

Research Article



Farmer Motivations for Sustaining Broiler Chicken Partnerships in Lima Puluh Kota Regency, West Sumatra

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Abstract | The decline in independent broiler farmers has raised concerns about the ability to manage production sustainably. While contracting provides security in terms of money and access to markets, many farmers find it ineffective. This study identifies the primary motivators that influence farmers in the Akabiluru District, Lima Puluh Kota Regency, West Sumatra, to continue participating in the broiler partnership scheme. A survey of 40 respondents identified four key drivers: access to funds, price, market, and bonus incentives. The findings indicate that capital access has the strongest positive influence ($\beta = 0.323$), followed by bonus incentives, on farmers' willingness to maintain partnerships. The regression model explains 43.6% (Adjusted $R^2 = 0.436$) of the variance in farmer motivation. These findings highlight both the bounded loyalty of farmers who remain tied to integrators despite dissatisfaction and the asymmetric bargaining power inherent in contract structures. Policy recommendations include strengthening financial training, enhancing performance-based incentives, and implementing regulatory safeguards to ensure fairer partnerships. Such measures can improve farmer satisfaction, reduce dependency, and contribute to more resilient rural livelihoods.

Keywords | Contract farming, Broiler industry, Farmer motivation, Asymmetric bargaining power, Bounded loyalty, Regulatory safeguards

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INTRODUCTION

The broiler chicken subsector plays a crucial role in enhancing rural economies and increasing household income for Indonesian farmers. This sector has enormous development potential throughout the country, particularly in the Lima Puluh Kota Regency in West Sumatra. However, many broiler farmers in the region are part of contract farming (CF) with partnership schemes run by large agribusiness companies. This reliance raises worries about farmers' long-term competitiveness and autonomy, as it may hinder entrepreneurs from managing their broiler enterprises.

Although CF arrangements can provide market stability and access to manufacturing inputs, some studies have identified possible downsides. These include power imbalances that impede farmers' decision-making autonomy (Singh, 2002; Da Silva and Rankin, 2013) and barriers to enterprise development (Birthal *et al.*, 2005; Narayanan, 2014). These factors jeopardize the long-term viability of independently operated broiler farms. Smallholder broiler farmers in Indonesia frequently lack the necessary resources and institutional support to handle feed price fluctuation, limiting their ability to remain self-sufficient and competitive (Gede *et al.*, 2024).

Payakumbuh provides ideal geographical and economic circumstances for broiler farming. The broiler industry has shorter production cycles and lower unit costs than other livestock sectors. CF systems have proven to have financial advantages globally, including in Turkey, due to their rapid turnover and quick returns (Karaman *et al.*, 2023). However, broiler farming is intrinsically risky, with high mortality rates, variable feed prices, and little risk control for smallholders. Rising input costs can reduce profit margins and jeopardize farmer welfare (Gede *et al.*, 2024). To reduce these risks, many small-scale farmers form partnerships with major integrators, despite having limited bargaining power and little control over market conditions. This geographic and economic suitability might suggest that broiler farmers in Payakumbuh could operate independently. Yet, many continue to rely on CF systems, raising important questions about the motivations behind their sustained participation. Understanding this apparent contradiction is central to the present study.

The paradox of CF reliance in an area with apparent capacity for independent operation raises important questions about farmers' motivations. Although CF can serve as a risk-sharing mechanism, in practice it often involves contract ambiguity, input price volatility, and uneven benefit distribution (Bellemare, 2012; Barrett *et al.*, 2012). Farmers may face late payments and lack control over production decisions, increasing their vulnerability.

Ulfa *et al.* (2021) discovered four major elements that influence farmers' propensity to keep CF arrangements: access to money, price assurances, market access, and bonus incentives. Capital support is especially important because integrator companies provide crucial inputs like chicks, feed, and medicine, easing the financial load on smallholders. In addition, integrators frequently provide market access, generally consistent prices, and performance-based incentives such as bonuses. These arrangements can foster enthusiasm and increase breeder engagement among farmers. These results are consistent with global studies. Ruml *et al.* (2022) discovered that resource-providing contracts are positively related to household income. Similarly, Bellemare (2012) emphasized the welfare benefits of CF, including greater access to inputs and safe markets.

While these motivating elements are commonly addressed, empirical research into how they affect farmer decision-making in specific geographical contexts is scarce. Payakumbuh, as one of West Sumatra's key broiler production centers, is an appropriate case to investigate these processes. Understanding the various motives driving farmers' continuous engagement in CF schemes is critical for developing policies and partnership models that improve smallholder welfare and facilitate their gradual

transition to autonomy and competitiveness.

Previous research, such as Ulfa *et al.* (2021) and Ruml *et al.* (2022), has highlighted crucial characteristics in contract farming arrangements, but the majority have focused on general descriptions or welfare outcomes. Few studies have experimentally studied the effectiveness of these motivational elements in sustaining long-term engagement in CF schemes, particularly in Payakumbuh, West Sumatra. This study fills that gap by statistically assessing farmer motives using regression analysis, using local field data.

MATERIALS AND METHOD

This research will be conducted on broiler farms in the Akabiluru Sub-district, Lima Puluh Kota Regency. The region is 120 Km away from the capital city of West Sumatra. This research site was selected based on a preliminary survey indicating that broiler farmers in Akabiluru District engage in partnership agreements. The research employs a survey method, with interviews as the primary data collection technique (Figure 1).

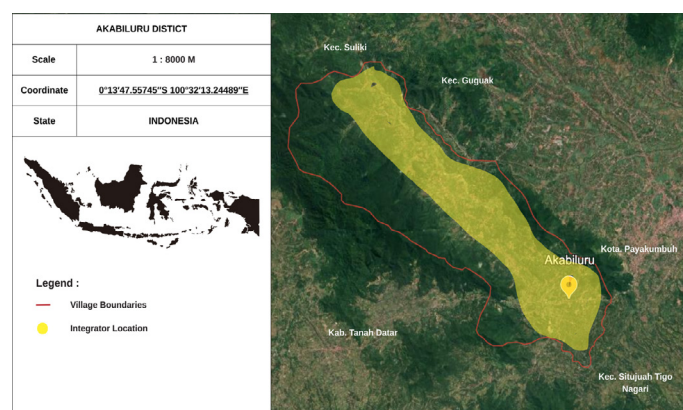


Figure 1: Research location (canva and google earth, 2025).

