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Drivers of commercial poultry development in Sub-Saharan Africa

Lessons from case studies of commercial poultry operations in Nigeria and Senegal

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Abstract

Transforming agrifood systems is a global priority, particularly in Africa where food security, nutrition and environmental issues remain critical. The poultry sector has the potential to contribute to this by providing affordable animal protein and improving rural livelihoods, while having a smaller environmental footprint than other types of livestock. However, despite growing demand, poultry production in Sub-Saharan Africa (SSA) remains low, averaging around 7 million tonnes per year between 2015 and 2022, far behind production in America (50.4 million tonnes), Asia (49.4 million tonnes) and Europe (21.5 million tonnes) (FAOSTAT, 2025). This results in a persistent reliance on imports. The sector is dominated by smallholder family systems with low productivity, which challenges its ability to meet the growing demand. Literature suggests that the more productive commercial sector has a key role to play in meeting demand. Understanding the mechanisms of success in this sector is important. However, there is a notable lack of research into the drivers of success in commercial poultry enterprises. This study addresses this gap by focusing on poultry businesses in Nigeria and Senegal, which were selected because West Africa has dominated poultry production in recent decades, with Nigeria being the largest producer and Senegal maintaining a long-standing ban on poultry imports. Their contrasting commercial poultry development and policy environments provide valuable nuances in the analysis. Using qualitative data and a framework emphasising entrepreneurial traits, business characteristics and the business environment as dimensions of success, the study finds that, while the business environment (including policy and industry conditions) plays an enabling or limiting role, business characteristics and strategic responses are crucial for leveraging opportunities or overcoming challenges. Although entrepreneurial traits are less directly linked to success, they influence entry capacity and enhance strategic approaches, thereby indirectly supporting long-term sustained performance. These insights enrich the literature on the poultry sector in SSA and offer guidance on how to strengthen its role in advancing broader food system goals.

Keywords: Commercial poultry, Nigeria, Senegal, agribusiness success, qualitative analysis

JEL codes: L1, L2, L4, L5, L66

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1 Introduction

The transformation of agrifood systems is high on the agenda across the World and particularly in Africa where many challenges to transformation, including food, nutritional and environmental issues, still exist (Ulimwengu, 2024). The SOFI report (FAO, IFAD, UNICEF, WFP and WHO, 2025) shows that, despite a global decline in hunger (share of people facing hunger falling from 8.7% in 2022 to 8.5 in 2023 and 8.2% in 2024) and food insecurity, Africa is experiencing the opposite trend. By 2030, nearly 60% of the projected 512 million undernourished people worldwide will live in Africa.

The poultry sector may contribute to food systems transformation in many ways, including improvements in food and nutrition security, poultry being a more affordable source of protein compared to red meat with less saturated fats and a lower environmental footprint. It is also an economic activity with proven potential to improve rural livelihoods and value addition across the food systems' segments (Qaim and Parlasca, 2022; Erdaw & Beyene, 2022; FAO, 2013a).

Despite a global increase in meat consumption, particularly poultry (Qaim & Parlasca, 2022), poultry production in Africa has expanded at a comparatively slower pace. Between 2015 and 2022, Africa's average poultry meat production was approximately 7 million tonnes, significantly lower than the 50.4 million tonnes produced in America, 49.4 million tonnes in Asia, and 21.5 million tonnes in Europe during the same period (FAOSTAT, 2025). To meet rising demand, many African countries continue to rely heavily on poultry imports (Erdaw & Beyene, 2022; Boimah & Weible, 2021; Kulla et al., 2021; Zamani et al., 2019). Yet, rapid changes are witnessed in multiple countries with urbanization driving changing demands, the rise of a middle class, etc. Gueye (2024) reports changing meat consumption patterns in Africa over the last 20 years, with poultry meat, particularly chicken, gradually replacing red meat that used to be more popular.

