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Inclusive and sustainable gender-transformative value chains: Barriers to entry and opportunities for increased participation of SMME's in South Africa's poultry value chain

Teboho Bosiu and Nwabisa Nontenja

Fair for All: Inclusive and sustainable gender transformative value chains

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About the authors

Teboho Bosiu is a Researcher for the Centre for Competition, Regulation and Economic Development (CCRED) at the University of Johannesburg.

Nwabisa Nontenja is an Associate Researcher for the Centre for Competition, Regulation and Economic Development (CCRED) at the University of Johannesburg.

CCRED: Centre for Competition, Regulation and Economic Development

69 Kingsway Ave,

Auckland Park,

Johannesburg, 2092

E-mail: infoccred@uj.ac.za | www.competition.org.za

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Table of Contents

List of figures

List of tables

1. Introduction

The poultry industry remains the largest sector of South Africa's agricultural industry, accounting for about 16.6% of all agricultural production and 39.9% of all animal products, followed by the beef industry at 11.5% of agricultural production and 27.5% of all animal products (SAPA AR, 2021). With a gross turnover of R62.4 billion at producer level, poultry is the largest animal product sector in agriculture in South Africa followed by beef (R43.01 billion) and milk (R21.17 billion) (SAPA AR, 2021). Further, poultry accounts for 66.1% of locally produced animal protein consumed in the country, given that it remains the cheapest source of protein (R26.18/kg), followed by pork (R28.18/kg) and beef (R46.23/kg) (SAPA, 2021). Thus, the poultry industry is critical for food security, especially given the high levels of unemployment and poverty, and loss of income, exacerbated by the covid pandemic.

Nevertheless, poultry is one of the several sectors of the South African economy that remain highly concentrated, with significant barriers to entry (BTEs) – these include high capital requirements, high costs of feed, limited access to markets, and limited access to breeding stock. In addition, there are challenges with access to enterprise finance across the entire economy, impacting on the ability of small and medium enterprises (SMMEs) to participate in the economy broadly. These challenges generally affect SMMEs disproportionately, particularly women-run SMMEs. This research analyses dynamics and linkages across the entire poultry value chain (covering broilers and layers), at a granular level, to understand bottlenecks and opportunities for effective participation of women-run SMMEs.

We conduct our analysis through a framework that links three theoretical concepts – value chain governance; barriers to entry; and upgrading – to demonstrate the implications for participation of SMMEs and benefits sharing in the poultry industry. Governance refers to authority and power relations that determine the allocation and flow of resources within a value chain (Gereffi, 1994; Dallas, Ponte and Sturgeon, 2017; Gereffi and Lee, 2012; Gereffi and Fernandez-Stark, 2011). This element of the analysis is critical to understand which actors control the value chains SMMEs operate in, and how this affects their ability to effectively participate and grow into higher-value products or enter higher-value markets (local or export markets). Actors that control a value chain typically set production parameters including standards and protocols that must be met by other players operating in the value chain, such as controlling decisions about what to produce, how to produce and how much to produce (Humphrey and Schimtz, 2002; Gereffi, and Fernandez-Stark, 2011). These parameters can create barriers to entry for new firms, or upgrading for existing but less powerful firms.

The literature identifies two types of barriers to entry; structural, and strategic barriers. Structural barriers arise primarily from market structure and include, but are not limited to, natural barriers (e.g. physical location), sunk costs, switching costs, economies of scale as well as network effects (Lutz et al., 2010). On the other hand, strategic barriers to entry are created through an incumbent firm's own conduct that seeks to frustrate entry or expansion of a rival, motivated by the incumbent's incentive to protect own market share (Banda et al., 2015). Regardless, barriers can impact on the ability of firms to upgrade. Upgrading is defined in the literature as the ability of firms to subsequently pursue more valuable capabilities in order to improve their relative competitive position within the value chain (Azadgan and Wagner, 2011). It involves developing more value-added processes, creating

more value-added products or performing higher value-added activities, leading to increased profitability and share of benefits (Pietrobelli and Rabellotti, 2006; Gerefi and Tam, 1998). Firms that upgrade are able to produce high-margin products, and negotiate better terms of contracts with buyers (Azadgan and Wagner, 2011).

The poultry industry presents a strong case study to unpack challenges faced by women and smallholder producers in vertically integrated value chains, characterised by economies of scale and bargaining power of input suppliers and retailers. While the large-scale poultry producers dominate the value chain, there is also a vibrant cohort of micro, small and medium producers; about 28% of the total broiler meat sold per week is produced by SMMEs (SAPA, 2021). However, majority of the SMMEs are limited to supplying the informal market, and even though this market offers higher margins, there is a limit to the quantities that can be marketed and sold informally. Informed by these dynamics, government in collaboration with the private sector has developed a Poultry Master Plan – a policy tool aimed at increasing the share of black ownership and contribution of SMMEs to the total output of the industry. On that backdrop, the research also aims to contribute to the enhancement of this policy through identifying strategic interventions to unlock opportunities for increased participation of SMMEs in the value chain.

The rest of the paper is organized as follows: Section 2 discusses the methodological approach and some challenges encountered; Section 3 provides a brief background to the poultry industry in terms of structure and performance; Section 4 discusses key issues emerging from the stakeholder engagements; Section 5 explores opportunities for increased SMMEs participation in the value chain; and Section 6 concludes with some policy recommendations.

2. Methodology

This paper seeks to understand the barriers to entry and effective participation of micro, small and medium enterprises within the poultry value chain. Our approach was twofold. One, a desktop overview of the overall poultry industry, focusing on market structure, demand and supply trends, and an analysis of implications for participation of SMMEs. Two, in-depth semi-structured interviews of value chain participants of various kinds and sizes across South Africa. The interviews sought to identify barriers present and the extent to which they limit new entrants and the upgrading of micro, small and medium participants (particularly women-run businesses) within the value chain. In particular, the interviews covered the following key themes:

i. Understanding the barriers to entry and participation
ii. Inputs and production, including production process, and the use of technology
iii. Markets and competition, including the importance of formal and informal routes to market, and the impact of competition
iv. The role of networks, including their importance in accessing markets, funding, and other inputs to production and the impact of association membership
v. Support from government and other institutions in accessing training, financial support, information, and markets

2.1. Profile of interviews conducted

The interviews covered both a range of types of producers as well as industry associations. The producers consisted of enterprises operating across three main nodes of operations: broiler production; egg production (layers); and day-old chick production (i.e., hatcheries). We draw the distinction between the value chain nodes early on because even as they fall within the broader poultry value chain, their operations are quite distinct with different implications for barriers to entry and participation of SMMEs. This approach has enabled a nuanced analysis of barriers to entry and different segments of the entire poultry value that are viable for SMME participation.

Our sample consisted of 14 broiler operations, 12 layer operations and five hatcheries, totalling 31 poultry producers. In addition, our sample consisted of a small-scale non-commercial producer of feed, and two industry associations, totalling 34 stakeholder engagements overall. A full profile of stakeholders included in the sample is provided in Appendix 1. For purposes of preserving confidentiality, we have anonymised the names of the enterprises and individuals interviewed, except in cases where we have explicit consent to publish the names.

Further, the producers consisted of enterprises of different sizes that are involved in different nodes of the value chain. SAPA (2021) defines a small commercial broiler farmer as one producing between 1,500 and 40,000 birds per cycle, whereas subsistence farmers produce less than 1,500 broilers per cycle. A small commercial egg farmer is defined as an enterprise which has between 500 and 50,000 hens, whereas subsistence farmers are those that have less than 500 laying hens. We, however, consider these definitions to be quite limited in ability to properly contextualise participation of enterprises of different sizes, especially SMMEs.

Firstly, they appear to bundle medium and large enterprises together, as those that have more than 40,000 broiler birds and 50,000 layer-hens per cycle respectively. It is important to have distinct definitions as issues affecting medium-sized firms can be different to those of large firms. In that regard, given that the largest three egg producers account for 32%, 12% and 7%, respectively, of the total egg market, and the smallest of those considered large in broilers accounts for 4% of the broiler market[1], it is not unreasonable to set a minimum threshold (for being considered large) at 4%. Given the annual industry production of 1127 million broiler day-old chicks (DOCs), this implies the minimum threshold of about 5 million broilers per cycle.[2] And for egg producers, given the annual industry production of 25 million pullets, this implies the minimum threshold of one million hens per cycle.[3]

Secondly, the definitions do not appear to take account of the production thresholds that trigger a requirement to conduct an environmental impact assessment (EIA). According to

[1] As discussed in section 3 below
[2] Broiler cycles range from 30 – 42 days. Assuming a cycle of 33 days for large producers, and 14 days of house resting between cycles (interview with PL01), there are 8 cycles in a year.
[3] Productive hens cycles are about 48 weeks, meaning they get replaced every year. Also, we use the same minimum threshold of 4% as in broilers

the National Environmental Management (NEMA) Act of 107 of 1998,[4] a poultry farm that accommodates more than 5,000 chickens (excluding chicks younger than 20 days) at any point in time is required to be assessed for potential impact on the environment. For hatcheries and traders of day-old chicks, the threshold is 25,000 for chickens younger than 20 days. An EIA is a costly exercise[5], without which an enterprise is essentially prohibited from operating commercially. Thus, the EIA requirements are a useful pointer to what should be considered a commercial poultry producer in South Africa. Considering the EIA thresholds, it is sensible to split small producers between those that are commercial and those that do not produce commercially. That is, the upper bound for non-commercial small producers should be 5,000 birds per cycles, meaning a producer with capacity of 6,000 chickens would be regarded as a small commercial enterprise.

Lastly, instead of referring to the smallest as 'subsistence' producers, we elect to use the term 'micro', primarily because an established understanding of subsistence farming is that of producing for own consumption, not for sale. However, it is unlikely that even a broiler farmer that produces just 100[6] chickens per cycle does solely so for own consumption. All our interviewed producers of less than 500 chickens per cycle raised them for the sole purpose of selling to generate income. The practice of subsistence chicken production may be common for indigenous breeds, but it is certainly uncommon for commercial broiler and layer breeds.

On that backdrop, we modify and add to SAPA's definitions in the following ways in order to categorize the different classes of producers. A commercial enterprise (in this study) refers to a registered entity that produces 5,000 or more chickens per cycle for both broilers and layers, while a non-commercial one produces less than 5,000 chickens. A large producer refers to a commercial enterprise that houses 5 million or more chickens per cycles for broilers, and 1 million or more for layers. A medium enterprise produces between 40,000 and 5 million broilers per cycle, and between 50,000 and 1 million hens per cycle for layers. A small commercial enterprise produces between 5,000 and 40,000 broilers, and between 5,000 and 50,000 hens for layers. A small non-commercial enterprise produces between 1,500 and 5,000 chickens for broilers, and between 500 and 5,000 hens for layers. Enterprises that produce less than 1,500 broilers and 500 layers are considered micro. With respect to hatcheries, a large commercial hatchery is defined as one that hatches more than 5 million day-old chicks per cycle, whilst small and medium commercial hatcheries hatch between 25,000 and 5 million day-old chicks per cycle. We have left the small and medium commercial category aggregated because we do not have sufficient data to determine thresholds between small and medium. Similarly we are unable to separate between non-commercial hatcheries that are micro and small, and therefore define only the broader category of micro and small non-commercial hatcheries to be ones hatching below 25,000 day-old chicks per cycle.

Of the 31 producers interviewed, 14 were micro, 4 were small non-commercial, 5 were small commercial, and 5 were medium enterprises. Our sample did not consist of any large

[4] National Environmental Management Act 107 of 1998. Environmental Impact Assessment Regulations: Listing Notice 1 of 2014. Available at: https://www.saflii.org/za/legis/consol_reg/eiarln1o2014621.pdf.
[5] Refer to section 4 for detailed discussion
[6] This is the minimum one can raise because day-old chicks are sold in batches of 100

producers. None of the women-owned/run farms interviewed produced at a large scale. The largest operations within the sample were male-owned or managed. This was true in both the egg and broiler value chains.

Table 1 provides an overview of the number of interviews per value chain node. The sample included both men and women to identify and isolate gender-specific issues. The sample included 20 women-owned/run businesses within the poultry value chain. All the women-run enterprises interviewed were involved in primary production – 9 broiler farmers, 3 hatcheries and 8 egg producers. Most of these women-owned/run farms produced at a small or micro scale[7]. Given the concentrated and highly integrated nature of the South African poultry industry, women-led businesses in our sample are mostly small in scale and exist at the periphery, serving mostly the informal sector. Of the 20 women-owned/run operations within the sample, only three produced at a small non-commercial scale, while two operated at a small-commercial scale. Only one of the medium-scale operations were women-owned or managed.

Table 1: Interviews per value chain node

Value Chain Node	Total	Micro	Small non-commercial	Small commercial	Medium	Large
Feed Manufacturer	1	1	0	0	0	0
Hatcheries	5	3	0	0	2	0
Layers	12	5	2	3	2	0
Broilers	14	4	7	0	3	0
Associations	2	N/A	N/A	N/A	N/A	N/A
Total	34	13	9	3	7	0

Source: Authors' own compilation

Two of the hatcheries interviewed were medium-sized businesses supplying over 200,000 day-old chicks per week. Most of the broiler producers interviewed were small-scale and sold at the farmgate to the informal market. In the egg value chain, interviewees comprised rearing farms of point-of-lay hens and egg producers. Two of the egg producers interviewed were medium-scale businesses with a flock of over 220,000 and 420,000 layers respectively. There were two women-owned/run egg producers that produced at a small commercial scale with flocks of 7,000 and 13,000 layers respectively. These egg producers supplied the formal market with graded and packaged eggs. They also supplied the informal market at the farmgate.

[7] See Appendix 1

2.2. Challenges encountered

In-person as well as online/telephonic interviews were conducted. In-person interviews were preferred as they allowed interviewers to see and physically interact with the farm or business. This allowed for richer and contextual engagement and questions. However, several farmers did not allow in-person interviews in order to preserve farm bio-security.

Another challenge pertained to the disaggregation of the broader value chain into specific nodes. The disaggregation by node has meant smaller subsamples, implicating on the richness of the data provided per node, and thus our ability to reach authoritative conclusions on some of our observations. In some instances, we have had to disaggregate even further (i.e, within layers, in terms of producers of point-of-lay chickens vs egg producers), exacerbating the challenge.

Another challenge was the involvement of some farmers in more than one value chain node. This required that their activities be carefully classified to identify the experiences and challenges specific to each node. This meant that in some instances, we could not get to the desired level of detail and information pertaining to each node, given that interviews were scheduled for a maximum of 1 hour, with interviewees unwilling to go beyond the agreed time. Additionally, participation of farmers in more than one value chain meant that they are counted more than once in our total list of stakeholders engaged. That is, a farmer that is involved in both hatchery and broiler operations is counted under the list of hatchery interviewees, as well as under the list of broiler interviewees. Our overall list consisted of four such participants.

Furthermore, some farmers who were contract producers of large firms were cautious not to disclose information regarding the specificities of how their contracts work, perhaps avoiding compromising the relationships with the large firms. This trend was observed particularly for those that were relatively new in such contracts, whereas those that were no longer under such contracts spoke freely.