POPULATION AND SAMPLE

This study involved 40 plasma broiler farmer respondents from one integrator company that implements a contractual partnership pattern. This was purposive sampling because the company is the dominant actor in the study area, and almost all active broiler farmers are in a partnership scheme with it. Not even a single farmer in the Akabiluru area is raising broilers independently.

A limitation of this study is that it excludes the opinions of farmers who have left the partnership system, who may have a different view on the system's flaws, such as exploitative contracts or unhappiness. This was owing to the unique emphasis of our research, which sought to identify variables that inspire present farmers to continue participating in contract farming. Nonetheless, future research and policy development should incorporate the

experiences of both active and former CF farmers to design more transparent and fair partnership schemes that also provide smallholders with equitable exit options and alternative market access (Ton *et al.*, 2017; Jinghui *et al.*, 2018).

Furthermore, this study did not explicitly account for structural socioeconomic factors such as farm size, access to alternative income sources, and land tenure status, all of which have been shown to influence farmers willingness and capacity to participate in CF arrangements (Bellemare and Bloem, 2018; Meemken and Bellemare, 2019). The absence of these controls may add unobserved heterogeneity due to wealth disparities or asset endowments, which could distort the computed associations. However, we concentrated on contract-related and relational variables rather than broader home economics. Future research could benefit from including such socioeconomic characteristics to gain a more detailed understanding of how household resource variation influences participation and persistence in CF schemes.

RESEARCH VARIABLES

The variables examined in this study are as follows (Ulfa, 2021). All variables used were on an ordinal scale because as we used a Likert scale in the questionnaire used to collect the data. The likert scale used a value range of 1-5 (1=Strongly Disagree, 2=Disagree, 3=Average, 4=Agree, 5=Strongly agree, The data was then processed using the Successive Interval Method so that it became interval data and could be analyzed using multiple linear regression (Table 1).

DATA ANALYSIS

VALIDITY AND RELIABILITY TEST

The procedure for validity testing uses the SPSS 23.0 program (George *et al.*, 2016). The following is the formula for validity testing:

$$r_{xy} = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{\{N \sum X^2 - (\sum X)^2\} \{N \sum Y^2 - (\sum Y)^2\}}}$$

Notes: r_{xy} = The correlation coefficient sought, N= Number of participants, X= Value of variable X (item score), Y= Value of variable Y (item score).

RELIABILITY TEST

The reliability of the questionnaire was tested using Cronbach's alpha. In this study, a threshold value of > 0.6 was considered acceptable for internal consistency. This decision is supported by recent studies (Taber, 2018; Tavakol and Sandars, 2020; Pallant, 2020), which note that in exploratory research or studies with relatively small samples and context-specific instruments, a Cronbach's

alpha between 0.6 and 0.7 may be deemed satisfactory. The formula for Cronbach's alpha is presented below:

$$\alpha = (k / (k-1)) * (1 - (\sum Si^2 / St^2))$$

Explanation: α = the reliability coefficient sought, k = the number of items in the instrument, Si^2 = variance of each item, St^2 = total variance of scores, The criteria for a research instrument to be considered reliable are that the reliability coefficient is > 0.6.

Table 1: Research variable.

Variable	Indicators	Scale
Capital Availability (X1)	Payments for production inputs are settled after the harvest, which facilitates better financial management.	Likert Scale 1-5
	Production inputs (DOC, feed, medicine) are provided by the core company	Likert Scale 1-5
	Farmers provide land, barns, equipment, and labor	Likert Scale 1-5
	Still using an open-house cage (intensive rearing system)	Likert Scale 1-5
Price Guarantee (X2)	DOC price according to contract	Likert Scale 1-5
	Feed price according to contract	Likert Scale 1-5
	Vitamins and medicines prices according to contract	Likert Scale 1-5
	Selling price of harvested chickens according to contract	Likert Scale 1-5
Market Assurance (X3)	Harvest confirmation from core company	Likert Scale 1-5
	Chicken sale is in accordance with the contract	Likert Scale 1-5
	Marketing handled by partners	Likert Scale 1-5
Bonus (X4)	FCR bonus according to standard	Likert Scale 1-5
	Market bonus according to contract	Likert Scale 1-5
	IP (Performance Index) bonus based on standard	Likert Scale 1-5
	Farmers maintain Still willing to continue the partnerships (Y) partnership	Likert Scale 1-5
	Already partnered for 5 years	Likert Scale 1-5

Note: All bonus incentives are provided in monetary form (cash), not in-kind.

SUCCESSIVE INTERVAL METHOD (SIM)

This method transforms the scale type in research data from an ordinal scale to an interval scale. In this study,

data obtained from the questionnaire cannot be directly analyzed using multiple linear regression because it is in ordinal form. Therefore, it must be converted using the SIM to meet multiple linear regression analysis requirements. The following are the steps involved in the process:

1. Calculate the frequency of responses for each category of each question.
2. Determine the proportion of each category based on the frequency obtained.
3. Calculate the cumulative proportion for each category.
4. Identify the Z-score boundaries for each category.
5. Compute the scale value (average interval) for each category using the formula: $Scale = (UCB - LCB) / (NHC - NLC)$. Notes: UCB = Upper class boundary, LCB = Lower class boundary, NHC = Number of Highest class, NLC = Number of Lower class
6. Calculate the transformed score for each category.

By following these steps, the ordinal data from the questionnaire can be effectively transformed into interval data, making it suitable for multiple linear regression analysis.

Survey responses were measured using a five-point Likert scale. In line with practices in agricultural economics and social sciences, the Successive Interval Method (SIM) was employed to transform ordinal scores into interval values, enabling the application of multiple linear regression. While some scholars argue that Likert data are inherently ordinal, recent studies demonstrate that, under conditions of reliability and normal distribution, Likert-type data can reasonably be treated as interval for parametric analysis (Norman, 2020; Harpe, 2015; Wu and Leung, 2017). To ensure appropriateness, we assessed the reliability and construct validity of the items (Cronbach's $\alpha = 0.701$; KMO = 0.691; Bartlett's Test $p = 0.003$), and the transformed data met the assumptions of regression analysis.

