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RESOURCES ECONOMICS,**

**ASSESSING THE ROLE OF THE PARISH DEVELOPMENT MODEL IN ENHANCING
THE PROFITABILITY OF SMALL-SCALE BROILER POULTRY FARMING IN
WAKISO DISTRICT.**

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Resource Economics in partial fulfilment of requirements of award of degree of Bachelor
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DECLARATION

I, **AMALI NOELINE**, declare that all the information presented in this research report is my original work, and has not been submitted to any institution of higher learning for an academic award. All material that is not my own has been duly acknowledged through references. I believe that the information herein is true to the best of my knowledge.

Signature *Amali* Date *08/10/2026*

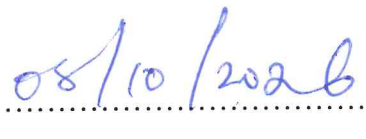
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LIST OF ABBREVIATIONS

BCR	Benefit-Cost Ratio
CI	Confidence Interval
GMA	Gross Margin Analysis
HC1	Heteroskedasticity-Consistent robust standard errors (type 1)
LC1	Local Council 1
LR	Likelihood Ratio
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
NAADS	National Agricultural Advisory Services
OLS	Ordinary Least Squares
OWC	Operation Wealth Creation
PDM	Parish Development Model
ROVC	Return on Variable Cost
SACCO	Savings and Credit Cooperative Organisation
SD	Standard Deviation
SE	Standard Error
TR	Total Revenue
TVC	Total Variable Costs
UBOS	Uganda Bureau of Statistics
UGX	Ugandan Shilling

CHAPTER ONE: INTRODUCTION

1.1. Background

Over the past several decades, agricultural commercialization has emerged as a central strategy for promoting rural economic transformation. It is widely regarded as a means of eliminating poverty and improving household welfare in developing countries (Mkandawire et al., 2026; Ogutu & Qaim, 2019). Rather than primarily producing for subsistence consumption, commercialization encourages households to engage in enterprises capable of generating sustainable income (Geffersa & Tabe-Ojong, 2024). Ogutu & Qaim (2019) demonstrated that agricultural commercialization increases household income, facilitates asset accumulation and significantly reduces multidimensional poverty. This evidence suggests that access to productive resources, financial services, and effective market linkages is critical to the contribution of smallholder agriculture to rural development (Geffersa & Tabe-Ojong, 2024).

Consequently, governments and development agencies have increasingly implemented policies and programmes to support the transition of rural households from subsistence farming to commercially viable agricultural enterprises (Asiimwe, 2025; Balana & Oyeyemi, 2022). Within this commercialization agenda, livestock production has gained considerable attention as a pathway for income generation and economic empowerment among smallholder farmers (Kayendeke et al., 2023). Poultry farming, in particular, has become one of the fastest-growing agricultural subsectors globally. This growth is driven by increasing demand for affordable animal protein, rapid urbanization, and evolving dietary preferences (Adeyonu & Odozi, 2022; Omondi, 2022). Abu Hatab et al. (2019) identified poultry production as an important component of urban and peri-urban food systems in low- and middle-income countries. This is because resource constraints make other forms of livestock keeping less feasible.

Broiler production, in particular, has expanded across Sub-Saharan Africa as a means of generating income and contributing to household food security. Compared to many other livestock enterprises, broiler farming requires relatively small land holdings, has short production cycles, and offers quicker returns on investment (Mdletshe & Obi, 2023; Phiri et al., 2023). Phiri et al. (2023) confirmed that small-scale broiler production can be a viable and profitable enterprise, provided that key production and management constraints are effectively addressed. Despite its

potential, the contribution of broiler farming to rural livelihoods depends on the profitability of the enterprise. In this context, profitability determines whether farming activities can generate meaningful income, sustain business growth, and contribute to poverty reduction (Adeyonu & Odozi, 2022; Phiri et al., 2023).

Existing literature indicates that the profitability of small-scale poultry enterprises is shaped by a range of structural and operational factors. These include feed costs, access to quality inputs, disease management, production efficiency, market access, technical knowledge, and access to finance (Mdletshe & Obi, 2023; Phiri et al., 2023). Feed expenses alone often account for the largest proportion of production costs in broiler enterprises, significantly affecting profit margins and enterprise sustainability (Adeyonu & Odozi, 2022; Omondi, 2022). Therefore, efforts to improve profitability among smallholder broiler producers must address production constraints if enterprise performance is to be meaningfully improved. Governments in developing countries have increasingly introduced interventions to address challenges facing agricultural enterprises. These interventions aim to improve productivity, strengthen market participation, and expand access to financial resources (Biyinizika et al., 2023).

Agricultural credit programmes, revolving funds, extension services, and enterprise development initiatives have been widely implemented to strengthen the capacity of smallholder farmers to engage competitively in commercial agriculture (Gefferesa & Tabe-Ojong, 2024; Ogutu & Qaim, 2019). Khan et al., (2024), found that agricultural finance plays a critical role in enabling the modernization and commercialization of farming practices. The study also identified barriers to credit access for smallholder farmers, including collateral requirements, high transaction costs, and limited access to reliable information. The justification for these interventions is that limited access to capital constrains farmers' ability to invest in productive inputs and improved technologies, as well as expand production, and respond effectively to market opportunities (Shilomboleni et al., 2024). Therefore, facilitating access to financial and institutional support is widely regarded as an important mechanism for improving enterprise performance and profitability.

The Government of Uganda has implemented a series of initiatives aimed at promoting wealth creation and increasing household participation in the money economy. These include the National Agricultural Advisory Services (NAADS), Operation Wealth Creation (OWC), and the Emyooga

presidential initiative. These programmes shared a common objective of enhancing household incomes through enterprise development and increased participation in commercial economic activities. However, evidence regarding the effectiveness of these initiatives remains mixed (Kayizzi-Mugerwa, 2024). Concerns regarding weak implementation, inadequate targeting, and governance challenges have recurrently undermined their impact. The Parish Development Model, launched in 2022, represents the country's most recent and comprehensive framework for promoting socio-economic transformation at the grassroots level.

The model is designed to move households from subsistence production into the money economy through interventions focused on financial inclusion, enterprise development, agricultural commercialization and improved service delivery (Adem & Turyamureeba, 2026; Asiimwe, 2025). Central to the implementation of the PDM is the Parish Revolving Fund, which provides financial resources intended to support income-generating enterprises among eligible households. By facilitating access to capital and promoting participation in productive economic activities, the PDM has the potential to improve enterprise performance and raise household incomes (Asiimwe, 2025; Kayizzi-Mugerwa, 2024). Poultry farming, including broiler production, is among the enterprises that have benefited from this support.

Wakiso District presents an important and suitable context for examining the relationship between the Parish Development Model and broiler enterprise profitability. Owing to its proximity to Kampala and its function as a key supplier of poultry products to the capital city, the district has experienced considerable growth in commercial poultry production. Wakiso district ranks as Uganda's leading producer of poultry, contributing approximately 7.4 per cent of the national chicken population (MAAIF & UBOS, 2010). Nevertheless, farmers in the district continue to face challenges related to input costs, access to finance, disease management and unstable output prices, all of which affect enterprise profitability (Kayendeke et al., 2023). Given that the Parish Development Model seeks to address these constraints, it is important to assess the extent to which the programme improves profitability among beneficiary broiler enterprises.

1.2. Problem Statement

Small-scale broiler farming in Wakiso District holds great potential to improve household incomes. This is because of the district's proximity to the massive consumer markets of the Greater

Kampala Metropolitan Area. However, these enterprises remain locked in low-profitability traps caused by severe operational constraints. High commercial feed costs, high bird mortality rates driven by inadequate veterinary extension services, and price exploitation by middle-tier brokers collectively suppress farm-gate margins (Mdletshe & Obi, 2023; Phiri et al., 2023). The Government of Uganda introduced PDM to address these constraints by injecting low-interest revolving credit and providing technical support directly at the parish level. This capital was intended to enable smallholder farmers to purchase high-quality feeds in bulk, improve production housing, and access more organised market channels (Asiimwe, 2025; Kayizzi-Mugerwa, 2024).

However, evidence from similar smallholder broiler programmes in Sub-Saharan Africa suggests that access to financial capital alone does not guarantee improved profitability. Without adequate extension services and market infrastructure, increased funding may be absorbed by rising input costs without generating sustained productivity gains (Mdletshe & Obi, 2023). Despite the scale and ambition of the PDM, existing studies on the programme have largely focused on its governance structures, implementation processes, and general livelihood outcomes (Adem & Turyamureeba, 2026; Asiimwe, 2025; Kayizzi-Mugerwa, 2024). Furthermore, the few studies that examine agricultural interventions under the programme have mostly focused on crop production, piggery, and dairy farming. Broiler poultry farming has received limited attention as a distinct enterprise.

As a result, there is limited empirical evidence on whether the PDM expands profit margins in small-scale broiler farming. It remains unclear whether the programme's financial and technical interventions improve profitability, or the gains are consumed by rising feed costs and operational inefficiencies. Beyond these gaps, implementation challenges have been reported at the local level. These include delays in credit disbursement (Asiimwe, 2025), lack of structured extension support (Adem & Turyamureeba, 2026), and weak information sharing systems among parish stakeholders (Biyinizika et al., 2023). This study addresses these gaps by assessing the role of the Parish Development Model in enhancing the profitability of small-scale broiler farming in Wakiso district.

1.3. Objectives of the Study

General Objective

To assess the role of the Parish Development Model in enhancing the profitability of small-scale broiler poultry farming in Wakiso District.

Specific Objectives

- To examine the socio-economic characteristics of PDM beneficiary and non-beneficiary small-scale broiler poultry farmers.
- To determine the profitability of broiler farmers in Wakiso district.
- To examine the effect of PDM on the profitability of small-scale broiler poultry farmers.

1.4. Research Hypothesis

- i. There is a significant difference in profits of PDM beneficiaries and non-beneficiary broiler farmers in Wakiso district.
- ii. The parish development model has a significant effect on the profitability of small-scale broiler poultry farming in Wakiso District.

1.5. Significance of the Study

To Small-scale Poultry Farmers: The findings will provide practical insights into how they can best use PDM funds and extension support to optimize their feeding regimes, lower production costs, and maximize farm-gate profits.

To Policymakers and PDM Secretariats: This research offers empirical data on how the model is performing in peri-urban environments, highlighting specific structural bottlenecks in credit delivery and extension support that need adjustment.

To Academic Researchers and Agribusiness Students: This study contributes to the thin body of literature surrounding decentralized parish-level financing models and their direct financial impact on intensive peri-urban livestock enterprises.