In Africa, smallholder family production systems are more prevalent. Yet they may face challenges to meet the increasing demand for poultry products due to low productivity (Erdaw & Beyene, 2022). Demand is further projected to increase by 73% between 2000 and 2030 in the continent (Robinson & Pozzi, 2011). The commercial, more productive sector, will have a crucial role to play in the supply of affordable poultry products to meet the growing demand (Herrero et al., 2014; Kabuage, 2010) while reducing the heavy reliance on imports. To that end, the sector's attractiveness to private investment is of utmost importance. This paper looks at the success drivers of poultry businesses on the commercial poultry sector in Sub-Saharan Africa (SSA).

There is extensive literature on poultry systems in sub-Saharan Africa, with a strong emphasis on smallholder family production systems due to their prevalence. While a number of studies have examined commercial poultry operations, these have largely focused on value chain analyses for broiler and layer production, classification of production systems, production and market orientation, profitability, competitiveness and vertical coordination (Chibanda et al., 2024; Chibanda et al., 2023; Arnoldus et al., 2021; Adeyonu et al., 2021; Onono et al., 2018; Andam et al., 2017; Carron et al. , 2017; FAO, 2014; Msami & Das, 2009; Nyaga, 2008; Sims, 2008; Touray, 2008; Adene & Oguntade, 2006; Aning, 2006). Other contributions have addressed regional differences in the development and trade of the poultry sector (Schneider, 2010; Vernooij et al., 2018), as well as macro-level or policy themes such as trade restrictions and animal health risks (Boimah & Weible, 2021; Kouam et al., 2018; Uyanga et al., 2021). However, there remains a notable gap in the literature concerning the determinants of business success in the commercial poultry sector, particularly from the enterprises' own perspective. This study addresses this gap by examining how commercial poultry enterprises navigate challenges and leverage opportunities when entering and growing within the sector. It offers novel insights into the drivers of business success within an evolving and uncertain sector. It also adds a critical enterprise-level dimension to the broader literature on poultry sector transformation in Africa.

The study mainly focuses on businesses producing chicken meat and eggs as chickens accounted for 97% of Africa's total poultry population in 2022 (Gueye, 2024). In the periods 2001-2011 and 2011-2021, Western Africa appeared as the region with the highest poultry growth rate, 48% and 47.3%, respectively compared to an average of 30.7% and 27.8% in total Africa and a maximum of 43% in Southern Africa in 2001-2011 and 39% in Middle/central Africa in 2011-2021 (Gueye, 2024). Additionally, except Northern Africa, Western Africa, steadily had higher hen eggs' production from the 1980s to 2021 (Gueye, 2024). Therefore, we focus on Nigeria and Senegal in West Africa based on production performance and transformative policy interventions as case studies.

Section 2 performs a review of the literature on poultry in SSA, focusing on the commercial sector to highlight the contributions from the literature and this paper's added value. Section 3 deals with the definitions, methods, conceptual framework and data used. Section 4 presents the results on the drivers of poultry businesses' success and Section 5 discusses the results, their policy implications, study limitations and future research directions.

2 Literature review on the commercial poultry sector in SSA

The poultry sector in Sub-Saharan Africa (SSA) comprises primarily family-based poultry systems and commercial poultry farms, which differ in terms of biosecurity levels, internal structure, and market orientation, as delineated in the FAO classification of poultry production systems (Sims, 2008) -(see Table 1).

Table 1: FAO classification of poultry production systems

Production system	**Main characteristics**
Sector 1	Integrated, industrialized enterprise with sophisticated, high-level farm biosecurity measures. Complete control over all farm inputs and outputs (e.g., breeding stock, feed mill, slaughterhouse, processing, distribution, animal health services).
Sector 2	Commercial, intensive poultry production involves largely independent enterprises or contractors practicing moderate to high-level biosecurity. Distribution of poultry to slaughterhouses and to live poultry markets.
Sector 3	Commercial farms with relatively poor biosecurity. Sales are more likely to be through live poultry markets or to traders who on-sell through live bird markets. This system covers ducks and other poultry. Production may be intensive, semi-intensive, or extensive.
Sector 4	Village-level, scavenging chickens for local consumption. These small flocks are reared in village households. An occasional bird is sold locally, bartered, used as a gift, or, occasionally, sold to a poultry trader for cash.