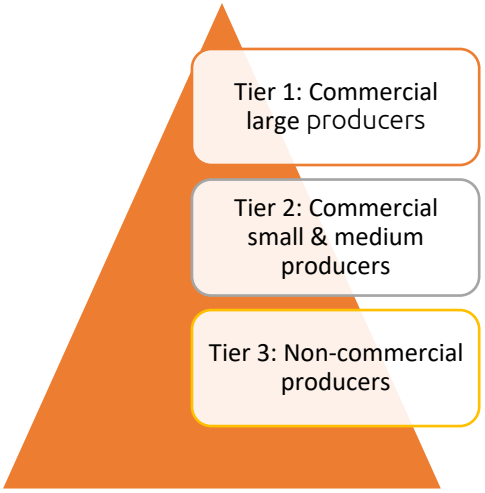
Lastly, while the aim of the paper was to unpack barriers for women-run SMMEs in particular, it became clear through the interviews that the key barriers identified were not necessarily gender-specific. Thus, the analysis has leaned towards SMMEs generally, although implications for effective participation of women-run SMMEs are highlighted.

3. Overview of the poultry industry

The South African poultry value chain consists of two main sub-value chains – broiler and layer value chains. The former is responsible for meat production and the latter for egg production. Approximately 74.5% of the birds in the South African poultry industry are used for meat production, while the remaining 25.5% are used in the egg industry (SAPA, 2022). The two sub-value chains have similar organisational structures, and are both characterised by high levels of concentration and vertical integration (Goga and Bosiu, 2019; Bosiu et al., 2017).[8] Overall, the industry can be organised into a 3-tier structure.

[8] Interviews with multiple producers

Tier 1 consists of few large producers (less than 10 for both layers and broiler) that account for majority of the industry production. The firms in this category are typically vertically integrated – backward into feed production and supply of breeding stock, and forward into slaughterhouses and distribution. They dominate the formal retail market and typically supply large national retailers directly. In broilers, the three largest firms are Astral Foods, RCL Foods and Country Bird Holdings (CBH), with market shares of 27%, 19% and 8% respectively (Goga and Bosiu, 2019). In layers, the three largest producers are Quantum Foods, Kuipers Group, and Highveld Co-operative with 32%, 12% and 7% market shares respectively (DALRRD, 2020).

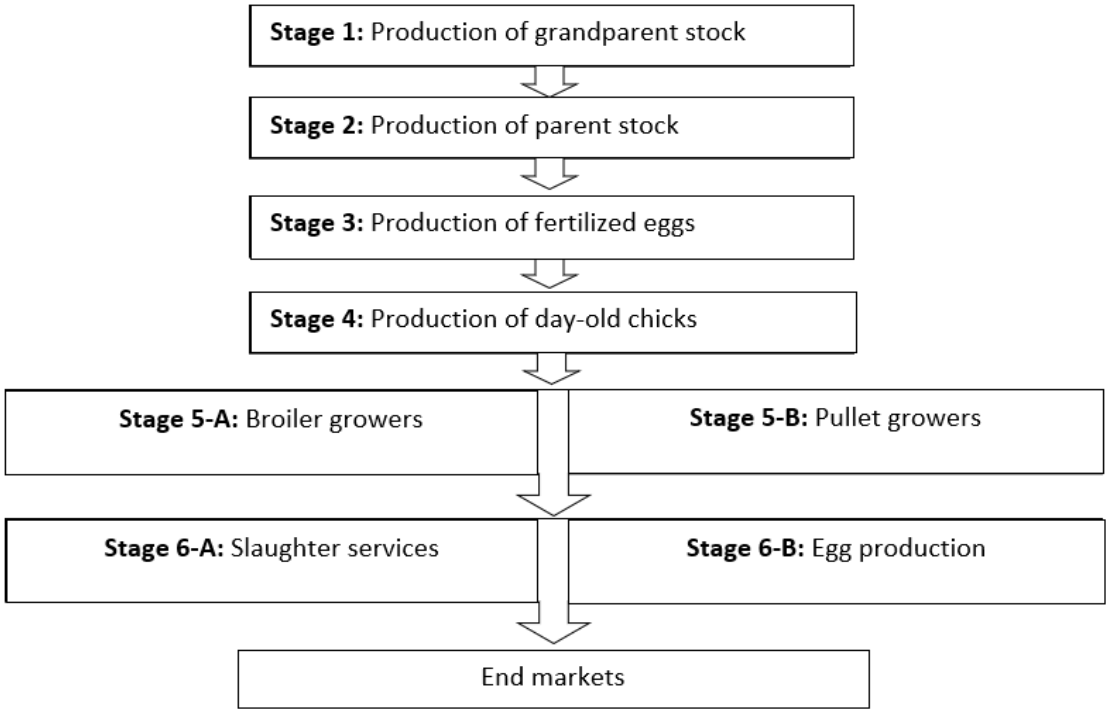


Tier 2 consists of a relatively larger number of medium-sized firms, and some small commercial producers. This group largely supply independent abattoirs and smaller independent retail stores, and/or large producers in tier 1 through contract farming. Tier 3 consists of a large number of micro and small firms that do not produce commercially. They target primarily the informal market in townships and rural villages, with none supplying formal retail stores and/or abattoirs.

3.1. Stages of the poultry value chain

The stages of poultry production in South Africa can be summarised as follows (accounting for both broilers and layers): 1) production of grandparent stock); 2) production of parent stock; 3) production of fertilised eggs; 4) production of broiler/layer day-old chicks (DOCs) (i.e., hatcheries); 5-A) broiler growers; 5-B) pullet growers (i.e., production of point-of-lays); 6-A) slaughtering (broilers); and 6-B) egg production.

Figure 1: Poultry Value Chain



Source: Authors' own construction

Stage 1 entails importing of great grandparent day-old chicks (DOCs) from international breeders and raising them to lay eggs that are then hatched to produce grandparent DOCs. Stage 2 entails raising grandparent DOCs to lay eggs that are then hatched to produce parent DOCs. There are only three licensed importers of great/grandparent DOCs per value chain in South Africa to service the entire national market, giving them significant control over the value chain. In broilers the three licensees are the same three largest producers mentioned above (Astral, RCL and CBH), and are all forward integrated into the subsequent stages up to stage 6-A (Goga and Bosiu; Bosiu et al., 2017; Ncube et al., 2016).[9] In layers the three licensees are Quantum Foods, Hyline SA and Serfontein Group.[10] Quantum is the only licensee that is forward integrated all the way to stage 6-B. Hyline and Serfontein are only forward integrated up to stage 4.[11] That is, they do not participate in the markets for point-of-lays and production of eggs. As a result of the exclusive licences, there is no participation of SMMEs at these stages of the poultry value chain.

Stage 3 entails raising the parent day-old chicks (DOCs) to lay fertilised eggs that are then hatched to produce either broiler or layer DOCs. This stage remains dominated by the licensed companies, who produce the fertilised eggs for inhouse use as well as selling to the market. There are however also independent producers that participate in this stage, for example Kuipers Group, National Chicks, Chubby Chick, Lufafa Hatchery, etc.[12] They buy parent DOCs from the licensed companies, raise the DOCs to produce fertilised eggs, hatch the fertilised eggs (or sell them to other hatcheries in the open market) to produce DOCs for inhouse production of broiler/layers, and/or sell the DOCs to broiler/pullet growers in the

[9] Interviews with multiples producers
[10] Note: Quantum is the only one of the three largest producers licensed to import layer breeding stock.
[11] Interviews with multiple producers
[12] Interviews with multiple producers

open market. There is limited participation of SMMEs in this stage, and no participation of non-commercial producers. Commercial SMMEs that participate are in fact not small and micro, but quite established medium-sized enterprises (i.e., Lufafa Hatchery in Limpopo, Grootvlei Hatchery in Free State, etc.).

Stage 4 entails sourcing fertilised eggs from producers mentioned in stage 3 and hatching them to produce DOCs for sale to broiler/pullet growers. Although this stage is similarly dominated by large integrated producers (that are also involved in the preceding stages), it is however the first stage wherein SMMEs (including non-commercial) participate in better numbers. Commercial SMMEs set up professional operations in line with industry norms and standards, although the setup costs become significantly higher compared to non-commercial SMMEs. For example, a commercial SMME needs more than R50 million to set up operations capable of hatching 200,000 eggs per week.[13] Non-commercial SMMEs buy small incubators that can be operated from the backyard, often of 5,000 or less capacity at a cost not exceeding R35,000.[14] Three of the non-commercial SMMEs we interviewed operate within this stage.

Stage 5 entails buying DOCs from producers in stage 4 and raising them to maturity as broilers or point-of-lay hens. We divide this stage into two parts: 5-A for broiler growers and 5-B for production of point-of-lays. Most of the SMMEs in the poultry value chain participate at stage 5-A, although this stage remains dominated by the large integrated producers. Typically, the grown broilers are sold live to the informal market or, in the case of commercial SMMEs, to abattoirs and/or other larger producers through contract growing. On the other hand, there is limited participation of SMMEs in the production of point-of-lays (stage 5-B) – which involves raising pullets to point-of-lay. The major reason is long turnover periods. As cash-hungry businesses, SMMEs avoid raising pullets because they take longer to generate revenues (17 weeks) as opposed to broilers that take just six weeks.[15] Instead SMMEs in the layer segment prefer to buy point-of-lay hens to produce table eggs (i.e., stage 6-B), because revenues are realised immediately. However as will be shown below, stage 5-B is more profitable than stage 6-B.

Stage 6 is divided into two parts; 6-A (slaughter services for broilers), and 6-B (production of table eggs on the layer side). Stage 6-A involves buying matured chickens from growers for slaughter and sale as meat to the retail market. And 6-B entails buying point-of-lays to produce table eggs for the retail market. There is limited participation of SMMEs at the abattoir (slaughterhouses) level because of high capital requirements. On the other hand, there is substantial participation of SMMEs in the production of table eggs (see section 5.1).

3.2. Markets and Production Trends

Poultry products reach the end consumer in two main forms: chicken meat and table eggs. Three main routes to markets are utilised: 1) national retailers (Shoprite, Pick'n Pay, Woolworths, etc); 2) independent stores (cash and carries, butcheries, food outlets, etc.); and 3) direct supply to end consumers (i.e., informal producers sell directly to the public).

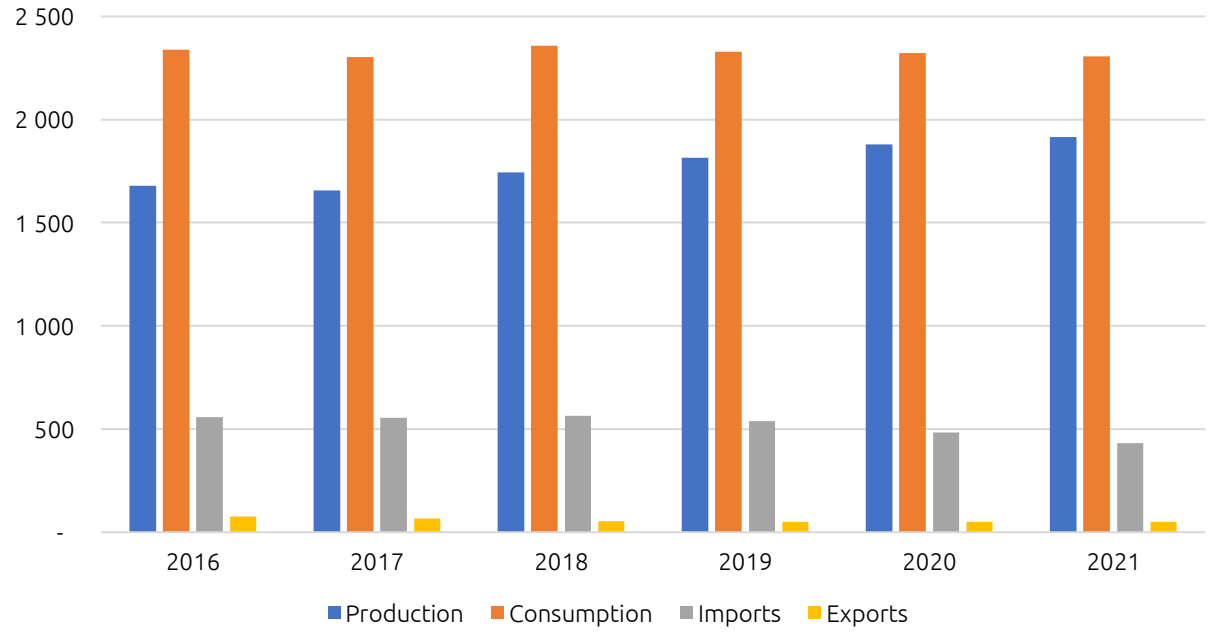
[13] Interview with PH05
[14] Interviews with PH01, PH02, PH03
[15] It takes 17 weeks to raise a layer day-old chick to point-of-lay when it can be sold, whereas it takes a broiler DOC 6 weeks to raise to maturity (Interviews with multiple producers)

The first is the major route to market for fast moving consumer goods (FMCG) in general, including poultry products. Majority of FMCG in South Africa reach the end consumer through this route. In the case of broilers, the meat reaches the retailers through abattoirs that slaughter live chicken and sell it as carcasses. Abattoirs also sell to processors and packers that sell chicken as fresh, frozen or further processed for sale to retailers or exporters (Goga and Bosiu, 2019). The most important consumption category is packs of individually quick frozen (IQF) chicken pieces which account for 90% of the chicken meat produced in South Africa (Ncube, 2016). In the case of eggs, producers that have grading and packing facilities typically sell directly to national retailers, whereas those that do not have these facilities tend to sell to independent stores or to other large producers through contract farming.

3.2.1. Production Trends – Broiler Industry

Chicken meat consumption remained high but generally flat between 2018 and 2021, while imports have declined, and production has been increasing over the same period (Figure 2). This followed the signing of the Poultry Sector Master Plan, the enacting of an Economic Partnership Agreement (EPA) to safeguard against imported European Union bone-in portions, and an application to the International Trade Administration Commission (ITAC) to increase the *ad valorem* tariff on frozen chicken portions (SAPA, 2021). For the fifth consecutive year, Brazil was the main country of origin of poultry imports, accounting for 66.6% of total imports in 2021, up from 55.6% in 2020 (SAPA, 2021). The USA was the second largest country of origin, with 15.6%, followed by Spain at 8.6% and Argentina at 5.5%. The EU contributed 8.3% to total poultry imports in 2021, compared to 18.7% in 2020.