MULTIPLE LINEAR REGRESSION

Classical assumption tests are conducted to obtain a valid regression equation, including normality of residuals, multicollinearity, heteroscedasticity, autocorrelation, t-test, F-test, and determination analysis (Iheaka, 2025; Mardiatmoko, 2024).

These tests help identify the factors that most influence farmers in maintaining partnership patterns in the Akabiluru District, Lima Puluh Kota Regency. The multiple linear regression equation is as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4$$

Notes: Y= Farmer maintains a partnership, a = Constant term, b= Regression coefficients (b1, b2, b3, b4), X= Independent variables: X₁ (Capital availability), X₂ (Price

guarantee), X₃ (Market guarantee), X₄ (Bonus).

The data was processed using the SPSS 23.0 program (Statistical Product and Service Solution). It is a statistical computer program capable of processing statistical data quickly and accurately.

RESULT AND DISCUSSION

RESPONDENT CHARACTERISTICS

Research on the socioeconomic characteristics of farmers is an important aspect in understanding the dynamics and sustainability of the partnership system in the broiler farming sector. This aspect is directly related to the success of the broiler business. In this study, most of the farmers involved in contract farming are small-scale producers with limited capital and access to resources. Many do not own the land where they operate and instead rent land to build their poultry farms. This condition reflects the resource constraints faced by farmers in the partnership system, which also influences their level of dependency on the integrator. Table 2 presents information on the age, gender, education level, business scale, and duration of the respondents' partnership.

Table 2: Socioeconomic characteristics of respondents (n=40).

Category	Information	Percentage (%)
Age (Years)	20-35	30.0
	36-50	60.0
	> 51	10.0
Gender	Man	65.0
	Woman	35.0
Education	Elementary School	5.0
	Senior High School	92.5
	Bachelor	2.5
Business scale (Heads)	3,000-4,999	22.5
	5,000-6,999	60.0
	7,000-8,999	10.0
	9,000-10,000	7.5
Length of partnership (Years)	1-5	25.0
	6-10	50.0
	11-15	22.5
	16-20	2.5

Many of the respondents in this study are within the productive age range, with 60% between 36 and 50 years old, 30% between 20 and 35 years old, and the remaining 10% above 51 years old. This age distribution indicates that most partner broiler farmers are young adults. At this age, humans tend to have more stable emotions, so they give careful consideration before making decisions. This psychological state makes them suitable for managing

a livestock business which demands perseverance and endurance. Farmers at this age will be more resilient in facing risks, so that the business productivity they get is quite satisfactory. This is in line with previous research, which showed that middle-aged farmers exhibit higher productivity levels than younger and older farmers, due to a good combination of experience and physical ability (Tauer, 1993). Similarly, studies in Bangladesh highlighted the active involvement of productive age groups in broiler farming (Ali *et al.*, 2015; Esiobu, 2021).

Gender also plays an important role in broiler farming. In Akabiluru sub-district, the gender composition in broiler farming activities is dominated by men at 65%, while women contribute 35%. This male dominance contrasts with the findings of Islam *et al.* (2010), who found that women play an important role in livestock management, particularly in small-scale or backyard systems. The mismatch may be due to structural variations between traditional family poultry systems and commercial contract farming operations. Broiler partnerships in the Akabiluru District are often organized and capital-intensive, which may lead to male family heads taking on more direct managerial responsibilities. Women may still play an important role in daily work, but men are more likely to have formal ownership and contractual agreements. This shows that gender roles in broiler farming are context-specific and modified by commercialization and partnership structures.

This male dominance can be attributed to the physical workload and the community perception that animal husbandry is an economic activity that requires greater strength. However, the considerable participation of women indicates their important role in managing the farm, especially in managerial and administrative aspects. Various studies have highlighted the considerable involvement of women in poultry farming in various regions, not only in administrative activities but also in farming activities. For example, in Bangladesh, women play an important role in smallholder broiler farms, handling essential tasks such as feeding, watering, cleaning cages, and vaccination, which are critical for reducing mortality and improving production performance (Islam *et al.*, 2010; Okitai *et al.*, 2007). In Nigeria, women are involved in routine activities and participate significantly in farm decision-making processes (Okoh *et al.*, 2010). These findings emphasize the indispensable contribution of women in broiler farming, challenging traditional gender roles and highlighting the need for gender-sensitive approaches in the livestock sector.

While it is true that women play an important role in everyday broiler farm operations, official recognition in contracts may not always result in equity. Women's labor is often devalued, both economically and socially. Introducing

formal roles without addressing underlying income discrepancies or gender norms may exacerbate rather than alleviate inequities. As a result, rather than revising contracts, complementing measures such as awareness campaigns, training access, and collective bargaining assistance may be more effective (Pandolfelli *et al.*, 2007).

The majority (92.5%) of respondents were high school graduates. While this may seem unusually high for rural areas in Indonesia, it reflects the local socio-economic context of Akabiluru District, which benefits from relatively better access to educational facilities due to its proximity to Payakumbuh City. The presence of public high schools and improved transportation infrastructure has contributed to increased secondary school enrollment in the region. Furthermore, engagement in broiler partnerships often requires basic literacy, record-keeping, and communication skills, which may encourage households with higher educational backgrounds to participate more actively.

This relatively homogeneous education at the high school level indicates that broiler partnership business actors are not always highly educated, but understand the production process and business management through direct experience. Formal education will influence farmers' ability to adopt technology and understand the partnership system. However, practical experience is often more dominant in the context of micro and small enterprises. However, higher education is still required to improve farmers' soft skills through critical thinking and managerial skills development. Various studies have shown that higher education levels among poultry farmers are associated with improved technical efficiency and better adoption of recommended practices, which are closely related to critical thinking skills. For example, Ezekiel *et al.* (2024) found that poultry farmers with secondary and tertiary education levels showed significantly higher technical efficiency than farmers with lower education levels. Similarly, Borah and Halim (2017) reported that education, financial independence, and exposure influenced the adoption of recommended technologies in broiler farming. Furthermore, Ali *et al.* (2015) highlighted that farmers with at least secondary education and training are better equipped to understand and apply scientific knowledge, increasing productivity and profitability. Thus, increasing capabilities through higher education levels will improve the ability of a farmer to manage his livestock business.

