and space requirements. The second largest group comprises farmers with flocks of 500-1,000 birds, representing 32%. This indicates a significant proportion of farmers who are either new to the business or in the early stages of development. Additionally, 14% of farmers manage flocks of 2,000-3,000 birds, reflecting a larger scale of operation but not dominant. Twelve percent of farmers have flocks of 3,000-4,000 birds, and only 8% have flocks of 5,000-6,000 birds, indicating that very few farmers operate at a very large scale.

Factors influencing quail flock sizes include capital constraints, where insufficient funding impedes farmers' capacity to scale up their operations. Expanding flock size typically necessitates substantial investments in feed, medications, and infrastructure. Additionally, land availability poses a limitation on the number of birds that can be accommodated. Farmers in Brebes may encounter spatial limitations that restrict their ability to manage larger flocks (Jahan *et al*., 2024). Furthermore, limited experience in quail farming affects the ability of farmers to effectively manage and expand their operations. Newcomers to the industry often opt to begin with smaller flocks, gradually scaling up as they acquire the necessary expertise and confidence. Data presented in Figure 2a reveal that most quail farmers in Brebes operate within a small to medium scale. The predominant group comprises farmers managing flocks of 1,000-2,000 birds, followed by those with flocks of 500-1,000 birds. A relatively small fraction of farmers maintain very large flocks. Principal constraints affecting expansion include limitations in capital, inadequate space, and insufficient experience, which collectively hinder the growth of quail farming operations.

Figure 2b demonstrates the predominance of males in quail farming (95%) compared to females (5%). Several factors contribute to this gender disparity in quail farming. Firstly, traditional and cultural norms in various regions often regard farming as more suitable for men due to its physically demanding nature. Secondly, men may have greater access to essential resources such as land, capital, and training needed to initiate and manage farming operations. Thirdly, conventional gender roles frequently assign women to domestic responsibilities, thereby restricting their engagement in economic activities like farming. Fourthly, the physical and environmental risks associated with farming may be perceived as more manageable for men. Lastly, support programs and policies from government or organizations may disproportionately benefit men, based on the perception that they are the primary earners or decision-makers (Bounds and Zinyemba, 2018).

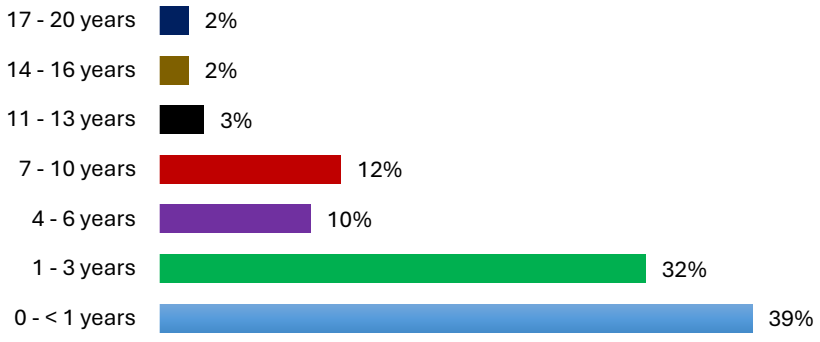

Figure 3. Long experience in quail farming

Data obtained from Figure 3 provide a comprehensive overview of the distribution of experience among quail farmers. The results indicate that the majority of farmers (39%) are in the early stages, with less than one year of experience. This high percentage suggests an influx of new entrants into the industry. However, it also reflects limitations in their knowledge and skills, given their nascent status in quail farming. This condition necessitates targeted guidance and access to adequate resources to mitigate the risk of business failure. Additionally, approximately 32% of farmers have between 1 to 3 years of experience. This group has likely developed a better understanding of farming operations and has overcome some of the initial challenges. Although this longer experience provides them with somewhat more stability compared to novice farmers, they remain in a developmental phase that requires ongoing enhancement of their knowledge and skills (Indrayani and Rahman, 2024).

For farmers with 4 to 10 years of experience, who constitute 22% of the interviewed population, there are indications that they have become more established in their operations. This mid-term experience allows them to develop best practices and more effective management systems, laying the foundation for long-term success. Interestingly, only 7% of farmers have more than 10 years of experience. This suggests that quail farming as an industry may still be in a developmental phase in this region, or that significant challenges may exist that prevent most farmers from sustaining their operations over the long term. The low percentage of farmers with over 10 years of experience could also be attributed to external factors such as market instability or insufficient support from government and relevant institutions (Bhawa *et al*., 2023).