Figure 2: Broiler production, imports, and consumption (1 000 tons)



Source: FAO (2022); Makgopa (2020); SAPA (2021; 2022), DALRRD (2019)

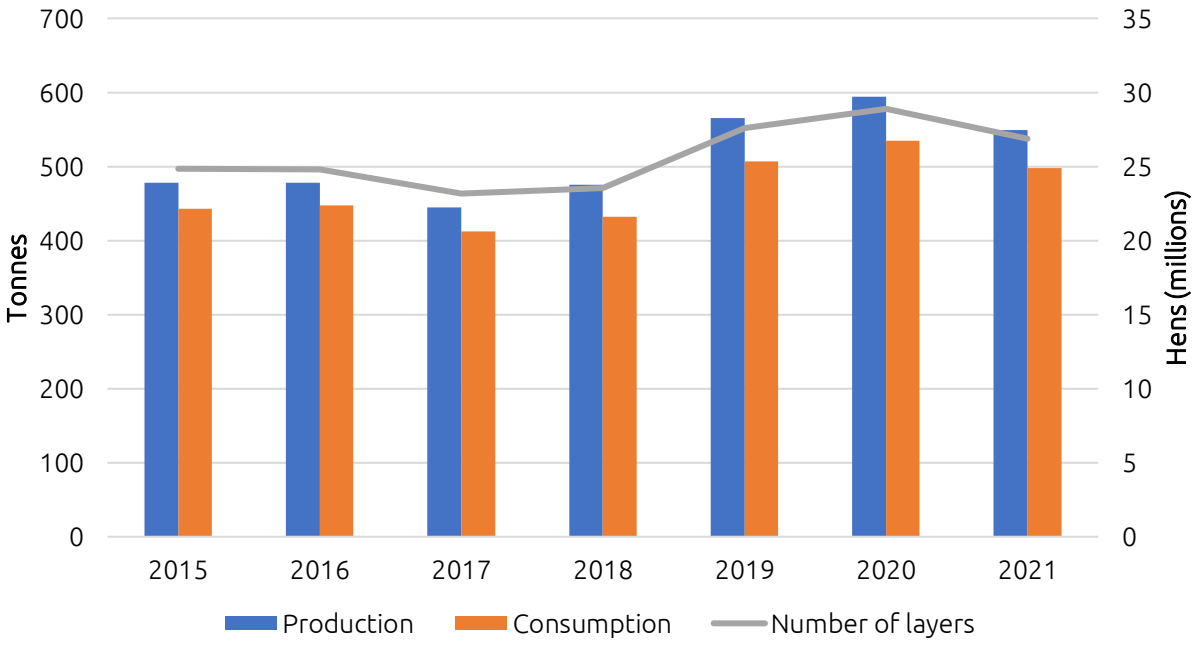
South African is not a major exporter of poultry and most production is consumed domestically. Exports made up only 2.6% of domestic chicken meat production in 2021,

down from 2.8% in 2020 (SAPA, 2022). Exports are absorbed mainly by countries in Southern Africa. Lesotho (57%), Namibia (18%) and Mozambique (8%) were the top 3 SA poultry exports destinations in 2021 (SAPA, 2022). The country's exports were negatively affected by the outbreak of Highly Pathogenic Avian Influenza in 2017 and again in 2021. Trade bans were imposed by SADC and other countries following the outbreak of HPAI in the country.

3.2.2. Production Trends – Eggs

There was a significant drop in egg production in the 2017 due to the outbreak of HPAI and related large-scale culls of layer flocks (Figure 3). Egg production recovered steadily in 2018 as farms were repopulated. Notably, in 2019 and the first quarter of 2020, rising hen numbers resulted in a surplus of eggs in the market. However, a surge in demand for eggs during the initial stages of the Covid-19 lockdown helped alleviate the oversupply. Per capita consumption for 2020 was 159 eggs or 9.73 kg, compared to 152 eggs or 9.30 kg per person in 2019 (SAPA, 2021). This is the highest per capita consumption recorded in South Africa, beating the previous high of 152.5 eggs consumed per person in 2012 (SAPA, 2021). South Africa's per capita egg consumption remains below the global average; estimated at 10.9 kg between 2019 and 2021 (OECD-FAO, 2022). Increased supply and the resultant lower egg prices encouraged consumption in 2019. However, egg sales increased significantly as consumers, confined to their homes, made more elaborate meals and home-baked goods. Increased home egg consumption offset the decrease in sales to restaurants and the hospitality sector (Botha, 2020). The outbreak of HPAI in 2021 saw the national laying flock decreased by 7.1% in 2021, from 28.89 to 26.85 million hens. This was due to the culling of an estimated 2.18 million laying hens (SAPA, 2022).

Figure 3: Production and consumption of hen eggs (1000 tonnes) and average number of layer hens (millions)



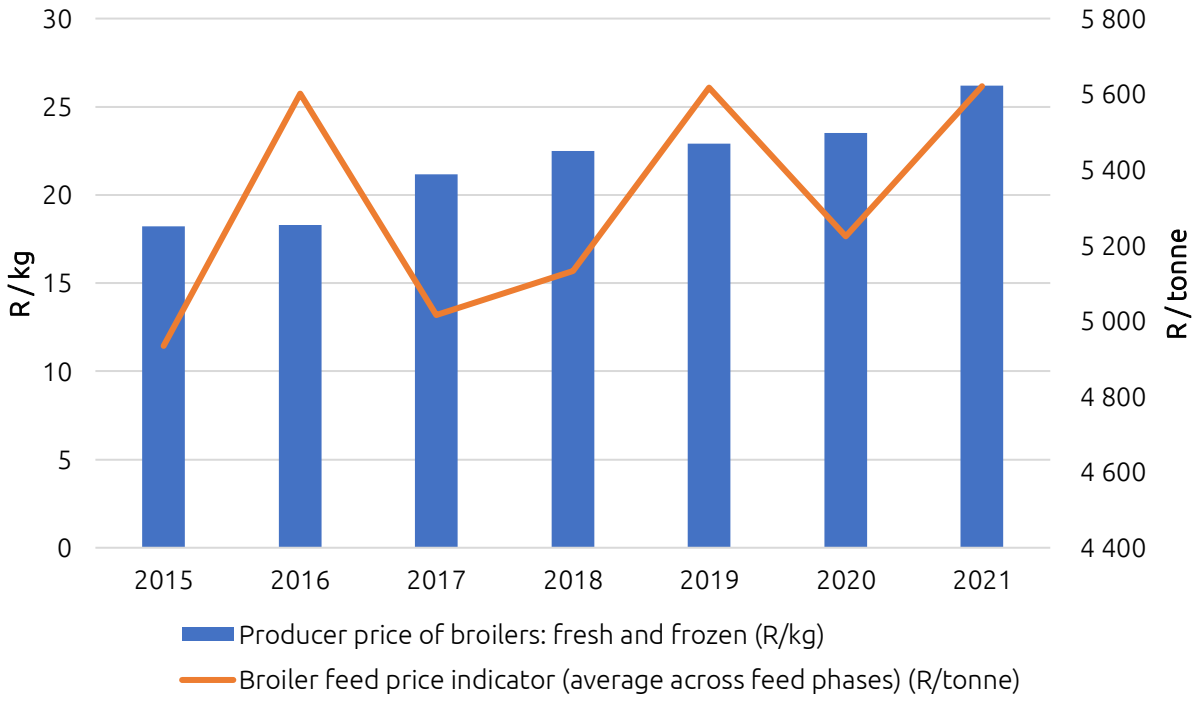
Source: FAO (2022); SAPA (2022), SAPA(2020); Author's calculation

3.3. Price Trends

3.3.1. Feed costs and broiler prices

Feed costs comprise up to 70% of total costs of producing a live chicken (Ncube et al., 2017).[16] High feed costs are particularly burdensome to small-scale farmers who do not benefit from discounts and scale economies of large orders. The drought which affected South Africa's maize-growing regions during the 2014/15 and 2015/16 seasons impacted feed prices (Figure 4). Maize is one of the main inputs in the manufacture of poultry feed. As the drought ended in the country's maize-growing regions, the country saw a record maize crop for the 2016/17 season and a drop in feed prices. Late rains and the resultant drop in maize production in the 2017/18 and 2018/19 seasons, once again lead to an increase in feed prices. Feed prices were also affected by international developments, including soaring global commodity prices due to the growing demand for biofuels, unstable weather conditions in maize-growing regions around the globe and China's strong demand (SAPA, 2021). These developments saw an increase in feed prices in 2021 despite an increase in maize production in the 2019/20 and 2020/21 seasons (Sihlobo, 2021).

Figure 4: Producer price of broilers: fresh and frozen (R/kg) and broiler feed price (R/tonne)



Source: SAPA (2019); SAPA (2020); SAPA (2021)

Broiler prices have been increasing since 2016 and are expected to continue increasing sharply along with the general food basket, though they remain below other proteins including beef and lamb[17]. This has prompted the removal of tariffs on chicken imports to dampen price increases. While there is a need to cushion the impact of price increases on consumers, concerns regarding the impact of cheap chicken imports on small-scale farmers

[16] Interviews with multiple producers

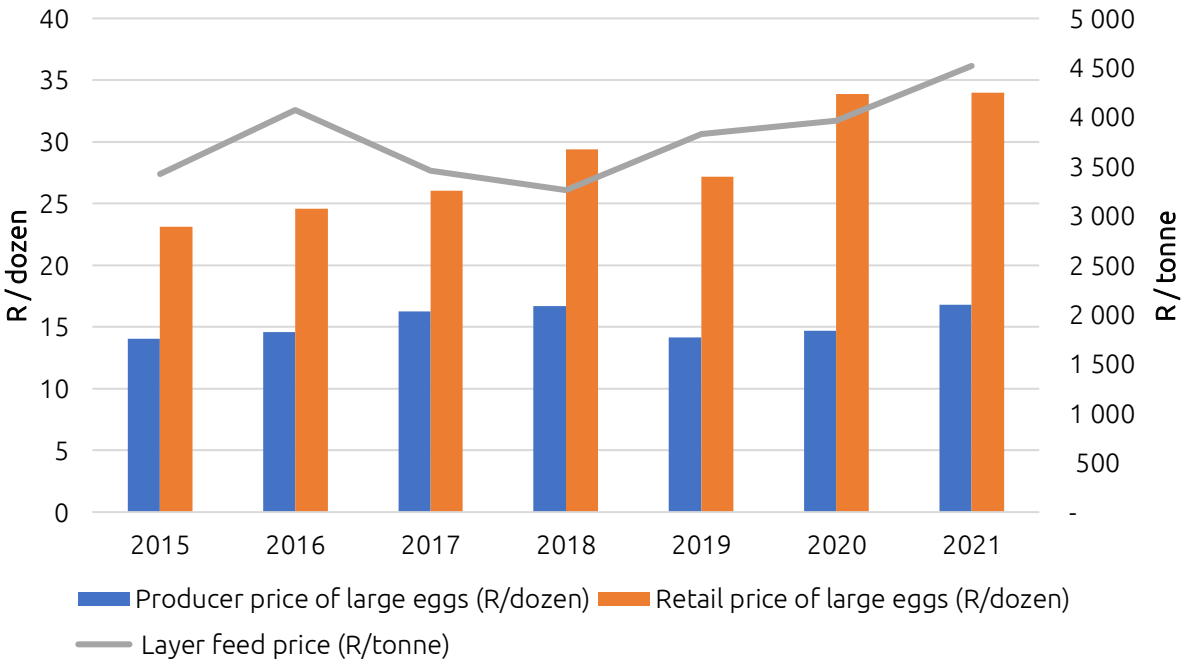
[17] https://www.news24.com/fin24/economy/chicken-off-the-table-for-poor-south-africans-after-prices-surge-20221215

have been raised[18]. In particular many of the small non-commercial broiler producers that supply chisanyamas/"chicken dust" have indicated that they struggle to penetrate this market because of cheap imports, given their high production costs rooted in high feed prices. Moreover, the high feed prices disproportionately affect SMMEs more than the large commercial producers (refer to section 4 below for a discussion on this), meaning the reduction in the selling price of chicken will reduce margins, especially for SMMEs. Without the accompanying reduction in feed costs, this will affect the ability of small farmers to compete effectively.

3.3.2. Feed costs and egg prices

The oversupply of egg production has acted to slow the increase of egg prices between 2015 and 2018 (Figure 5). The high egg producer price in 2018 was due to the HPAI cull of the country's laying flock and the resultant shortage in supply. This higher price played a role in driving the repopulation of layer farms to capacity and the expansion of facilities (SAPA, 2022). As egg production decreased between 2020 and 2021, producer prices have increased (SAPA, 2021). There is a large retail mark-up on eggs in South Africa that is increasing. In 2021, the estimated retail mark-up on large eggs was 120%. During the past five years, the average mark-up on large eggs was 94% (SAPA, 2022). This is in sharp contrast to the low margins received by egg producers, as we discuss in section 5.

Figure 5: Producer price of large eggs (R/dozen), retailer price of large eggs (R/dozen) and layer feed price (R/tonne)



Source: SAPA (2022), SAPA (2020)

[18] https://www.engineeringnews.co.za/article/removal-of-poultry-import-tariffs-will-destroy-domestic-jobs-says-sapa-2022-04-22/rep_id:4136

4. Analysis of key findings from interviews

This section discusses key findings from engagements with firms. Whilst firms have shared insights on a wide range of issues, some of which are firm-specific, the focus of the discussion here is on issues that are common across the majority of the firms.

4.1. Costs of setting up and operating a poultry enterprise

As highlighted in section 3, the South African poultry industry is highly capital intensive. The high capital requirements relate mainly to commercial production. The major start-up costs are infrastructure (housing in particular) and initial stock (i.e., day-old chicks, point of lays, and feed[19]). Table 2 below provides a breakdown of setup costs for some of the firms we interviewed.

Table 2: Costs of setting up a commercial poultry production

Category	Producer	Production capacity	Housing costs (per chicken)[20]	Compliance costs	DOC/POL costs
Broilers	PB01	410 000	R212[21]	R300 000	N/A
	PB03	320 000	N/A	R470 000	N/A
	PB13	750 000	R133	N/A	R9.2/DOC
	Average	*493 333*	*R172.5*	*R385 000*	*R9.1/DOC*[22]
Layers	PL04	280 000	R280[23]	R1.58m	R90/POL
	PL05	35 000	R320	R280 000	R89/POL
	PL09	10 000	N/A	N/A	R144/POL
	PL10	48 000	N/A	N/A	R97/POL
	Average	*93 250*	*R300*	*R357000*[24]	*R92/POL*[25]

Source: authors' construction based on data gathered through interviews

In broiler production, the cost per chicken of building a fully automated and environmentally controlled house is around R172 on average, meaning the total cost of constructing a chicken house for a medium-sized firm with the capacity of 100,000 birds is about R17.2 million. With the average cost of day-old chicks (DOC) of R9.1 per chick, it would cost about R910,000 to fill it up, and cost about R2.5 million[26] to raise them to maturity.[27] Thus the total costs of setting up would be about R20.6 million.