Source: Sims (2008)

Family poultry (sector 4), primarily located in rural areas, have minimal biosecurity, low input use, and is intended for home consumption (Akinola and Essien, 2011; Schneider, 2010). It accounts for approximately 70 to 99% of national poultry populations in SSA (Kebede, 2023; Ekinola and Essien, 2011). This subsector contributes to household income, women's empowerment, and nutritional security, particularly for women and children (Akinola and Essien, 2011; Erdaw and Beyene, 2022; Ndambi et al., 2019; Sonaiya and Swan, 2004; Desta, 2021; FAO, 2013a; Akinola and George, 2009).

In SSA, family poultry systems face persistent challenges, including disease prevalence, weak biosecurity and quality standards (Carron et al., 2017; Kebede, 2023), and low productivity levels (Erdaw and Beyene, 2022). These limitations challenge their ability to meet the rising demand for animal protein driven by demographic growth and urbanization (Erdaw and Beyene, 2022; Herrero et al., 2014). Compared to beef or sheep, poultry remains an affordable and environmentally friendly protein source (Erdaw and Beyene, 2022; Akinola and Essien, 2011). Yet in many African countries, domestic production has lagged behind demand, leading to increased reliance on imports (Zamani et al., 2019). While imports can improve household welfare (Knößlsdorfer and Qaim, 2023), they may threaten domestic poultry sectors' competitiveness (Duteurtre et al., 2004) and exacerbate disease risks in contexts of weak biosecurity (Wu and Perrings, 2018).

The literature has consistently recommended developing the commercial sector to meet demand by fostering the commercialization of traditional poultry production, establishing large-scale poultry farms, and encouraging private investment (Farrelly, 1996; Herrero et al., 2014; Kabuage, 2010).

However, the growth of commercial poultry in Africa remains slow. Despite its crucial role in bridging the supply-demand gap, the commercial poultry sector, comprising FAO sectors 1 to 3 (Table 1), has received relatively limited scholarly attention. Fully integrated, high-biosecurity firms (sector 1) are rare in SSA, with the majority of commercial operations classified within sectors 2 and 3 (Andam et al., 2017; FAO, 2013b; Msami and Das, 2009; Touray, 2008; Nyaga, 2007; Aning, 2006), which typically exhibit moderate to low levels of biosecurity. Flock sizes vary considerably across countries (see Table S1 in supplementary materials), likely due to the classification criteria focusing on biosecurity rather than scale (Sonaiya et al., 2022; Demeke, 2008; Aning, 2006).

Existing literature primarily examines value chains for broiler and egg production, focusing on business organization, vertical coordination, production and market orientation, profitability, competitiveness, etc. (Chibanda et al., 2024; Chibanda et al., 2023; Kassali et al., 2022; Arnoldus et al., 2021; Adeyonu et al., 2021; Onono et al., 2018; Andam et al., 2017; Carron et al., 2017; FAO, 2014; Msami and Das, 2009; Touray, 2008; Nyaga, 2008; Adene and Oguntade, 2006; Aning, 2006). It also covers regional growth and trade dynamics, trade policies and their implications from stakeholders' perspectives (Duteurtre et al., 2004; Boimah & Weible, 2021; Schneider, 2010; Vernooij et al., 2018), disease outbreaks (Uyanga et al., 2021; Kouam et al., 2018; Adene and Oguntade, 2006).