Beyond the distribution of experience, the interview results also indicate that the majority of quail farmers have not received formal training from government or private institutions. Instead, they rely on self-directed learning through informal channels such as YouTube videos, online communities, literature, and direct observation of successful peers. This reliance on informal learning methods highlights a significant level of initiative and motivation among farmers to advance their knowledge and skills, despite the lack of formal educational resources. However, the unstructured nature of these learning methods may not always provide the comprehensive and integrated knowledge required for optimal production and long-term sustainability. Thus, it is imperative to consider implementing formal training programs and organized technical support to enhance the capabilities and success rates of quail farmers.

Factors causing bankruptcy of quail farms

All respondents (100%) strongly agree that high feed costs are a primary factor contributing to bankruptcy among quail farmers. This underscores the substantial impact of feed expenses on the operational costs of quail farming. Increased feed prices necessitate higher expenditures for feeding quail, which diminishes profitability or may even result in financial losses if the price of quail eggs remains constant or declines (Vavrek *et al*., 2021). A majority of respondents (95%) agree, with an additional 5% strongly agreeing, that the low price of quail eggs relative to production costs represents a significant problem. This indicates that 100% of respondents perceive that revenue from egg sales is insufficient to offset production costs, potentially compromising the long-term viability of their operations. Furthermore, 90% of respondents agree, and 10% strongly agree, that frequent disease occurrences lead to significant financial losses. Quail diseases can cause substantial mortality rates or reduce egg production, resulting in considerable economic losses. The additional costs associated with disease treatment and prevention exacerbate the financial burden on farmers (Srebro *et al*., 2021).

Table 1. Factors Contributing to Bankruptcy in Quail Farming

No	Question Item	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
1	The high cost of feed is a major factor leading to quail farmers' bankruptcy.				100%
2	The price of quail eggs is too low compared to production costs.			95%	5%
3	Diseases in quail occur frequently and cause significant financial losses.			90%	10%
4	Quail mortality due to various factors is a serious issue for farmers.			100%	
5	Difficulty in marketing quail eggs to consumers is a major barrier for farmers.			22%	78%
6	Lack of initial and working capital is a constraint for farmers to expand their businesses.			15%	75%
7	Natural disasters such as floods, droughts, and earthquakes can cause damage to farms and financial losses.			88%	12%
8	Insufficient knowledge about quail farming leads to suboptimal practices by farmers.			5%	95%
9	Poor farm management, such as inadequate sanitation and disorganized record-keeping, can be detrimental.			7%	93%
10	Value-added products from quail, such as salted quail eggs and quail floss, enhance profitability.			100%	
11	Competition with other farmers, especially large-scale farmers, makes it difficult for small-scale farmers to survive.			3%	97%

All respondents (100%) strongly agree that quail mortality is a serious issue. High mortality rates can reduce the productive population and egg production, decrease revenue, and increase costs associated with replacing deceased quail. The majority of respondents (78%) strongly agree, and 22% agree, that marketing difficulties are a major barrier. Challenges in reaching a broader market or selling at profitable prices reduce farmer income and increase the risk of bankruptcy. Most respondents (75%) strongly agree, and 15% agree, that a lack of initial and working capital is a constraint. Initial capital is required to establish infrastructure and purchase equipment, while working capital is necessary for daily operations (Adom *et al*., 2023). Without sufficient capital, farmers struggle to expand their businesses and face financial challenges. A majority of respondents (88%) agree, and 12% strongly agree, that natural disasters cause damage and financial losses. Natural disasters can destroy farming facilities, lead to mass quail mortality, and disrupt production cycles, all of which add to the financial burden on farmers (Folajinmi and Peter, 2020).

Most respondents (95%) strongly agree, and 5% agree, that insufficient knowledge leads to suboptimal practices. Without adequate knowledge, farmers may not implement best practices in health management, feeding, and environmental control, potentially reducing productivity and increasing disease risk. Most respondents (93%) strongly agree, and 7% agree,

that poor management can be fatal. Poor sanitation increases the risk of disease, while disorganized record-keeping hampers farmers' ability to effectively manage operations and finances, potentially leading to losses and bankruptcy (Céu and Gaspar, 2022). All respondents (100%) strongly agree that value-added products enhance profitability. Product diversification can boost income and mitigate the risk of dependency on a single product, helping farmers sustain their operations in the long term (Hadawale and Sinha, 2024). The majority of respondents (97%) strongly agree, and 3% agree, that competition with large-scale farmers makes it difficult for small-scale farmers to survive. Large-scale farmers have advantages in production efficiency and market access, making it challenging for small-scale farmers to compete on price and production volume, thus increasing their vulnerability to bankruptcy.