CHAPTER TWO: LITERATURE REVIEW

2.1. Socio-economic characteristics of smallholder broiler farmers

2.1.1. Global and regional evidence

Small-scale broiler farming tends to attract a diverse range of households, but certain socio-economic profiles are more prevalent. Age, level of education, household size, land holding, access to credit and farming experience are among the characteristics most commonly assessed in studies of smallholder poultry operations (Adeyonu & Odozi, 2022; Phiri et al., 2023). In Zimbabwe's Mutare District, Phiri et al. (2023) found that most smallholder broiler producers were middle-aged adults with limited formal schooling and operated on very small land holdings. The study confirmed that access to financial capital was highly constrained. Most farmers depended on informal savings groups rather than formal lending institutions. These characteristics influenced both production capacity and farmers' ability to adopt improved breeds. They also affected the adoption of feeding technologies that could raise output efficiency.

Similarly, Adeyonu & Odozi (2022) conducted a large sample study of broiler farmers across two geo-political zones in Nigeria. They found that socio-economic characteristics are statistically significant determinants of profitability. This confirms that demographic and structural differences directly affect production performance. Mdletshe & Obi (2023), in their study of government-funded broiler projects in KwaZulu-Natal, observed that many beneficiaries were women and youth. These participants had entered farming through public funding rather than private investment. While this targeting supported national equity goals, it also meant that many participants lacked prior farming experience. This negatively affected technical efficiency and early profitability. This finding highlights a strong link between socio-economic background and production outcomes. It also justifies the PDM's approach of combining financial support with training and extension services.

Education is one of the most consistent socio-economic predictors of broiler farming success in the literature. Farmers with secondary or higher education tend to keep better production records and apply recommended biosecurity protocols more consistently. In addition, they engage more effectively with organised market networks (Phiri et al., 2023). Lower literacy levels, by contrast, are associated with suboptimal feed conversion management. They are also linked to higher bird

mortality rates from preventable diseases. In many cases, they increase susceptibility to price exploitation by middlemen.

2.1.2. The Ugandan context

In Uganda, smallholder broiler farming is predominantly practiced in peri-urban zones adjacent to Kampala. These areas have high demand for affordable animal protein and market access advantages offset the higher input costs of intensive production. Studies have shown that the typical broiler farmer in these areas is a smallholder with limited land but significant market proximity. Many of these farmers are women and young adults who often rely on broiler income as a supplement to other livelihood activities (Nanyonjo & Nchanji, 2023). Research on smallholder market access in Uganda further establishes that the majority of farmers sell on the spot market through middlemen at the farm gate (Hill et al., 2021). They therefore receive prices that are significantly lower than those obtainable through institutional buyers such as hotels, supermarkets, or processing facilities. Biyinzika et al. (2023) noted that local smallholders in parishes such as Wampeewo often lacked access to organized information channels, formal credit, and structured market linkages. These are key socio-economic barriers that the PDM was designed to address. Comparing beneficiaries and non-beneficiaries of the PDM across these dimensions is therefore central to understanding whether the model is reaching and transforming the intended demographic.

2.2. Profitability of small-scale broiler farming

2.2.1. Cost structure and revenue drivers

Profitability in broiler farming is determined by the balance between revenues and production costs. Research across low and middle-income countries shows that the cost structure of smallholder broiler enterprises is heavily dominated by a few key items. These include commercial feed, day-old chicks, veterinary drugs and energy for brooding. Of these, commercial feed alone consistently represents the single largest cost category, often consuming more than half of total variable costs (Adeyonu & Odozi, 2022; Omondi, 2022). Revenue generation in smallholder broiler production is equally complex. Farm-gate prices fluctuate based on seasonal demand, proximity to markets and the degree to which farmers can collectively negotiate with buyers. Research from Sub-Saharan Africa consistently shows that farmers who sell individually to

middlemen receive significantly lower prices than those who engage with institutional buyers such as hotels, supermarkets or slaughterhouses. The capacity to access premium markets is therefore a key determinant of net profit margins (Geffersa & Tabe-Ojong, 2024; Omondi, 2022).

2.2.2. Profitability studies: Africa and Uganda

Mdletshe & Obi, (2023) found that public capital helped farmers establish essential production infrastructure such as poultry housing, feeding equipment, and watering systems. However, net profit margins remained comparatively low. The key finding was that financial capital alone cannot guarantee profitability. It must be complemented by strong technical extension services and improved market infrastructure. Without facilities such as local processing plants, most smallholder operations struggle to break even. In Uganda, smallholder poultry enterprises face a particularly challenging cost environment. The cost of commercial broiler feed has risen sharply in recent years, partly driven by import-dependent ingredient prices. Feed importation and the reliance on external inputs like soya and fish meal expose local farmers to global price fluctuations, which reduce margins even when production volumes increase (Kizza et al., 2024; Nampanzira et al., 2025).

Veterinary costs add a further burden, particularly in peri-urban zones where biosecurity is harder to maintain due to proximity to informal markets and human settlements (Ayebare et al., 2025; Kpomasse et al., 2021). Despite these challenges, research confirms that broiler farming in Uganda can be profitable when managed efficiently. A key profitability metric frequently cited in the literature is the benefit-cost ratio (BCR). A BCR greater than one indicates that a farming enterprise generates more revenue than it costs to operate. Studies on smallholder poultry farms report BCRs that vary considerably across production systems, herd sizes, and market access levels (Adeyonu & Odozi, 2022; Oluwatayo et al., 2016). This confirms that profitability is not a fixed characteristic of the enterprise, but a variable outcome shaped by managerial and environmental factors.

2.3. Effect of development interventions on broiler profitability

2.3.1. Credit-based interventions

The theoretical basis for credit-based agricultural interventions rests on the premise that capital constraints, rather than unproductivity, are the main reason smallholder farmers remain poor

(Balana & Oyeyemi, 2022). When farmers lack the financial resources to purchase high-quality inputs in sufficient quantities, they are forced into suboptimal production decisions. These include purchasing low-grade feed in small expensive batches, sourcing low-quality chicks, or operating at below-optimal flock sizes (Ouma et al., 2023). Providing structured access to affordable credit is therefore expected to break this cycle by enabling farmers to invest in better inputs and more efficient production systems. Evidence from Sub-Saharan Africa confirms that credit access enhances farmers' financial capabilities. This empowers them to cover input and transaction costs that would otherwise be prohibitive (Agyemang et al., 2019).

Global evidence on the effectiveness of such interventions is mixed. On the positive side, revolving fund models and microfinance schemes have been shown to increase input access and production volumes in several Sub-Saharan African countries (Agyemang et al., 2019). In East African contexts in particular, studies have found that credit access enables smallholders to shift from irregular, low-volume production cycles to more continuous, commercially oriented operations. This consistency of supply is important because it improves bargaining power with buyers and builds the trust-based relationships needed to access institutional markets. However, a recurring finding in the literature is that credit alone is insufficient to sustainably improve profitability. Without complementary technical training, farmers may use borrowed capital inefficiently. They may overstock beyond the carrying capacity of their housing and also mismanage vaccination schedules. In some cases, they fail to maintain adequate financial records (Ogunleye et al., 2024).

When these technical failures lead to poor flock performance, the borrowed capital is effectively lost, leaving farmers with debt but no improved profitability. This outcome has been documented in evaluations of heifer-based programs implemented by organizations such as Heifer International. In some cases, recipient households struggled to sustain productivity gains beyond the initial support phase (Clements, 2012). In the Ugandan context, Nanyonjo & Nchanji (2023) provide a relevant precedent through their study of a seed credit model conducted across two districts in central Uganda. Their findings show that structured revolving credit access led to measurable increases in productivity, income, and asset accumulation among beneficiary farmers. However, the sustainability of these improvements was found to depend heavily on programme design features. These included clear repayment structures and the integration of extension

support. Where these features were weak or absent, participation rates declined over time, implying that initial gains were difficult to sustain without strong institutional backing.

2.3.2. The Parish Development Model as a financial and institutional intervention

Uganda's Parish Development Model represents a domestically designed attempt to address both the capital and institutional constraints that have historically limited smallholder agricultural productivity. By channelling low-interest revolving funds directly through parish-level SACCOs, the PDM aims to decentralize financial access, reduce the barriers associated with formal banking and inject capital at the grassroots level where it is most needed (Kayizzi-Mugerwa, 2024). For broiler farmers in districts like Wakiso, this mechanism theoretically addresses the cash flow constraints that force farmers to buy feed expensively and in small quantities. The model's design incorporates elements beyond pure financial support. The seven PDM pillars collectively address production, storage, processing, marketing, infrastructure, financial inclusion, and governance.

This multi-dimensional architecture reflects an understanding that profitability improvements in smallholder agriculture require simultaneous interventions across multiple system constraints. This insight is consistent with findings from South Africa and Zimbabwe, where single-dimension financial interventions produced limited long-term results (Mdletshe & Obi, 2023; Phiri et al., 2023). However, early implementation evidence from Wakiso District reveals significant challenges. Biyinzika et al. (2023) documented that local PDM rollouts in parishes such as Wampeewo were hampered by manual record-keeping systems, delayed information flows between parish administrators and project beneficiaries, and low transparency in fund disbursement processes. These potentially undermine the model's potential, as delayed credit disbursement can cause farmers to miss optimal stocking windows, while information gaps can prevent them from accessing available technical support.

There is a broader theoretical debate in the development economics literature about whether top-down government transfer programs can effectively transform smallholder agricultural enterprises into commercially viable operations. Critics argue that such programs often create dependency rather than sustainability, particularly when they are not accompanied by rigorous business training and market development support. Proponents, on the other hand, point to evidence that structured revolving funds when properly managed can catalyze self-reinforcing improvements in

productivity and market engagement (Agyemang et al., 2019; Nanyonjo & Nchanji, 2023). The PDM's effectiveness in Uganda's broiler sector remains an open empirical question that this study aims to address.

2.3.3. Extension services and technical support

Beyond financial capital, technical knowledge transfer through agricultural extension services plays a vital role in determining broiler profitability. Research across Sub-Saharan Africa consistently shows that farmers' access to timely and relevant technical advice improves production outcomes. It strengthens biosecurity practices, reduces bird mortality rates, and also improves feed conversion ratios. These improvements collectively increase net profit margins (Brenya & Zhu, 2023). In the Ugandan context, government extension services have historically been under-resourced at the district and sub-county levels. This has left many smallholder poultry farmers without access to professional veterinary or production management advice.

The PDM design includes a Community Mobilization and Mindset Change pillar, as well as provisions for Parish-Based Information Systems (Adem & Turyamureeba, 2026; Asiimwe, 2025). These components are intended to create structured channels for technical knowledge dissemination. If implemented effectively, they could help address the technical gap that has constrained profitability improvement in previous agricultural support programs (Kayizzi-Mugerwa, 2024). However, the actual delivery of technical extension under the PDM framework remains uneven across many areas of Wakiso District. As Biyinzika et al. (2023) found, information sharing mechanisms at the parish level have not always functioned as designed. This suggests that the model's potential to integrate financial and technical support into a coherent intervention has not yet been fully realized.

