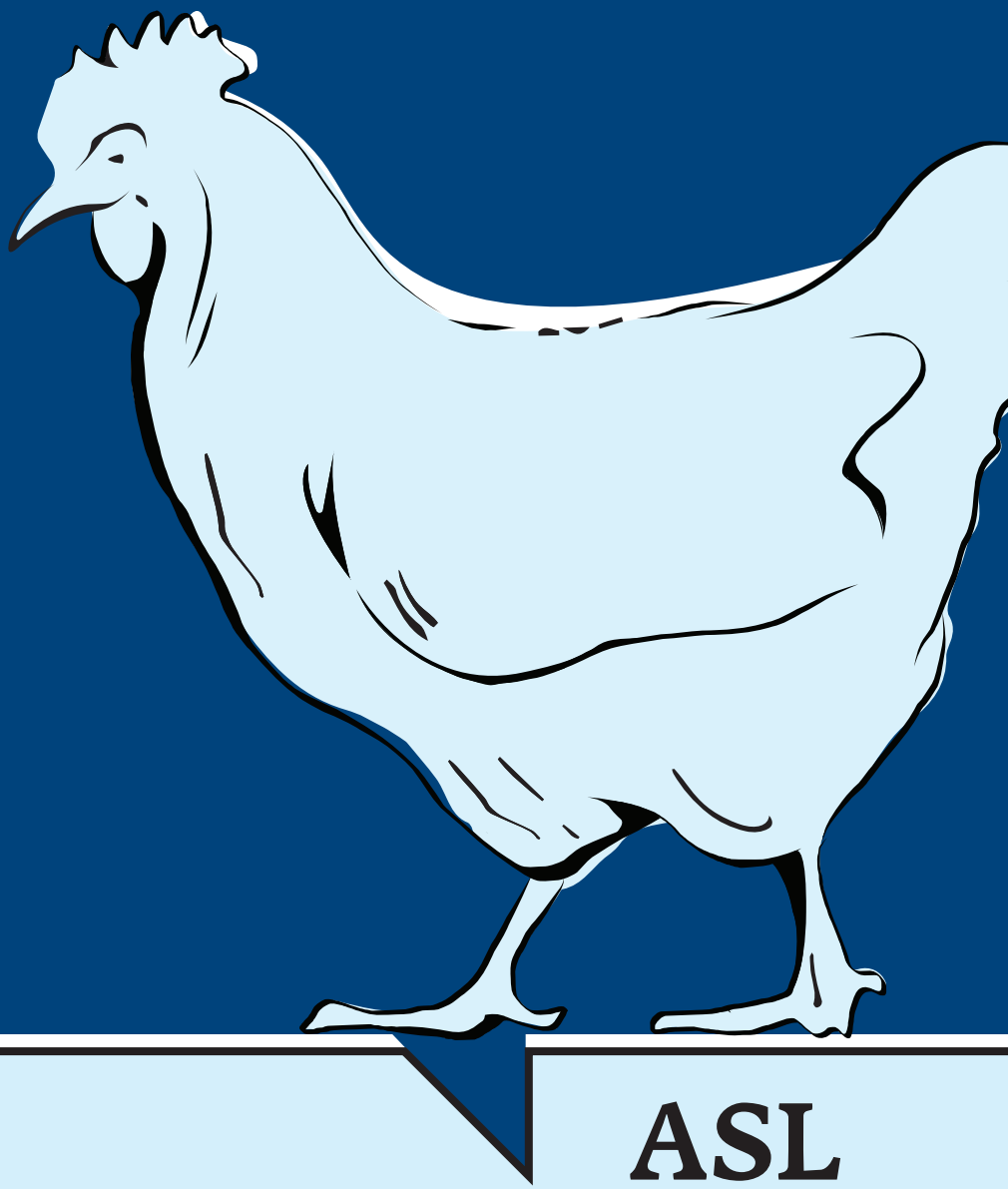
Food and Agriculture Organization of the United Nations

AFRICA SUSTAINABLE LIVESTOCK 2050

Business models along the poultry value chain

UGANDA

Evidence from the Wakiso and Mukono districts



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ASL 2050

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Contents

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Disclaimer

Executive summary

The poultry value chain in Uganda has high growth potential due to the increase demand for poultry meat and eggs, particularly in urban and peri-urban areas. Uganda's human population is expected to more than double from currently 45 million to 106 million by 2050, when about 44 percent of the population will live in cities and towns (FAO, 2020). This population growth, in combination with an expected increase in per capita GDP from USD about 700 today to over USD 1 900 in 2050, is predicted to raise the demand for poultry products by over 300 percent. Projected demand growth will provide major business opportunities for poultry operators. However, an unregulated growth of the poultry sector carries the risk of exacerbating the negative impacts of poultry-related activities on the environment and on human health, such as through poultry-associated zoonotic diseases and antimicrobial resistance.

This study generated evidence on the business models along the poultry value chain in Uganda with the objective to facilitate a One Health dialogue at local level that results in the wide adoption of biosecurity and veterinary public health practices along the poultry value chain. Indeed, stakeholders' willingness to adopt good practices involves some changes – from minor to major – in their business model, which calls for an understanding of the business models of poultry operators along the value chain.

This study investigates the business models of actors at the four key nodes of the poultry value chain: producers/farmers, traders/transporters, marketers/retailers and slaughterers/processors in Mukono and Wakiso districts. Data were gathered through holding 12 focus group discussions and 24 in-depth interviews. A business model canvas was used to characterize the poultry businesses and an enterprise budget constructed to assess their profitability.

The findings indicate that the poultry producers mainly rely on family labour to operate their farms and do not keep proper books of accounts, which makes it difficult to cost the production and ascertain the actual profits of the business. Poultry traders, mainly men, usually transport birds to the market by using motorcycles. The fixed costs of their business are low – as for example they do not need to purchase or rent land for a poultry house – but they require substantial working capital to purchase the birds. Marketers/retailers sell chicken to walk-in customers and hotels/restaurants. Although their operating costs are low, they make minimal profits also because of high bird mortality due to infections in unhygienic cages and congestion of birds in the cages. Slaughterers/processors adopt rudimentary and labour-intensive slaughtering practices, which makes the unit cost per processed bird high and lowers profits.

Overall, most of the actors in the poultry value chain do not keep financial records and their business processes are labour intensive; they have limited knowledge and information on biosecurity practices and public health risks and relevant mitigation measures. Access to credit is generally informal, with actors usually borrowing from groups, friends and family members. In general, the lack of business management skills, limited business volumes and cash inflows lower actors' ability to access finance from formal financial institutions.