Integrated firms often manage all value chain activities internally (Table 1), sourcing genetic material from Europe, Brazil, South Africa, or India (Carron et al., 2017; Arnoldus et al., 2021), and frequently coordinate with upstream broiler or egg-laying farms through outgrower schemes (Carron et al., 2017). Non-integrated firms rely on integrated firms, external hatcheries, or their distributors for day-old chicks (DOCs) and procure feed from local producers or shops (Chibanda et al., 2023; Onono et al., 2018; Carron et al., 2017). Production in these commercial systems faces significant constraints, particularly high feed costs (representing 54 to 60% of production expenses for small and medium-scale commercial broilers in Senegal), feed quality issues, space limitations, disease outbreaks (Gueye, 2024; Chibanda et al., 2023; Aarnoldus et al., 2021; Onono et al., 2018).

Commercial poultry development shows strong regional variation (Vernooij et al., 2018). In Eastern and Southern Africa, South Africa, Zambia, Kenya, Uganda, and previously Zimbabwe have been leading producers, while Malawi and Tanzania have experienced rapid sectoral growth in the past decade. In Mozambique, broiler production has expanded more rapidly, whereas in Ethiopia, both broiler and layer production have grown comparably. Despite this growth, consumer preference for indigenous chickens remains strong across East Africa, although the number of exotic birds has steadily increased, driven by rapid urbanization, growing middle-class, expansion of quick-service restaurants (e.g., KFC), and farm modernization (Vernooij et al., 2018). Regional trade is also important, with some countries relying on others for inputs such as DOCs and vaccines, or serving as markets for eggs and poultry meat (Vernooij et al., 2018).

In West Africa, commercial production is concentrated around peri-urban areas, especially of capital cities. Factors supporting the sector's development include strong demand, good productivity, adequate infrastructure for market access, strong biosecurity and favourable policies (Schneider, 2010). Demand is strongest in Benin, Burkina Faso, Ghana, and Nigeria with Ghana offering the best market access and overall biosecurity. Productivity is highest in Nigeria and Senegal where intensive commercial production is most developed. Unlike Eastern and Southern Africa, intraregional trade remains limited in West Africa due to high costs, poor transport quality, and sanitary controls that restrict access, prompting many countries to import chicks from Europe (Schneider, 2010).

Policy interventions, notably full or partial poultry meat import bans have protected local industries from disease and competition in countries including Senegal, Nigeria, and Ghana (Boimah and Weible, 2021; Chibanda et al., 2023; Heise et al., 2015). Additional efforts to reduce the commercial sector challenges include government veterinary controls and management of imported inputs' quality. In Kenya, for instance, broiler companies must have a government veterinary officer overseeing their production (Carron et al., 2017). In Senegal, the Directorate of Veterinary Services (DVS) regulates the

quality of imported hatching eggs, and controls vaccinations and disease outbreaks (Aarnoldus et al., 2021).

Despite these developments, significant research gaps remain. The existing literature largely offers macro- and meso-level analyses of the poultry sector, emphasizing sectoral characteristics, production constraints, and the influence of policy interventions. However, there is limited understanding of the micro-level strategies that enable individual commercial enterprises to achieve sustained success. Studies on contractual arrangements primarily focus on smallholder or small-scale commercial farms with average flock sizes below 2000 birds (Umoh et al., 2019; Wainaina et al., 2012), leaving larger commercial operations underexplored. Moreover, while policy measures such as import bans have been identified as drivers of the commercial sector's growth, how firms leverage such policies, assess their long-term viability, and develop corresponding strategic responses remain unclear. Additionally, success factors-including marketing strategies, management practices, and adaptation to local challenges-are best understood through firms' own experiences.

To address these gaps, this study employs country-specific case studies to investigate the internal success factors and operational challenges of commercial poultry firms across different policy environments and production systems, thereby providing context-specific insights to guide future policy interventions and commercial poultry development.

3 Materials and methods

3.1 Definitions and conceptual framework

This study considers a commercial poultry business (CPB) as a purely market-oriented enterprise producing and selling chicken meat and/or eggs. In the literature, business success is often associated with an increase in sales turnover and/or profitability (Lampadarios et al., 2017). This study considers a CPB successful if it (i) displays a tendency to grow measured by a steady increase in flock size compared to flock size at onset[1], (ii) demonstrates resilience to shocks proxied by sustained operation over several years, and (iii) is formalized as a legal entity.