Potential mitigation strategies for quail farming development

Respondents were also asked to provide their perspectives on various potential solutions that could be implemented to address the challenges and frequent failures in quail farming. These solutions include strategies for improving management effectiveness, such as intensive training for farmers to enhance their skills and knowledge about best practices in quail farming. Additionally, optimizing environmental conditions is a focus, which includes better coop management, adequate ventilation, and maintaining cleanliness to reduce disease risk. Improved financial management, through more detailed financial record-keeping and meticulous budgeting, is also expected to help farmers manage operational costs more efficiently. Expanding market development is another strategy, achieved by broadening distribution networks, promoting quail products to various regions, and utilizing digital media to reach a wider market (Jahan *et al*., 2024). Finally, the adoption of the latest technologies, such as automated feeding systems and coop monitoring tools, as well as the implementation of information systems to monitor quail health and productivity, can support the overall success of quail farming (Indrayani *et al*., 2019). By applying these solutions, it is anticipated that challenges and failures in quail farming can be minimized, enabling the quail farming business to develop more effectively and sustainably. The potential solutions based on questionnaire results are presented in Table 2.

Based on the interview and questionnaire data presented in Table 2, various perspectives from respondents regarding potential solutions to mitigate failures in quail farming have been identified. A significant majority of respondents (80%) strongly agree that government subsidies for feed costs would be highly beneficial for quail farmers. This consensus highlights feed expenses as a major financial challenge in quail farming. The provision of subsidies is perceived as a viable strategy to reduce the financial burden on farmers, thereby potentially enhancing the profitability of their operations. Such financial assistance from the government would enable farmers to reallocate resources towards other critical areas, such as improving productivity and the overall quality of their livestock.

Table 2. Potential Solutions for Addressing Failures in Quail Farming

No	Question Item	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
1	Government subsidies for feed prices would help quail farmers.			20%	80%
2	Government assistance in marketing quail eggs through programs such as discount markets and promotions.				100%
3	Veterinary departments (Government) provide training and mentoring to farmers			100%	

	on good farming techniques and business management.		
4	Farmer organizations strengthen their role in supporting members by providing access to capital, technology, and markets.	12%	88%
5	Quail farmers enhance the efficiency and effectiveness of their operations by adopting new technologies and improving management.	90%	10%
6	Increasing consumer awareness about the benefits of quail eggs through education and campaigns.	100%	
7	Developing new products from quail eggs, such as processed eggs, cosmetics, and health supplements, to increase market value.	76%	24%
8	Opening new markets for quail eggs, such as export markets and online platforms.		100%

All respondents strongly agree (100%) that government assistance in marketing quail eggs through programs such as affordable markets and promotional activities is essential. This underscores marketing as a critical component of quail farming success. Government support for promoting quail egg products through various promotional programs is expected to help farmers reach broader markets and boost sales. These programs not only raise consumer awareness of quail egg products but also provide farmers with more stable and predictable market access. Additionally, all respondents strongly agree that training and mentoring from the livestock department on best farming practices and business management are highly needed. This indicates that enhancing farmers' skills and knowledge is crucial for the success of quail farming. Training that covers aspects such as livestock health management, husbandry techniques, feed management, and financial management will aid farmers in improving operational efficiency and livestock productivity.

The majority of respondents (88%) strongly agree that the role of farmer organizations in supporting their members, particularly through access to capital, technology, and markets, is critically important. These findings align with international literature that emphasizes the significance of farmer organizations in enhancing member welfare through various forms of support and collaboration. Such organizations act as platforms for sharing information, resources, and opportunities, as well as facilitating access to financing, modern technology, and broader market networks. The study indicates that access to modern technology and adequate financing can improve productivity and efficiency in farming operations. Furthermore, expanded market networks enable farmers to secure better prices and mitigate market risks. However, to date, there are no official quail farmer organizations, especially in the form of farmer groups. This underscores the urgent need to establish such organizations to support quail farmers in addressing existing challenges and enhancing their overall well-being (Kwesisi *et al*., 2022).