We recommend business management training for the poultry value chain actors, especially in book-keeping, to enable them better assess the performance of their businesses. In addition, poultry operators should be sensitized on public health risks and on biosecurity practices to mitigate them, particularly as in many cases compliance with biosecurity practices can improve business' profitability. In general, adoption of modern technologies and tools could reduce cost and increase revenue of the businesses. Finally, actors should be encouraged to aggregate through associations so as to increase their bargaining power and better cooperate with finance institutions and input suppliers.

1. Introduction

The Africa Sustainable Livestock 2050 of Food and Agriculture Organization of the United Nations (FAO) and the government of Uganda are supporting a One Health policy dialogue in the country aimed at identifying public sector procedures (working modalities of public sector officers) that facilitate the adoption of good practices by private sector stakeholders along the livestock value chain. The focus is on poultry value chain actors – from producers through traders to retailers – and on good practices that minimize livestock-related public health threats associated with zoonotic diseases and antimicrobial resistance.

Stakeholders' adoption of good practices involves some changes – from minor to major – in their business model. Stakeholders' willingness to adopt good practices, therefore, also depends on how changes in the business model affect the profitability of the enterprise. This report characterizes the business models of poultry actors at the different nodes of the value chain node in Mukono and Wakiso Districts. It aims to answer the following questions:

- To what extent are the poultry businesses profitable?
- Do poultry value chain actors have the capacity to adopt good practices?
- Do poultry value chain actors have incentives and resources to adopt good practices?
- Can poultry value chain actors access finance to adopt good practices?

2. A snapshot of the poultry sector

The poultry population in Uganda is estimated at 36 million birds. Eighty per cent (80%) of the birds are of indigenous breeds kept under free range, while 20 percent are raised in commercial production systems (UBOS, 2018). Due to the high population growth, urbanization and increases in household purchasing power, consumption of animal sourced food, particularly of poultry origin, is rapidly growing in Uganda (UBOS, 2010). This growth in demand for animal protein provides major business opportunities for poultry producers and can have positive implications on food security (FAO, 2012).

The poultry sector includes a variety of private businesses, from actors producing day-old chicks (hatcheries) to those selling poultry meat to consumers. Figure 1 provides an overview of the poultry value chain actors. These businesses regularly liaise and cooperate with public actors, such as policy-makers, public veterinarians, public animal health workers, market inspectors, among others. An enabling environment would ensure constructive and fruitful cooperation between private poultry operators and the public sector, which would result in a sustainable growth and transformation of the poultry sector. However, the environment in which poultry actors operate do not always facilitate the wide adoption of good practices, which creates environmental and public health threats. The recent COVID-19 pandemic has made even harder for businesses to effectively cooperate and collaborate with the public sector, as the enterprises' profitability has reduced in the last year or so due to a lower demand for poultry products.

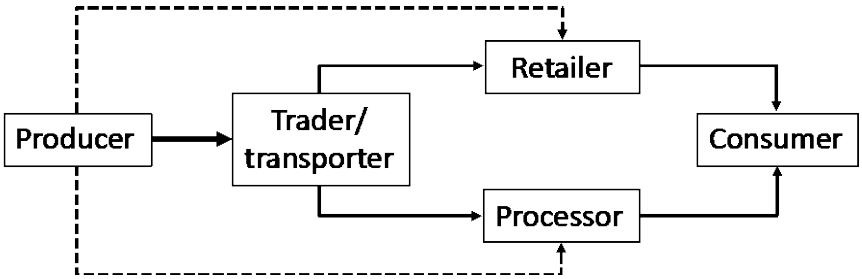

Figure 1: Poultry value chain actors and their relationships

3. Methodology

This reports characterizes the poultry businesses operating at four nodes of the broiler value chain, namely:

- **Production**: Actors at this node are farmers rearing birds to produce meat. Farmer raise improved or exotic broilers but also other birds, such as *kuroilers*, off-layers and indigenous / local birds.
- **Aggregation/transportation**: Actors at this node are traders, who buy birds from the farmers and distribute them to designated retailers or customers.
- **Marketing/retail**: Actors at this node own stalls in market places where they stock birds for sale.
- **Slaughtering/processing**: Actors at this node slaughter birds at designated slaughter premises, sell poultry meat and, in some cases, roast the chicken for direct sale to consumers.

We gathered data in the districts of Wakiso and Mukono, both in the proximity of Kampala. Because of their location, these districts are highly dynamic and with a thriving poultry sector, which is expected to change rapidly in response to the anticipated expansion of the capital city.

In each district, we cooperated with the District Veterinary Officers (DVO) to create a sample of poultry value chain actors. We developed and tested a semi-structured questionnaire and a targeted questionnaire to gather business-related data from actors operating at the different nodes of the poultry value chain. In each district, we had three focus group discussions in local language with an average of 11 actors at each node of the poultry value chain, i.e. we discussed with an average of over 30 actors at each node of chain. The focus group discussion gave us a general understanding of the business practices. Based on our own observation, we then selected between two and three participants at each node of the value chain, with whom we organized in-depth interviews at their business establishments to corroborate and refine the data and to gather detailed information on cost and revenue of their business.

Enterprises at the selected nodes were analyzed using the business model canvas (BMC) and the business process model. The former is a succinct representation of nine major dimensions of any enterprise, from key activities to key resources to the major cost items. Box 1 presents the BMC elements. The business process model describes the way in which operations are carried out to accomplish the business objective, such as selling or slaughtering birds. Indicative enterprise budgets were also elaborated for enterprises at each node of the value chain using data/information obtained from the focus group discussions and in-depth interviews. Data were validated at a workshop held at Makerere University Business School involving poultry value chain actors, the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), FAO and MUBS.

Box 1. The Business Model Canvas

The Business Model Canvas (BMC) is a tool used in strategic management to develop new or document existing business models. It consists of nine building blocks that describe the activities, relationships and processes of a business. The BMC helps a business clarify its:

Value proposition: The unique assembly of products and services that the business offers its customers. The value proposition is the business' unique ability to make its customer loyal. It varies from quantitative measures (e.g. price discounts) to product or service quality assurance. In poultry, it can include pricing advantages or add on/after-sales services.

Key activities: Every business has key activities that it engages in to execute its value proposition. In a poultry-related business, key activities could range from hatching eggs to selling chicken sausages.

Key resources: These are assets needed to sustain or support the business and include human, financial, intellectual and physical.

Key partners: The different actors with which the business has cultivated relationships to successfully implement its activities. In poultry, these can be relationships with suppliers, veterinarians, intermediaries and other business alliances.

Customers: For a business to be effective, the targeted customers should be well specified. These could include, for example, mass market customers or niche market customers who are willing to pay a price premium to purchase antibiotic-free poultry products.

Channels: These are the channels through which the enterprise distributes its value proposition in a fast, efficient and cost-effective manner to its customers. It can be through its local offices, online, through agents or mixed combinations.