CHAPTER THREE: METHODOLOGY

3.1. Study area

This study was conducted in Wakiso District, located in the Central Region of Uganda. The district partly encircles Kampala, Uganda's capital city, and serves as the primary peri-urban and commuter zone of the Greater Kampala Metropolitan Area. It borders Nakaseke and Luweero districts to the north, Mukono to the east, Kalangala to the south, Mpigi to the southwest, and Mityana to the northwest (UBOS, 2024). The district covers a total area of 2,807.75 square kilometres. With a population of approximately 3.4 million as per the 2024 National Population and Housing Census, it is the most populous district in Uganda. Administratively, Wakiso District comprises two counties, six sub-counties, four municipalities, and nine town councils. The district has 147 parishes and 720 villages, which constitute the lowest units of local government administration (UBOS, 2024).

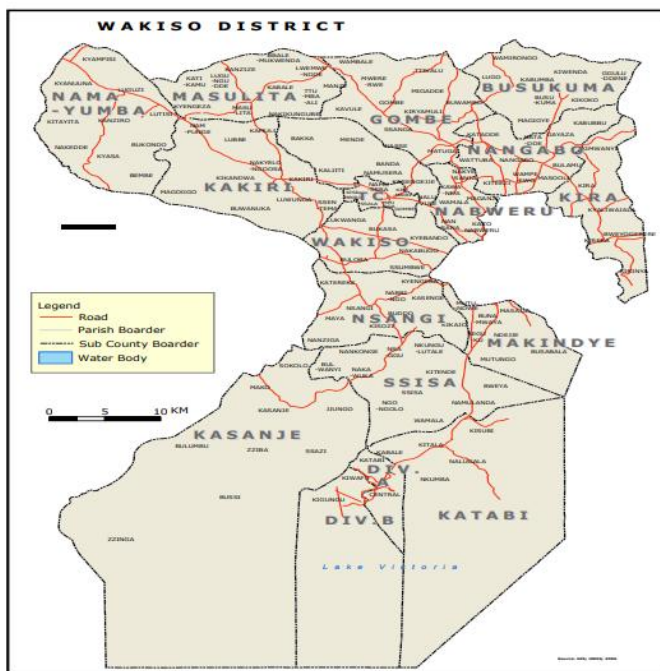


Figure 1: Map of Wakiso District

PDM implementation in Wakiso District has been active since the programme's national rollout. Each parish has an established PDM SACCO. Through this SACCO, registered beneficiary households access enterprise grants of UGX 1,000,000. This money is disbursed via Post Bank Uganda's WENDI mobile platform. Poultry, including broiler production, is among the enterprises

selected by beneficiaries because of its relatively low capital entry requirements (Kayizzi-Mugerwa, 2024). The District Production and Marketing Office and the District PDM Coordination Office maintain records of registered SACCO members and enterprise selections. These records will serve as the primary sampling frames for this study.

3.2. Research design

This study adopted a cross-sectional comparative research design. Data was collected at a single point in time from two groups. These include PDM beneficiary broiler farmers and non-beneficiary broiler farmers. Cross-sectional designs are well-established in smallholder agricultural research across Uganda and Sub-Saharan Africa for comparing enterprise performance (Ahimbisibwe et al., 2020; Mdletshe & Obi, 2023). PDM was only launched in 2022, and no baseline farm-level profitability data existed prior to the programme. Therefore, the cross-sectional comparative design, supported by appropriate econometric controls, was the most practical approach under these conditions. Primary quantitative data was collected using structured questionnaires administered through face-to-face interviews. Analytical techniques applied include descriptive statistics, gross margin analysis, independent samples t-tests, chi-square tests, and a Probit model of programme participation. Ordinary Least Squares (OLS) regression was also used to estimate the effect of PDM on profitability while controlling for observable selection differences between the two groups (Ahimbisibwe et al., 2020).

3.3. Study population

The target population comprised all small-scale broiler poultry farmers in Wakiso District that had been active in the enterprise during the six months preceding data collection. Both PDM beneficiaries and non-beneficiaries were included. A small-scale farmer is defined as one operating a flock of fewer than 1,000 birds per cycle. This is consistent with the classification used in comparable broiler profitability studies in East and Southern Africa (Phiri et al., 2023; Mdletshe & Obi, 2023). To be eligible for inclusion, a farmer was required to have completed at least one full broiler production cycle during the last six months. The farmer also had to be able to provide cost and revenue information for that cycle. This criterion was applied equally to both groups to ensure that profitability comparisons are grounded in actual production experience. Among PDM beneficiaries, the accessible population comprised farmers registered in PDM SACCOs within selected parishes, and allocated part or all of their grant to broiler production. Among non-

beneficiaries, the accessible population comprised active broiler farmers in the same parishes who had not received PDM support. Restricting both groups to the same parishes controlled for location-based confounders. These include market proximity, road access, and availability of veterinary and input supply services.

3.4. Sample size and sampling procedure

3.4.1. Sample size determination

A complete register of all small-scale broiler farmers in Wakiso District meeting the study's inclusion criteria did not exist in any single administrative source. The population was therefore treated as unknown, and Cochran, (1977) formula for sample size estimation from an infinite population was applied:

$$n = \frac{Z^2 pq}{e^2}$$

Where:

n is the minimum required sample size;

Z is the standard normal deviate at 95% confidence, equal to 1.96;

p is the estimated proportion of the attribute of interest, set at 0.5 to maximise variability;

q = 1 – p = 0.5; and

e is the acceptable margin of error, set at 0.10.

Substituting these values:

$$n = \frac{(1.96)^2 \times (0.5) \times (0.5)}{(0.10)^2} = 96.04 \approx 96 \text{ respondents}$$

This figure represented the minimum analytical sample required. To account for an anticipated non-response rate of 4%, a recruitment target was computed as:

$$n_a = \frac{96}{(1 - 0.04)} = 100 \text{ respondents}$$

Therefore, 100 farmers were targeted for recruitment, and were allocated equally between PDM beneficiaries (50) and non-beneficiaries (50) to support balanced group comparisons in the subsequent statistical analysis

3.4.2. Sampling procedure

A multi-stage sampling procedure was used to move systematically from the district level down to the individual respondent.

Stage One: Sub-county selection

Sub-counties with documented PDM SACCO activity and confirmed broiler production among registered beneficiaries were identified using records from the District Production and Marketing Office and the District PDM Coordination Office. Three sub-counties were then purposively selected to represent locations with relatively high, medium, and lower proximity to the Kampala urban market. Proximity to Kampala is a known determinant of broiler profitability, as it affects market access and transport costs. Each selected sub-county was required to contain both active PDM broiler beneficiaries and identifiable non-beneficiary broiler farmers for comparison.

Stage Two: Parish selection

Within each selected sub-county, a complete list of parishes was compiled. Parishes were then randomly selected using simple random sampling, with the parish PDM SACCO registry as the sampling frame. Random selection ensured that all eligible parishes have an equal probability of inclusion, thus reducing enumerator convenience bias. To ensure that the sample fairly represented all sub-counties, the number of parishes selected from each sub-county was proportional to the total number of eligible parishes within that sub-county. In other words, sub-counties with more eligible parishes contributed a larger number of sampled parishes than those with fewer eligible parishes.

Stage Three: Farmer identification and respondent selection

Within each selected parish, the farmer population was stratified into two groups, that is, PDM beneficiaries and non-beneficiaries. PDM beneficiaries were identified from the parish SACCO membership register. Only farmers who received a grant disbursement and used it at least in part for broiler production were included. From this register, respondents were selected purposively based on willingness to participate and ability to provide production cost and revenue data for at least one completed broiler cycle. Where the number of eligible beneficiaries in a parish exceeded the number required, selection prioritised farmers with the most recently completed cycle to improve recall accuracy.

For non-beneficiaries, no comprehensive register existed at the parish level. Eligible non-beneficiary broiler farmers were therefore identified with the help of three local informants in each selected parish. These included agricultural extension officers, the nearest registered agro-input dealers, and the LC1 chairpersons. These individuals interact regularly with farmers in their areas through input sales, extension visits, and local administration. Each informant was requested to name active broiler farmers in the parish who have not received PDM support. From the combined list, respondents were selected using the same eligibility criteria applied to beneficiaries.

3.5. Data collection

Primary data was collected using a structured questionnaire administered through face-to-face interviews. Face-to-face administration was preferred over self-completion because most small-scale broiler farmers maintain informal or partial cost records. Active recall facilitation and probing were therefore necessary, with reference to available records where applicable. This approach is consistent with the method used in comparable smallholder broiler profitability studies in the region (Phiri et al., 2023; Mdletshe & Obi, 2023). The questionnaire was organised into five sections. The first section captured socio-economic and demographic characteristics, including age, sex, marital status, education level, household size, primary occupation, land holding size, and years of broiler farming experience. The second section captured PDM participation details: SACCO registration status, grant disbursement, amount received, and proportion allocated to broiler production.

The third section collected broiler enterprise characteristics. The fourth section captured production cost data for the most recently completed broiler cycle, covering flock size, day-old chick costs, feed costs by phase, veterinary expenditures, hired and family labour costs, energy and transport costs, and mortality. The fifth section collected revenue data: total birds sold, average price per bird, and income from by-products such as litter. Profitability estimates were based on the most recently completed production cycle. While this approach improves recall accuracy, it may not fully capture profitability variation across multiple production cycles. This is acknowledged as a limitation of the study. The questionnaire was pre-tested with a small group of broiler farmers outside the selected parishes. The pre-test aimed to identify unclear items, assess administration time, and refine probing guides. Revisions were then made before the main data collection exercise.

3.5.1. Validity and reliability of the research instrument

Validity refers to the extent to which a research instrument measures what it is intended to measure (Roopa & Rani, 2012). Content validity was established through expert review. The questionnaire was reviewed by the study supervisor in the Department of Agribusiness and Natural Resource Economics at Makerere University. The reviewer assessed whether all items were relevant to the study objectives and whether critical variables had been omitted. Revisions were made based on their feedback before the pre-test. Face validity was assessed during the pre-test phase. The instrument was administered to a small group of broiler farmers representative of the target population. Comprehension, clarity of wording, and logical flow were assessed. Items that caused confusion or inconsistent responses were then revised. This iterative process confirmed that the questionnaire was appropriate for the study context. Reliability refers to the consistency of results when an instrument is administered under similar conditions (Ranganathan & Caduff, 2023). Because the questionnaire relied primarily on factual production and financial data, reliability was ensured through enumerator standardisation. The questionnaire was administered using the same probing protocols.

3.6. Data analysis

Completed questionnaires were reviewed, coded, and entered into Microsoft Excel. Data was cleaned to identify and resolve entry errors, outliers, and missing values. The cleaned dataset was then exported to StataNow/BE version 19.5 for statistical analysis. The analytical strategy was structured around the three specific objectives of the study.

Despite a recruitment target of 100 farmers, data collection ultimately yielded a final sample of 76 respondents (38 PDM beneficiaries and 38 non-beneficiaries). This shortfall arose from a combination of logistical constraints encountered during fieldwork. These include time limitations, the unavailability of some sampled farmers within the survey period, and a higher than anticipated non-response rate among eligible respondents.