Similarly, the housing costs are high in egg production. The cost per chicken of a fully automated and environmentally controlled house is about R300 on average, meaning the

[19] This refers to the first batch of feed purchased initially along other setup items, before the enterprise's operations generate revenues.
[20] These figures are for automated and environmentally controlled houses. Figures for manual and environmentally uncontrolled houses are a bit lower.
[21] The cost for manual and environmentally uncontrolled houses is R84.84
[22] The average includes two additional data points acquired from hatcheries
[23] The cost for manual and environmentally uncontrolled houses is R160
[24] PL05 figure includes R1.2m incurred for a 300KVA transformer. We excluded this when computing the average
[25] Excluding PL09 figure, which is an outlier.
[26] It costs about R25 to commercially raise a DOC to maturity – interview with PB01 and PB03
[27] It is important to note that the costs of raising DOCs to maturity during the first cycle of production form part of setup costs because at that stage a firm would not have yet generated revenues. Once the firm begins generating revenues, these costs would simply be operational costs.

total housing cost for a medium-sized firm with 100,000 birds is about R30 million. With the average price of point-of-lays of R92, the cost of filling up that capacity with point-of-lay chickens (17 weeks old) will be about R9.2 million. The total setup costs would add up to R39.2 million. If the layer chickens are instead bought at day-old, it would cost about R6.5 million to raise 100,000 DOCs to point of lay,[28]meaning total setup costs of R36.5 million.

In addition to the housing and stock-up costs, there are other miscellaneous costs that are often taken for granted yet are quite important. These include the costs of other infrastructural requirements (other than housing) such as electrical connections and transformers, water sources (i.e., boreholes, etc.), and regulatory compliance.[29] The connections costs can range between R280,000 to R1.58 million, as shown in Table 2 above. For PL04, electrical cabling alone cost just under R200,000, while a 500KVA transformer cost about R1.2 million. It's worth noting that PL04 was not allowed to do any work on the farm before Eskom could instal that transformer.

Regulatory compliance in the main involves municipality approvals, water use rights, land use rights, borehole certificate, etc. All these are required as part of or in addition to environmental impact assessment (EIA) that has to be conducted on all commercial poultry farms, as per the national environmental management act (NEMA) 107 of 1998. An EIA can be a costly exercise, especially for small-scale producers. It is not clear at this stage whether the costs vary with the capacity of the poultry operation. However, it cost one small-scale producer about R200,000 to conduct an EIA for 12,000-birds capacity operation[30], and another producer more than R300,000 for a 410,000-birds capacity operation.[31]

The overall high setup costs apply primarily to commercial enterprises, due to EIA requirements on the one hand, and formal market requirements on the other hand. Formal markets typically require large volumes that necessitate large-scale production, in turn triggering the EIA requirements on the part of producers. The picture is a bit different for small and micro enterprises that operate below the 5,000-birds capacity (i.e., tier 3 producers as discussed in section 3), because, firstly, they are not required to conduct an EIA, and secondly, they typically supply the informal markets (i.e., live chicken, individuals, chisanyamas, street resellers, spaza shops, etc.).

The chicken houses for this category of producers are typically not automated and environmentally controlled, although they are built such that there is natural ventilation and lighting. There are also no strict specifications on how the houses need to be built, nor what material needs to be used. So these producers tend to go for the cheapest materials, such as using corrugated iron sheets instead of concrete bricks for house walls. They also typically self-build the houses, thereby saving on labour costs. All these factors reduce the setup costs significantly compared to commercial production. Producers do however still adhere to industry norms in terms of other factors such as orientation of chicken houses, stocking up densities (that is, number of chickens required per square meter within a house), etc.

[28]It costs R64.80 on average to raise a DOC to point-of-lay
[29] Interviews with multiple firms
[30] Interview with PL05, 18 August 2022
[31] Interview with PB01, 18 August 2022

Table 3: Costs of setting up a non-commercial poultry operation

Category	Producer	Production capacity	Housing costs per chicken	DOC/POL costs
Broilers	PB03	15000	R43	
	PB05	5000		R10/DOC
	PB06	2000	R35	R10.5/DOC
	PB10	3000		R10.5/DOC
	PB11	3000	R12.67	R10.5/DOC
	PB12	600		R9.4/DOC
	PB13	4500		R8.7/DOC
	Average	*3016*[32]	*R30.22*	*R9.77*
Layers	PL02	1200	R194.16	
	PL06	220		
	PL07			R105/POL
	PL11			R95/POL
	PL12			R110/POL
	Average	*720*	*R194.16*	*R103.33/POL*

Source: Authors construction based on information gathered through interviews

Table 3 above provides a breakdown of setup costs for non-commercial producers. For broiler houses, the average construction cost per chicken is R30, meaning it would cost R30,000 to construct a 1,000-capacity house. For layers, we only managed to get costs for one producer that constructed the house semi-formally using concrete bricks. The house cost about R194 per chicken (inclusive of cages) – even higher than the cost for a commercial house (R160) (manual and environmentally uncontrolled) (refer to footnote 23 above). Given the average cost per point-of-lay (POL) of R103, it would cost about R103,000 to fill that house with 1,000 point-of-lay chickens. The total estimate for setup cost adds up to R297,000, for a 1,000-capacity house.

4.2. Access to production inputs

In addition to setup costs, there are operational costs as well. These include input costs (feed and breeding stock[33]), medication, labour, packaging, electricity and heating costs (for broilers). Majority of the costs are attributable to input costs. Feed alone accounts for 70% of total production costs. Small-scale producers typically pay more for feed than medium and large producers due to inability to take advantage of scale economies. For example, it costs a commercial egg producer on average about R0.62 per day to feed a layer chicken, and a non-commercial producer about R1.63 per day, as shown in Table 4 below, indicating the substantial and disproportionate effect on small-scale producers. Small scale producers do not buy directly from feed suppliers because of the low quantities that they purchase, and rather buy from traders that markup the feed price, increasing costs for small scale producers. Moreover, the feed industry has experienced record-high feed prices owing to surges in the international prices of raw materials and increased packaging and distribution

[32] Excluding PB03. Technically, PB03 was a commercial producer at that capacity, although was operating informally

[33] These refer to replenishment stock specifically, instead of initial stock discussed under setup costs. Their discussion here is in relation to day-to-day operational costs

costs of feed which have placed added pressure on small-scale farmers and shrunk their profit margins (SAPA, 2022). Unlike with large producers that buy feed in tonnages, small scale producers purchase bagged feed and therefore incur related packaging costs.

Table 4: Feed costs

Category	Type of producer	Average daily feed costs (per chicken)
Layers	Non-commercial	R1.63
	Commercial	R0.62
Broilers	Non-commercial	R0.76
	Commercial	R0.62

Source: Authors construction based on information gathered through interviews

Further, in addition to costs, there is also a challenge with consistent access to quality breeding stock. About 40% of the producers we interviewed highlighted issues with access to breeding stock, mainly citing unavailability followed by poor quality (Figure 6). Majority (42%) of those that raised challenges with supply of breeding stock are in broiler production, followed by egg producers (33%) and day-old chick producers (25%) (Figure 7). The major challenge at the broiler level is unavailability of breeding stock, with all the broiler producers that highlighted challenges with breeding stock citing unavailability. Layers are affected by quality and unavailability in equal proportions, and hatchers cite challenges with quality more than unavailability (Figure 8). At the broiler level, small-scale farmers struggle to get consistent supply of day-old chicks. During peak seasons such as the December period, suppliers of DOCs often prioritise big clients, creating shortage for small-scale farmers. For example, one such producer had placed an order of 3,000 day-old chicks for the 2022 December period, but only received 1000 chicks.[34]

[34] Interview with PB10, 22 November 2022

Figure 6: Type of breeding stock challenge

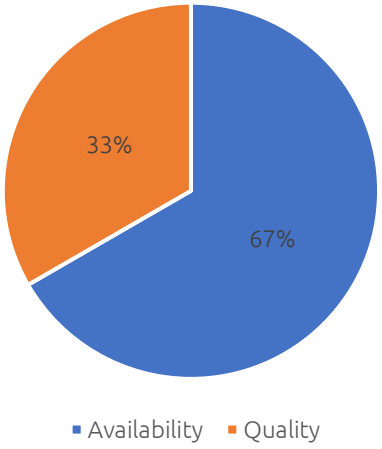


Figure 7: Category of producers with challenges

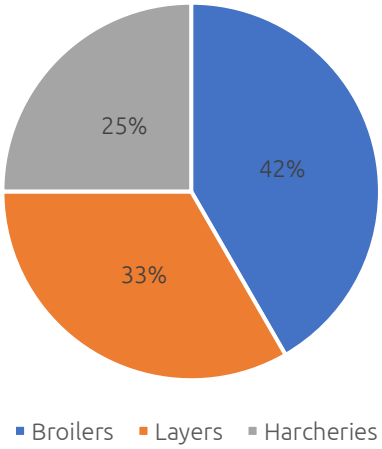
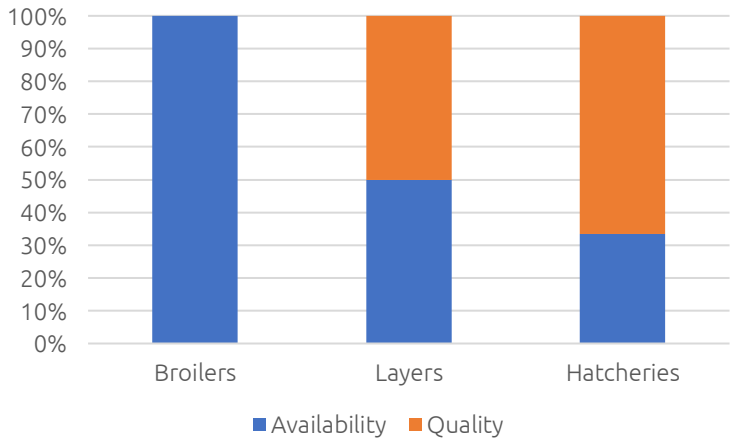


Figure 8: Intensity of the challenge per category



Source: Authors construction based on information gathered through interviews

In layers, egg producers struggle with consistent and quality supply of point-of-lay chickens. There are generally fewer hatchers of layer DOCs than broilers. Moreover, the life cycle of a layer is longer than that of a broiler (layers are grown for 17 weeks before they can be productive and sold as point-of-lays (POLs), whereas it takes just 6 weeks for broilers to be ready for market). As a result, orders for point-of-lay chickens must be made well in advance (at least a year). If a supplier is not able to fulfil an order, it becomes extremely difficult (if not impossible) for a farmer to be able to get supply elsewhere within a short period of time. However even if they were to get supply from elsewhere, it would be extremely risky because they may not have knowledge of the quality of the birds they are getting from the different supplier. With layers, acquiring low quality birds means the farmer will have to feed unproductive birds for over a year, before eventually culling them.

Similarly, at the hatchery level, there is a challenge with consistent access to fertilised eggs. There are few producers of fertilised eggs in the country due to the capital-intensive nature of parent stock segment of the value chain.[35] Each parent stock day-old chick costs about

[35] Production of fertilized eggs is done at the parent stock segment of the value chain. Those eggs are then hatched to produce day-old chicks that are grown into broilers, or in the case of layers, that are

R100,[36] meaning a 100,000-capacity parent stock farm would cost about R10 million just to fill up with DOCs, excluding infrastructure costs. It is predominantly the large integrated producers that have parent stock operations, thus the major suppliers of fertilised eggs. Given that these producers use the fertilised eggs for own operations as well as selling to the open market, they tend to retain high quality eggs and sell low quality ones to the market, thus impacting on the quality of production of their competitors (these include small-scale hatcheries).[37] Moreover, the large integrated producers of fertilised eggs often do not supply small-scale hatcheries directly, leaving them to buy from middle traders.

4.3. Access to markets

Access to formal markets remain a significant challenge for small and medium producers, primarily due to volume requirements imposed by the retailers and independent abattoirs, that tend to be high relative to the capacities of many SMMEs. For some of the broiler producers we interviewed, minimum volumes required to supply abattoirs range from 1,000 to 7,000 chickens per week, and for layers, the minimum requirements to supply retail markets range from 1,000 to 36,000 eggs per week (Table 5). For an SMME to be able to meet volumes of 36,000 eggs per week, for instance, they would need to have invested in at least two chicken houses each with capacity of 40,000[38] birds per week. Many SMMEs do not have such capacities due to high setup costs involved, as discussed in the previous paragraphs. As shown in Table 3 above, production capacities of the non-commercial producers interviewed ranged between 600 to 15,000 chickens for broilers (per 42-week cycle), and 220 to 1200 chickens for layers (translating to 1386 – 7560 eggs per week[39]).

Table 5: Minimum volume requirements by the formal retail market

Producer	Category	Min. retail volumes required	Unit of measurement
PB06	Broilers	1000	Chickens per week
PB10	Broilers	7000	Chickens per week
PL07	Layers	2000	Chickens per week
PL01	Layers	7200 - 36000	Eggs per week
PL03	Layers	2500	Eggs per week

Source: Authors construction based on information gathered through interviews

Even if an entrant was able to meet the high-volume requirements, there are many other listing requirements demanded by the big retailers. In the case of egg producers, these include having a packhouse and grading equipment, and compliance with HACCP (Hazard Analysis and Critical Control Points) and FSA (Food Safety Accreditation).[40] Audits are conducted annually by retailers on farms to ensure compliance. If a farmer fails an audit,

grown into hens that lay table eggs. Parent stock farms are typically much more expensive to set up than ordinary layers/broiler farms, due to cost of breeding stock and high standards requirements for biosecurity (interview with PA01 and other producers)

[36] Interview with parent stock farmer (PH04), 23 November 2022

[37] Interview with multiple producers

[38] Assuming a 90% productivity of the birds

[39] Assuming a 90% productivity of the birds

[40] Interview with PL04, 16 August 2022

they cease to supply that retailer until they pass the audit.[41] Moreover, listing with retailers does not guarantee that orders will be placed. On that backdrop, all non-commercial producers tend to target the informal sector as their primary market.

4.4. Role of networks in the poultry industry

Networks have become a survival strategy and an accepted norm of the industry. Majority (62%) of our interviewees considered networks extremely important for sustainability (Figure 9), especially personal networks (67%) (Figure 10). A few (11%) considered professional networks to be important, whilst about 22% considered both personal and professional networks to be important (Figure 10). We define personal networks to be informal and close relationships built overtime between individual executives of companies. Typically, these kinds of relationships are in the form of friendships and close family ties. Professional relationships are more formal and involve affiliations with recognised industry associations/groupings.

Figure 9: Role of networks in poultry

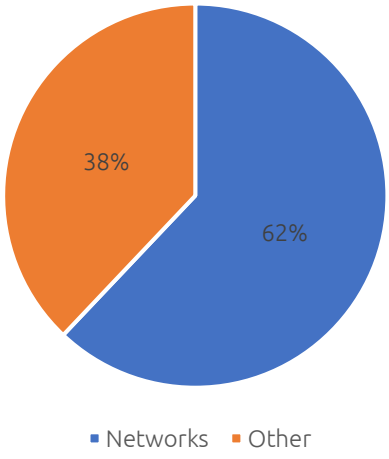
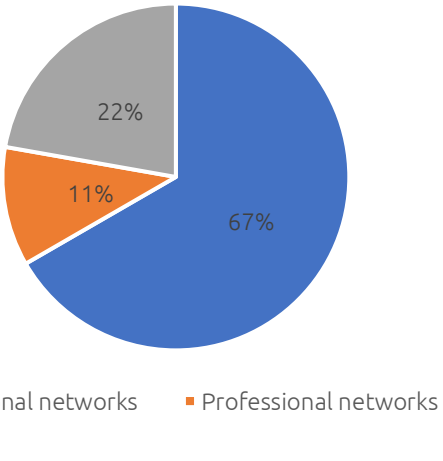


Figure 10: Role of networks by type



Source: Authors construction based on information gathered through interviews

In most cases (85% of cases) networks created opportunities for SMMEs, whilst in 15% of cases they created barriers (Figure 11). Opportunities have been created in relation to market access, access to information, access to finance, access to training, and access to inputs, in that order respectively (Figure 12). In most instances where networks have created access to finance and market opportunities, it has been for commercial producers largely through personal networks (Figure 13). Put differently, personal networks have created market and funding opportunities for commercial enterprises than for non-commercial enterprises. For example, on two separate occasions, one broiler producer (an SMME) managed to secure key customers on the basis of personal relationships: on one occasion, the SMME managed to secure contract farming with one of the three large producers as a result of a school friendship with an executive of the large producer; and on another occasion, the SMME obtained a contract to supply an abattoir as a result of a friendship with a contractor that was refurbishing that abattoir.