Customer relationships: As customers are crucial to the business, the business must identify the nature of relationship it wants to foster with its customers. It is critical to state how the business will get new customers, maintain old customers and grow its revenue. The relationships vary from personal interactions, self-service, community engagement.

Cost structure: This describes the important and significant monetary consequences that drive business operations. It elicits the fixed costs, variable costs and economies of scale for operating. The business can opt for a cost-driven or a value-driven business operation. The former minimizes costs, while the latter is less concerned with costs and focuses more on value of the product.

Revenue streams: This is how the business gets income from each of the customer segments. Commonly it is through the sale of goods and services but some revenue can also be generated from other services offered. In the poultry value chain, the revenue streams range from sale of poultry products and by-products to services offered in the value addition.

4. Findings

In this section, we describe the major characteristics of the businesses at the four nodes of the poultry value chain. We present their business model canvas, the business process model and the enterprise budgets, with a focus on the profit margins and the bankability of the different enterprises. We also present some information on the adoption of biosecurity practices.

4.1 Poultry production

Business model canvas

Nationally, poultry production is dominated by indigenous chicken raised in free-range production systems. However, in the urban and peri-urban areas of Mukono and Wakiso districts, poultry operators are increasingly becoming market-oriented and a variety of breeder farms, hatcheries, layer and broiler farms exist. We gathered data on broiler farm units that, on average, raise birds for five to

six weeks per cycle (beyond six weeks the profit margins reduce due to the decreasing feed conversion ratio).

The majority of respondents practiced semi-intensive poultry production with improved breeds under the deep litter housing system. The flocks are of one breed, consisting of between 200 and 500 birds per cycle, that is producers raise between 1 000 and 2 500 birds in total per year. The poultry house varies from fairly modern to a simple rudimentary structure made out of locally available materials. The major source of day-old chicks are established hatcheries, like Ugachick Poultry Breeders and Biyinzika Poultry Enterprises limited (BIPL). Farmers source feeds from retailers, who are usually located in commercial towns scattered around the two districts. However, note that major day-old chick suppliers also provide starter feeds alongside the chicks. Coffee husks are mainly used as litter; they are sourced from nearby coffee processing factories and sell off to crop farmers after use. Broiler farmers practice an all-in all-out production system, which involves having only one batch of broilers at any time and selling all birds latest by the seventh week. During sale, clients first select the healthier birds, with the unhealthy ones usually being the last to be sold. The picture below shows a farmer weighing a bird, a common practice at poultry farm to check weight gain of birds. Key activities that take place during the production process are detailed in Table 2, which presents the business model canvas for poultry producers.

Poultry farmer in Nama, Mukono district, weighing a bird

Producers are middle-aged people (35-44 years). The ventures are young, between 1-3 years old. Since poultry production/ farming is home-based, many producers are female (62%) and use own and family labour. On the one hand, this empowers women and reduces labour cost but, on the other, it could negatively affect the quality of the business as women are also responsible for a variety of household chores. The interviewed poultry farmers in Mukono and Wakiso Districts are semi-commercial operators, while the typical producer country wide is subsistence-oriented and keeps few birds in a free-range production system. Poultry houses are largely made of locally available materials: this greatly compromises bio-security putting the poultry at risk of diseases. Majority of producers interviewed operated as sole-proprietors with no registration documents, like certificates of registration and trading licenses, a situation that encumbers business expansion and growth. We suggest that actors at this node obtain key health records, like vaccination and treatment records, from the supplier of day-old chicks as well as start adopting basic biosecurity practices that, by reducing morbidity and mortality in birds, could result in increased business profitability.

Table 1: Demographics of poultry producers

Feature	Percent
Age	
17-24	11.5
25-34	23.1
35-44	53.8
45-54	3.8
>54	7.7
Gender	
Female	61.5
Male	38.5
Age of enterprise	
1-3 years	47.6
4-6 years	23.8
7-10 years	4.8
>10 years	28.6
Nature of management	
Sole proprietorship	90.9
Partnership	9.1
No of birds reared per cycle	
<200	17.4
200-500	78.3
>500	4.3

Table 1: Business Model Canvas of the poultry production node

<table>
<tr><th>Key Partners</th><th>Key Activities</th><th>Value Propositions</th><th>Customer Relationships</th><th>Customer Segments</th></tr>
<tr><td rowspan="3">Village Savings and Loans Associations(VSLA) and Savings and Credit Co-opratives (SACCO)
Hatcheries
Feed manufacturers and processors
Veterinary practitioners
Agro Vet shops
Brokers/Traders
Fellow farmers</td><td>Vaccination of birds
Feeding of birds
Weighing of birds
Cleaning of the poultry house
Turning the litter
Marketing the birds</td><td rowspan="3">Supply healthy large broiler chicken to customers
Supply quality products</td><td>Constant and active communication with marketers/ transporters and processors</td><td rowspan="3">Individuals through processors, transporters and retailers
Commercial entities like restaurants and hotels</td></tr>
<tr><td>Key Resources</td><td>Channels</td></tr>
<tr><td>Brooders and poultry houses
Family members and non-family labour
Market networks and relationships
Bank and microcredit loans</td><td>Telephone contacts
Market contacts
Onsite advertising (e.g. posters)</td></tr>
<tr><td colspan="3">Cost Structure</td><td colspan="2">Revenue Streams</td></tr>
<tr><td colspan="3">Fixed costs: rent
Variable costs: feeds, medicines, utilities (i.e. electricity, water) and veterinary services</td><td colspan="2">Sales: 450 broilers per 5 week cycle
Fertilizers/litter UGX 10 000 per 50 kg
Cash based payment</td></tr>
</table>

Business process

The business process of poultry production is portrayed in Figure 2.