All respondents have been in a partnership for 5 to 12 years. The long duration of the partnership indicates an ongoing relationship between farmers and the core company, although there may be dynamics and challenges in practice. Long-term relationships in CF systems may reflect trust, economic dependency, or limited alternative business

opportunities. Farmers feel they are in a comfortable position where some of the significant risks in the farming business can be transferred to the core company. Various studies show that trust plays an important role in the sustainability of CF arrangements. For example, [Mao et al. \(2022\)](#) found that social trust significantly promotes better production behavior on broiler farms, indicating that trust improves the quality of cooperation. Similarly, [Gao et al. \(2024\)](#) illustrated that the strength of ties, including trust and reciprocity, positively influenced farmers' willingness to renew contracts, emphasizing the importance of relational factors in sustaining partnerships. In addition, [Hoang \(2021\)](#) highlighted that long-term CF improves farmers' income, sustainability, and welfare by increasing their capacity, knowledge, and market access. These findings illustrate the importance of trust and experience in fostering stable and profitable partnerships in broiler farming between small and medium-sized enterprises and lead firms.

VALIDITY AND RELIABILITY TEST RESULTS

Research instruments that meet the criteria as a research instrument must have adequate validity and reliability. Validity shows how much an instrument can measure what should be measured, while reliability is a measure of the instrument's reliability. The validity and reliability test results are shown in [Table 3](#), which reflects that all items for each variable have met the validity and reliability criteria.

Table 3: Validity and reliability test results.

Variable	Item	Validity test result	Cronbach's Alpha	Reliability test result
X1	8 items	Valid	0.806	Reliable
X2	8 items	Valid	0.805	Reliable
X3	6 item	Valid	0.817	Reliable
X4	6 item	Valid	0.792	Reliable
Y	4 item	Valid	0.761	Reliable

* All items show that the calculated r value is greater than the table r value for $(df) = 40 - 2 = 38$ and alpha 5% with a two-sided test showing a table r value of 0.3120, which means each item statement for variables X and Y is valid.

All variables are declared valid based on the analysis results. This shows that each statement item can adequately represent the intended construct. The validity of all items indicates that the indicators used are well structured and aligned with the theoretical dimensions underlying each variable. The existence of all valid items indicates the consistency of the construct and the clarity of the item formulation in measuring the intended aspect.

Reliability is a measure of the internal consistency of a research instrument, which indicates the extent to which

an instrument can provide stable and consistent results when used in repeated measurements ([Hair et al., 2020](#)). One of the most commonly used methods for testing reliability is the Cronbach's Alpha coefficient, where a value ≥ 0.70 indicates acceptable reliability ([Taherdoost, 2016](#)). Through measurement, it is found that all variables meet the reliability criteria, because they have a number > 0.70 .

NORMALITY TEST

The normality test is conducted to see whether each variable's data is normally distributed. The normality test used is the Kolmogorov-Smirnov test. Data can be normally distributed if the significance value is > 0.05 . The normality test in this study was carried out with the help of SPSS 23. The results of the normality test can be seen in [Table 4](#).

Table 4: One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		40
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	1.79661969
Most Extreme Differences	Absolute	.088
	Positive	.051
	Negative	-.088
Test Statistic		.088
Asymp. Sig. (2-tailed)		.200 ^{c,d}

a. Test distribution is Normal. b. Calculated from data. c. Lilliefors Significance Correction. d. This is a lower bound of the true significance.

[Table 4](#) shows that the Kolmogorov-Smirnov test results have a significant value (Asymp. Sig 2tailed) of 0.200, meaning that 0.200 is greater than 0.05. So it can be concluded that the residual value is usually distributed.

MULTICOLLINEARITY TEST RESULTS

The results indicate that all independent variables have VIF values below the threshold of 10 (X1: 1.320, X2: 1.237, X3: 1.024, X4: 1.123) and tolerance values above 0.1, indicating no statistically significant multicollinearity. Additionally, the correlation matrix results show that the relationships between independent variables are below the critical value of 0.8, with the highest correlation being 0.571 between X1 and Y. According to [Hair et al. \(2010\)](#) and [Gujarati and Porter \(2009\)](#), problematic multicollinearity is typically characterized by very high correlations between independent variables ($r > 0.9$) or $VIF > 10$, as emphasized by [Wooldridge \(2013\)](#) that moderate or low correlations between variables do not cause significant multicollinearity issues. Therefore, it can be concluded that the regression

model in this study is free from multicollinearity issues and is suitable for interpreting the influence of each variable on the sustainability of partnerships.

HETEROSCEDASTICITY TEST

A heteroscedasticity test is conducted to test whether there is an inequality of variance of residuals from one observation to another in a regression. A good regression model is the absence of heteroscedasticity. In Figure 2, one data point appears as a potential outlier, located slightly away from the main data cluster. However, upon verification, this observation corresponds to a farm with an exceptionally high production capacity but with valid data. Therefore, it was retained in the analysis. No major distributional issues were detected that would affect the regression model.

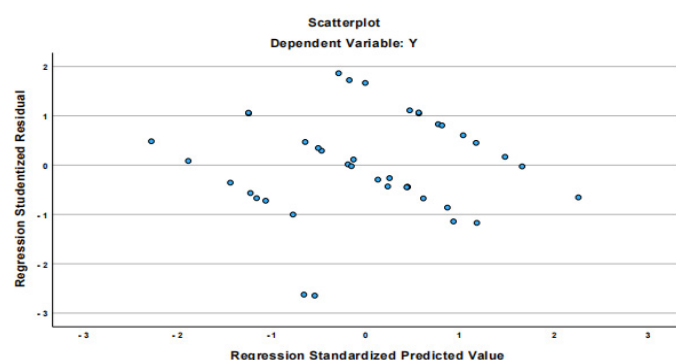


Figure 2: Scatterplot diagram.

Two data points (observations 18 and 39) appeared as potential outliers in the scatterplot (Figure 2). However, Cook's Distance values for these points were 0.2307 and 0.1905, respectively well below the conventional threshold of 1.0. These findings indicate that the observations do not exert a disproportionate influence on the regression estimates. Therefore, both data points were retained in the final model.