[41] Interview with multiple producers

On the other hand, professional networks play an important role in creating opportunities related to training and access to information for non-commercial producers. This is unsurprising given that non-commercial producers tend to lack skills and need more training than commercial producers. They leverage industry associations primarily to access information and training opportunities.

Figure 11: Networks as opportunities or barriers

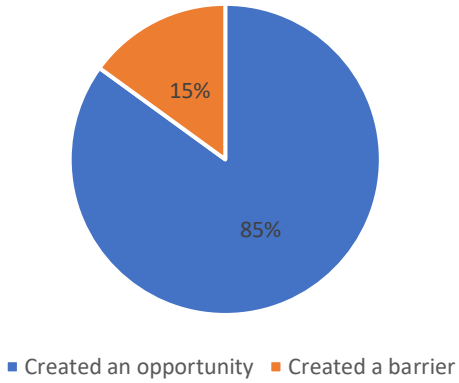
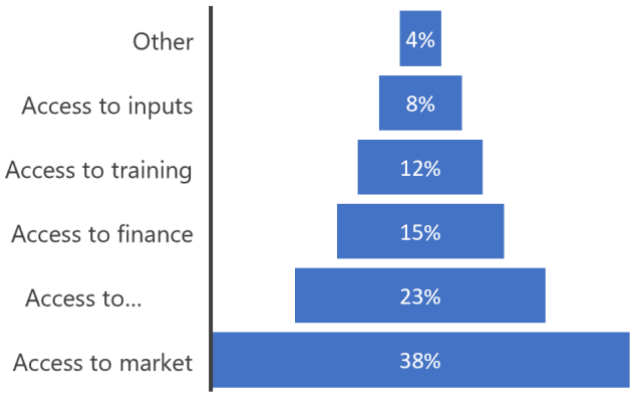
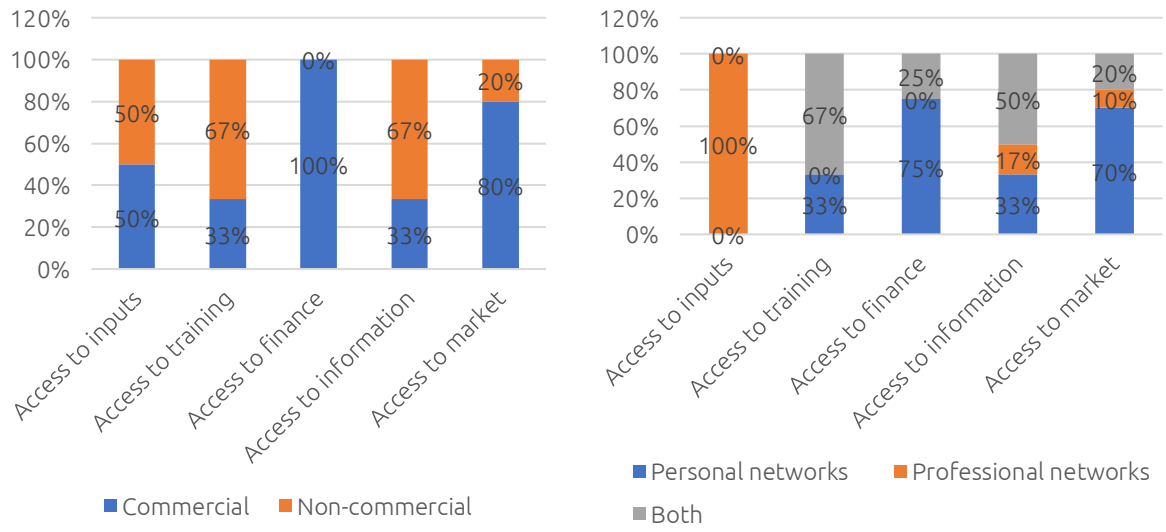


Figure 12: Network opportunities by type



Source: Authors construction based on information gathered through interviews

Figure 13: Role of networks by type of producer and type of network



Source: Authors construction based on information gathered through interviews

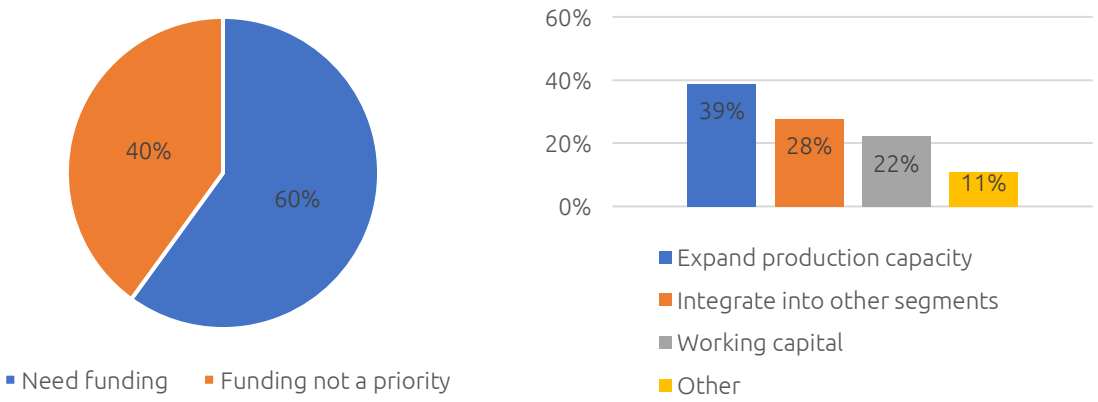
As shown in (Figure 11), networks have not only created opportunities for SMMEs, but in some instances erected barriers. The key barrier has been inability to penetrate certain markets because incumbents have established long-standing personal relationships with customers. In such instances, incumbents would influence customers not to buy from an entrant that is a potential threat to the incumbent. One medium-sized entrant that was a contract farmer for a large producer attempted by-passing that producer to supply their retail customer directly, however as soon as the large producer became aware, the negotiations between the entrant and the retail customer collapsed immediately, through

the obvious influence of the large producer.[42] Subsequent to that, the retail customer blocked any form of communication with the entrant. Moreover, apparently even if an entrant manages to secure listing with a national retailer, there is still no guarantee that the retailer will place orders with the entrant. Again, this is because there are typically strong personal relationships between executives of large producers and procurement officers of retailers. In such instances, it is not unlikely for procurement officers to prioritise placing orders with suppliers they personally know over relatively new and unknown suppliers.[43]

4.5. Access to finance and other government support incentives

Access to finance remains a major challenge in the South African economy (Goga et al, 2019; Bosiu et al, 2020). Majority (60%) of the interviewees mentioned that they needed funding to operate sustainably, with the priority being to expand production capacity and/or integrate into other segments of the value chain (Figure 14). There are also challenges with access to working capital, with 22% of the interviewees highlighting this as a key priority for sustenance. This is not surprising given the high costs of feed that majority alluded to. For non-commercial producers in particular, feed costs can even surpass setup costs.

Figure 14: Funding needs of SMMEs

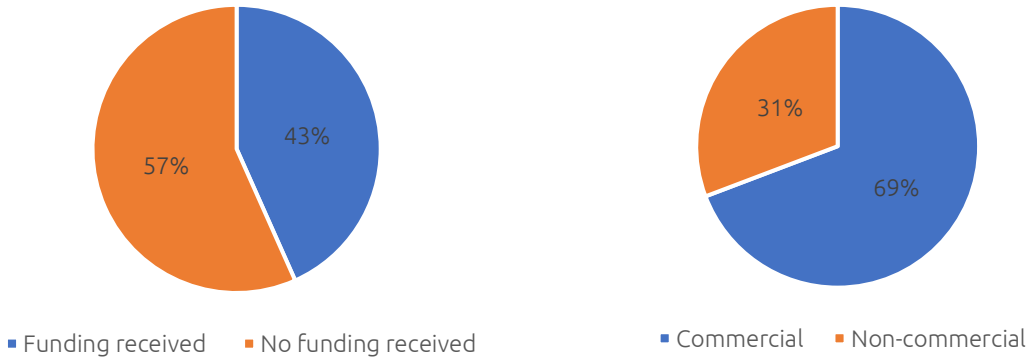


Source: Authors construction based on information gathered through interviews

The scale at which an entrant wishes to enter determines the source of funding ultimately used, or that they can access. Non-commercial producers tend to use own savings to start operations, and this is because they typically start small (as small as 100 chickens), which does not require significant capital outlays. Overall, only about 43% of the producers interviewed received some form of external financial assistance, as shown in Figure 15 below. Majority (69%) of the enterprises that received external funding were commercial enterprises, as opposed to non-commercial enterprises. Financial institutions are likely to fund established commercial producers with track record over micro and small non-commercial producers. Commercial producers that do not have track record tend to manage to secure funding if they have offtake agreements from large customers. On the other hand, non-commercial producers tend to rely on grants from government and angel funders.[44]

[42] Interview with PL04, 16 August 2022
[43] Interview with PL04, 16 August 2022
[44] Interviews with multiple non-commercial producers

Figure 15: Access to funding by SMMEs



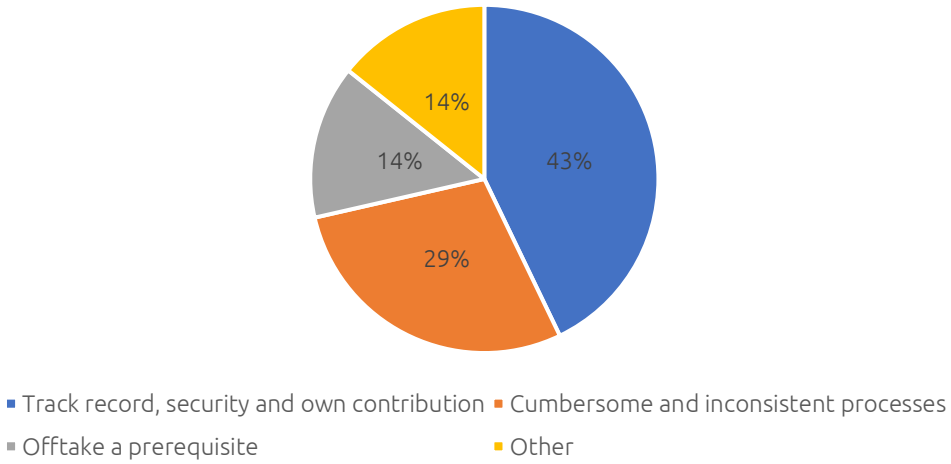
Source: Authors construction based on information gathered through interviews

The Industrial Development Corporation (IDC) is the major financial institution that funded the commercial SMMEs we interviewed, with other funders including the Land Bank, Nedbank and ABSA. Out of the 11 commercial SMMEs interviewed, four received funding from the IDC to the value of R53 million per SMME on average. Two received funding from Nedbank – one to the value of R30 million (R6 million of that was a working capital facility) for acquisition of an existing layer farm, and the other to the value of R1.6 million to construct a packhouse for layer operations. The R30 million loan from Nedbank was subsequently taken over by ABSA, because Nedbank wanted to exist the investment. One SMME was funded by the Land Bank for acquisition of a layer farm, to the value of R3 million.

Other financial support incentives have been provided by non-financial institutions. For example, one producer (a cooperative) received support from the Agricultural Development Agency (ADA), with the package consisting of 10,000 birds, two chicken houses, feed and salaries for the farm's workers for the first 3 months. The other producer received funding from SAPA to cover 50% of the costs of acquiring an EIA. SAPA has a Transformation Fund reserved to assist with increased participation of previously disadvantaged persons in the poultry value chain. Through SAPA, another producer was provided with funding to construct a 25,000-birds capacity house. The support did not come directly from SAPA, but from one of SAPA's large members.

Despite some SMMEs having managed to secure external funding as discussed thus far, overall, challenges with access to finance remain a barrier to sustainable entry for many other SMMEs. Various reasons can be attributed to challenges with access to funding, but mainly have to do with stringent requirements by financial institution. Figure 16 shows the following to be key requirements by financial institutions that make it difficult for poultry producers to access funding: track record, security and own contribution; cumbersome and inconsistent application processes; and offtake agreements. Commercial banks typically require track record and collateral, making it difficult for new entrants and less established SMMEs to be funded as they have not had sufficient time to develop and build healthy asset bases that can be used as collateral.

Figure 16: Challenges with access to funding experienced by SMMEs



Source: Authors construction based on information gathered through interviews

Development finance institutions (DFIs) also require track record and collateral, and in addition, own contribution – popularly known as 'skin in the game'. For example, the IDC requires an upfront own contribution from an entrepreneur as a show of commitment (about 3% of the investment value) to the project. One producer was required to raise R1 million upfront for the R55 million funding approved. The amount was revised up to R3 million because of the Russia/Ukraine conflict (which increased costs). This is clearly a barrier that many SMMEs would not be able to overcome, given that the IDC is the lender of last resort in any case (i.e., SMMEs would not be able to raise that money from commercial banks given the challenges discussed previously).

Nonetheless, in contrast to commercial banks, DFIs are relatively amenable to funding complete startups provided they have offtake agreements with large customers. Offtake agreements provide a form of security to funders that there is viability to the business venture, however these are not easy to get especially for small producers. Although the DFIs are amenable to fund start-ups, their application processes (particularly the IDC) are quite stringent, especially for new entrants. Established enterprises find application processes less challenging as they tend to make use of consultants. One producer that was approved for R55 million IDC funding said the application process was extremely difficult; [45] this was despite the funds being needed for expansion purposes, and the producer not being a new entrant and having established customer base (i.e., offtake agreements). The final business plan that the IDC eventually approved was close to 1,000 pages in length.

In addition to the challenges with DFI funding specifically, there are other prerequisites to investment (also known as conditions precedent) that an applicant gets approved conditional upon meeting. These include the municipal approvals, environmental impact assessment, water rights, electrical installations, etc. As discussed in section 4.1 above, these can be costly (a minimum of R300,000 in the case of the firms we interviewed). The IDC does not fund these, and requires an entrepreneur to find ways of covering the costs themselves. Inability to raise such funds can result in the application not being considered further.