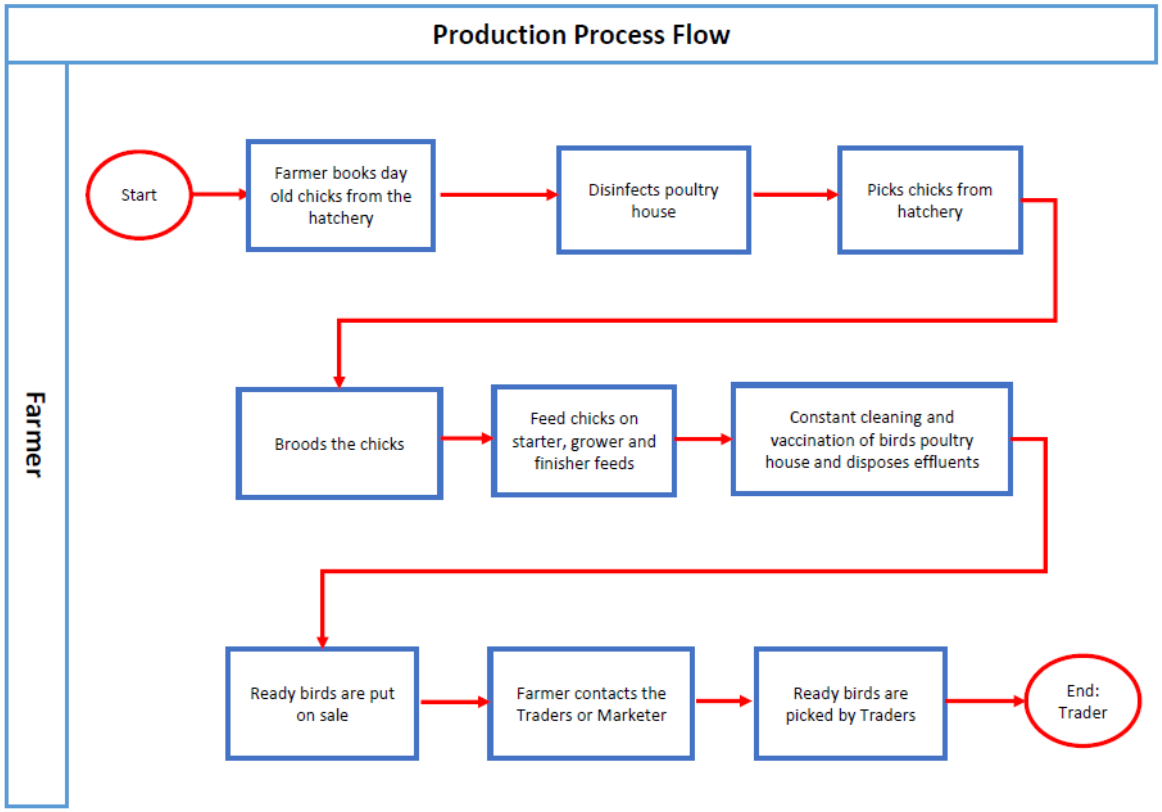

Figure 2: Business process flow of poultry production

Producers carry out activities at the farm with limited consultation with public or private veterinary officers. Relationships with other market actors are market-based with limited horizontal and vertical integration.

Enterprise budget

The enterprise budget of a poultry producer is presented in Table 3. Poultry production is labour intensive and the owners reduce costs (e.g. wages) by personally managing their ventures. Farmers rear the birds by mixing feeds, providing water, vaccines and drugs such as vitamins. The active engagement of the farmer translates into slim operational costs and high profit margins (32%). This means that the poultry producing business is potentially bankable. However, other underlying processes in the business model curtail their bankability. For example, producers do not keep proper records, have non-transparent accounting processes and do not comply with several formal registration requirements. Since large and medium financiers like banks prefer to lend to businesses with proper books of account, poultry producers often fall outside the banks' eligibility for loans.

Poultry producers, therefore, mainly borrow from microfinance institutions at relatively high interest rates (about 25 percent per annum). High-interest rates are likely to erode the profit and make it difficult for the business to grow. Although some farmers can source financing informally at minimal or no interest, the amounts received are meagre and do not allow significant investments. Therefore, while production is profitable, producers have limited growth prospects because the prevailing business model does not allow external financing.

Table 3: Enterprise budget of a poultry producer, Uganda Shillings (3 650 UGX = 1 USD)

ITEM	Per cycle[1]	Per month	Assumption
Revenue			
Broilers	4 500 000	1 875 000	450 broilers @ 10 000 UGX/cycle
Husks/manure	60 000	25 000	600kg @ 100 UGX/cycle
Total Revenue	**4 560 000**	**1 900 000**	
Variable costs			
Birds (DOCs)	1 200 000	500 000	450 DOCs @ 2 667 UGX/cycle
Feed	980 000	408 333	
Medication	115 000	47 917	
Litter	90 000	37 500	
Casual labour	200 000	83 333	
Transport	200 000	83 333	
Misc. (charcoal, security, etc.)	135 000	56 250	
Total variable costs	**2 920 000**	**1 216 666**	
Returns over variable costs	**1 640 000**	**683 334**	
Fixed costs			
Electricity	35 000	14 583	
Water	52 500	21 875	
Depreciation of chicken house	80 000	33 333	UGX 4 000 000 over 10 years
Total fixed costs	**167 500**	**69 791**	
Total costs (variable & fixed)	**3 087 500**	**1 286 457**	
Indicators			
Returns over total costs	**1 472 500**	**613 543**	
Net profit/bird		**3 264**	
Net profit margin (%)		**32.0**	
Fixed costs/revenue (%)		**4.0**	

[1] Duration of one cycle is 5 to 6 weeks and a producer completes 5 cycles a year, i.e. an average of 188 birds/month

4.2. Traders or transporters

Business model canvas

Poultry transport is managed by traders or agents who purchase mature chicken from the producers and supply them to processors or retailers. The traders are a key actor along the value chain as producers rarely deliver directly to markets or consumers. Traders/transporters typically hire passenger motorbikes (*boda bodas*) to collect and deliver birds, which are usually transported in cages. Although using *boda bodas* significantly reduces costs, it limits the number of birds that traders can carry on each trip. Some traders use bicycles and public transport vehicles to carry live birds from the farms to the market. Using passenger *boda bodas* and public vehicles to transport birds increase the risk of spread of zoonotic disease.

A trader in Nsangi, Wakiso district, offloading broilers from the motorcycle

All (100%) interviewed traders are men and most are young, with 78 percent falling in the 17-34 age category. They run their business as sole proprietorship. The majority of them have been managing these micro-businesses for more than 7 years. Most do not have enough assets and collateral to access external financing, which makes it challenging to expand and formalize their business. Traders tend to not comply with basic biosecurity practices, such as cleaning and disinfecting bird cages at each transport or checking the health status of the flock before transportation, such by making onsite visit/s to the producer prior to collection or paying a professional to perform a health check. These practices, however, would increase the cost of the business.

Table 4: Demographics of traders/transporters

Feature	Percent
Age	
17-24	12.5
25-34	65.6
35-44	18.8
45-54	3.1
>54	0.0
Gender	
Female	0.0
Male	100.0
Age of enterprise	
1-3 years	19.2
4-6 years	23.1
7-10 years	15.4
>10 years	42.3
Nature of management	
Sole proprietorship	73.1
Family business	3.8
Partnership	23.1
No of birds transported per day	
5-190	84.0
200-500	16.0

The BMC of poultry traders is presented in table 5.