Through a literature review on the success of small- and medium-sized enterprises, Lampadarios et al. (2017) identified three elements influencing business success across industries: (i) entrepreneurial factors, including owners' or managers' characteristics and personality traits; (ii) enterprise factors such as firm age, size, capital (financial and human), and business strategies; and (iii) the business environment, encompassing the political, financial, economic, technological, and sociocultural environment in which the business evolves. To complement this empirically developed conceptual framework, this study also draws on the structure conduct performance (SCP) paradigm from Industrial Organization theory. SCP posits that market structure (e.g. competition level, market concentration, barriers to entry, product differentiation) shapes firm conduct (strategic behaviour), which in turn influences performance (here business success). Many SCP elements overlap with Lampadarios et al.'s framework. For instance, barriers to entry may relate to the legal and regulatory frameworks, financial constraints, while conduct aligns with enterprise-level strategic factors. Business performance here is reflected in the success of poultry enterprises as defined earlier.

Building on SCP and Lampadarios et al. (2017), the conceptual framework (Figure 1) proposes three interdependent success elements: entrepreneurial factors, enterprise factors, and the business environment. Entrepreneurial and enterprise factors are internal to businesses, while the business environment is external, and can hinder or facilitate the enterprise factors. Similarly, the entrepreneurial factors can be important for designing or choosing enterprise factors or reacting to changes in the business environment. These elements may contribute unequally to success. Based on poultry literature in SSA, one may hypothesize that policy measures and demand growth in the business environment are particularly influential elements of success. This study explores success drivers across these dimensions and discusses which factors businesses themselves view as most critical.

[1] In this study, flock size refers to the total number of birds a poultry farm can raise simultaneously, determined by its building capacity and equipment. It may include both chicks and mature birds. The proportion of mature birds within the flock helps estimate egg and chicken output (Kitalyi, 1998). A farm's production capacity per cycle cannot exceed its flock size, although multiple production cycles may occur within a year. Some farms intentionally operate below their maximum physical capacity for strategic or management reasons. In this study (Table S4 in the supplementary materials), we report the management-adjusted flock size, which may be slightly lower than the physical flock size.

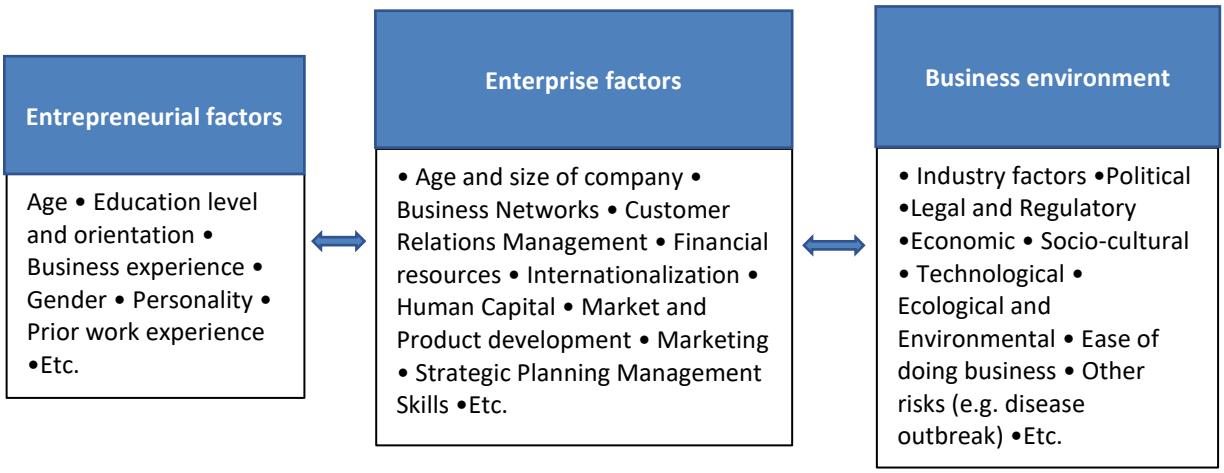


Figure. 1 Conceptual framework

Source: Adapted from Lampadarios et al. (2017)

3.2 Data collection

This exploratory study employs qualitative surveys to examine successful poultry enterprises in depth, aiming to uncover the key factors underlying their achievements. The generic conceptual framework (Figure 1) serves as the analytical basis for interpreting the collected data. The analysis emphasises factors identified as relevant by the entrepreneurs or managers of these enterprises, as well as factors that naturally emerged.