3.6.1. Socio-economic characteristics of PDM beneficiaries and non-beneficiaries

Descriptive statistics were used to summarise and compare the socio-economic profiles of both groups. Continuous variables such as age, household size, years of broiler farming experience, flock size, and land holding size, were reported as means and standard deviations. Categorical

variables such as sex, education level, and marital status, were reported as frequencies and percentages. To examine whether there are statistically significant differences between both groups, inferential statistical tests were applied depending on the nature of the variables. For continuous variables, Welch's independent-samples t-test was used to test whether the mean values differ between the two groups. This test does not assume equal variances between the two groups, making it the more appropriate choice given the unequal group sizes and variances observed across several variables in this study. For categorical variables, the Pearson Chi-square test of independence was used to assess whether PDM status was associated with each categorical characteristic. All statistical tests were conducted at a 10% level of significance ($p < 0.10$). This means that differences were considered statistically significant where there was less than a 10% probability that the observed differences occurred by chance. All data analysis was conducted using StataNow/BE version 19.5.

3.6.2. Profitability of broiler production

Profitability was assessed using Gross Margin Analysis (GMA), the standard enterprise-level profitability measure in smallholder broiler production studies (Phiri et al., 2023; Mdletshe & Obi, 2023; Adeyonu & Odozi, 2022). Gross margin was selected as the primary profitability indicator because variable costs constitute the dominant cost component in smallholder broiler production. Variable costs are also more reliably recalled by farmers than fixed costs such as housing depreciation, which are difficult to isolate accurately through recall-based surveys. The gross margin per production cycle was calculated as:

$$\text{GM} = \text{TR} - \text{TVC}$$

Where GM is the gross margin per production cycle (UGX);

TR is total revenue, computed as total birds sold multiplied by average price per bird, plus any income from by-products; and

TVC is total variable costs, comprising expenditure on day-old chicks, feed, veterinary drugs, hired labour, energy for brooding, and transport to market.

Two supplementary profitability indicators were also computed. The Benefit-Cost Ratio (BCR) was calculated as TR divided by TVC. A BCR greater than 1.0 indicated that revenue exceeds variable costs (Mdletshe & Obi, 2023). The Return on Variable Cost (ROVC) was computed as

$(GM / TVC) \times 100$, expressing profit per unit of variable cost as a percentage (Phiri et al., 2023). These indicators were computed in StataNow/BE version 19.5 for group comparison.

To determine whether profitability differed significantly between PDM beneficiaries and non-beneficiaries, Welch's independent-samples t-test was applied to GM, BCR, and ROVC values. Significance was set at $p < 0.10$.

3.6.3. Effect of PDM on the profitability of poultry farmers

Participation in the Parish Development Model (PDM) is not randomly assigned. Farmers who participate may differ from non-participants in observable socio-economic and farm-level characteristics. These include age, education, farming experience, household size, access to credit, and distance to market. Such characteristics may influence both the likelihood of programme participation and the profitability of broiler enterprises. Consequently, estimating the relationship between PDM participation and profitability without accounting for these observable differences may produce biased estimates of the association between programme participation and gross margin.

To examine the factors associated with programme participation, a Probit regression model was estimated. The Probit model is appropriate because the dependent variable is binary, taking the value of one for PDM beneficiaries and zero for non-beneficiaries. The model estimates the probability that a farmer participates in the PDM programme as a function of observable socio-economic and farm-level characteristics identified under Objective One. By identifying these characteristics, the Probit model provides insight into the observable factors associated with participation in the programme. It then informs the selection of control variables used in the subsequent profitability analysis.

The Probit model was specified as:

$$\Pr(PDM_i = 1 | X_i) = \Phi (\beta_0 + \beta_1 AGE_i + \beta_2 SEX_i + \beta_3 EDU_i + \beta_4 HHS_i + \beta_5 EXP_i + \beta_6 LAND_i + \beta_7 GRP_i + \beta_8 CR_i + \beta_9 DIST_i + \beta_{10} TRN_i + \beta_{11} EXT_i + \varepsilon_i)$$

Where PDM_i is a binary indicator equal to 1 if farmer i is a PDM beneficiary and 0 otherwise. $\Phi (\cdot)$ is the standard normal cumulative distribution function. The explanatory variables represent the socio-economic and farm-level characteristics expected to influence programme participation.

The Probit link function was chosen over a linear probability model because it constrains predicted participation probabilities to the [0,1] interval (Greene, 2012). Table 1 presents the full variable definitions, measurement approach, and expected a priori signs. Because raw Probit coefficients are indexed in standard-normal units rather than probability units, average marginal effects were obtained using the margins, dydx(*) post-estimation command in Stata. These effects represent the average change in the predicted probability of participation associated with a one-unit change in each explanatory variable, while accounting for the observed values of all other covariates in the sample. Overall model significance was assessed using the likelihood-ratio chi-square test, while model fit was evaluated using McFadden's pseudo R².

Table 1: Probit model variables, measurement, and expected signs

Variable	Description / Measurement	Type
PDM	Parish Development Model participation: 1 = beneficiary, 0 = non-beneficiary	Binary
AGE	Age of farmer in completed years	Continuous
SEX	Sex of farmer: 1 = male, 0 = female	Binary
EDU	Education level measured as years of formal schooling completed	Continuous
HHS	Household size: total number of household members	Continuous
EXP	Broiler farming experience in completed years	Continuous
LAND	Land owned by the household, measured in acres	Continuous
GRP	Membership in farmer group/cooperative (excluding PDM SACCO): 1 = member, 0 = non-member	Binary
CR	Access to credit from non-PDM sources: 1 = yes, 0 = no	Binary
DIST	Distance to nearest broiler market in kilometres	Continuous
TRN	Access to poultry/broiler training: 1 = trained, 0 = not trained	Binary
EXT	Contact with an agricultural extension agent in the last 12 months: 1 = yes, 0 = no	Binary

Following estimation of the Probit model, a multiple linear regression model was also estimated using Ordinary Least Squares (OLS). Variables representing observable characteristics associated

with programme participation, together with theoretically relevant farm-level and institutional factors, were included as covariates in the regression. This was designed to estimate the relationship between PDM beneficiary status and gross margin while controlling for observable characteristics that may influence both participation decisions and broiler production outcomes. OLS regression is the most widely used method for identifying determinants of gross margin among smallholder broiler producers (Phiri et al., 2023; Adeyonu & Odozi, 2022; Mdletshe & Obi, 2023). The model was specified as:

$$GM = \beta_0 + \beta_1 PDM + \beta_2 FS + \beta_3 MR + \beta_4 EXP + \beta_5 AGE + \beta_6 EDU + \beta_7 VET + \beta_8 MA + \beta_9 FD + \beta_{10} DIST + \beta_{11} GRP + \beta_{12} OCC + \beta_{13} SEX + \beta_{14} CR + \beta_{15} HHS + \beta_{16} TRN + \epsilon$$

Table 2 presents the full variable definitions, measurement approaches, and the expected a priori signs.

Table 2: OLS model variables, measurement, and expected signs

Variable	Description / Measurement	Type
GM	Gross margin per production cycle in UGX. <i>Dependent variable</i>	Continuous
PDM	Parish Development Model participation: 1 = beneficiary, 0 = non-beneficiary	Binary
FS	Flock size: number of day-old chicks stocked per cycle	Continuous
MR	Mortality rate: percentage of birds that died before sale	Continuous
EXP	Broiler farming experience in completed years	Continuous
AGE	Age of farmer in completed years	Continuous
EDU	Education level measured as years of formal schooling completed	Continuous
VET	Access to veterinary services: 1 = yes, 0 = no	Binary
MA	Market access: 1 = regular buyer/contract, 0 = spot market only	Binary
FD	Feed source: 1 = registered agro-dealer, 0 = informal/mixed source	Binary
DIST	Distance to nearest broiler market in kilometres	Continuous
GRP	Membership in farmer group/cooperative (excluding PDM SACCO): 1 = member, 0 = non-member	Binary
OCC	Main occupation: 1 = broiler farming is primary occupation, 0 = secondary	Binary
SEX	Sex of farmer: 1 = male, 0 = female	Binary
CR	Access to credit from non-PDM sources: 1 = yes, 0 = no	Binary
HHS	Household size: total number of household members	Continuous
TRN	Access to poultry/broiler training: 1 = trained, 0 = not trained	Binary

Where:

β coefficients show how each factor affects profitability.

Error term (ε) captures everything else that affects profitability but is not measured in the model.

Standard diagnostics were conducted before the model was interpreted. Variance inflation factors were computed to rule out multicollinearity among the explanatory variables. The Breusch-Pagan test was used to test the null hypothesis of homoskedastic errors. Where this null hypothesis was rejected, heteroskedasticity-consistent (HC1) robust standard errors were used throughout (White, 1980).

Convergence between the participation determinants identified by the Probit model and the covariates retained in the OLS specification provided evidence that the estimated profitability effect of PDM is not driven by observable characteristics associated with programme selection. However, this approach cannot rule out bias arising from unobserved characteristics that jointly affect both participation and profitability. This remains a limitation. All Probit and OLS analyses were conducted using StataNow/BE version 19.5.

3.7. Ethical considerations

Ethical approval for this study was obtained from the relevant institutional review authority at Makerere University prior to data collection. Participation was entirely voluntary. Before each interview, respondents were informed of the study's purpose, the voluntary nature of participation, and their right to withdraw at any point without penalty. Informed verbal consent was obtained from each respondent. No personally identifying information was recorded on questionnaires. Furthermore, findings were reported in aggregate form only. No individual respondent was identifiable in the final report or any publication arising from the study. Interview durations were kept reasonable, and no respondent was pressured to provide information they are unable or unwilling to share.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1. Introduction

This chapter presents the findings obtained from the analysis of data collected from 76 small-scale broiler farmers in Wakiso District. These comprise 38 Parish Development Model (PDM) beneficiaries and 38 non-beneficiaries. All statistical analyses were conducted in StataNow/BE version 19.5. The chapter is organised around the three objectives of the study. Section 4.2 presents the socio-economic and farm-level characteristics of PDM beneficiaries and non-beneficiaries. Section 4.3 presents the profitability of broiler production, measured through gross margin, the benefit-cost ratio and the return on variable cost. Section 4.4 presents the effect of PDM participation on profitability, estimated through a Probit model of programme participation and an Ordinary Least Squares regression of gross margin.

4.2. Socio-economic characteristics of PDM beneficiary and non-beneficiaries

4.2.1. Continuous socio-economic and farm-level characteristics

Twelve continuous variables were compared between PDM beneficiaries and non-beneficiaries. Each variable was compared between groups using Welch's independent-samples t-test, which does not assume equal variances between the two groups. Table 3 reports, for each variable, the non-beneficiary mean, the beneficiary mean, the pooled full-sample mean, the numeric difference between groups, and the exact p-value.