Table 5: Business model canvas of poultry traders/transporters

<table>
<tr><th>Key Partners</th><th>Key Activities</th><th>Value Propositions</th><th>Customer Relationships</th><th>Customer Segments</th></tr>
<tr><td rowspan="3">Poultry farmers
Marketers/retailers
Community leaders
Public / private veterinary practitioners</td><td>Finding customers
Co-ordinating with poultry farmers
Cleaning the cages</td><td rowspan="3">Delivery at point to the customer
Supply of healthy birds
Timeliness</td><td>Constant and active communication between traders/transporters and processors</td><td rowspan="3">Commercial entities like restaurants and hotels
Retailers such as processors and marketers
Individual households</td></tr>
<tr><th>Key Resources</th><th>Channels</th></tr>
<tr><td>Motorcycles for transportation
Marketer networks
Financial (working capital)</td><td>Telephone contacts
Market contacts</td></tr>
<tr><th colspan="3">Cost Structure</th><th colspan="2">Revenue Streams</th></tr>
<tr><td colspan="3">Fixed costs: motorcycle maintenance (in case of onwership of motorcycle)
Variable costs: fuel or rent of motorcycle</td><td colspan="2">Sale of an average of 15-20 birds a day
Cash based payment</td></tr>
</table>

Business process

The business process of poultry traders is portrayed in Figure 3.

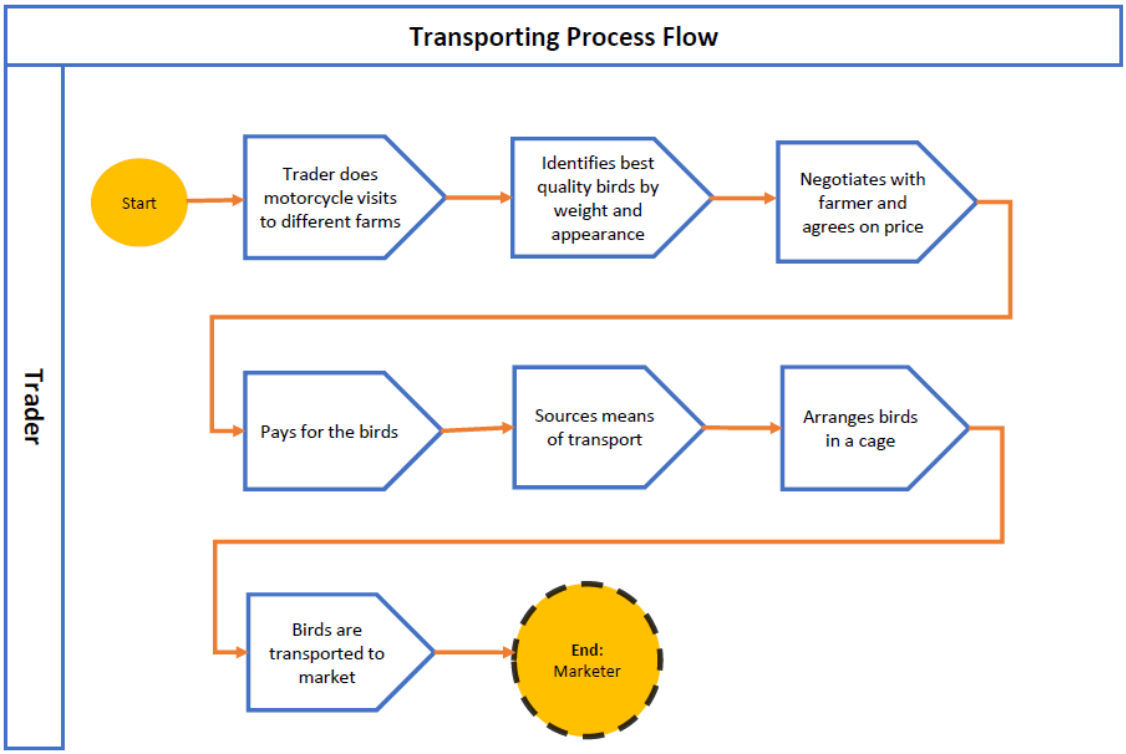

Figure 3: Business process model of poultry trade/transport

Enterprise budget

The enterprise budget of a poultry trader is presented in Table 6. The trader/transporter node has a lean cost structure with minimal fixed costs (2%), as traders keep the birds only for a few hours with the motorcycle purchase / rent being their major cost item. However, the transportation business demands large amounts of working capital because producers do not advance birds on credit. Therefore, the size of the enterprise is limited by the traders' own resources, which are typically limited. Traders have also limited access to formal credit because they lack any assets/collaterals. This makes it challenging to expand their business. The trading/transporting node is relatively competitive, with traders using a price differentiation strategy to attract more customers, with customers charged differently depending on their perceived disposable income. The average profit margin is 14.7 percent, which does not translate in high profit given the low volume of birds sold per month.

Table 6: Enterprise budget for traders/transporters in Uganda Shillings (3 650 UGX = 1 USD)

ITEM	Per month	Assumption
Revenue		
Broilers	6 000 000	500 birds @ 12,000 UGX
Total Revenue	**6 000 000**	
Variable costs		
Birds	4 800 000	500 birds @ 9,600 UGX
Fuel for motorbike	80 000	
Broker	80 000	
Misc. (e.g. disinfection)	40 000	
Total variable costs	**5 000 000**	
Returns over variable costs	**1 000 000**	
Fixed costs		
Communication	60 000	
Servicing of motorbike	60 000	
Total fixed costs	**120 000**	
Total costs (variable & fixed)	**5 120 000**	
Indicators		
Returns over total costs	**880 000**	
Profit/bird traded	**1 760**	
Net profit margin (%)	**14.7**	
Fixed costs/revenue (%)	**2.0**	

4.3. Marketers or retailers

Business model canvas

This node includes actors who operate in both formal and informal markets located in trading centers. These operate permanent or semi-permanent stalls in gazetted markets in urban areas, where they keep the birds, including broiler, kuroiler, off-layer and indigenous chicken. It is no uncommon for several marketers to share the birdcages/stalls. They sell about 5-10 live birds per day to end-consumers and, occasionally, to processors. Youthful (63.6%) men (81.8%) tend to dominate the marketing node. Marketers operate relatively established micro ventures managed by single owners. They are very asset-light and keep small numbers of poultry. They run their business operations informally and rarely keep any books of account, which makes it hard if not impossible to access finance. Only few have regularized their operations with registration certificates and trading licenses.

The marketers/retailers receive the birds at their stall in the market, that is they do not bear any transport cost. Few of them purchase birds directly from producers. The marketers/retailers' bargaining power with the traders is in general low. In addition, poor infrastructure for storage of birds coupled with poor hygienic practices causes marketers to often lose birds, which negatively affects their profit margins. Ensuring that only healthy birds enter and leave the market and improving within-market biosecurity would definitely make the business of marketers/retailers more profitable.