Given its qualitative nature, this research does not establish causal relationships, and the findings may not be generalizable. Nonetheless, the insights generated can enhance understanding of the drivers of success in poultry businesses, particularly in countries sharing similar socio-economic conditions and policy environments.

3.2.1 Sampling strategy

Using a purposive multi-stage sampling method, two countries were first selected as primary sampling units among SSA countries on the basis of the following aspects:

- quantitative information from FAOSTAT in the period 2014–2019 preceding data collection on (1) the average production of chicken and egg, (2) the average growth rate of chicken and egg production, (3) trade information, and (4) the Doing Business index of the International Finance Corporation.
- qualitative information gathered through unstructured interviews with purposively selected poultry experts with a strong track record in livestock research and contributions to the field. Expert selection was guided by existing literature and peer recommendations. Qualitative information is mainly related to the policies and dynamics of the poultry sector that are not necessarily captured through quantitative information.

We calculated the quartiles for the quantitative indicators and tagged the countries in the upper or lower quartile depending on the indicator direction. If the higher the value of an indicator, the better, then the top countries were tagged if they belonged to the upper quartile. All indicators, except imports, are in this category. For imports, lowest values are considered better as it reduces exposure to international disease and price fluctuations. Therefore, the top countries for imports were tagged if they belonged to the lower quartile. We then calculated the frequency of appearance in the best

performing quartile across all variables. Table S2 in the supplementary materials shows the top countries resulting from this selection (after excluding South Africa).

Of this list and in SSA, Nigeria is, by far, the biggest chicken meat and egg producer. We therefore include it as a country case study. We further include Senegal as it remains the only country in Africa that enforces a nearly two-decade-old, complete ban on uncooked poultry meat imports, covering all countries and product forms, despite its international trade commitments under the Economic Community of West African States (ECOWAS), the West African Economic and Monetary Union (WAEMU), and the World Trade Organization (WTO). It is hence the country with the lowest level of chicken meat imports of this list, and also the third biggest chicken producer after Nigeria and Malawi.

Poultry enterprises were then selected in Nigeria and Senegal using a multi-step process. A sampling frame was first developed based on information from producer organizations, veterinary service records, and consultations with country experts. Firms were then screened using the predefined success criteria (growth tendency, resilience, legal status). A consultative workshop with experts refined the selection, ensuring inclusion of diverse cases from FAO sectors one to three. Selected enterprises primarily produced chicken meat and/or eggs, with some, additionally, engaged in other value chain activities. Final inclusion depended on the businesses' willingness to participate.

The sample includes 15 businesses: 5 in Nigeria and 10 in Senegal. In Nigeria, businesses mainly belong to sector one or two of the FAO classification, while in Senegal, they primarily fall under sector two or three. This diverse representativeness allows us to analyse success drivers across firm types. Characteristics of the selected poultry businesses are provided in the supplementary materials (Tables S4 and S5).

3.2.2 Interviews

Primary data were collected from the selected enterprises through semi-structured interviews administered by national poultry sector experts rather than enumerators. The interviews captured detailed information on (i) business characteristics, including legal status, year of establishment, sources of financial capital, and membership in poultry producer organizations, business evolution, covering changes in production capacity, challenges encountered, and related strategies; (ii) entrepreneurial factors such as educational background, professional and business experience; and (iv) interviewees' perceptions of success drivers, constraints, and the business environment. While the interview instruments were designed to collect comparable information across countries, adaptations were made to account for country-specific contexts and differences in business types.