[45] Interview with PB01, 12 August 2022

The challenge of cumbersome and inconsistent application processes relates mainly to the DFIs and other government entities that provide financial support. The general negative perception of government amongst many entrepreneurs has discouraged some producers (especially micro and non-commercial) from even attempting to apply for government support. Non-commercial producers that have not attempted to apply tended to believe that their applications would automatically be declined, or that the processes would be complex and cumbersome. However, this is not always accurate as some producers have clearly received financial support from different government departments or agencies.

For example, two out of the five hatcheries we interviewed received incubators from the National Youth Development Agency (NYDA) to start small-scale hatcheries.[46] Both said the application processes were smooth and seamless. One non-commercial broiler producer received assistance in the form of two chicken houses (each with a capacity of 2,500 birds), from the Department of Agriculture, Land Reform and Rural Development (DALRRD)'s Comprehensive Agricultural Support Program (CASP).[47] Another producer (in layers) received support from DALRRD on multiple occasions, essentially enabling them to upgrade from non-commercial to commercial production.[48] In the first instance, the department provided them with cages and breeding stock (500 layers); on the second, they were provided with a further 1,000 birds; and on the third occasion, the department assisted with financing of the EIA and provision of two chicken houses (6,000 birds capacity each).

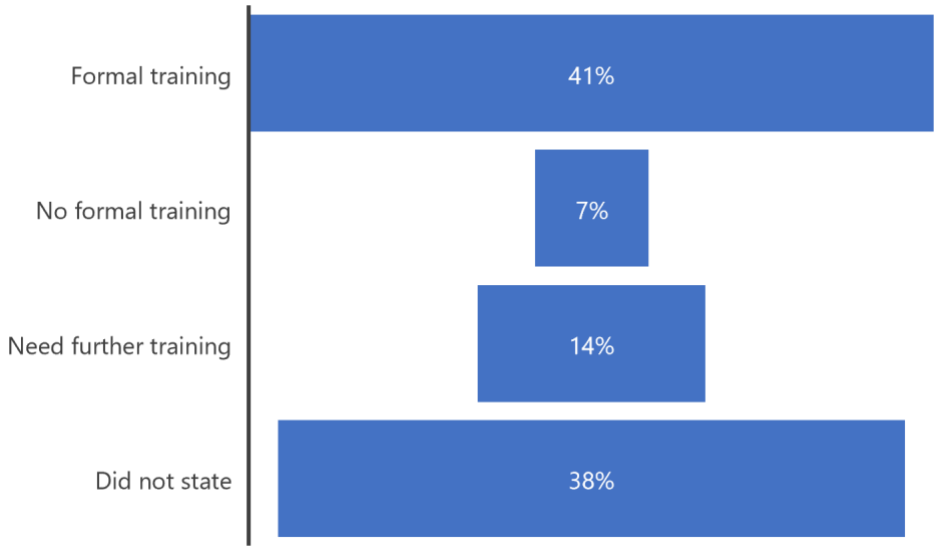
Some of the micro and small producers may simply lack awareness of the different support incentives available in the country; the type of firms targeted by each incentive; and the application processes involved. For example, the IDC funding targets relatively large projects by commercial producers, and as result its due diligence process tend to be relatively stringent. The Land Bank also tends to support large (agricultural) projects, including acquisition of farmland. Other DFIs such as NEF, SEFA, SEDA, NYDA, etc. tend to target smaller projects, including those by non-commercial producers. They also tend to offer other non-financial support incentives to micro and small enterprises, such as development of bankable business plans and business management skills. Moreover, there are other support incentives offered at the departmental level, in particular, by DALRRD. Some of these include the Agricultural Broad-Based Black Economic Empowerment (AgriBEE), Comprehensive Agricultural Support Programme (CASP), Integrated Food Security and Nutrition Programme (IFSNP), etc. Lastly, there are also non-government incentives offered by the private sector, such as the Agricultural Development Agency (ADA). Most of the small and micro producers interviewed were unaware of these incentives. In contrast, most commercial producers interviewed were quite aware of the different funding options available, and the appropriate financial institutions to approach.

Regarding non-financial support, SMMEs interviewed highlighted the importance of skills development. As shown in Figure 17 and Table 6 below, most producers received technical production skills through formal training institutions (largely private) that charge a fee per the intensity and duration of the training. Producers do not find the training fees to be inhibitive, with training fees quite accessible at between R500 to R5,000 (Table 6). Moreover, some more experienced farmers also often offer training sessions to

[46] PH02 and PH03
[47] Interview with PL05, 20 September 2022
[48] Interview with PL05, 18 August 2022

inexperienced farmers, at a fee. Five of the producers interviewed offered some form of training.

Figure 17: Access to training and skills development for SMMEs



Source: Authors construction based on information gathered through interviews

Table 6: Training institutions and costs to SMMEs

	Number institutions	Fee range
Private	8	R500 – R5000
Public	5	N/A

Source: Authors construction based on information gathered through interviews

On the other hand, some producers have indicated that they need training on financial management and marketing skills. Few of those interviewed had formal training on these skills. The implication of lack of these skills becomes apparent in the challenges that many micro and small producers experience with cashflow management, costing, pricing and ability to attract and retain customers. For example, a common oversight amongst small and micro producers is the omission of the entrepreneur's own labour time when calculating costs of production.

4.6. Strategies adopted by SMMEs to remain sustainable

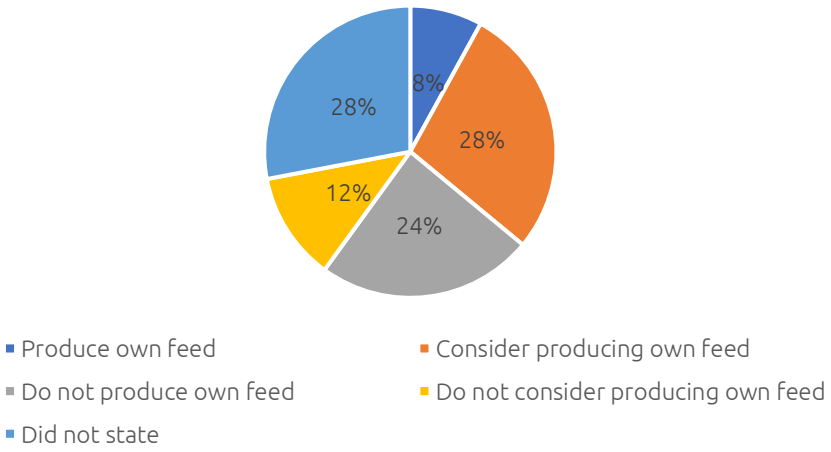
The discussions thus far have brought forth a myriad of challenges inhibiting effective participation of SMMEs in the South African poultry value chain. In this section we discuss the different kinds of strategies adopted by the interviewed SMMEs to remain sustainable. Key amongst them includes: i) entry at other strategic segments of the value chain; ii) leveraging the informal market; and iii) replacing grower with finisher feed

i). Entering at other strategic segments of the value chain. SMMEs typically enter the poultry value chain at the rearing and egg production levels, for broilers and layers respectively. However soon after entering they are encountered with challenges relating to access to affordable feed and breeding stock. As a result, some have opted to mixing their own feed, whilst others are still considering the idea. Figure 18 shows that about 36% of the poultry

producers are either already mixing their own feed or considering doing so as a strategy to overcome to increasing costs of feed. Non-commercial SMMEs typically just mix pre-formulated concentrates with crushed maize. The ratio of the mixture is 30% concentrate to 70% of maize. For one producer, a 40kg bag of concentrate costs about R380, while a 50kg bag of maize costs between R150 and R300.[49] This means a kg of own mixed feed would cost between R4 and R6, whilst a kg of an already mixed feed costs about R10.[50]

One commercial SMME that has already done a feedmill business plan says producing own feed would reduce operational costs by R6 million per annum.[51] Another one that is also in the process of constructing a feedmill said that is expected to increase profit margins to about 40%, from 16% presently.[52] Another commercial SMME that is producing own feed saves about R783,000 per annum.[53]

Figure 18: Production of feed for inhouse use



Source: Authors construction based on information gathered through interviews

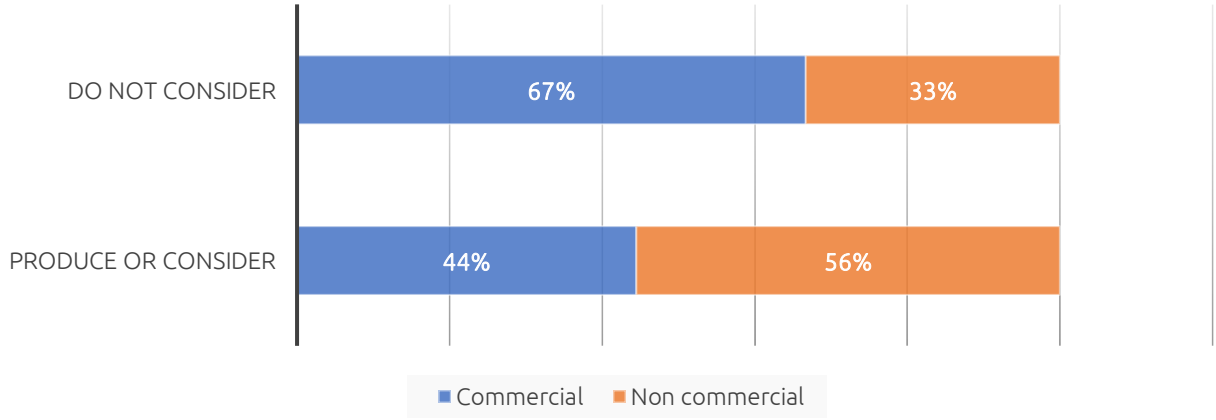
It is not surprising that majority (56%) of those considering or already producing own feed are non-commercial producers (Figure 19), given the disproportionate effect of feed costs on them, as discussed in previous sections. This contrasts with the majority of producers that do not consider producing own feed being commercial producers. Commercial producers' production volumes are significantly larger than non-commercial producers, translating into high feed consumption. This means they are able to take advantage of scale economies and transports costs compared to non-commercial producers.

The commercial producers that do not consider producing own feed stated that it would not be commercially viable for them to do so because of the high costs associated with setting up a commercial feed mill – the costs can be at least R150 million.[54] Moreover, a commercial feed mill would require minimum quantities of at least 1000 tonnes per month to be

[49] Interview with PH02, 21 September 2022
[50] The current average price of a 40kg bag of feed is R400
[51] Interview with PL04, 16 August 2022
[52] Interview with PB01, 12 August 2022
[53] Each productive layer chicken consumes 0.125kg of feed per day.
[54] Interview with PB14, 25 November 2022

viable.[55] On the other hand, non-commercial producers that do not consider producing own feed highlighted inaccessibility of raw materials as the major constraint.

Figure 19: Breakdown of SMMEs that produce own feed, by type of producer



Source: Authors construction based on information gathered through interviews

The strategy to enter at other segments of the value chain has not been limited to feed production only. SMMEs tend to also enter at the hatchery level, as a strategy to overcome the unreliable supply of the day-old chicks (as discussed in the previous sections). This strategy is common among non-commercial producers. Most non-commercial SMMEs often purchase incubators with the hatch capacity of not more than 5000. Moreover, hatcheries do not incur feed costs as they normally sell chicks on the same day they are hatched. The main operational costs involved are the costs of fertilised eggs, electricity and labour. Figure 12 shows that majority (80%) of the hatcheries we interviewed indicated unreliable supply of day-old chicks as the primary reason for venturing into the hatchery segment of the poultry value chain. For example, one SMME in the Eastern Cape province ventured into hatchery because there were few suppliers of DOCs in the province – broiler producers would typically have to go outside the province to get DOCs.[56]

Most (60%) of the hatcheries stated that their initial point of entry into the poultry value chain was in the production of broilers for the meat market (Figure 21). This means that many of those that ventured into hatchery were quite aware of the challenges in the broiler-rearing segment, in particular difficulties with access to DOCs. The informal market for broilers is not stable, partly because there are many competitors within a market that is highly dispersed. At times, chickens take longer to sell, escalating feed costs and putting pressure on cashflow.

[55] Interview with PH04, 23 November 2022
[56] Interview with PH01, 11 August 2022

Figure 20: Reasons for entering the hatchery segment

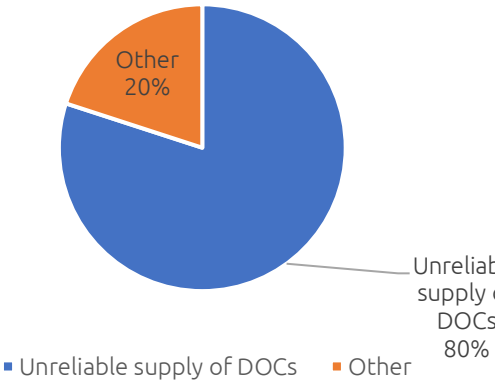


Figure 21: Initial entry into the poultry value chain

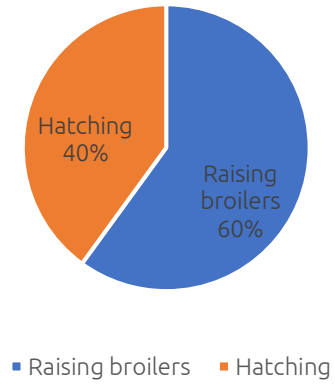
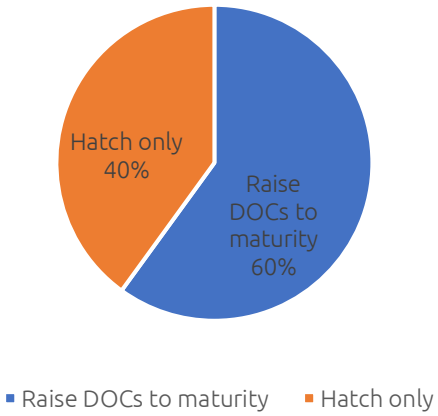


Figure 22: Proportion of hatcheries integrated into rearing



Source: Authors construction based on information gathered through interviews

One such SMME switched from rearing broilers to hatching DOCs, due to limited growth prospects of the informal broiler market.[57] They could not access the formal broiler market due to scale requirements. They switched to hatching layer DOCs, and raising them to point-of-lay – this is because the market prefers birds that are ready to lay eggs. The SMME had acquired a 5,200 capacity incubator, at the cost of R37,000. Some SMMEs don't completely switch, but rather supplement the broiler businesses with hatchery operations. Moreover, hatchers have the option of raising the DOCs (if they are not all sold) and sell them as matured broilers after 6 weeks or as point-of-lays after 17 weeks. Majority (60%) of the hatcheries interviewed raise the DOCs (as an additional measure) to maturity (Figure 22).

The other part of the value chain that SMMEs use as a strategic entry point is the 'cull' market. This is the market for layer chickens that have reached end of their productive life. At that stage, the chickens are essentially 'useless' for the egg producer and therefore would need to be replaced with new point-of-lays. This becomes a continuous cycle for any egg producer, where each cycle lasts about 12 months, after which the stock of birds is replaced. As a result, a market has been created (especially in black communities) where those chickens are sold, not to produce eggs, but to be slaughtered and consumed as meat.