Poultry retailer in Kyengera, Wakiso district, selling an off layer to a client

Table 7: Demographics of poultry marketers/retailers

Feature	Percent
Age	
17-24	24.2
25-34	39.4
35-44	27.3
45-54	6.1
>54	3.0
Gender	
Female	18.2
Male	81.8
Age of enterprise	
1-3 years	11.5
4-6 years	19.2
7-10 years	42.3
>10 years	26.9
Nature of management	
Sole proprietorship	76.9
Family business	3.8
Partnership	19.2
No. of birds sold per day	
5-10	69.2
11-25	19.2
>25	11.5

Table 8: Business model canvas of the market/retail node

<table>
<tr><th>Key Partners</th><th>Key Activities</th><th>Value Propositions</th><th>Customer Relationships</th><th>Customer Segments</th></tr>
<tr><td rowspan="3">Poultry producers
Feed manufacturers and sellers
Agro vet shops
Local market leaders
Brokers/traders</td><td>Finding customers
Coordinating with suppliers</td><td rowspan="3">Supply of a variety of chicken
Affordable prices for chicken</td><td>Constant and active communication with brokers/ transporters and processors</td><td rowspan="3">Individual consumers
Commercial entities like restaurants and hotels</td></tr>
<tr><th>Key Resources</th><th>Channels</th></tr>
<tr><td>Market stalls
Employees
Customer / broker networks</td><td>Telephone contacts
Market contacts
Posters</td></tr>
<tr><th colspan="3">Cost Structure</th><th colspan="2">Revenue Streams</th></tr>
<tr><td colspan="3">Fixed costs: market dues, salaries/wages, rent, cleaning services, security fees
Variable costs: feed, drugs and veterinary services</td><td colspan="2">Broilers: Price UGX 15 000 – 20 000 - Sales: 40-65 birds per week
Kuroilers: Price:UGX 25 000-30 000 - Sales: 10-20 birds per week
Offlayers: Price:UGX 15 000-20 000 - Sales: 50-70 birds per week
Local chucken: Price:UGX 25 000-35 000 - Sales: 5-7 birds per week
Cash based and occasional credit based payment from hotels/restaurants</td></tr>
</table>

Business process

The business process of poultry marketers/retailers is portrayed in Figure 4.

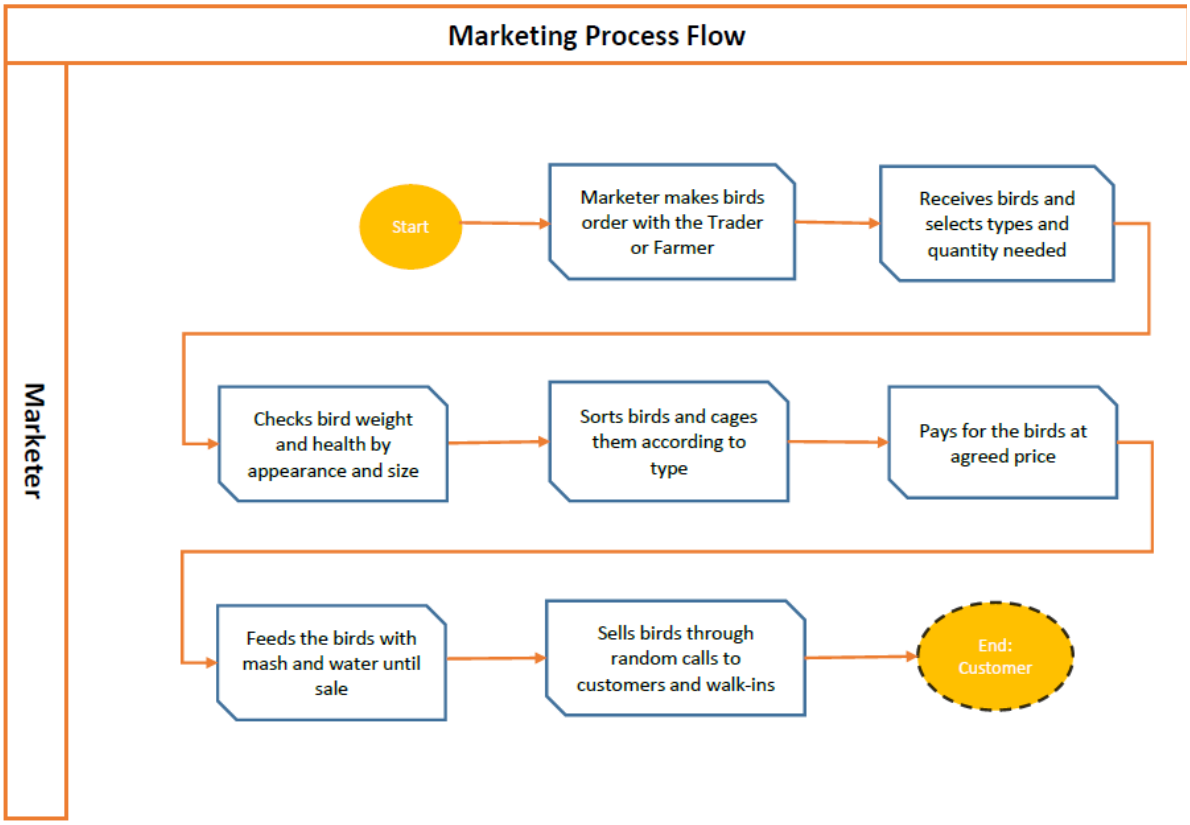

Figure 4: Business process flow of poultry marketer

Enterprise budget

The enterprise budget of a poultry retailer/marketer is presented in Table 9. Marketers/retailers stock various poultry breeds in their stall to respond to the different demands of customers. They differentiate price based on customers' taste, preference and perceived purchasing power. Prices are set through negotiations but margins do not vary significantly. All sales/purchases are spot transactions and in cash. Although the businesses have very low operating overheads (3.5 %), they have low-profit margins (11.3%). The success of these ventures, therefore, is highly dependent on turnover.

Table 9: Enterprise budget for marketers/retailers, Uganda Shillings (3,650 UGX = 1USD)

ITEM	Per month	Assumption
Revenue		
Birds	8 592 000	450 to 500 birds @ 15 000 to 35 000 UGX
Manure	40 000	50 kg @ 10 000 UGX
Total Revenue	**8 632 000**	
Variable costs		
Birds	7 288 000	450 to 500 birds @ 12 000 to 28 000 UGX
Feed	60 000	
Medication	12 000	
Wages	200 000	
Total variable costs	**7 560 000**	
Returns over variable costs	**1 072 000**	
Fixed costs		
Electricity	2 000	
Water	5 600	
Rent	50 000	
Miscellaneous (e.g. security)	41 000	
Total fixed costs	**98 600**	
Total costs (variable & fixed)	**7 658 600**	
Indicators		
Returns over total costs	**973 400**	
Profit/bird sold	**2 045**	Average of 475 birds
Net profit margin (%)	**11.3**	
Fixed costs/revenue (%)	**3.5**	

4.4. Slaughterers or processors

Business model canvas

Processors are slaughterers with poultry handling facilities such as buckets, saucepans and makeshift tables. They usually slaughter the birds manually and operate in rudimentary facilities, lacking refrigerators and other equipment to ensure the meat quality is not compromised. Live birds are supplied by retailers and transporters, although some processors source live birds directly from the producers. Some markets, like the Namawojjolo roadside market, demand that processors only slaughter a maximum of six (6) birds a day and keep the premises clean. A few mid-scale processors have more sophisticated equipment, such as a defeathering, and there are also a few large integrators that both slaughter and process birds, adding value to the final products. These include Biyinzika Poultry International Limited and Ugachick Breeders in Mukono and Wakiso districts respectively. In these cases, hygiene is high and quality of the poultry meat ensured.