The data was collected in 2021 during the COVID-19 pandemic, which implied conducting a number of interviews remotely. Consequently, the context may have affected the collected data. For instance, the decrease that accompanied per capita income during the pandemic may have influenced the demand for poultry products, which, in turn, may have affected businesses in different ways. However, we collected information for the period 2015–2019 and the firms' evolution over time. Therefore, we predict that this scenario will not affect the relevance of the findings.

3.2.3 Data analysis

Interviews were conducted in French for Senegal and English for Nigeria. Audio-recording was only possible for the case of some Senegal enterprises. The recordings were then transcribed by the country experts who did the interviews. We translated them into English to ensure common understanding across authors. For cases where respondents did not permit interview recording, the interviewing experts took detailed notes on paper, which we used for our analysis.

Where records were available, we coded the responses to the questions and categorized them as commonly done in qualitative data analysis. Similarly, notes taken during unrecorded interviews were coded and categorized. The coding and categorization approach is well described in Saldaña (2013)

who defines a code as a "word or short phrase that […] assigns a summative […] attribute for a portion of language-based or visual data" (Saldaña, 2013, p.3). This coding process facilitates the organization and grouping of similarly coded data into categories or "families" that share common characteristics (Saldaña, 2013).

The analysis began with open coding directly in Microsoft Word, by inserting comments linked to relevant segments of the text. This process was informed by our conceptual framework in Figure 1, but we also remained open to identifying themes that emerged inductively from the data. During the initial coding, several categories of codes emerged naturally, and an early categorization was developed by grouping related codes. We also noted dependency relationships between some codes- for example, where one code appeared to influence or be a subcategory of another. In each comment, these relationships were visually represented using bullet points and indentation within the code list to reflect their hierarchical association. Table S3 in the supplementary materials illustrate the first step of coding using an excerpt from a company in Senegal.

In the second phase of analysis, we compared codes across interviews to harmonize terminology and refine categories. This iterative process of active categorization involved revisiting the initial codes and progressively reorganising them to ensure consistency across cases. Codes and categories were refined through repeated cycles of review, ultimately resulting in the identification of consistent categories of success drivers. Only categories that were repeatedly observed across multiple businesses were retained for the final analysis. As part of this step, codes were grouped into intermediate categories, which were subsequently linked to broader, final categories of business success. Figure S1 in the supplementary materials illustrates this categorization process. Importantly, for each code, we kept record of the businesses in which it appeared, enabling us to support the analytical findings with concrete examples in the results section (Section 4).

The resulting categories of success factors are presented in Table 2 and further examined in the results section (Section 4).

For anonymity, we refer to companies as company 1, 2, etc., in the case of Senegal where businesses are small enough to be possibly identified using the provided characteristics. In Nigeria, as the businesses are of sectors 1 or 2, they can be easily identified through their characteristics. Therefore, we mainly refer to the number of firms in a given success factor.

Table 2: Categories of success drivers of commercial poultry businesses

Success element in conceptual framework		**Categories**
Entrepreneurial drivers		Owner background
Business drivers		Diversification
		Staff management strategies
		Sales strategies
		Technical innovation
		Access to financial capital
		Vertical integration strategies
		Backward or forward contracting
		Business takeover strategy
Business environment (industry and policy factors)	Industry factors	Input supply (cost and quality)
		Shocks
		Geographical concentration of businesses
		Demand
	Policy environment	Trade policies
		Financing policies
		Doing business: utilities and infrastructure

4 Results and discussion

4.1 Key metrics of the commercial poultry sector in Nigeria and Senegal

Figures 1 and 2 depict the evolution of chicken and egg production in the two countries in the period 1961–2022. In Nigeria, the sector has been expanding since the 1960s and 1970s for chicken meat and eggs, while the expansion in Senegal is more evident since the 2000s onward for chicken meat production.