[57] Interview with PH02, 21 September 2022

These are typically being sold at independent butcheries as 'hardbody' chickens. Some SMMEs that want to avoid the risks and costs that come with rearing have spotted that opportunity, and simply buy cull chickens to resell to butcheries and households. It is reported to be a quick cash business, provided one has sufficient market.[58]

The chickens are typically sold for low prices (R25 – R40 per chicken)[59] by egg producers who want to get rid of them.[60] For example, if one buys 1000 culls and sells each for R70 (the current going price of full hardbody chicken at butcheries), it will translate into profits of between R30000 – R45000. Whilst those margins are not significantly different from the informal broiler market, a broiler producer takes on much more risk in raising chickens from day-old to maturity. Moreover, given that traders of cull chickens slaughter immediately and sell to customers that would have pre-ordered, they do not have to incur capital costs of infrastructure.

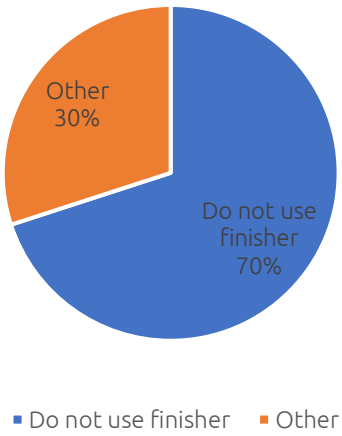
Further, the cull market also creates an additional revenue stream for egg producers since revenue from selling cull chickens is essentially free cash that can be used to supplement cashflows. The business of egg production is often a low margin and high-volume business, meaning that for SMMEs cashflow is quite critical.

ii). Leveraging the informal market. Given the difficulties with access to formal markets, as discussed previously, many micro and small producers have opted to participate in the informal market. This market is not regulated and therefore much easier to enter compared to the formal market, although challenges exist. Further, the larger producers tend to ignore this market, which has created opportunities for SMMEs to compete amongst themselves. Whilst this is the primary market for non-commercial SMMEs, it tends to be a secondary market for commercial SMMEs –they often contest the formal market first, and then sell whatever is left to the informal market. Given that the feed costs affect SMMEs disproportionately compared to larger producers, due to scale economies, the informal market enables SMMEs to realise full cost recovery because margins tend to be higher than in formal markets. At their production costs, non-commercial SMMEs would not make positive profits in the formal market even if they had access to it. Thus, although the informal market remains significantly smaller than the formal market, and unstable, most SMMEs in the poultry value chain participate in that segment.

iii). Replacing finisher with grower feed. The informal market prefers relatively bigger chickens – about 2.5 - 3kg of live weight compared to less than 2kg preferred by the formal market. It is quite expensive to grow bigger chickens, especially because the feed conversion ratio tends to get higher as the chicken grows older. The industry norm is that during the first two weeks of chickens' growth, they are fed starter feed, then grower feed during week 3 to 5, and finisher feed thereafter. The grower feed increases the growth rate and weight gain of a chicken. Instead of switching to finisher at the end of week 5, SMMEs continue using grower feed in order keep the chicken growing. So non-commercial SMMEs tend to use only starter and grower feeds, as a way to meet customers' preferred live weights at lower cost.

[58] Interview with PL04, 16 August 2022, and PL03, 15 August 2022
[59] Interviews with multiple producers
[60] One egg producer we interviewed had a flock of 280,000, which needed to be culled within a short period of time to avoid having to keep feeding them (Interview with PL04, 16 August 2022).

Figure 23: Proportion of SMMEs that do not use finisher feed



Source: Authors construction based on information gathered through interviews

5. Opportunities for SMMEs and woman participation

Participation and growth of SMMEs within the poultry value chain means, firstly, ability to enter, and secondly ability to subsequently upgrade to production of higher value products (i.e., processed chicken or eggs), or to move to other segments of the value chain that improve one's competitiveness and/or where margins are a bit higher. For example, integrating into feed production for in-house use can significantly improve competitiveness, by reducing the cost of feed (which constitute 70% of production costs). Another example includes integrating into hatchery for production of day-old chicks – this can improve competitiveness by ensuring security of supply of DOCs. Moreover, production of day-old chicks can be a profitable venture on its own (as we show below, margins are relatively higher at this segment of the value chain).

5.1. The most lucrative segments of the value chain

As discussed in section 3, the stages of poultry production in South Africa can be summarised as follows (accounting for both broilers and layers): 1) production of grandparent stock; 2) production of parent stock; 3) production of fertilised eggs; 4) production of broiler/layer day-old chicks (DOCs) (i.e., hatcheries); 5-A) broiler growers; 5-B) pullet growers (i.e., production of point-of-lays; 6-A) slaughtering (broilers); and 6-B) egg production. We analyse profit margins at different stages of the value to infer the stages that generate the most value for its participants. There was limited data on other operational costs such as labour, vaccines, electricity, etc., so we calculate profit margins over input costs only. As an example, for broiler producers, we calculate the cost of acquiring a DOC and feeding it to maturity and subtract that from the market price of a mature chicken. That is, the other costs of production including labour, etc., are not accounted for. The result is a rough estimate of profit margins, however still useful given that input costs tend to constitute more than 80% of the total cost of production.

We begin our analysis from stage 3 as we do not have data relevant for stages 1 and 2. We did not manage to secure interviews with any of the participants of these stages.

Nonetheless, we note that these stages are completely controlled by the three largest poultry producers in the country, given that they are the only producers with exclusive import licences with international breed owners.

Table 8 provides a breakdown of cost and revenue items for stage 3. As it shows, the total costs of acquiring and feeding a day-old parent chick to the end of its productive life is about R415, with feed and price of a DOC constituting the major cost items. At the time that the chicken is culled (around 64 weeks old), it would have generated about R875 and R460 in revenues and profits, respectively, from production of fertilised eggs. While the profit margin seems substantial, it is over 64-week period. A daily profit would be about R1.03 per chicken

Table 7: Margin analysis: production of fertilised eggs

Cost item	Quantity	Value (rands)
• Parent DOCs (per chick)		100
• Feed price (per kg)		7
• Feed intake (kg/chicken)	45	
• Cost of feeding DOC to maturity		315
Total cost (per chicken)		415
Revenue item		
• Number of fertilised eggs (per chicken)	263	
• Price per fertilised egg		3.3
Total revenue (per chicken)		875.79
Profit margin (per chicken)		460.79
Daily profit margin (per chicken)		1.03

Source: authors' construction based on data gathered through interviews

Table 9 provides a breakdown of costs and revenues involved in the production of day-old chicks for broiler/layer growers (i.e, stage 4). This is the only stage that does not utilise feed, leaving the major cost item to be fertilised eggs, each costing R3.3 on average for commercial producers. The average price that the commercial hatcheries in turn sell DOCs to the open market is about R9.1 per DOC, generating a profit of R5.8 per chick. It takes about 21 days to produce a DOC, meaning the daily profit per chick is about R0.28. In contrast to commercial producers, non-commercial producers seem to be sourcing fertilised eggs at cheaper prices. Commercial producers tend to prioritise sourcing from reputable suppliers that are likely to guarantee good quality and therefore charge higher prices. As a result, non-commercial producers appear more profitable than commercial producers.

Table 8: Margin analysis: production of day-old chicks (i.e., hatcheries)

Cost item	Commercial	Non-commercial
• Price per fertilised egg	3.3	2.87
Revenue item		
• Price per DOC	9.1	9.77
Profit margin (per chick)	5.8	6.9
Daily profit margin (per chick)	0.28	0.32

Source: Authors' construction based on data gathered through interviews

Table 10 provides a breakdown of costs and revenues involved in raising broiler day-old chicks to maturity when chickens are ready for slaughter (i.e., stage 5-A). For this stage we also highlight the differences between commercial and non-commercial producers, primarily because majority of SMMEs operate within this stage, and the size of operations impacts on the costs disproportionately between the two groups. It costs a non-commercial producer about R32 to feed a DOC to market weight compared to R20.50 for commercial producers. The differences are largely due to high feed costs for non-commercial SMMEs due to low production volumes that raise transport and packaging costs. Further, for non-commercial producers, the market requires bigger chickens that can only be produced over longer periods (typically 42 days), as opposed to commercial producers where the market requires smaller chickens that can be produced over shorter time periods (typically 33 days). As a result, commercial producers save substantially on feed costs. In contrast, the margins are significantly higher for non-commercial producers, because the informal market is willing to pay a bit higher for a bigger and fresh chicken.

Table 9: Margin analysis: Production of broilers

Cost item	Value (rands)	
	Non-commercial SMMEs	Commercial SMMEs
• Day-old chick	9.77	9.1
• Cost of feeding DOC to maturity	31.92	20.46
Revenue item		
• Live chicken	72.8	34.56
Profit margin (per chicken)	**31.11**	**5**
Daily profit margin (per chicken)	**0.74**	**0.29**

Source: Authors' construction based on data gathered through interviews

Table 11 provides a breakdown of costs and revenues involved in the production of point-of-lay chickens. That is, raising layer day-old chicks to 17 weeks old. The cost of feeding a day-old layer chick to 17 weeks old is around R32.13 for commercial producers and R49 for non-commercial producers, translating into daily profit margins per chicken of R0.40 and R0.35, respectively.

Table 10: Margin analysis: Production of point-of-lays

	Value (rands)	
Cost item	Commercial	Non-commercial
• Price of DOC	12.25	12.25
• Cost of feeding DOC to 17 weeks	32.13	49.01
Revenue item		
• Sale of point-of- lay	92	103.33
Profit margin (per chicken)	**47.62**	**42.07**
Daily profit margin (per chicken)	**0.40**	**0.35**

Source: Authors' construction based on data gathered through interviews

Table 12 provides a breakdown of cost and revenue items for production of table eggs (i.e., stage 6-B). As it shows, the total costs of maintaining a productive layer chicken from point-of-lay to replacement is about R207 for commercial producers and R268 for non-commercial producers. Given that a layer chicken is productive for 48 weeks, these translate into daily margins of R0.28 and R0.24 for each category respectively.

Table 11: Margins analysis: production of table eggs

Cost item	Commercial	Non-commercial
• Point of lay	92	103.33
• Cost of feeding POL to replacement	207.23	268.8
Total costs per chicken	**299.23**	**372.13**
Revenue item		
• Expected eggs per chicken	280	280
• Price per egg	1.41	1.62
Total revenue per chicken	**394.8**	**453.6**
Profit margin (per chicken)	**95.57**	**81.47**
Daily profit margin (per chicken)	**0.28**	**0.24**

Source: Authors' construction based on data gathered through interviews

The margins are summarised across the different stages in Table 13 below, together with participation of SMMEs at each stage. SMMEs mainly participate at the production of broilers (stage 5-A) and eggs (stage 6-B), however these are not the most lucrative segments of the value chain. For commercial poultry enterprises, production of fertilised eggs (stage 3) appears to be the most profitable segment of all the analysed stages, followed by production of point-of-lays (stage 5-B), production of broilers (stage 5-A), and production of DOCs (stage 4) and production of table eggs (stage 6). Interestingly, a small proportion of commercial SMMEs participate in the most profitable segments of the value chain (i.e., stages 3 and 5-B). The reason for limited participation at the parent stock level is largely due to high capital requirements needed to set up operations, as highlighted in the previous sections. With regards to production of point-of-lays, the main reason for limited participation of SMMEs is lack of knowledge and sheer oversight on the part of entrepreneurs at the time of entry. Some of the egg producers that we interviewed confirmed that, had they known the full intricacies of the value chain at the time of entry, they would have first entered at the production of point-of-lays.[61]

Table 12: Summary of profit margins and participation across stages of the poultry value chain

	Daily profit margins (per chicken)		Participation by SMMEs (% total interviewed)		
Value chain segment	Commercial	Non-commercial	Commercial	Non-commercial	Women producers[62]
Stage 3: Production of fertilized eggs	R1.01	N/A	3%	0%	0%
Stage 4: Production of day-old chicks	R0.28	R0.32	6%	9%	60%
Stage 5-A: Production of broilers	R0.29	R0.74	9%	31%	88%
Stage 5-B: Production of point-of-lays	R0.40	R0.35	3%	9%	75%

[61] Interview with PL04
[62] This the proportion of women producers per the total number of producers participating in that segment of the value chain

Stage 6-B: Production of table eggs	R0.28	R0.24	14%	17%	70%

Source: Authors' construction based on data gathered through interviews

For non-commercial producers, the most profitable segment of the value chain is the production of broilers (stage 5-A), followed by production of point-of-lays (stage 5-B), production of day-old chicks (stage 4) and production of table eggs (stage 6). Although stage 5-A has the highest per unit margins, it is the least lucrative segment of the value chain due to two specific challenges with the informal market. Firstly, the informal market is quite dispersed, with producers relying on customers that buy individual live chickens. This poses a limit in terms of the quantities that can be sold within a week after chickens have reached maturity. Taking longer than a week to sell all the produce means continued expenditure on feed, and therefore cost over-runs.

Secondly, non-commercial producers are legally not allowed to produce more than 5,000 chickens at any given point in time. To do so, they would need to conduct an environmental impact assessment (EIA) – which can act as a barrier to entry into commercial production because it is costly to attain. This means the upper bound daily profit for any non-commercial broiler grower is R3700 (i.e., 5000 multiplied by R0.74). There are similarly upper bounds for potential value that can be generated by non-commercial producers of point-of-lay chickens (stage 5-B) and table eggs (stage 6-B). For point-of-lays, the maximum daily profit that a producer can earn is R1750 (i.e., 5000 multiplied by R0.35), whilst it would be R1200 for table egg production. The other stage wherein non-commercial SMMEs participate is the hatchery level (i.e., stage 4). Compared to the other stages that non-commercial SMMEs participate in (i.e., stages 5-A, 5-B and 6-B), the upper bound production limit for stage 4 is 25,000[63] DOCs (beyond which an EIA would be required). This translates to potential maximum daily profits of about R8,000, making it the stage with the highest potential for non-commercial SMMEs to derive maximum value.

5.2. Potential interventions to empower women-run SMMEs

A promising avenue for inclusion of SMMEs is contract farming. This is an arrangement wherein large and established producers get into supply agreements with small-scale producers to supply them with broilers or eggs. While the large producers typically have own broiler/egg production facilities, they contract small-scale producers to supplement their output. The benefit on the part of the SMMEs is access to a secured market over a longer period. Moreover, there are also benefits with respect to skills and efficiency transfers from the established producers to small-scale producers. As a result, contract farming is even identified in the Poultry Master Plan as a vehicle that government in partnership with the private sector has set out to utilize to increase participation of SMMEs in this industry.

However, contract farming has its own challenges that need careful consideration, to ensure fair distribution of benefits between parties. The contracts typically work in a way that large producers provide input materials (feed and breeding stock) on credit to small-scale producers who in turn produce broilers or eggs and sell them back to the large producers at

[63] National Environmental Management (NEMA) Act of 107 of 1998

an agreed upon price.[64] The small-scale producer is typically expected to purchase the input materials from the large producer for the duration of the contract, with the justification that it is for preserving the standard level of quality of the final product.[65] However, in such contracts, there are typically information asymmetries and power imbalances in favour the large poultry producers. Small-scale producers have indicated that the prices they get tend to be quite low, squeezing them of margins.[66] Moreover, the offered price is also calculated based on the cost of production of the small-scale producer. So even in instances where the small-scale producer has managed to reduce costs, the price received gets revised downwards in line with the costs.[67] This essentially punishes small-scale producers for being efficient. As a result of these challenges, some of the small-scale producers we interviewed opted out of these contracts after finding them to inhibit their growth prospects.