Cook's distance is commonly used to identify influential observations in regression analysis. Values less than 0.5 are generally considered to have little influence, values between 0.5 and 1.0 suggest moderate influence and warrant further investigation, while values greater than 1.0 indicate highly influential data points that may need to be examined or removed if justified (Kutner *et al.*, 2005; Field, 2013; Stevens, 2009).

The scatterplot graph of standardised residuals shows several extreme observations (e.g., cases 18 and 39) that may affect linear regression estimates. To address this issue, quantile regression is used as a robustness test, as this method is less sensitive to outliers and allows for the evaluation of covariate effects at various points in the conditional distribution of the dependent variable

(Kuenker and Bassett, 1978; Kuenker, 2005).

As shown in Table 5, the results indicate that Capital Availability (X1) consistently has a positive and significant effect on Partnership Maintenance at the 0.25, 0.50, and 0.75 quantiles, highlighting its robust role. Conversely, Price Guarantee (X2) is only significantly negative at the lower quantile (0.25), while becoming insignificant at the median and upper quantile. Bonus (X4) has a significant positive effect at the lower quantile and median, but disappears at the upper quantile. Market Assurance (X3) does not show a significant effect across all quantiles. Through the findings, it can be concluded that the outliers depicted in the scatterplot do not affect the results of the multiple linear regression. Multiple linear regression and quantile regression consistently identify the most important factor in maintaining partnerships as capital availability, with other factors varying across the distribution of results.

Table 5: Results of Quantile Regression Estimates at Various Quantiles (0.25, 0.50, 0.75).

Variable	q=0.25 (low)	q=0.50 (medium)	q=0.75 (high)
Capital availability (X1)	0.769***	0.550***	0.474***
Price guarantee (X2)	-0.341**	-0.238(ns)	0.119(ns)
Insurance in the market (X3)	0.208(ns)	0.122(ns)	0.087(ns)
Bonus (X4)	0.275**	0.395**	0.090 (ns)
Intercept	0.146(ns)	0.446(ns)	1.191**
Pseudo R ²	0.396	0.287	0.296
MAE	0.377	0.332	0.443

***p < 0.01; **p < 0.05; *p < 0.10; ns = non significant. Dependent variable: Maintaining Partnerships.

COEFFICIENT OF DETERMINATION

The coefficient of determination (R²) is used to see how much the percentage of independent variables, namely capital availability, price guarantee, market guarantee, and bonuses, together explain the variance of the dependent variable, namely farmers maintaining partnerships. The results of the coefficient of determination R² can be seen in Table 6.

Table 6: Coefficient of determination (R²).

Model	R	R Square	Adjusted R square	Std. error of the estimate
1	0.702a	0.494	0.436	1.8996507

Based on Table 6, the Adjusted R Square number value shows the coefficient of determination of 0.436. The percentage contribution of the influence of capital availability variables (X1), price guarantee (X2), market guarantee (X3) and bonus (X4) on farmers maintaining partnerships (Y) is 43.6% and factors outside the changes

in variables X1, X2, X3 and the X4 influence the remaining 56.4% (100%-43.6%).

F TEST

The F-test determines how much capital availability, price guarantee, market guarantee, and bonus variables influence farmers' decision to maintain partnerships. The F-test results can be seen if the F value > F table value, then H0 is rejected and H1 is accepted; otherwise, if the t value < t table value, H0 is accepted and H1 is rejected.

- H0: It is suspected that there is no effect of capital availability (X1), price guarantee (X2), market guarantee (X3), and bonus (X4) on the factors driving farmers to maintain partnerships with PT.KSM in Akabiluru District, Lima Pulu Kota Regency.
- H1: It is suspected that there is an effect of capital availability (X1), price guarantee (X2), market guarantee (X3), and bonus (X4) on the factors driving farmers to maintain partnerships with PT.KSM in Akabiluru District, Lima Pulu Kota Regency.

Table 7: F test.

Model	Sum of squares	Df	Mean square	F	Sig.
Regression	122.657	4	30.664	8.526	0.000 ^b
Residual	125.886	35	3.597		
Total	284.542	39			

Based on [Table 7](#), it is known that the calculated F value is 8.526. The F table value is obtained based on the degrees of freedom, namely the numerator df ($N1 = k - 1 = 5 - 1 = 4$) and the denominator df ($N2 = n - k = 40 - 5 = 35$). At a significance level of 5%, the F table value is 2.64. Since the calculated F value (8.526) is greater than the F table value (2.64). It can be concluded that all variables of the farmer's driving factors separately affect the farmer's desire to continue using the partnership system. So it can be stated that the alternative hypothesis is accepted.

T TEST

Based on [Table 8](#), it can be seen that the constant (α) of 0.629 means that all independent variables, namely capital availability, price guarantee, market guarantee, and bonuses, have a positive influence on the variable of farmers maintaining a partnership of 0.629. The regression coefficient of the capital availability variable (X1) is 0.323, price guarantee (X2) is -0.112, market guarantee (X3) is 0.188, and bonus (X4) is 0.198. Based on this, the regression equation model obtained is as follows:

$$Y = 0.629 + 0.323X_1 - 0.112X_2 + 0.188X_3 + 0.198X_4$$

The analysis results were processed using SPSS version

23.0. Then the following results were obtained:

- The constant has a positive value of 0.629, meaning that if the availability of capital (X1), price guarantee (X2), market guarantee (X3), and bonus (X4) are 0 percent or have not changed, then the farmers maintain the partnership will still be formed at 0.629.
- The regression value of 0.323 (positive) means that if the availability of capital (X1) increases by 1% while the other variables are constant, the farmers' partnership will increase by 0.323.
- The regression value of -0.112 (negative) means that if the price guarantee (X2) increases by 1% while the other variables are constant, the farmers' decision to maintain the partnership will decrease by 0.112.
- The regression value of 0.188 (positive) means that if the market guarantee (X3) increases by 1% while the other variables are constant, the farmers' partnership will increase by 0.188.
- The regression value of 0.198 (positive) means that if the bonus (X4) increases by 1% while the other variables are constant, the farmers' intention to maintain the partnership is expected to increase by 0.198.

