

Economic Viability and Constraints of Broiler Farming in Bangladesh

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Abstract

The production issues and profitability of broiler farming in Bangladesh's Feni District are examined in this monograph. By examining production costs, revenues, and profitability indicators, the study aims to evaluate the region's broiler farms' economic feasibility. Important problems that affect the financial stability of broiler farmers include market instability, disease control, and variable feed prices. This study is based on data gathered from 54 broiler farms in Feni, which includes information on management strategies, feed costs, farm size, and experience. Professional training has a considerable impact on farm profitability, according to the results of the hypothesis test. Training-receiving farmers reported an average profit of 22,629.57 Taka higher than non-training farmers (t-value: -11.4562, p-value: 0.0000). Furthermore, the multicollinearity tests show that feed costs and production changes are positively correlated with earnings, which makes them essential for guaranteeing the industry's financial performance. Welch's test also demonstrates how economies of scale help larger farms become more profitable, while lower profit margins and higher production expenses plague smaller farms. Low-interest loans and farmer training programs are among the suggestions made in the monograph's conclusion to increase the profitability of broiler farming. The local community's economic stability and food security can be enhanced by the broiler farming industry in Feni achieving long-term sustainability by tackling these problems. The study effectively achieves its goal of examining the profitability and difficulties of broiler farming in Feni and offers useful advice and insights to raise the sector's sustainability and profitability.

Key Words: Broiler farming, Feed cost, Profitability, Professional Training, Production

Introduction

Agriculture remains the backbone of Bangladesh's economy with the poultry sector playing a central role in enduring food security and fostering rural development (Mujeri, & Mujeri, 2021; Selim et al., 2026). Among the various segments of poultry farming broiler production has emerged as a key contributor to both national income and household livelihoods (Dolberg, 2007, Alders et. al., 2018). As a cost effective source of animal protein broiler meat is an integral component of the Bangladeshi diet while broiler farming offers significant employment opportunity in rural areas thereby reinforcing its importance to the agricultural landscape.

In recent decades the broiler farming sector in Bangladesh has witnessed a remarkable transformation (Das et. al., 2008, Rahman, et al., 2017). Traditional farming methods have been gradually replaced by more intensive and modern techniques driving the growth of the sector. The burgeoning demand for poultry products coupled with advancements in breeding feeding and disease management has led to notable improvements in productivity and profitability (Chadd, 2008, Rabbani & Ahmad 2021, Acheampong, 2024). These innovations have made broiler farming a commercial viable enterprise for a large number of farmers contributing to the overall economic development of the country (Besbes, et al., 2012, Nkukwana, 2018, Ramukhithi, et. al., 2023).

Feni district situated in southeastern Bangladesh has emerged as a prominent hub for broiler production. The districts favorable climate availability of affordable labor and proximity to key local markets make it an attractive region for poultry farming. Local farmers have increasingly adopted modern farming practices such as the use of improved poultry breeds and advanced management techniques which have led to significant gains in both productivity and profitability (Harris, & Newman, 1994, Quddus, 2012, Ramukhithi, et.al., 2023, Acheampong, 2024). Despite these positive developments the industry faces several persistent challenges that hinder its growth and long term sustainability (Bansal, 2002, Danciu, 2013, Ahmad, 2024). Among these are rising feed prices market volatility disease outbreaks and inadequate infrastructure issues that continue to limit the full potential in Feni (Moller, et. al., 2023, Mwacalimba, et. al., 2025).

This study aims to evaluate the productivity and profitability of broiler farming in selected areas of Feni district focusing on key factors as production costs labor input market access and disease management. Through this investigation the research seeks to provide valuable insights into the economic viability of broiler of farming in the region. Moreover, the study will identify the primary challenges confronting farmers and propose strategies to address these constraints thereby enhancing the sustainability and profitability of broiler farming in Feni district and potentially in other similar regions of Bangladesh.



Methodology

Study Area and Data Collection

The study was conducted in Feni district a key area for broiler production in southeastern Bangladesh. The study focuses on three Upazilas Sonagazi, Daganbhuiyan, and Chhagalnaiya which have active poultry farming practices and a significant number of commercial broiler farms. These areas were selected based on their diverse farm sizes and farmer engagement in the poultry sector.