Processed broilers at a slaughter facility

Most of slaughterers are men aged between 17 and 34 years. More than two-thirds have been in this business for more than seven years. Up to half of them process ten or fewer birds a day, which suggests that slaughtering is a micro and labour-intensive business. More than 80 per cent of the processors operated as sole proprietorships and informally.

Processors often see their profit reduced because of bird mortality and morbidity. Indeed, when costumers reject unhealthy birds, processors may incur in a net loss as they are not paid for their service. This is also the case as no proper documentation on the health of the birds exists at the different nodes of the value chain, which makes it difficult to transfer liability. An assessment of the health status of the bird before it gets to the slaughterers would definitely enhance the profitability of the processing business. The use of rudimentary processing equipment and practices also reduce the profitability of processing. For example, poor bleeding negatively affects the quality of the

carcasses, which will rapidly deteriorate and can then be sold only at low prices to consumers. Use of technology (processing lines) and personal protecting equipment (PPP) could help reduce public health risks and increase the revenue stream but also involves additional costs for the entrepreneur.

Table 10: Demographics of poultry processors

Feature	Percent
Age	
17-24	20.7
25-34	44.8
35-44	24.1
45-54	6.9
>54	3.4
Gender	
Female	20.7
Male	79.3
Age of enterprise	
1-3 years	20.8
4-6 years	20.8
7-10 years	12.5
>10 years	45.8
Nature of management	
Sole proprietorship	83.3
Family business	8.3
Partnership	8.3
No of birds processed per day	
<5	12.5
5-10	37.5
11-25	16.7
>25	33.3

Table 11: Business model canvas of poultry processors

<table>
<tr><th>Key Partners</th><th>Key Activities</th><th>Value Propositions</th><th>Customer Relationships</th><th>Customer Segments</th></tr>
<tr><td rowspan="3">Marketers
Transporters
Community/district leaders and regulatory authorities
Halaal bureau
Lending groups/individuals
Market leaders</td><td>Co-ordinating with marketers and transporters
Dressing chicken
Roasting chicken</td><td rowspan="3">Supply dressed and or processed chicken to a wide customer base
Complimentary salads for those that roast</td><td>Constant and active communication with brokers/ transporters and processors.</td><td rowspan="3">Walk-in or roadside consumers
Transporters and customers
Nearby market restaurants, eateries and hotels</td></tr>
<tr><th>Key Resources</th><th>Channels</th></tr>
<tr><td>Slaughterhouse
Employees
Grills and ovens
Marketer networks</td><td>Telephone contacts
Market contacts
Public address system</td></tr>
<tr><th colspan="3">Cost Structure</th><th colspan="2">Revenue Streams</th></tr>
<tr><td colspan="3">Fixed costs: stall rent
Variable costs: wages, cleaning, Ingredinents for those that roast

Lean cost structure, focused on premium value proposition</td><td colspan="2">Broilers UGX 14,000 to 20,000
Average sales 30-35 birds a day
Chicken by-products (legs, intestines, gizards and heads)
Cash based payment
Sale of poultry meat using a product feature dependent pricing</td></tr>
</table>

Business process

The business process of poultry processors is detailed in Figure 5.

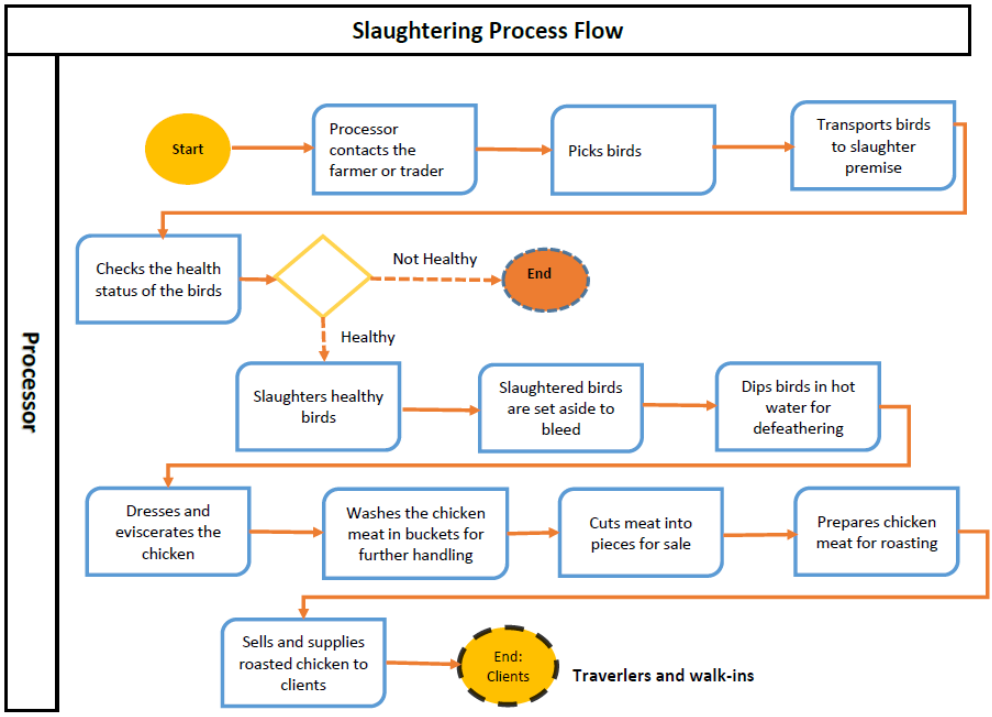

Figure 5: Business process flow of poultry processing

Enterprise budget

The enterprise budget of a poultry processor is presented in Table 12.