The results illustrate that these factors provide great motivation for farmers in Akabiluru to implement CF. This makes farmers dependent on the integrator company but provides an imbalance in the effort to create a mutually beneficial relationship. Farmers are in a passive position, as the integrator company has control over prices, inputs, and bonus schemes that will not harm the company. Research by [Little and Watts \(1994\)](#) in Sub-Saharan Africa also explains that CF creates a new form of smallholder subordination because integrators control information, inputs, and markets.

If broiler farmers in Akabiluru have collective bargaining power through cooperatives, the dynamics of partnerships in the Contract Farming (CF) system will change significantly; dependence on integrator companies for access to capital and market guarantees will be reduced, and farmers' motivation will focus more on control over the production process, income security, and contract transparency. Cooperatives can be an essential tool to balance power asymmetries in partnerships, enabling more equal negotiations and improved bargaining power for farmers ([Bijman and Wollni, 2008](#); [Warning and Key, 2002](#)). However, the effectiveness of cooperatives also depends on good governance and active participation of members ([Barham and Chitemi, 2009](#)). Therefore, the existence of cooperatives not only strengthens the bargaining power of farmers but also enhances their bargaining power.

Table 8: T test.

Model	B	Unstandardized error	Standardized beta	t	Sig.	Tolerance	VIF
1 (Constant)	0.629	2.026	-	0.311	0.758	-	-
Availability	0.323	0.080	0.556	4.702	0.000	0.758	1.320
Capital	-	-	-	-	-	-	-
Price guarantee	-0.112	0.081	-0.184	-1.379	0.177	0.809	1.237
Market guarantee	0.188	0.087	0.263	2.156	0.038	0.976	1.024
Bonus	0.198	0.093	0.285	2.136	0.040	0.813	1.231

DISCUSSION

CAPITAL AVAILABILITY

The regression analysis results show that the capital availability variable (X1) has a coefficient of 0.323 with a significance value of 0.000 (<0.05), thus showing a positive and significant influence on the sustainability of the broiler farmer alliance. Starting and running a business depends primarily on capital land and money to finance infrastructure, production facilities, and more.

Farmers in the Akabiluru sub-district recognise that they lack capital, making it difficult to operate independently. Operating independently requires farmers to spend more on maintenance and investment. Therefore, they prefer to tie up with big players who assist in providing day-old chickens (DOC), feed, medicine, and technical advice. Farmers only need to provide cages, labour, and supporting equipment.

This trend is consistent with [Lestari et al. \(2024\)](#), which showed that small broiler farmers engaged in CF with credit reported significantly higher profits, indicating that access to credit greatly increases profitability among those engaged in CF. In comparison, [Chima and Timothy \(2022\)](#) found that the performance of poultry firms is strongly influenced by capital structure factors, including credit receivables and short-term debt capital. The need for capital forces independent farmers to settle using borrowed capital. This decision will significantly affect the amount of profit they will get. In addition, [Sudirjo et al. \(2023\)](#) highlighted how the availability of resources, including financial capital, strengthens the sustainability of chicken farming. These studies highlight the importance of capital availability to maintain the efficiency and sustainability of broiler farming alliances. This has led to a tendency for farmers to pursue contract farming with the lead company. The government provides access to capital loans that do not burden farmers and provide capital assistance.

PRICE GUARANTEE

The regression analysis results revealed that the price guarantee variable (X2) has a coefficient of -0.112 with a significance value of 0.117 (>0.05), thus indicating a

negative but insignificant influence on the sustainability of broiler farmer partnerships. This indicates that farmers' choice to maintain the partnership relationship is not highly dependent on price guarantee.

We retain this predictor because of its theoretical relevance and its alignment with qualitative insights. Interviews reveal that farmers often perceive fixed-price mechanisms unfavorably, especially when contractual prices are locked below market rates this inflexibility can hinder their ability to capitalize on price surges. Empirical literature supports this: Farmers may accept a lower guaranteed price, effectively paying a "risk premium," particularly when the market price later exceeds contract terms ([Adam et al., 2018](#); [Bogetoft and Hendrik, 2004](#)). Furthermore, studies show that smallholders often prefer variable pricing schemes over fixed-price contracts, as the former retain flexibility and potential upside ([Abebe et al., 2019](#)). We also tested alternative model specifications, including interaction terms between price guarantees and market volatility, as well as farmer experience. Although model fit did not improve, the negative (though insignificant) coefficient for Price Guarantees remained consistent. Therefore, retaining this variable enriches the model's theoretical completeness and reflects the nuanced tension between contractual design and farmer satisfaction.

Although this conclusion contradicts previous research, informal testimony from farmers during field visits revealed that integrators' set prices were frequently lower than market rates, particularly during peak demand periods. As a result, some farmers did not view price guarantees as an advantage, which could explain the negative coefficient

Based on interviews, farmers in the Akabiluru sub-district said that the leading company sets the selling price of broiler chickens under the partnership scheme without negotiating with farmers. Although the agreed price is not much different from or even the same as the contract, the financial condition of farmers is susceptible to small changes in prices. Farmers are extra incentivised when market prices rise; conversely, when prices fall, harvesting is sometimes delayed. These delays have the adverse effect of reducing farmers' income and causing losses due to higher feed costs and possible livestock deaths. This situation

makes it important to re-examine the contract. CF is the farmer's hope to make a profit by minimising losses caused by changes in market prices.

This situation is consistent with the results of MacDonald (2014), who observed that while contracts can reduce some market risks, they can also create other financial uncertainties for broiler producers. In addition, studies in Turkey (Karaman *et al.*, 2023) and Bangladesh (Begum, 2005) revealed that while contract farming can provide stability, farmer participation in price determination can lead to dissatisfaction and financial hardship. Therefore, incorporating a system that allows farmer involvement in price negotiation Hair *et al.* (2020) found that such involvement can improve the sustainability of broiler farming alliances. Protecting farmers is the duty of the government by re-examining how mutually beneficial contracts can be created, not just for one-sided benefits.