Beneficiaries were, on average, 5.82 years older than non-beneficiaries, a statistically significant difference ($p = 0.0040$). This is consistent with the pattern documented by Khan et al. (2024), who found that older farmers in group-based rural credit programmes were more likely to participate because they possess greater social collateral and standing within parish-level SACCO structures. The PDM channels its revolving grant through parish SACCOs, which require members to register, form co-guarantee groups and demonstrate a degree of community standing. Older farmers are more likely to have already established these social credentials. Asimwe (2025) similarly found that older household heads were more highly represented among registered SACCO members. This was attributed to the seniority conventionally accorded to older residents in parish-level leadership structures.

Beneficiaries were also located significantly closer to the market, by 2.11 km on average ($p = 0.0077$). This reflects the geographic rollout pattern of the PDM documented by Biyinizika et al.

(2023) whose mapping of Wampeewo Parish found that SACCO administrative capacity and outreach activity were concentrated nearer trading centres. This left farmers in more remote villages both less informed about the programme and less able to attend registration meetings. Since market proximity also independently reduces transport costs and improves access to premium buyers, as confirmed by Geffersa & Tabe-Ojong (2024), this imbalance needs to be controlled for before drawing conclusions about the PDM's effect on profitability.

Household size, broiler farming experience, and years of schooling were all balanced between the two groups. The absence of a significant difference in farming experience is notable, because experience has been identified as an important predictor of access to agricultural support in other African contexts. Oluwatayo et al. (2016) found farming experience to be among the strongest correlates of both technical efficiency and access to formal support schemes. The finding in the present study may instead reflect the inclusive design of the PDM as a parish-level programme, rather than a merit-based or competitively allocated intervention. This is consistent with Kayizzi-Mugerwa (2024) who noted that the PDM was deliberately structured around universal parish coverage rather than the selection of farmers based on productive potential.

Similarly, the absence of a schooling gap contrasts with Ogunleye et al. (2024) who found formal education to be positively associated with microcredit uptake among Nigerian poultry farmers. In the Wakiso sample, PDM access instead appears to operate through the group and geographic channels rather than through individual human-capital screening. Mortality rate showed no significant difference between the groups either ($p = 0.6238$), consistent with the fact that mortality is driven primarily by biosecurity and disease-management practice at the individual farm level rather than by financing source. Ouma et al. (2023) similarly found that access to capital had limited influence on mortality outcomes unless it was specifically directed toward veterinary inputs and biosecurity infrastructure, neither of which is specifically earmarked under the PDM grant.

Beneficiaries also reported significantly higher gross revenue than non-beneficiaries, by UGX 1,393,379 on average ($p = 0.0156$). This is equivalent to roughly 19% of the non-beneficiary group's mean gross revenue. Flock size stocked, the number of day-old chicks purchased, and the cost of day-old chicks were all larger among beneficiaries. However, flock size stocked and number of day-old chicks stocked did not reach the ten per cent threshold significance. These three

variables imply that beneficiaries operate at a marginally larger production scale than non-beneficiaries, which is the most plausible proximate driver of their higher gross revenue. This is consistent with the finding in Adeyonu & Odozi (2022) that flock size was the single strongest correlate of gross revenue regardless of the farmer's funding source.

Furthermore, beneficiaries sold more birds on average (+44.08 birds, $p = 0.1249$) at a marginally higher price per bird (+UGX 396, $p = 0.1997$). However, neither difference reached statistical significance. This suggests a general scale advantage among beneficiaries across the whole production and marketing cycle rather than in any single input or output variable. The modest and non-significant price premium is broadly consistent with the analysis of Omondi (2022) that found that individual farmers, regardless of funding source, generally have limited bargaining power over selling price relative to traders and middlemen. Therefore, differences in profitability are driven far more by production volume than by the price obtained per bird.

Table 3: Continuous socio-economic and production characteristics by PDM Status (n = 76)

Variable	Pooled mean (SD)	Non-beneficiary mean (SD)	Beneficiary mean (SD)	Difference	p-value
Age (years)	41.12 (8.97)	38.21 (8.72)	44.03 (8.34)	+5.82	0.0040
Household size	5.64 (1.90)	5.66 (1.73)	5.63 (2.07)	-0.03	0.9522
Broiler experience (years)	5.89 (2.27)	5.87 (2.26)	5.92 (2.32)	+0.05	0.9204
Years of schooling	9.21 (4.80)	8.68 (4.22)	9.74 (5.32)	+1.05	0.3425
Flock size stocked (birds)	465 (133)	441 (141)	490 (122)	+48.95	0.1099
Distance to market (km)	8.50 (3.49)	9.55 (3.39)	7.45 (3.31)	-2.11	0.0077
No. of day-old chicks purchased	458 (130)	433 (138)	482 (119)	+48.32	0.1070
Cost of day-old chicks (UGX)	1,464,789 (423,575)	1,381,711 (442,467)	1,547,868 (392,078)	+166,157.8 9	0.0874
Mortality rate (%)	7.97 (3.87)	7.76 (3.45)	8.19 (4.28)	+0.44	0.6238
Number of birds sold	428 (125)	406 (130)	450 (117)	+44.08	0.1249
Selling price per bird (UGX)	18,056 (1,289)	17,861 (1,099)	18,257 (1,447)	+396.03	0.1997
Gross revenue (UGX)	7,950,676 (2,536,776)	7,253,987 (2,441,601)	8,647,366 (2,466,979)	+1,393,379. 29	0.0156

4.2.2. Categorical socio-economic characteristics

Six categorical variables were compared between PDM beneficiaries and non-beneficiaries using the Pearson chi-square test of independence. Table 4 reports the results, together with the pooled full-sample percentage for each category.

Farmer group membership was significantly associated with PDM status. 47.37% of beneficiaries belonged to a farmer group compared with 15.79% of non-beneficiaries. This is consistent with the PDM's implementation structure, under which grants are disbursed through parish SACCOs to which farmer groups are the primary channel of access. Education level is treated as a meaningful association at the ten per cent level applied throughout this study, though several cells had small expected counts. Marital status showed no significant association with PDM status ($p = 0.4972$). Sex, training in the last twelve months, and non-PDM credit access each returned an identical chi-square statistic (0.872, $p = 0.3505$).

The absence of a significant sex effect on participation is consistent with the PDM's design as a collectively delivered, household-level programme rather than one targeted at individual demographic groups. This is consistent with Adem & Turyamureeba (2026), that found gender-neutral uptake at the parish level despite the programme's stated aim of women's economic inclusion. The absence of a significant training effect is notable because prior exposure to agricultural extension could be expected to increase farmers' engagement with formal agricultural institutions, including SACCOs. However, Brenya & Zhu (2023) showed that extension services and financial interventions in Uganda are implemented through distinct government structures, with limited coordination at the parish level. This institutional separation may help explain why prior training exposure was not associated with a higher likelihood of PDM participation in the present sample.

Table 4: Categorical socio-economic characteristics by PDM status (n = 76)

Variable	Pooled (%)	Non-beneficiary (%)	Beneficiary (%)	p-value
Sex (% male)	59.21	65.79	52.63	0.3505
Marital status (% married)	69.74	76.32	63.16	0.4972
Education (% secondary+)	65.79	63.16	68.42	0.0648
Farmer group membership (% yes)	31.58	15.79	47.37	0.0066
Training in last 12 months (% yes)	40.79	34.21	47.37	0.3505
Non-PDM credit access (% yes)	59.21	65.79	52.63	0.3505

4.3. Profitability of small-scale broiler production in Wakiso district

4.3.1. Cost structure and revenue

Table 5 presents the mean costs, revenue, and gross margin for the full sample and by PDM status, along with each cost item's share of total variable cost.

Beneficiaries spent more than non-beneficiaries on every cost component except other costs, consistent with their larger average production scale. Total variable cost averaged UGX 6,207,132 for beneficiaries against UGX 5,674,974 for non-beneficiaries, a difference of UGX 532,158. Feed is the dominant cost item, accounting for 60.82% of total variable cost across the full sample, followed by day-old chicks at 24.56%. Together, these two items account for over 85% of all variable costs. This is consistent with evidence from comparable settings. Phiri et al. (2023) found that feed accounted for 56.8% of total variable costs among smallholder broiler farmers in Mutare district, Zimbabwe, while Adeyonu & Odozi (2022) reported a feed share of 75% measured per kilogram of output. The slightly higher share found here than in the Zimbabwean case likely reflects the relative cost of commercial broiler feed in Uganda's import-dependent input market.

Nampanzira et al. (2025), found that the majority of smallholders rely on commercially milled feed rather than home-mixed rations. This is because of inconsistent access to raw feed ingredients, which sustains a persistently high feed cost share regardless of farm scale. Veterinary drugs accounted for 8.22% of pooled variable costs, making them the third-largest cost component. Kizza et al. (2024), found that farmers' expenditure on veterinary inputs is constrained by the

limited availability of qualified animal-health workers at the parish level. This limited access to veterinary services may restrict expenditure on veterinary inputs even where disease pressure is high.

The cost structure is nearly identical between beneficiaries and non-beneficiaries, with feed shares differing by less than a quarter of a percentage point and every other cost category differing by less than a single percentage point. This suggests that the observed profitability difference is not primarily associated with differences in production cost structure or expenditure patterns between the two groups. Beneficiaries generated significantly higher gross revenue than non-beneficiaries (UGX 8,647,366 versus UGX 7,253,987), consistent with the marginally larger production scale observed in Section 4.2.1. The PDM grant therefore appears to support increased production scale rather than greater efficiency in cost allocation. In other words, the higher revenue among beneficiaries is associated primarily with producing and marketing a larger volume of output rather than with achieving the same level of production at a lower cost.

Table 5: Cost structure by PDM Status (n = 76)

Cost component	Pooled mean (UGX)	Non-Ben. mean (UGX)	Ben. mean (UGX)	Pooled (%)	Non-Ben. (%)	Ben. (%)
Day-old chicks	1,464,789	1,381,711	1,547,868	24.56	24.25	24.87
Feed	3,618,581	3,460,054	3,777,108	60.82	60.94	60.70
Veterinary drugs	495,164	474,579	517,514	8.22	8.28	8.16
Labour	87,000	82,811	91,189	1.53	1.51	1.55
Transport	107,764	98,703	117,343	1.80	1.72	1.89
Other	171,263	174,263	168,263	3.11	3.39	2.84
Total variable cost	5,941,053	5,674,974	6,207,132	100.00	100.00	100.00

4.3.2. Gross Margin, Benefit-Cost Ratio and Return on Variable Cost

Profitability was assessed using three indicators. These include gross margin, the benefit-cost ratio, and the return on variable cost. Each was compared between groups using Welch's independent-samples t-test. Table 6 reports the results, including the pooled full-sample mean for each indicator.