Additionally, a majority of respondents (90%) agree that the adoption of new technologies and improved management practices can enhance the efficiency and effectiveness of quail farming operations. Although not all respondents strongly agree, this indicates that modernization and effective management are key to success. New technologies, such as automated feeding systems, advanced livestock health monitoring, and digital data management, can help farmers boost productivity and reduce operational costs (Prafitri *et al.,*

2023). For instance, automated feeding systems allow for more efficient and consistent feed scheduling, thereby minimizing the risks of feed shortages or surpluses that can affect the health and growth of quail. Moreover, advanced health monitoring systems can detect early signs of disease or stress in quail, enabling timely interventions that can prevent disease outbreaks and reduce mortality rates.

All respondents strongly agree that education and campaigns to increase consumer awareness of the benefits of quail eggs are essential. This underscores the importance of marketing and consumer education in supporting quail egg sales. Proper education about the nutritional value and health benefits of quail eggs can enhance consumer demand, which in turn supports market stability and growth. Quail eggs offer various health benefits that are often not widely known among consumers. For instance, quail eggs are rich in protein, vitamins, and minerals such as vitamin B12, selenium, and riboflavin, all of which are crucial for maintaining overall health. By raising consumer awareness about these nutritional contents, farmers can attract more health-conscious consumers. Additionally, educational campaigns can highlight how quail eggs serve as a healthier alternative to chicken eggs, particularly for individuals with allergies to chicken eggs. This education can be delivered through various channels, including social media, health seminars, and collaborations with nutritionists or health influencers. Effective marketing strategies might also include recipe demonstrations and cooking tips for quail eggs, which can engage consumers seeking variety in their diets. By showcasing the versatility and ease of incorporating quail eggs into various dishes, consumers may be more inclined to try and purchase these products.

The majority of respondents (76%) endorse the development of new quail egg products as a strategy to enhance their market value. This finding underscores the potential for product diversification to augment farmer income. Innovative product lines, including processed quail eggs, cosmetics, and health supplements, not only expand market reach but also elevate the added value of quail farming operations, thus improving profitability. Potential new products could include various forms of food processing, such as salted quail eggs, canned quail eggs, or ready-to-eat options tailored to the modern consumer (Neves *et al*., 2021). These products can be marketed as healthier and more nutritious alternatives to other processed goods, thereby attracting health-conscious consumers. Furthermore, quail eggs exhibit considerable potential within the cosmetics industry. The protein and nutritional content of quail eggs can be leveraged in the formulation of skincare and haircare products, including facial masks, anti-aging creams, and shampoos. Such products can be positioned as natural and high-quality, appealing to consumers seeking effective and safe beauty solutions (Longweni *et al*., 2023). Similarly, health supplements containing quail egg extracts present a promising product category. Given the rich nutritional profile of quail eggs, including essential vitamins, minerals, and amino acids, these supplements can be marketed to consumers interested in enhancing their health through natural and nutrient-dense products. Diversifying product offerings enables quail farmers to expand their market base and enhance product value. This approach not only contributes to increased revenue and profitability but also provides greater economic stability for farmers. Additionally, product diversification can mitigate market risks by creating multiple revenue streams (Wambua *et al*., 2022).

Data from Table 2 indicates strong support among respondents for various initiatives and strategies to address challenges in quail farming. These include government subsidies and marketing support, training and guidance from agricultural agencies, enhanced roles of farmer organizations, adoption of new technologies, consumer education, development of new products, and exploration of new markets. Collectively, these measures are considered vital for improving the success and sustainability of quail farming enterprises.

Conclusion

This study reveals that of the 59 quail farmers interviewed, only 30 remained active in 2024, comprising 27 men and 3 women. The majority of quail farmers in Brebes manage flocks of 1,000-2,000 birds (34%), followed by those managing 500-1,000 birds (32%). Larger-scale operations are less common, with only 8% of farmers managing flocks of 5,000-6,000 birds. Respondents identified several key interventions to mitigate risks in quail farming. A significant 80% supported government subsidies to reduce feed costs, crucial for industry sustainability. All respondents agreed on the need for government support in marketing quail eggs and training in best practices. Strengthening farmer organizations was seen as essential for improving access to capital, technology, and markets. Additionally, 90% backed the adoption of new technologies and better management practices, while 100% stressed the importance of consumer education on quail eggs. Finally, 76% supported product diversification to boost market value and profitability. These strategies are considered vital for the long-term success of quail farming.

Acknowledgments

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