To address this, future partnership models should incorporate mechanisms for farmer participation in price negotiations, as emphasized by Hair *et al.* (2020). More inclusive and transparent pricing practices can help build trust and encourage long-term collaboration. It is also the government's responsibility to safeguard farmers' welfare by overseeing fair contract enforcement and promoting mutual benefit in public-private livestock partnerships.

INSURANCE IN THE MARKET

The coefficient is 0.188, and the significance value is 0.038 (<0.05). The regression analysis results show that the market guarantee variable (X3) has a positive and significant influence on the choice of farmers to remain in the alliance. The broiler business depends on market assurance that helps farmers promote their products. Market assurance refers to the farmer's ability to gain market share. The ability of farmers to gain market share in the Akabiluru sub-district is very low. So farmers feel the benefits obtained from CF, one of which is in the marketing process. Farmers in Akabiluru Sub-district said that the market guarantee provided by the core company is beneficial for their operational activities because they find it challenging to market their products without this guarantee.

The core company directly supervises broilers' harvesting, scheduling, and processing under the CF program. Since the integrator company arranges the sales, the farmers do not have to look for buyers. As stipulated in the partnership agreement, they have to wait for authorization to sell and the integrator pays the farmer for the harvested chickens, based on agreed pricing and performance parameters. Usually, this agreement binds farmers to sell their harvest only to the integrator company. However, this makes farmers feel secure without worrying about unsold livestock.

This aligns with the results of Indarsih *et al.* (2010), who found that farmers who started contract broiler production in Lombok, Indonesia, were mostly motivated by marketing security. In line with this, Junaidi *et al.* (2023) highlighted how strongly farmers' choice of partnership contracts depended on market security, thus increasing their willingness to engage in such agreements. In addition, Wantasen *et al.* (2021) show that collaboration that provides market security helps broiler farming businesses in Indonesia become financially viable and resilient. However, this takes away the farmer's independence to manage his business with innovative marketing. Government intervention is needed to help farmers find market share, one of which is by creating software or applications that can help farmers access the market.

BONUS

The regression analysis shows that bonus incentives (X4) have a significance of 0.04, and the regression coefficient is 0.198. It means that the bonus, including FCR (Feed Conversion Ratio) bonuses, performance-based incentives, and market-based rewards, has a positive and statistically significant effect on farmers' decisions to sustain broiler partnerships. These results indicate that bonus mechanisms play an important role in reinforcing farmers' commitment to contract farming schemes.

Broiler farmers in Akabiluru sub-district stated that if the broiler chickens produced meet the requirements to get a bonus, namely the optimal FCR, performance index, or market criteria, then the farmer will get a bonus from the core company according to what has been stipulated in the agreement. On the other hand, if these criteria are not met, the farmer still gets paid according to the agreed contract price. These set incentives guarantee mutual benefits by motivating farmers to maintain performance and yields, thus ensuring their maintenance.

Komaladara *et al.* (2018) found results: performance-based incentives, especially those related to biosecurity and production yields, clearly inspired smallholder broiler farmers in Indonesia. In addition, studies by Majid and Hassan (2014) and Zaghari *et al.* (2011) show how farm sustainability and efficiency under contract farming systems depend on financial incentives linked to FCR and growth performance.

However, qualitative interviews revealed a more complex dynamic. While bonuses are perceived as attractive short-term rewards, they also contribute to increased psychological and structural dependency on the core company. Farmers reported that even when they experienced dissatisfaction with pricing or lack of autonomy, they continued the partnership due to the lure of potential bonuses tied to performance metrics.

This finding is consistent with [Ton *et al.* \(2017\)](#), who argue that performance-based bonuses in contract farming function not only as economic incentives but also as subtle mechanisms of control, locking farmers into dependent relationships. [Umar *et al.*, \(2025\)](#) further highlight that such incentive structures often reinforce asymmetrical power relations, particularly when farmers lack access to alternative markets or production systems.

Moreover, [Meemken and Bellemare \(2019\)](#) suggests that incentives can improve compliance and productivity, but when administered in opaque or inflexible ways, they reduce farmers' bargaining power and autonomy. [Kersting and Wollni \(2019\)](#) also found in their study of Kenyan contract farmers that performance-based incentives often obscure the lack of participation and transparency in decision-making, thereby fostering a form of "bounded loyalty."

Additional evidence from [Ton *et al.* \(2017\)](#) also highlights that even in well-structured contract farming arrangements, performance-based bonuses can reinforce farmers' perception of dependence if they are not accompanied by transparent evaluation criteria and participatory decision-making. The imbalance worsens when bonuses are paid conditionally or with delays, creating a psychological anchoring effect that discourages farmers from seeking alternative arrangements.

In the Akabiluru context, farmers' willingness to remain in the partnership scheme even with minimal negotiation rights is partially driven by these promised bonuses. This suggests that while bonuses are effective in maintaining short-term loyalty, they may inhibit the development of more independent, empowered farming systems. Future partnership models should ensure that incentive structures promote not only performance, but also fairness, transparency, and farmer voice.

Farmers' capacity to establish profitable trends in broiler farming demonstrates their business management skills. This skill enables them to reproduce independently, as the profits from doing business independently will be significantly higher than those of CF. Giving farmers bonuses is a wonderful thing that major firms do, but it also makes farmers feel obligated to use the CF system all the time. However, independent poultry farming is becoming increasingly rare in the study area. Smallholders who operate outside of contract farming agreements have major challenges, including a lack of affordable, high-quality inputs.

Day-old chicks are frequently unavailable or more expensive in informal markets, and feed, immunizations, and medications sold at chicken businesses are more

expensive. Many independent producers have already abandoned the sector due to a lack of secure market access and increased input risk. Thus, contract farming is no longer just the favored option; it has become the de facto structure for smallholder farmers to sustain chicken production.

These findings underscore individual farmers' structural reliance on integrators, particularly due to limited access to inputs and market networks. In situations when farmers work through cooperatives or other collective bargaining institutions, the incentive structures may change significantly. Farmers who organize together can achieve more price transparency, bulk procurement advantages, and increased bargaining power, realigning incentive motivations toward more strategic, partnership-based models ([Alemu *et al.*, 2021](#); [Meemken and Bellemare, 2019](#)).