Data were collected from 54 randomly selected broiler farmers in these upazilas through face to face interviews. The interviews focused on farm management aspects such as production costs, feed and medicine usage, labor, quantitative and qualitative data ensuring the reliability and accuracy of the findings.

OLS Regression Model

To assess the factors influencing the profitability of broiler farming, the study employs an Ordinary Least Squares (OLS) regression model (Bandara, and Dassanayake, 2006). The dependent variable, Profitability, is measured in terms of net income from broiler production. The independent variables include socio-economic factors, farm characteristics, and management practices (Ali et al., 2015; John et al., 2020).

The regression model is specified as follows:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + \beta_7 X_{7i} + \beta_8 X_{8i} + \beta_9 X_{9i} + u_i \dots (i)$$

Where: Y_i is the profitability of the farm, $X_1, X_2, \dots, X_9$ Independent Variables, β_0 Intercept term, $\beta_1, \beta_2, \dots, \beta_9$ Coefficients representing the effect of each independent variable on profitability, u_i is the Error term capturing factors including in the model.

Hypothesis Testing

The following hypotheses are tested to evaluate the relationship between different factors and the profitability of broiler farming:

Impact of Professional Training on Profitability

- Null Hypothesis (H_0): No significant difference in profitability between farms with and without professional training.
- Alternative Hypothesis (H_1): Farms with professional training are more profitable than those without.

Effect of Disease Outbreaks on Profitability

- Null Hypothesis (H_0): Disease outbreaks do not affect the profitability of broiler farms.
- Alternative Hypothesis (H_1): Disease outbreaks negatively impact profitability.

Effect of Professional Engagement on Profitability

- Null Hypothesis (H_0): Professional engagement does not affect the profitability of broiler farms.
- Alternative Hypothesis (H_1): Farms with higher professional engagement are more profitable.

Multicollinearity Test

To detect multicollinearity among the independent variables in the regression model, the Variance Inflation Factor (VIF) is used (Fox and Monette 1992; Daoud, 2017).

The VIF is calculated using the formula:

$$VIF = \frac{1}{1 - R^2}$$

Where $VIF > 10$, is the coefficient of determination from the regression of an independent variable on all other variables. A VIF greater than 10 suggests multicollinearity (Schroeder et al., 1990).

Result and Discussion

Summary Statistics

The analysis of 54 broiler farms in Feni district provides valuable insights into the socio-economic and operational dynamics of poultry farming. The average monthly profit across the farms is BDT 26,259, though significant variation exists in profits which reflects differences in farm size, management practices, and input costs. The average age of farmers is 40.02 years, and the average education in poultry farming indicates a gap in formal knowledge.



Farm accessibility to markets is favorable with an average distance of 0.42 km which aids in the efficient sale of products. Capital investment varies widely with larger farms investing more reflecting economics of scale. The average time spent on poultry farming is 8.31 hours per day underlining the labor intensive nature of the industry. The average level of experience among farmers is 7.5 years which plays a significant role in their farm management practices and profitability.

Table 1. Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Profit	54	26259.26	12535.51	10000	50000
Age	54	40.01852	12.00863	19	73
Education	54	9.277778	4.931289	0	17
Professional training	54	.1111111	.3172206	0	1
Distance from household	54	.4240741	.7025386	0	4
Total cost	54	349677.2	206329.9	80700	1195000
capital	54	472963	669558.1	20000	5000000
Long involving poultry farm	54	7.5	5.544843	1	27
Time spends	54	8.314815	3.800815	0	16
Chicken production	54	2111.111	1564.544	500	7000

N.B.: Std. Dev = Standard Deviation, Min = Minimum, Max = Maximum; Source: Author's compilation based on field survey 2025

OLS Regressing Model

The OLS regression analysis reveals key determinants of profitability in broiler farming in Feni district. The results indicate that age has a positive on profitability with each additional year of age increasing profit by BDT 54.68 highlighting the importance of experience in farm management. However, education shows a negative correlation (-187.7) suggesting that more years of schooling may initially result in lower profits due to decrease in profitability by BDT 2411 indicating that multitasking may reduce farm management effectiveness. A significant negative relationship is observed with distance from household for every kilometer farther from the farm profitability decreases by BDT 2,634 likely due to higher transportation costs. Conversely total cost has a positive effect where every additional BDT spent results in an increase in profit by 0.0087 BDT reflecting economies of scale. Experience contributes substantially to profitability with each additional year of experience increasing profits BDT 1,036. Time spent on poultry farming also plays a significant role with each additional hour spent increasing profits by BDT 380.8, underscoring the labor intensive nature of the sector. Finally, chicken production shows a strong positive correlation with profitability with every kilogram of chicken produced adding BDT 2.718 to profits. The model explains 78.9% of the variation in profits (R-squared=0.789) indicating that these factors are crucial in determining the economic success of broiler farming in Feni district.