Table 12: Enterprise budget for poultry processors, Uganda Shillings (3 650 UGX = 1 USD)

ITEM	Per month	Assumption
Revenue		
Broilers	2 688 000	168 birds @ 16 000 UGX
Intestines, livers & gizzards	8 000	
Legs	6 000	
Total Revenue	**2 702 000**	
Variable costs		
Broilers	1 680 000	168 birds @ 10 000 UGX
Dressing	268 000	
Wages (at selling point)	200 000	For 6 birds/day
Total variable costs	**2 148 000**	
Returns over variable costs	**554 000**	
Fixed costs		
Electricity	10 000	
Charcoal	90 000	
Transport (live & dressed birds)	150 000	
Stall rent	50 000	
Misc. (e.g. certificates, fees)	65 000	
Total fixed costs	**365 000**	
Total costs (variable & fixed)	**2 513 000**	
Indicators		
Returns over total costs	**189 000**	
Profit/bird processed	**1 125**	
Net profit margin (%)	**7.0**	
Fixed costs/revenue (%)	**13.5**	

Poultry processing is labour-intensive and rudimentary, which explains the high costs of processing birds. Mid to large scale processors can also hire some employees (for poultry slaughter, dressing, cleaning and roasting) to respond to market demands. For instance, processors in Nakifuma and Mukono district use different personnel at the various steps in the processing chain to improve efficiency and enhance quality of the final product. This explains why the processing node has the highest level of fixed costs to revenue (13.5%). Processors have also low-profit margins (7%). The processors who add more value to their products are commonly roasting the poultry meat, which requires purchasing firewood and paying for specific stalls in the market. They stand by the roadside and sell poultry products to travellers, with whom they have spot transactions in cash.

For the most part, the businesses are self-financed. Some operators borrow from small associations, such as savings and credit co-operatives (SACCO). These types of funders require membership and do not demand other forms of collateral. SACCOs, however, charge relatively high-interest rates and do

not lend large sums of money. Consequently, the processors' businesses remain small, informal and targeting largely local markets.

5. Discussion and recommendations

This section summarises and discusses the specificities of the different business models and enterprise budgets, including the profitability margins of the enterprises. We further highlight the connection between business practices and public health risks at the various nodes of the value chain.

Table 13: Monthly turnover and profitability (in Uganda Shillings; 3 650 UGX = 1 USD) of producers, traders, retailers and processors

	Producer	Trader	Retailer	Processor
Birds/per month	188	500	450 to 500	168
Net profit/month, UGX	613 543	880 000	973 400	189 000
Profit/bird, UGX	3 264	1 760	2 045	1 125
Net profit margin (%)	32.0	14.7	11.3	7.0
Fixed cost/revenue (%)	4.0	2.0	3.5	13.5

Businesses at the various poultry nodes are profitable (>7% profit margin), but actors typically run small and micro-businesses. The production node is the most profitable while the processing is the least. Most of businesses at each node use rudimentary processes and technologies (an exception is the wide use of mobile phone technology when searching for input and output markets), do not apply basic biosecurity measures and do not keep books of account. This is particularly noticeable at the processing node.

Aggregation is a standard business practice to enhance bargaining and market power of small players. However, there are no organized networks or groups of actors, neither within the different nodes of the value chain nor across the different nodes. All market linkages are loose, informal and not institutionalized, which makes it hard to develop policies aimed to support the development of the entire poultry value chain.

Access to external finance is limited and informal, with stakeholders rarely if ever accessing credit from established credit institutions, like commercial banks and registered microfinance institutions. Indeed, the majority of poultry chain actors, when in need of finance, borrow from informal groups, relatives and friends as they lack any collateral that would make their business bankable. In addition, the level of bureaucracy and stringent documentation required by formal financial institutions act as an additional barrier to access formal finance. There is need to facilitate access to finance for poultry operators to grow and supply safe and affordable animal food to the population.

The public sector provides little support to actors along the poultry value chain. In particular, many poultry operators lack knowledge/awareness of public health threats associated with limited adoption of basic biosecurity measures and the relevant veterinary public health legislation. For example, traders are not sure whether they need a health certificate to move birds from one location to another. As a result, the industry ends up using poor quality inputs, from day-old chicks to drugs and vaccines, which reduces the profitability of the various businesses. Poor record keeping makes also challenging to demonstrate that investments in quality inputs and biosecurity would likely make the businesses more profitable and sustainable.

We recommend investments in four areas to improve business operations: (i) business training, (ii) biosecurity and public health awareness, (iii) technology and innovation, and (iv) forming associations.

Business training for actors. Many of entrepreneurs do not keep proper records of their activities, which makes it difficult to assess the profitability and bankability of their business. With proper bookkeeping, poultry operators would have the opportunity both to improve their business and to access formal loans from banks and other financial intuitions to expand their operations. Providing training for actors to properly record their cost and revenue, therefore, is an investment likely to support an effective and sustainable growth of the poultry value chain

Biosecurity and public health awareness. Most poultry actors do not apply basic biosecurity measures, which creates public health risks for society. Investments to generate awareness of the possible negative impact of poultry operations on public health as well as on the importance of complying with basic biosecurity practices are necessary to ensure the sustainability of the poultry value chain. In addition, the adoption of basic biosecurity practices – such as cleaning cages with disinfectants – is often low cost and also good for the business.

Technology adoption and innovation. Businesses along the poultry value chain in Mukono and Wakiso use rudimentary processes and technologies, which often increase unitary cost of processes and inputs. Investments to facilitate the adoption of novel and fit-for-purpose technologies at all nodes of the poultry value chain, therefore, could result in more efficient business models, reducing costs and increasing profitability.

Aggregation and bulking of services. Given the micro nature of the poultry businesses and multiplicity of actors in the value chain nodes, actors have limited bargaining and market power, which increases their input costs. Investments to facilitate the formation of associations, which have more bargaining power than individual actors, could enhance the profitability of the different businesses and support a sustainable growth of the poultry sector in both Mukono and Wakiso district.

6. Conclusions

The study provided an overview of the poultry businesses in the districts of Mukono and Wakiso, Uganda. It presented the business model canvass, the business process and the enterprise budget of actors at the production, transportation, marketing and processing nodes of the poultry value chain.

Poultry operators along the value chain typically run informal and small and micro-businesses with small profit margins. The production node is the most profitable, while the processing is the least. Actors use rudimentary process and production technologies and practices; in general they do not comply with basic biosecurity practices and do not keep books of account. Access to finance is limited and, in any case, through micro-finance institutions or personal connections.

Business training resulting in formalization of the poultry enterprise, such as through business certification and licensing, is essential for developing the poultry value chain. It will allow producers, traders, processors and marketers to access finance to make those investments necessary to improve both the biosecurity and profitability of their business.

The study recommends that poultry actors receive business training and be fully informed of the public health threats associated with their non-compliance with biosecurity practices. Additionally, they should be encouraged to aggregate through associations so as to increase their bargaining power and improve the profitability of their business. The entire poultry value chain can advance only if actors formalize and start adopting good practices that not only improve the profitability of the business but also minimize public health risks that, when materialize, have negative impact on both individual enterprises and the entire society more at large.

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