Furthermore, [Valentinov *et al.* \(2024\)](#) present a stakeholder theory paradigm in which contract farming is framed as a morally rooted, trust-based partnership rather than a strictly transactional one. This viewpoint emphasizes the role of informal governance and relationship-based coordination in eliminating power imbalances common in transitional economies in contract farming arrangements.

While bonuses remain an important driver of CF involvement, their function must be carefully considered. When poorly regulated or opaque, they risk exacerbating uneven power dynamics and increasing farmer reliance on integrators. However, CF is not necessarily exploitative. In line with [Simmons *et al.* \(2005\)](#), even though bonuses can drive farmers, they can also reinforce dependency when contracts are opaque and one-sided. CF is not inherently exploitative; its equity is contingent on contract clarity and farmer participation. When contract conditions are co-designed, bonuses are standardized and managed, and farmer collectives are involved, CF can progress toward true empowerment. Making CF more egalitarian and robust requires collective action, third-party oversight, and capacity building.

While performance-based bonuses are often cited as effective incentives in contract farming, their opacity can undermine trust and motivation. Indeed, empirical evidence from Vietnam demonstrates that bonus schemes when tied to clearly communicated quality metrics increase compliance and production investments among farmers ([Saenger *et al.*, 2013](#)). However, when these schemes are opaque or perceived as favoring integrator profit over farmer welfare, they may breed dissatisfaction and limit long-term engagement. To address this, bonus schemes should be aligned with farmer-defined or jointly negotiated metrics such as animal welfare compliance,

consistent delivery standards, or community-agreed quality thresholds rather than solely focusing on integrator profit targets. This alignment promotes fairness, accountability, and transparency, while strengthening partnership trust and sustainability

To promote empowerment over reliance, CF systems should implement more transparent bonus mechanisms, encourage participatory contract negotiation, and incorporate farmer cooperatives within the value chain. Policy interventions can also prioritize farmer education and legal literacy to foster critical engagement with contract conditions. With these adjustments, CF can help smallholders achieve economic inclusion and resilience.

To prevent structural dependency and preserve contract farming's developmental potential, policymakers should embed clear regulatory safeguards, including: (i) standardized contract clauses with transparent pricing formulas and bonus mechanisms, (ii) minimum price guarantees to shield farmers from volatility, (iii) independent auditing of cost structures and performance assessments, (iv) collective bargaining mechanisms through farmer associations, and (v) accessible dispute resolution channels. These safeguards, which have already been implemented in Thailand's Contract Farming Act and tested in other Southeast Asian contexts, have the potential to rebalance bargaining power, mitigate exploitative risks, and improve the long-term viability of broiler contract farming in Indonesia (Narayan, 2025; Marks *et al.*, 2024).

While incentives like bonuses might encourage participation, they can also perpetuate unequal dependency if integrators set prices, quality standards, and contract terms. These dynamics emphasize the necessity for regulatory measures to supplement contractual design. Effective regulation can avoid integrator dominance by requiring openness in contract clauses, dispute resolution systems, and pricing practices. Contract farming has been advocated in Indonesia as a means of achieving smallholder inclusion, but insufficient regulatory control frequently leads to power imbalances in which farmers bear production risks without equal negotiating power.

One weakness of this study is the absence of potentially crucial control variables such as farm size, household income, and alternative livelihood alternatives. While the relative homogeneity of respondents mostly smallholder farmers with limited land and capital helps to attenuate the omission, it may still contribute unobserved variation, affecting both farmer motivation and partnership sustainability. Indeed, prior studies in the Indonesian broiler sector identified farm size as a critical factor of CF involvement (Rondhi *et al.*, 2020; Meemken and Bellemare, 2020). Future research should incorporate these structural

elements to better causal interpretation and provide a more nuanced picture of farmer participation in contract farming programs.

CONCLUSION

This study provides empirical evidence on the determinants of farmers' decisions to continue engaging in broiler farming under the contract farming (CF) system in Akabiluru Sub-District, West Sumatra, Indonesia. The findings reveal that factors such as access to capital, price guarantees, market guarantees, and production bonuses significantly influence farmers' participation, explaining 43.6% of the variation in decision-making. Among these, capital access and market guarantees emerged as the most influential drivers, while fixed price schemes had a weaker and sometimes negative effect, reflecting farmers' concerns about reduced flexibility in responding to market dynamics.

The analysis further indicates that farm-scale variation plays a critical role in shaping farmers' motivations. Smallholders with limited resources are more dependent on CF support mechanisms, whereas larger-scale farmers exhibit greater resilience and autonomy. Complementary robustness checks using quantile regression confirmed the consistency of these findings across different distributional segments of decision outcomes, strengthening the reliability of the results.

Overall, this research highlights that improving contract farming arrangements requires a balance between risk-sharing mechanisms and farmers' need for market responsiveness. Policy interventions should prioritize enhancing financial accessibility, ensuring transparent and flexible price guarantees, and strengthening market linkages. These measures will not only sustain farmer participation but also contribute to the long-term sustainability of the broiler farming sector in rural Indonesia.

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NOVELTY STATEMENT

This study offers a fresh perspective on broiler contract farming by examining the motivational dynamics that sustain farmer participation rather than focusing solely on

profitability or efficiency. It uniquely reveals how bounded loyalty and asymmetric bargaining power influence farmers' decisions to remain in partnerships despite dissatisfaction. Based on empirical evidence from the Akabilluru sub-district, Lima Pulu Kota district, Indonesia, the findings contribute new contextual insights for designing fairer and more sustainable partnership policies

AUTHOR'S CONTRIBUTION

Dwi Yuzaria; Head of research project, Conceptualization, methodology, data curation, investigation, writing original draft, writing review, and editing.

Tevina Edwin: investigation and writing the original draft.

Wilna Fadillah; data curation, investigation

GENERATIVE AI AND AI-ASSISTED TECHNOLOGY STATEMENT

During the compilation of this paper, the authors utilized ChatGPT (OpenAI, DeepL) to improve English grammar, sentence clarity, and overall readability. No generative AI was utilized to analyze data, interpret it, or draw conclusions. The writers reviewed, confirmed, and are solely responsible for all of the material in this publication.

CONFLICT OF INTEREST

The authors have declared no conflict of interest.

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