There is also a need for intervention in relation to the high costs of feed that tend to affect SMMEs disproportionately, as discussed in the earlier sections. An industry-wide strategy is needed to reduce the cost of feed and increase competitiveness. This means finding ways to reduce the cost of key input materials (i.e., soyabeans and maize) that go into the production of feed. South Africa does not have the best climate conditions to produce cheap soyabeans relative to other regional countries such as Zambia and Mozambique (Goga and Bosiu, 2019). Thus, a long-term feed strategy should extent to the region to leverage opportunities that lie beyond the national borders. In the meantime, there is a need for establishment of state supported feed mills that can be accessible to SMMEs at subsidized feed prices. Such feed mills should not be primarily for profit making, even as they need to be financially sustainable and independent. This kind of an intervention wouldn't necessarily be unique to South Africa, as it has been adopted in other peer countries. For example, the governments of the Phillipines and Bahamas have instituted state-owned feed mills that provide qualifying farmers with feed at a subsidised price (Government of the Bahamas, 2022; Petinglay, 2021). The Indian government has also instituted a wide range of schemes for animal feed producers, including a 50% capital subsidy for the expansion of production facilities and a loan of up to 90% for the establishment of feed manufacturing units (Government of India, 2022).

However, given the challenges with South Africa's state-run enterprises generally, and government's other priorities, a public-private partnership (PPP) model might be the most viable vehicle for operation of such feed mills. Feed mills need to sell certain minimum quantities (typically about 1000 tonnes per month on average) to be economically viable. Thus, such a partnership can work if there is a relatively large private partner that can act as an anchor consumer of the feed mill's output. One producer of eggs that is in the process of constructing own feed mill and that has shown keen interest in such a partnership consumes about 920 tonnes of feed per month, and indicated that their offtake alone would make such as feed mill economically viable.[68] This means a feed mill with the capacity to produce 5000 tonnes per months (as an example), anchored with an offtake of 1000 tonnes per month from an anchor consumer, can be able to sell the rest of the output (i.,e 4000 tonnes) to SMMEs at significantly lower prices, whilst remaining financially sustainable. Such a

[64] Interviews with PB01, PB03, PL01, PL04, PL05 and PL09
[65] Interviews with PB01, PB03, PL01, PL04, PL05 and PL09
[66] Interviews with PL01, PL04 and PL09
[67] Interview with PL01
[68] Interview with PL04

partnership wouldn't only benefit the SMMEs but the anchor partner as well, creating a mutually beneficial partnership. The said egg producer indicated that they would save about R6 million per annum on feed costs alone.

Similarly, there is a need for a state supported abattoir given the challenges that small scale producers encounter in accessing these markets. Two key challenges are high minimum volume requirements that majority of SMMEs are not able to meet given their typically small production capacities, and long-standing relationships between abattoirs and large incumbent producers that make it difficult for entrant producers to take market share away from incumbents. Most of the broiler meat from commercial producers is sold through abattoirs while small scale producers sell to the live broiler meat market (DALRRD, 2021). As a result, small-scale broiler producers sell live chickens largely to the informal markets and are excluded from the formal retail. Given that government cannot dictate to abattoirs who to transact with, the most effective way to ensure inclusion of SMMEs is to establish strategically located abattoirs which can operate under a similar arrangement as the feed model proposed above. In this case the anchor partner would need to be a relatively large consumer of poultry meat (i.e., processors that sell to end retailers).

There are also opportunities to increasing SMME participation through aggregation. Economies of scale characterize the poultry industry in South Africa. A way for small-scale farmers to compete is to aggregate their production capacities by establishing buying groups and/or cooperatives. This allows not only to meet minimum quantities typically required by large customers, but also to purchase input materials in bulk to save on transportation costs and take advantage of discounts offered for bulk purchases. While traditional cooperatives have been successful in some respects, they also have inherent challenges that come with coordination of multiple participants that may have completely differing objectives.[69] Lessons in both respects need to be drawn to unlock the full potential that sits with cooperation. One of the successful cooperatives is the Highveld Cooperative, which is currently the third largest producer of commercial eggs nationally.[70] Highveld consists of a multiple independent egg producers that have grouped to market their eggs under one brand (Toplay).[71] Individually, many Highveld members would not be able to supply national retailers, but they presently do through the cooperative.[72] Lessons need to be drawn from the experiences (both positive and negative) of Highveld given that it has been in existence for many years and the model seems to be working.

Other forms of aggregation need to be explored as well, such as those that utilize digital technologies/platforms. There are innovative emerging digital platforms that SMMEs in the agricultural sector in general are seemingly leveraging to aggregate their produce and sell to the wider market. One such platform is HelloChoice – a digital marketplace for fresh produce.[73] Another is FoodPrint – a mobile application that uses blockchain technology to assist smallholder farmers with access to markets.[74] Under both platforms, farmers list their coming harvests on the application, and retailers and other entities can purchase directly

[69] Inteview with PL09
[70] Interview with PL04 – A member of Highveld
[71] Interview with PL04
[72] Interview with PL04
[73] Presentation by Grant Jacobs – CEO and Co-founder of HelloChoice, OXFAM Regional Symposium on Food Seceurity, 26 April 2023
[74] https://www.foodformzansi.co.za/the-future-of-farming-agritech-trends-to-watch-in-2022/

from the farmers. Given the stringent nature of the specifications and requirements of large buyers such as retailers, HelloChoice provides member farmers with assistance to meet the specifications and requirements,[75] thus not only facilitating access to markets but assisting smallholder farmer develop other important capabilities necessary to penetrate these markets. As a result, some of HelloChoice's member farmers have graduated to being able to supply large retailers independently.[76]

Similar platforms can be developed exclusively for poultry products, consisting of buyers and producers. Farmers can list their coming produce, whilst buyers can indicate the produce they need. This can further be an opportunity for key customers such as abattoirs or retailers to communicate product specifications and minimum quantities they require with producers. For instance, an abattoir may indicate that they require 5000 chickens (that adhere to their specifications) per week. A group of broiler producers that meet those specifications, and are near the abattoir, can be able to supply. That means even farmers with small production capacities, that would have otherwise been unable to meet the 5000 quantities individually, would be able to supply by grouping with other farmers.

Lastly, government should consider establishing a financing facility for pre-investment compliance-related costs. while the costs of setting up a commercial poultry operation are high overall, the costs related to pre-investment compliance (particularly EIA) are quite special in that the ability or inability to overcome them literally distinguishes between an enterprise being considered commercial or non-commercial. This has direct implications for enterprises' ability to access both finance and key markets. DFIs do not finance EIA but require enterprises to have it before they can be approved for funding. Further key customers typically require this before committing to supply agreements with producers. The EIA can cost in upward of R300 000, and whilst this might appear insignificant relative to the overall setup costs, it can be quite expensive and challenging to raise for many entrepreneurs (especially previously disadvantaged individuals). Thus, government needs to establish a funding facility exclusively for pre-investment compliance related costs. This will unlock further opportunities for SMMEs including ability to access finance and key markets, thereby relieving government of the pressure to provide support in that regard. While the South African Poultry Association (SAPA) does provide some financial assistance with regards to EIA to qualifying SMMEs, these efforts need to be intensified with government taking on a much deliberate and leading role.

6. Conclusion and recommendations

The poultry industry presents a strong case study to unpack challenges faced by women and smallholder producers in vertically integrated value chains, characterised by economies of scale and bargaining power of input suppliers and major customers. While large-scale poultry producers dominate the value chain, there is also a vibrant layer of micro, small and medium producers. However, majority of the SMMEs are limited to supplying the informal market, and even though this market offers higher margins, there is a limit to the quantities that can be marketed and sold informally. In addition, and informed by these dynamics, government in collaboration with the private sector has developed a Poultry Master Plan – a

[75] Interview with Sakhile Mthembu – HelloChoice Regional Manager, 26 April 2023
[76] Interview with Sakhile Mthembu – HelloChoice Regional Manager, 26 April 2023

policy tool aimed at increasing the share of black ownership and contribution of SMMEs to the total output of the industry.

Nevertheless, poultry is one of the several sectors of the South African economy that remain highly concentrated, with significant barriers to entry (BTEs) – these include high capital requirements, high costs of feed, limited access to breeding stock, and limited access to markets. In addition, there are challenges with access to enterprise finance, impacting on the ability of SMMEs to participate in the value chain. The high capital requirements relate mainly to commercial production. The major start-up costs are infrastructure (housing in particular) and initial stock (i.e., day-old chicks, point of lays, and feed). In addition, there are other miscellaneous costs that are often taken for granted yet are quite important. These include the costs of other infrastructural requirements (other than housing) such as electrical connections and transformers, water sources (i.e., boreholes, etc.), and regulatory compliance.

Access to affordable inputs into production remains a critical issue (especially for SMMEs) in running a sustainable poultry enterprise. Small-scale producers typically pay more for feed than medium and large producers due to inability to take advantage of scale economies. In addition to costs, there is also a challenge with consistent access to quality inputs (especially breeding stock). Breeding stock tend to be either completely unavailable or of poor quality. For broiler producers, the challenges are in relation to accessing day-old chicks. For layers, the challenge is with respect to accessing point-of-lay chickens. For hatcheries, the challenges relate to accessing fertilised eggs.

Access to formal markets remain a significant challenge for SMMEs, primarily due to volume requirements imposed by the retailers and independent abattoirs, that tend to be high relative to the capacities of many SMMEs. Additionally, there are many other listing requirements demanded by the big retailers.

Access to finance also remains a significant barrier to entry for majority of the SMMEs. Overall, challenges with access to finance and government support are attributable to the following key factors: track record, security & own contribution; cumbersome and inconsistent processes; and offtake requirements. In addition, financial institutions (including DFIs) do not fund pre-investment compliance related costs such an EIA. Some case examples have illustrated the importance of finance for upgrading and sustainability. One producer received financial support from DALRRD on multiple occasions, as well as from private sources, essentially enabling them to upgrade from non-commercial to commercial production. Specifically, the department assisted the producer with financing of the EIA, leading to the producer securing contract farming with one of the large egg producers.

Despite the several challenges and barriers identified, there are opportunities for greater participation of SMMEs, including through; participation at strategic segments of the value chain; contract farming; and aggregation. Whilst most of the SMMEs are largely involved in broiler and egg production segments, there are opportunities to enhance competitiveness by integrating into other strategic segments such as feed production and hatchery. Feed production for inhouse use can significantly reduce costs and increase profitability. Furthermore, SMMEs tend to also enter at the hatchery level, as a strategy to overcome the unreliable supply of the day-old chicks. Importantly, hatcheries do not incur feed costs as they normally sell chicks on the same day they are hatched. The main operational costs

involved are the costs of fertilised eggs, electricity and labour. Further, a small proportion of commercial SMMEs participate in the most profitable segments of the value chain. While the reason for limited participation at some of the profitable segments is largely due to high capital requirements needed to set up operations, in some instances is lack of knowledge and sheer oversight on the part of entrepreneurs.

There is another opportunity for greater participation of SMMEs through contract farming. Contract growing has the potential to assist farmers with start-up costs, input supply and access to market. Among the targets of the Poultry Sector Master Plan is the expansion and improvement of the contract farming sector. The Plan targets the establishment of 50 new commercial-scale contract farmers with agreements to supply large producers. However, successful contract growing that fosters inclusion will require that small farmers are integrated on fair terms that enable their long-term sustainability as opposed to only serving to externalise the costs of large firms. Currently, contract producing is characterised by information asymmetries, high capital requirements and power imbalances between large firms and small producers. These act to exclude small farmers or prevent their sustainability. Further, given that the contracts typically require small-scale producers to buy input materials exclusively from the large producers or their affiliates, these need to be scrutinised for potential violation of competition laws.

Aggregation can also be an avenue for greater participation of SMMEs. Economies of scale characterise the broiler and egg industries in South Africa. Lessons need to be drawn from traditional forms of aggregation such as the co-operative model. However, with the advent digital technologies, other emerging forms of aggregation (such as digital platforms) need to be leveraged as well.

In conclusion, and despite the several challenges discussed, opportunities exist for greater participation of SMMEs, especially women-owned/run enterprises. While the study has unpacked challenges affecting SMMEs in general, there are invaluable insights that can be used to unlock opportunities for women-owned/run SMMEs in particular. For instance, meaningful empowerment of women-owned/run SMMEs requires intentional, targeted and practical interventions, especially at the feed and abattoir levels. A proposed initiative is to establish feed mills and slaughterhouses that can be accessible exclusively to SMMEs, at subsidized prices. Lessons should also be drawn from international experiences. Another intervention is for the government to fund pre-investment compliance related costs. This will unlock further opportunities for women-owned/run SMMEs, including access to markets and finance.

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8. Appendix

List and description of interviewees

Interview code	Sex	Province	Commencement of operations	Value chain node	Number of birds
PB01	M	Free State	2010	Broilers	410 000
PB02	F	Limpopo	2018	Broilers	2 000
PB03	F	Gauteng	2019	Broilers	15 000
PB04	F	North West	2021	Broilers	100
PB05	F	Gauteng	2009	Broilers	5 000
PB06	F	Gauteng	2020	Broilers	800
PB07	M	Limpopo		Broilers	3200
PB08	F	Limpopo	2021	Broilers, Layers	700

PB09	M	Limpopo	2022	Broilers	300
PB10	F	Limpopo	2020	Broilers	1 500 broilers, 60 layers
PB11	F	Limpopo	2020	Broilers	2 000
PB12	F	Limpopo	2011	Broilers	600
PB13	M	Limpopo	2014	Broilers	1 000 broilers, 500 layers
PB14	M	Limpopo	1991	Broilers	150 000
PH01	F	Eastern Cape		Hatchery	
PH02	F	Mpumalanga	2019	Hatchery	500
PH03	F	Limpopo	2021	Broilers, Layers	700
PH04	M	Limpopo	1992	Hatchery	420 000
PH05	M	Limpopo	2016	Hatchery	220 000
PL01	M	KwaZulu-Natal	2002	Layers	4 000
PL02	F	Free State	2016	Layers	1 000
PL03	F	Free State	1999	Layers	600
PL04	M	North West	2017	Layers	60 000
PL05	M	Western Cape	2003	Layers	35 000
PL06	F	Gauteng	2021	Layers	220
PL07	F	Mpumalanga	2019	Hatchery	500
PL08	F	Limpopo	2020	Layers	200 broilers, 400 layers
PL09	F	KwaZulu-Natal	2021	Layers	7 000
PL10	F	KwaZulu-Natal	1973	Layers	13 000
PL11	F	Limpopo	2020	Broilers, Layers	1 500 broilers, 60 layers
PL12	M	Limpopo	2014	Broilers, Layers	1000 broilers, 500 layers
PIS01	M	Limpopo		Animal Feed	