Table 2. OLS Regression Model on Determinants of Profit of Poultry farming

Variable	Unit of Measurement	Co-efficient
Age	Year	54.68
Education	Year	-183.7
Involvement in other profession	0= No and 1= Yes	-2,411
Distance from household	Km	-2,634*
Total Cost	BDT	0.00870
Capital	BDT	-5.72e-05
Experience	Year	1,036***
Time spends on poultry farming	Hours per day	380.8**
Chicken production	kg	2.718***
Constant		7,468*
Observations		54
R-squared		0.789

N.B.: ***p<0.001, **p<0.05, *p<0.1; Source: Authors Estimation 2025

Hypothesis Testing

Three hypotheses were tested to evaluate key factors affecting profitability in broiler farming:

- H01: No significant difference in mean profits between farms with and without professional training.
- H02: No significant difference in profits due to sickness outbreaks.
- H03: No significant difference in profits based on professional involvement.



Professional Training: Farms with professional training report significantly higher profits (BDT 41,764.71) compared to those without training (BDT 19,135.14) with a mean difference of BDT 22,629.57 ($p < 0.01$), indicating that professional training positively impacts profitability.

Disease Outbreaks: The impact of disease outbreaks on profitability is not statistically significant ($p = 0.1983$). While farms with outbreaks reported lower profits the data does not provide strong evidence to suggest that outbreaks have a significant impact on financial outcomes.

Professional Engagement: Farms with higher professional engagement report significantly higher profits (BDT 44,285.71) compared to those without (BDT 23,474.47) with a mean difference of BDT 20,711.25 ($p < 0.01$), suggesting that professional involvement enhances profitability.

Table 3. Hypothesis Testing

Null Hypo.	Variables	Obs.	Mean	Mean Diff.	Std. Dev.	t-value	p-value	Decision
H ₀₁	With training	37	-	22629.57	6596.136	-	0.00	Rejected
	Without training	17	19135.14		7085.058	11.4562		
H ₀₂	With outbreak	52	26692.31	11692.31	12575.32	1.3090	0.1983	Accepted
	Without outbreak	2	15000		0			
H ₀₃	With profession	47	23574.47	-20711.25	10977.73	-4.8765	0.00	Rejected
	Without profession	7	44285.71		5345.225			

Source: Authors' calculation from field survey, 2025

Multicollinearity test

Variance Inflation Factor (VIF) is a critical diagnostic tool used in regression analysis to detect multicollinearity which occurs when independent variables are highly correlated with each other. Multicollinearity can lead to biased coefficient estimates inflated standard errors, and reduced model reliability (Kim, 2019)

Table 4. The results of the VIF test for the variables in this study

Variable	VIF	1/VIF
Chicken	3.30	0.303248
Total cost	2.41	0.414401
Year of experience	2.18	0.457832
Age	1.61	0.622301
Time spends	1.48	0.673922
Education	1.41	0.710351
Capital	1.26	0.796035
Distance house	1.17	0.853342
Profession	1.12	0.895843
Mean VIF	1.77	

Source: Authors' calculation from field survey, 2025

Interpretation

The VIF values for all variables in the model are well below the commonly accepted threshold of 4 or 10 which indicates that multicollinearity is not a significant issue in this model. Specifically, the VIF values range from 1.12 to 3.30 suggesting low to moderate correlations between the predictor variables which is generally considered acceptable. These result imply that multicollinearity is not concern and that the regression model's estimates are reliable.

Conclusion

This study highlights the significant role of age, experience professional training and production scale in determining the profitability of broiler farming in Feni district. The findings suggest that professional training and greater professional engagement are crucial for improving profitability. However, challenges such as disease outbreaks and high capital costs still hinder the full potential of the sector. By addressing these challenges and promoting training and engagement the sustainability and profitability of broiler farming in Feni can be enhanced.



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