Both groups recorded positive mean gross margins and benefit-cost ratios above 1.0. This confirms that small-scale broiler farming is profitable at the variable-cost level in Wakiso District for both beneficiaries and non-beneficiaries. The pooled mean benefit-cost ratio of 1.3276 means that, on average, farmers recovered UGX 1.33 for every UGX 1.00 of variable cost invested, comparable to the BCR of 1.15 reported by Phiri et al. (2023) among Zimbabwean smallholder broiler farmers. One farmer in the sample, a non-beneficiary, recorded a loss in the most recently completed production cycle (gross margin of UGX –19,000, BCR of 0.995), confirming that profitability at this scale of production is not guaranteed. This was an isolated observation as both group medians remained comfortably above zero.

Beneficiaries recorded significantly higher values on all three profitability indicators before any adjustment for observable selection differences. Their gross margin was, on average, UGX 861,221 higher than that of non-beneficiaries ($p = 0.0009$), their benefit-cost ratio was 0.1178 higher ($p = 0.0003$), and their return on variable cost was 11.77% higher ($p = 0.0003$). However, Section 4.2 shows that beneficiaries were, on average, older, spent more on day-old chicks, and were located closer to markets, independently of PDM participation. Each of these factors may influence profitability independently of the treatment effect of PDM participation. The unadjusted profitability gap therefore reflects both PDM participation and pre-existing differences between the two groups and cannot be interpreted as the effect of PDM participation alone.

Table 6: Profitability Indicators by PDM Status (n = 76)

Indicator	Pooled mean	Non-Ben. mean	Ben. mean	Difference (Ben – Non- Ben)	p-value
Gross margin (UGX)	2,009,624	1,579,013	2,440,235	+861,221.39	0.0009
Benefit-cost ratio	1.328	1.269	1.387	+0.1178	0.0003
Return on variable cost (%)	32.76	26.87	38.64	+11.77	0.0003

4.4. Effect of the Parish Development Model on broiler profitability

4.4.1. Probit model results

A Probit model of PDM participation was estimated as a function of the socio-economic and farm-level characteristics identified under Objective One. The model was statistically significant overall (LR $\chi^2(11) = 31.30$, $p = 0.000986$, Pseudo $R^2 = 0.2971$), confirming that observable farmer characteristics jointly predict PDM participation. Table 7 reports the results.

Age was a significant positive predictor of participation, consistent with the pattern identified in Section 4.2.1 and the social-collateral mechanism discussed (Khan et al., 2024). Land ownership was negatively associated with participation, indicating that farmers with smaller or less secure landholdings were more likely to be PDM beneficiaries. This pattern is consistent with the PDM's stated objective of extending financial support to farmers who face greater constraints in accessing formal credit. Farmers with limited landholdings typically have fewer assets that can serve as collateral and, consequently, fewer options for accessing agricultural credit (Balana & Oyeyemi, 2022). Farmer group membership was a strong positive predictor of PDM participation, consistent with the bivariate association reported in Section 4.2.2. This finding also aligns with Hill et al. (2021) who identified membership in producer organisations as one of the strongest predictors of smallholder participation in formal market and financial support programmes across several Ugandan districts. Farmer groups can provide an established institutional channel through which government programmes, including PDM SACCOs, identify, mobilise, and register potential beneficiaries.

Access to non-PDM credit was negatively associated with PDM participation. This indicates that farmers with existing access to other credit sources were less likely to participate in PDM, suggesting that the programme may be reaching farmers with fewer alternative sources of agricultural finance rather than primarily serving farmers who already have access to credit. A comparable pattern was reported by Nanyonjo & Nchanji (2023) in their study of Uganda's seed credit model, where farmers with existing access to informal or commercial credit were less likely to apply for the programme's in-kind credit facility. Agyemang et al., (2019) similarly reported evidence of substitution between microcredit and grant-based support among Ghanaian poultry farmers. Distance to market was the strongest predictor of PDM participation, both in terms of statistical significance and the magnitude of its marginal effect. Each additional kilometre from

the market reduced the predicted probability of PDM participation by 4.24%, holding the other covariates constant. This finding is consistent with the rollout pattern documented by Biyinizika et al. (2023) and highlights the importance of physical proximity, administrative reach, and information flow in determining which farmers are reached by the programme.

Sex, years of schooling, household size, broiler farming experience, training in the last twelve months, and extension contact in the last twelve months were not significant predictors of participation once the other covariates were controlled for. This suggests that the observed participation pattern provides limited evidence of the type of selective participation associated with concerns about elite capture in community-targeted programmes (Kayizzi-Mugerwa, 2024). In particular, there is limited evidence that participation was selectively driven by education, prior institutional exposure, or demographic characteristics. Participation was instead significantly associated with age, land ownership, farmer group membership, non-PDM credit access, and distance to market.

Table 7: Probit Model – Determinants of PDM Participation (n = 76)

Variable	Coefficient	Std. error	p-value	Marginal effect (dy/dx)
Age (years)	+0.0478	0.0210	0.0226	+0.0133
Sex (1 = male)	−0.2546	0.3538	0.4718	−0.0708
Years of schooling	+0.0241	0.0391	0.5377	+0.0067
Household size	−0.0243	0.0978	0.8035	−0.0068
Broiler experience (years)	−0.0618	0.0786	0.4316	−0.0172
Land ownership (ordinal)	−0.3239	0.1706	0.0577	−0.0901
Farmer group membership	+0.8138	0.3946	0.0392	+0.2264
Non-PDM credit access	−0.7587	0.3819	0.0470	−0.2111
Distance to market (km)	−0.1523	0.0532	0.0042	−0.0424
Training in last 12 months	+0.1639	0.3669	0.6552	+0.0456
Extension contact in last 12 months	+0.2099	0.3430	0.5406	+0.0584
Constant	+0.5297	1.4116	0.7075	—

4.4.3. Ordinary Least Squares regression results

The OLS regression model was estimated on the full sample of 76 farmers, with gross margin as the dependent variable and 16 explanatory variables. The Breusch-Pagan test rejected the null hypothesis of constant error variance ($\chi^2(1) = 6.57$, $p = 0.010352$), confirming heteroskedasticity. Heteroskedasticity-consistent (HC1 robust) standard errors were therefore used throughout. Variance inflation factors for all sixteen predictors did not exceed 1.59, which is below the threshold of 10. This confirmed the absence of multicollinearity among the explanatory variables. The model explained 75.04% of the variation in gross margin across farms ($R^2 = 0.7504$, adjusted $R^2 = 0.6827$) and was highly significant overall. Table 8 reports the results.

Holding the other covariates constant, PDM beneficiary status was associated with a gross margin that was on average UGX 499,338.87 higher than that of non-beneficiaries, with the difference statistically significant at the one per cent level ($p = 0.0032$). This coefficient represents the estimated difference in gross margin associated with PDM participation after controlling for differences in flock size, mortality rate, group membership, and the other observable characteristics identified in Section 4.4.1. The estimate is smaller than the unadjusted gap reported in Table 6 (UGX 861,221), consistent with the expectation that part of the raw profitability difference reflects selection factors that the Probit model shows to be systematically associated with participation, rather than the programme's effect alone.

Flock size stocked was the strongest positive determinant of gross margin in the model, with each additional bird stocked associated with an increase of UGX 4,917.74 in gross margin per cycle ($p = 1.42 \times 10^{-10}$). This is consistent with the central role attributed to flock size and scale economies in the determinants of profitability literature for smallholder broiler enterprises across Sub-Saharan Africa (Adeyonu & Odozi, 2022). Mortality rate was the largest negative predictor, with each percentage point increase in mortality associated with a UGX 97,281.07 reduction in gross margin per cycle ($p = 0.0000060$). Kpomasse et al. (2021) identified disease management as the primary profitability constraint across tropical Africa, while Ayebare et al., (2025) confirmed that biosecurity deficiencies in Ugandan poultry systems are directly associated with higher mortality and lower financial performance. This suggests that the potential profitability gains associated with PDM could be strengthened if the revolving fund were accompanied by adequately resourced

veterinary extension support at the parish level, a gap that Biyinizika et al. (2023) also identified in the programme's implementation.

Farmer group membership was associated with an additional UGX 470,943.86 in gross margin independently of PDM participation status ($p = 0.0270$). This is consistent with Adeyonu & Odozi (2022), who found that membership in the Poultry Association of Nigeria was one of the strongest positive drivers of profitability in their analysis of 645 farmers, operating through channels such as bulk input purchasing, shared market intelligence, and collective bargaining with buyers. Non-PDM credit access was positively associated with gross margin and marginally significant at the ten per cent level ($p = 0.0563$), consistent with the view that access to credit from multiple sources, rather than PDM credit alone, supports profitability (Balana & Oyeyemi, 2022; Khan et al., 2024).

Taken together, the Probit and OLS results provide a coherent account of the relationship between PDM participation and broiler profitability in Wakiso District. The Probit model shows that participation is systematically associated with age, land ownership, group membership, non-PDM credit access, and proximity to market. Once these observable characteristics are controlled for in the gross margin regression, PDM beneficiary status remains positively and significantly associated with profitability, with an estimated difference of approximately UGX 499,338.87 per production cycle. This indicates that the profitability advantage observed among beneficiaries in Section 4.3.2 is only partly explained by the characteristics that predict PDM participation. A substantial difference remains after these characteristics are controlled for.

As in the cost-structure analysis, however, the regression results show that this association does not operate in isolation. Flock size, mortality rate, and farmer group membership are also independently associated with profitability. A farmer who receives PDM support but experiences a disease outbreak that materially increases mortality could therefore lose a substantial share of the associated profitability advantage within a single production cycle. This finding is consistent with the broader argument advanced by Balana & Oyeyemi (2022) and Mdletshe & Obi (2023) that capital transfers alone are unlikely to deliver sustained profitability improvements without complementary technical and market-access support.

Table 8: Ordinary Least Squares Regression – Determinants of Gross Margin (Dependent Variable: Gross Margin in UGX, n = 76)

Variable	Coefficient (UGX)	Robust SE	p-value
PDM beneficiary	+499,338.87	162,550.41	0.0032
Flock size stocked (per bird)	+4,917.74	634.05	1.42×10^{-10}
Mortality rate (per point)	−97,281.07	19,567.19	0.0000060
Veterinary access	+221,922.86	180,730.63	0.2244
Farmer group membership	+470,943.86	207,689.91	0.0270
Non-PDM credit access	+308,372.42	158,385.63	0.0563
Age (years)	+9,431.55	8,056.39	0.2464
Sex (1 = male)	−135,059.45	158,238.62	0.3968
Distance to market (km)	+23,654.09	24,506.13	0.3384
Market access	+31,806.10	161,413.68	0.8445
Feed source (1 = agro-dealer)	−143,369.01	210,039.43	0.4975
Household size	+9,027.67	46,743.57	0.8475
Training in last 12 months	+14,601.30	149,797.77	0.9227
Broiler as main income source	+49,557.53	184,996.25	0.7897
Years of schooling	−3,965.00	18,713.56	0.8329
Broiler experience (years)	+5,658.97	42,137.13	0.8936
Constant	−752,928.10	557,802.84	0.1822

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary of findings and conclusions

This study provides the first econometrically detailed assessment of the PDM's effect on small-scale broiler farm profitability in Uganda. The first hypothesis, that there is a significant difference in profits between PDM beneficiaries and non-beneficiary broiler farmers, is supported by the unadjusted comparison. In this, gross margin, the benefit-cost ratio and the return on variable cost were all significantly higher among beneficiaries. However, the size of this raw gap is greatly due to pre-existing differences between the two groups that are independently associated with profitability in the literature. After controlling for these and other observable characteristics in the OLS regression, the difference associated with PDM participation reduced. This indicates that part of the initial profitability difference is associated with observable differences between beneficiaries and non-beneficiaries.

The second hypothesis, that the Parish Development Model has a significant effect on the profitability of small-scale broiler poultry farming in Wakiso District, is supported by the OLS evidence. PDM beneficiary status was a significant positive predictor of gross margin after controlling for production characteristics and socio-economic and institutional access factors. This finding is reinforced by the Probit model of participation, which confirms that beneficiaries and non-beneficiaries differ systematically on observable characteristics, specifically age, land ownership, farmer group membership, non-PDM credit access, and distance to market, rather than being randomly assigned to participation status. The OLS estimate is best interpreted as the PDM effect net of this non-random selection into the programme, to the extent that the selection operates through the observable characteristics captured in this study.

Three further conclusions follow from the observed results as a whole. First, PDM beneficiaries and non-beneficiaries in this sample differ primarily on access-related and structural characteristics. These include age, flock size, market proximity and farmer group membership, rather than on the human capital characteristics conventionally associated with productive capacity. This pattern suggests that the programme's selection process in Wakiso District mainly operates through administrative and social capital channels, with implications for the equity of

programme reach. Second, small-scale broiler farming is profitable at the variable-cost level for both beneficiaries and non-beneficiaries. This confirms that the enterprise is commercially viable in this peri-urban setting, independent of PDM status. It provides the baseline against which the programme's impact must be evaluated. Third, PDM contributes positively and significantly to profitability. However, this contribution is also due to other factors such as farmer group membership, veterinary access and credit diversification. This has direct relevance for various policy and implementation recommendations.

5.2. Recommendations

Systematically link PDM beneficiary recruitment to established farmer cooperatives and groups. Farmer group membership independently increases gross margin through various channels such as bulk input purchasing, coordinated market access, and collective price negotiation. The current recruitment model, which channels PDM through newly formed parish SACCOs, fails to capture these complementary benefits for most beneficiaries. The PDM secretariat should develop a formal integration protocol between PDM SACCO registration and existing farmer cooperative networks. For beneficiaries already in groups, this integration unlocks the simultaneous profitability advantage documented in this study. For those outside groups, SACCO enrolment should be accompanied by active facilitation of membership in a recognised poultry cooperative. This converts SACCO participation from a credit access mechanism into a broader market and network development pathway.

Introduce structured reinvestment guidance alongside grant disbursement. The wide dispersion in beneficiary gross margins reflects mixed patterns of grant deployment. Some beneficiaries used the capital to scale up substantially while others used it more modestly or absorbed it into existing cost structures without expanding productive capacity. Without structured guidance at the point of disbursement, the same grant amount produces very different profitability outcomes depending on how individual farmers allocate it. The PDM secretariat should introduce a mandatory enterprise planning module that specifies minimum reinvestment thresholds for productive inputs and documents intended use prior to fund release. Visits at the midpoint of the production cycle would allow SACCO officials to confirm alignment between planned and actual deployment.

Increase the grant amount or introduce a performance-linked top-up mechanism. The PDM grant of UGX 1,000,000 covers at most one quarter of a single cycle's feed costs for a farmer operating at the sample mean flock size. For the grant to enable beneficiaries to achieve the flock sizes at which scale economies in feed purchasing become most pronounced, the grant amount would need to increase reasonably. Otherwise, a performance-linked top-up should be made available to beneficiaries who demonstrate full repayment in their first cycle and reinvested their initial grant productively. This mechanism would be efficient because it selects for the farmers most likely to generate returns large enough to service additional obligations.

Attach a funded veterinary extension component directly to the PDM revolving fund. Mortality rate is the single largest negative determinant of gross margin in this study. The full sample mean mortality rate of 7.97% already exceeds the 6 – 7% typically regarded as the acceptable upper limit for well-managed commercial broiler operations. A veterinary extension sub-component within the PDM parish budget should therefore be catered for. This should probably cover at minimum two structured farm visits per production cycle by a trained paraveterinary officer. Biosecurity compliance should also be tracked as a Key Performance Indicator in programme monitoring frameworks.

Establish parish level market information systems to reduce dependence on spot-market middlemen. The existing literature confirms that farmers selling exclusively through spot-market middlemen at the farm gate receive substantially lower farm-gate prices than those accessing institutional buyers (Hill et al., 2021; Geffersa & Tabe-Ojong, 2024). Distance to market was not a significant determinant of gross margin in this study's OLS regression, but market channel quality was directionally positive. The non-significance likely reflects inadequate variation in market channel access across the sample. Most farmers in all five parishes were predominantly reliant on spot-market transactions. District Production Offices should work with the PDM Parish information systems pillar to establish price bulletin boards at parish trading centres and support the formalisation of collective marketing arrangements through SACCO commercial sub-committees.

5.3. Limitations of the study

The study's cross-sectional design cannot separate the pre-existing scale and market access advantages of PDM beneficiaries from the productive changes attributable to the programme after disbursement. The PDM was launched in 2022 and no farm-level profitability baseline existed prior to the programme. This makes a pre-post or difference-in-differences design impossible at the time of data collection. The OLS regression addresses observable selection bias and the Probit model identifies which of the variables systematically predict participation. However, regression on observables cannot eliminate the possibility that unobserved farmer characteristics jointly influence both PDM participation and profitability outcomes. Panel data tracking the same farmers across multiple cycles before and after PDM disbursement would be required to fully resolve this identification problem.

The study's realized sample of 76 farmers (38 beneficiaries and 38 non-beneficiaries) limits statistical power, particularly for gross margin, which showed the largest relative dispersion of the three profitability indicators. The benefit-cost ratio and return on variable cost, being normalised measures, showed proportionally less dispersion and were estimated with correspondingly greater precision. A larger sample would allow future work to estimate the PDM effect on gross margin with tighter confidence intervals and to test for effect heterogeneity, for example whether the PDM effect differs between farmers who are and are not members of a farmer group.

5.4. Directions for future research

The most important next step for the literature is a longitudinal study that tracks PDM beneficiaries and comparable non-beneficiaries across at least three production cycles. It could be one before PDM grant disbursement and two after. A difference-in-differences or fixed-effects estimator applied to panel data would eliminate the time-invariant unobserved heterogeneity. It would also provide credible causal estimates of the programme's effect on profitability trajectories. Furthermore, a study replicating this design across a sample of districts that vary in market access, rainfall reliability, and PDM implementation intensity would establish whether the current findings represent an effect driven by favourable peri-urban conditions or a baseline effect observable across more challenging environments. Districts such as Mubende, Luwero, or Soroti would provide meaningful contrasts in market integration and agricultural infrastructure. Comparative analysis would also allow decomposition of the PDM effect into the components attributable to

the revolving fund itself and those attributable to the institutional infrastructure of SACCO formation.

This study demonstrates that mortality management is the single largest profitability risk facing PDM supported broiler farmers. A prospective study comparing a control group receiving the standard PDM revolving fund with a treatment group receiving the fund plus a structured parish-level veterinary extension component would establish whether the veterinary investment is justified by the mortality reduction and associated profitability improvement it generates. A cost-effectiveness ratio expressed as PDM profit preserved per shilling of extension investment would provide policymakers with a basis for scaling the extension component. The borderline significance non-PDM credit access in the OLS model suggests that the full profitability potential of the PDM is not only constrained by mortality but also by weak market access and credit diversification. A study examining the differential profitability outcomes of PDM beneficiaries who access institutional buyers through organised collective marketing versus those who sell exclusively through spot-market channels is suitable. It would quantify the market premium available to farmers who sell directly without brokers. It would also establish the business case for the market information system and collective marketing recommendations.

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APPENDIX I: SURVEY QUESTIONNAIRE

Introduction and Consent

Thank you, Sir/Madam, for the opportunity to speak with you.

My name is Amali Noeline. I am a third-year student at Makerere University, College of Agricultural and Environmental Sciences, pursuing a Bachelor of Science in Agribusiness Management. I am collecting data for my undergraduate research study titled:

“Assessing the Role of the Parish Development Model in Enhancing the Profitability of Small-Scale Broiler Poultry Farming in Wakiso District.”

You are one of the respondents that have been selected to participate in this study. This study is investigating whether PDM participation has improved the profitability of small-scale broiler poultry farmers in Wakiso District. Findings will be shared with Makerere University and may inform improvements to the PDM programme for the benefit of farmers like yourself. Your honest responses are therefore essential to the quality of this research. This interview will take approximately 20 to 30 minutes and it will NOT be recorded. You will be asked about your household background, your broiler production activities, your costs and revenues, and your experience with the PDM programme.

Some questions require you to recall figures from your most recently completed production cycle, please provide your best estimates where exact records are not available. All information you provide will be kept strictly confidential. Your name will not appear in any report or publication. Your responses will be combined with those of other farmers and only group summaries will be reported. Data will be stored securely and used solely for this academic study. You are free to ask questions and or make any comment about this study during and after the interview for clarification.

This questionnaire will NOT be shared with PDM officials, local government, or any regulatory body. Participation is entirely voluntary. You may decline to answer any question or withdraw at any time without penalty. Your access to any services or support you currently receive will not be affected in any way. There are no known risks associated with this interview and there is no direct financial benefit to you. However, findings from this study may contribute to improved PDM implementation that could benefit broiler farmers in Wakiso District and across Uganda.

Do you have any questions about the survey or what I have said so far? If yes, allow the questions and respond to them.

Are you willing to participate? ☐ YES (1) ☐ NO (0)

ADMINISTRATIVE INFORMATION

Respondent ID	
Date of Interview (DD / MM / YYYY)	
Start Time	
Stop Time	
Sub-county	
Parish	
Village	
Respondent Group	☐ PDM Beneficiary (1) ☐ Non-beneficiary (0)

SECTION A: SOCIO-ECONOMIC AND DEMOGRAPHIC CHARACTERISTICS

No.	Question	Response / Code
A1	Sex of respondent	☐ Male (1) ☐ Female (0)
A2	Age of respondent	_____ years
A3	Marital status	☐ Married (1) ☐ Single (2) ☐ Widowed (3) ☐ Divorced/Separated (4)
A4	Years of schooling	_____ years
A5	Highest level of education completed	☐ No Formal Education (0) ☐ Primary (1) ☐ Secondary (2) ☐ Certificate (3) ☐ Diploma (4) ☐ University Degree (5)
A6	Are you the head of this household?	☐ Yes (1) ☐ No (0)
A7	Total number of people living in this household	_____ persons
A8	Number of household members who actively work on the broiler farm	_____ persons
A9	For how many years have you been doing broiler farming?	_____ years
A10	Is broiler farming your main source of income?	☐ Yes (1) ☐ No (0)
A11	Land Ownership Status	☐ Own Land (1) ☐ Family Land (2) ☐ Rented Land (3) ☐ Leased Land (4) ☐ Other (Specify)
A12	Size of land	_____
A13	If rented, how much rent do you pay per season or month (UGX)?	UGX _____ ☐ Per season ☐ Per month (Write 0 if not rented)
A14	Do you own a mobile phone?	☐ Yes - Smartphone (2) ☐ Yes - Basic phone (1) ☐ No (0)

A15	Do you regularly use Mobile Money Services?	☐ Yes (1) ☐ No (0)
A16	Are you a member of any farmer group, cooperative or association besides PDM?	☐ Yes (1) ☐ No (0)
A17	If yes, what benefits do you obtain from the group? (Multiple selection)	☐ Training ☐ Input Access ☐ Credit Access ☐ Market Information ☐ Collective Marketing ☐ Other (Specify)
A18	Have you received any poultry production training in the last 12 months?	☐ Yes (1) ☐ No (0)
A19	Have you received any poultry extension/advisory services in the last 12 months?	☐ Yes (1) ☐ No (0)
A20	Have you accessed any agricultural credit or loan in the last 12 months?	☐ Yes (1) ☐ No (0)
A21	If yes, what was the source of credit?	☐ PDM (1) ☐ SACCO (2) ☐ Bank (3) ☐ Microfinance Institution (4) ☐ Village Savings Group (5) ☐ Family/Friends (6) ☐ Other (Specify)

SECTION B: PDM PARTICIPATION AND SUPPORT

No.	Question	Response Format / Codes
B1	Are you a beneficiary of the Parish Development Model (PDM)?	☐ Yes (1) ☐ No (0)
B2	In what year did you first receive PDM support?	
B3	What amount of PDM funds did you receive?	
B4	Did you invest any of the PDM funds in broiler production?	☐ Yes (1) ☐ No (0)
B5	What was the major use of the PDM funds? (Multiple selection)	☐ Purchase of Day-Old Chicks (1) ☐ Feed Purchase (2) ☐ Poultry Housing (3) ☐ Equipment Purchase (4) ☐ Drugs/Vaccines (5) ☐ Working Capital (6) ☐ Other (Specify)
B6	Did you receive any additional support besides funding?	☐ Yes (1) ☐ No (0)
B7	If yes, what additional support did you receive?	☐ Training ☐ Extension Services ☐ Input Support ☐ Market Linkages ☐ Business Advisory Services ☐ Other

B8	How would you rate the usefulness of the support received?	☐ Not Useful (1) ☐ Slightly Useful (2) ☐ Useful (3) ☐ Very Useful (4)
B9	Have you received any follow-up visits or monitoring from PDM officials after receiving support?	☐ Yes (1) ☐ No (0)
B10	Has your broiler enterprise expanded since receiving PDM support?	☐ Yes (1) ☐ No (0)
B11	If yes, in what way has it expanded?	☐ Increased Flock Size ☐ Improved Housing ☐ Increased Production Cycles ☐ Better Feeding Practices ☐ Improved Marketing ☐ Other (Specify)
B12	Overall, how would you rate the contribution of PDM support to your broiler enterprise?	☐ Very Low (1) ☐ Low (2) ☐ Moderate (3) ☐ High (4) ☐ Very High (5)
B13	To what extent has PDM support contributed to the growth of your broiler enterprise?	☐ Very Low (1) ☐ Low (2) ☐ Moderate (3) ☐ High (4) ☐ Very High (5)
B14	To what extent has PDM support improved the profitability of your broiler enterprise?	☐ Very Low (1) ☐ Low (2) ☐ Moderate (3) ☐ High (4) ☐ Very High (5)
B15	Would you recommend participation in PDM to other broiler farmers?	☐ Yes (1) ☐ No (0)
B16	Additional comments regarding PDM support	

For Non-PDM Beneficiaries Only

No.	Question	Response Format / Codes
B17	Are you aware of the Parish Development Model (PDM)?	☐ Yes (1) ☐ No (0)
B18	Have you ever applied for PDM support?	☐ Yes (1) ☐ No (0)
B19	If yes, were you successful?	☐ Yes (1) ☐ No (0)
B20	What is the main reason you have not benefited from PDM support?	☐ Did Not Apply (1) ☐ Not Selected (2) ☐ Delayed Processing (3) ☐ Lack of Information (4) ☐ Other (Specify)

SECTION C: BROILER ENTERPRISE CHARACTERISTICS

No.	Question	Response Format / Codes
C1	What type of broiler housing do you use?	☐ Permanent House (1) ☐ Semi-permanent House (2) ☐ Temporary Structure (3)
C2	Do you own the broiler house(s)?	☐ Yes (1) ☐ No (0)
C3	How many broiler houses do you currently operate?	_____ Houses
C4	On average, how many production cycles do you complete per year?	_____ Cycles
C5	Which category best describes your usual flock size?	☐ Less than 100 birds ☐ 100–299 birds ☐ 300–499 birds ☐ 500–999 birds ☐ 1,000 birds and above
C6	What month and year did the most recent completed production cycle start?	Month _____ Year _____
C7	What month and year was the flock sold?	Month _____ Year _____
C8	What was your flock size during the most recent production cycle?	_____ Birds Stocked
C9	What source do you mainly use for day-old chicks?	☐ Commercial Hatchery (1) ☐ Agro-input Dealer (2) ☐ Fellow Farmer (3) ☐ Other (Specify)
C10	What feeding system do you mainly use?	☐ Commercial Feeds Only (1) ☐ Homemade Feeds Only (2) ☐ Combination of Both (3)
C11	What is your main source of poultry feed?	☐ Feed Manufacturer (1) ☐ Agro-input Dealer (2) ☐ Own Formulation (3) ☐ Other (Specify)
C12	Do you have access to a regular veterinary service provider?	☐ Yes (1) ☐ No (0)
C13	Do you vaccinate your broilers according to a vaccination schedule?	☐ Always (1) ☐ Sometimes (2) ☐ Never (3)
C14	Do you keep production records for your broiler enterprise?	☐ Yes (1) ☐ No (0)
C15	Which records do you keep?	☐ Mortality Records ☐ Feed Records ☐ Vaccination Records ☐ Sales Records ☐ Expense Records ☐ Other
C16	How often do you update your business records?	☐ Daily (1) ☐ Weekly (2) ☐ Monthly (3) ☐ Occasionally (4)
C17	Do you prepare a budget before starting a production cycle?	☐ Yes (1) ☐ No (0)

C18	Do you compare actual expenses with your planned budget?	☐ Always (1) ☐ Sometimes (2) ☐ Never (3)
C19	Do you calculate the profit or loss from each production cycle?	☐ Always (1) ☐ Sometimes (2) ☐ Never (3)
C20	Do you separate broiler enterprise finances from household finances?	☐ Yes (1) ☐ No (0)

**SECTION D: COSTS OF BROILER PRODUCTION
(MOST RECENT COMPLETED PRODUCTION CYCLE)**

No.	Question	Response Format / Codes
D1	How many day-old chicks did you purchase in the previous cycle	
D2	Buying price of the day-old chicks?	
D3	Approximately how much did you spend on feed during the production cycle?	
D4	Approximately how much did you spend on vaccines, medications and veterinary services during the production cycle?	
D5	How many workers do you employ in broiler business	
D6	Approximately how much did you spend on hired labour during the production cycle?	
D7	Approximately how much did you spend on transport related to broiler production and marketing?	
D8	Distance to the market	
D9	Did you incur any other production cost	☐ Yes (1) ☐ No (0)
D10	If yes, which other costs did you incur	
D11	Approximately how much did you spend on other production expenses?	
D12	Did you incur any other expenses?	☐ Yes (1) ☐ No (0)
D13	If yes, specify them.	
D14	Were the cost figures provided based on written records?	☐ Yes (1) ☐ No (0) ☐ Partly (2)

SECTION E: REVENUE AND SALES
(MOST RECENT COMPLETED PRODUCTION CYCLE)

No.	Question	Response Format / Codes
E1	How many broiler birds were sold during the production cycle?	Birds
E2	How many broiler birds died before sale?	Birds
E3	Were any birds retained for home consumption, breeding, or other purposes?	☐ Yes (1) ☐ No (0)
E4	If yes, how many birds were retained?	Birds
E5	What was the average selling age of the birds?	Weeks
E6	What was the average selling price per bird?	
E7	Did you earn any additional income from the broiler enterprise (e.g., sale of manure, empty feed bags, litter)?	☐ Yes (1) ☐ No (0)
E8	If yes, what was the estimated amount earned from these additional sources?	
E9	What was your main market for broiler sales?	☐ Individual Consumers (1) ☐ Traders/Middlemen (2) ☐ Hotels/Restaurants (3) ☐ Retail Shops (4) ☐ Institutions (5) ☐ Other (Specify)
E10	How were most of the birds sold?	☐ At Farm Gate (1) ☐ Local Market (2) ☐ Delivered to Buyers (3) ☐ Other (Specify)
E11	Did you experience difficulty selling your birds during this production cycle?	☐ Yes (1) ☐ No (0)
E12	If yes, what was the main challenge?	☐ Low Prices (1) ☐ Lack of Buyers (2) ☐ High Competition (3) ☐ Transport Problems (4) ☐ Delayed Payments (5) ☐ Other (Specify)
E13	Were any birds still unsold after the intended marketing period?	☐ Yes (1) ☐ No (0)
E14	If yes, how many birds remained unsold?	Birds
E15	Were any of your sales made on credit?	☐ Yes (1) ☐ No (0)

E16	If yes, approximately what percentage of sales were made on credit?	_____ %
E17	Were the revenue figures provided based on written records?	☐ Yes (1) ☐ No (0) ☐ Partly (2)
E18	Do you regularly seek market information before selling your birds?	☐ Yes (1) ☐ No (0)
E19	What is your main source of market information?	☐ Fellow Farmers (1) ☐ Traders/Buyers (2) ☐ Radio (3) ☐ Extension Workers (4) ☐ Farmer Groups (5) ☐ Internet/social media (6) ☐ Other (Specify)
E20	How would you rate the prices received during the most recent cycle?	☐ Very Low (1) ☐ Low (2) ☐ Fair (3) ☐ Good (4) ☐ Very Good (5)

What is the single most important challenge affecting your broiler enterprise?

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What measures do you suggest to improve profitability among broiler farmers?

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