Fig. 1 Evolution of chicken production in Nigeria and Senegal (1961–2022)

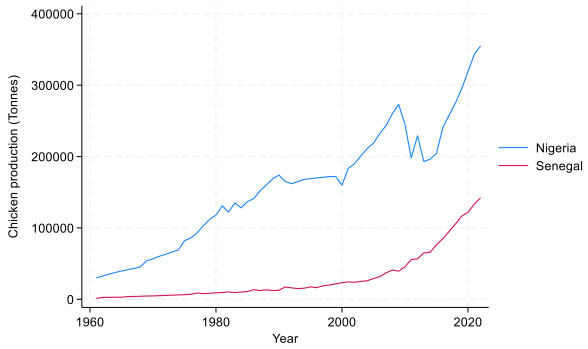
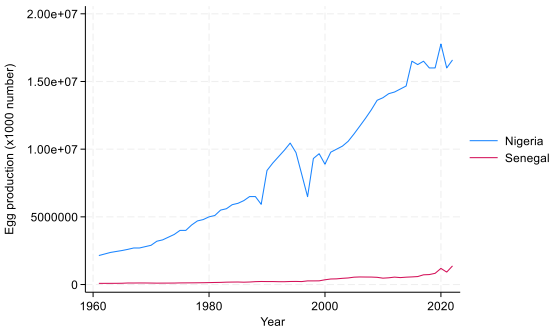


Fig. 2 Evolution of egg production in Nigeria and Senegal (1961–2022)



Source: Authors based on FAOSTAT (2024)

This growth can be attributed to the expansion of CPBs as the point of initial growth in both countries is followed by a subsequent development of the commercial sector as we discuss in this section.

In Nigeria, commercial poultry production began in 1957 coinciding with the commercial exploitation of oil resources, benefiting from favourable economic conditions, favourable government policies and support from the private sector. This supportive environment materialized through easy access to finance and land, technology in production, processing, quality control, and marketing. For example, the Western Nigeria government encouraged private investment in commercial poultry by offering free medicine and vaccinations, subsidized poultry equipment, loans and grants. By the early 1960s, poultry farming had become so attractive that government facilities could no longer meet the demand for DOCs and feed, leading to commercial poultry expansion to other parts of Nigeria. With the private sector firmly established, the government of Western Nigeria shifted from direct production to its traditional policy-making and regulatory roles, while supporting poultry farms with extension services and technological innovations (Sonaiya et al., 2022).

However, during the structural adjustment programs of the 1980s, severe financial constraints reversed this expansion (Adebiyi et al., 2020). Starting in the 1990s, as the national economy improved, commercial poultry production steadily increased. Poultry businesses were further supported by a ban on poultry meat imports in 2002 (Chibanda et al., 2023). The commercial sector's growth was temporarily interrupted in 2006 due to the avian influenza (AI) outbreak. In 2013, after Nigeria was declared AI-free, commercial poultry production surged once more, driven by collaborations between the government and poultry businesses to address consumer safety concerns (Sonaiya et al., 2022).

In contrast, prior to the AI, the local demand in Senegal was mainly met through imports that faced little competition from local poultry meat, leading to slow growth in local production. The AI outbreak served as a key catalyst for the development of the commercial poultry (CP) sector. Following the government's import ban in 2005, introduced in response to the crisis, commercial poultry farms expanded rapidly to meet rising domestic demand. In Senegal, per capita consumption of chicken has

increased from 3.1 kg in 2007 to nearly 5 kg in 2019 (Arnoldus et al., 2021). In both countries, the consumption of poultry meat is predicted to more than triple from 2000 to 2030 (Table 3) due to urbanization, increased population, and economic growth (Robinson & Pozzi, 2011; Carron et al., 2017).

Table 3: Poultry meat predictions between 2000 and 2030 in Nigeria and Senegal

Country	**Predictions of poultry meat consumption (thousands of metric tons)**		
	2000	**2030**	**Percentage change**
Nigeria	177.5	683.4	285
Senegal	66.1	228.5	246

Source: Authors based data from Robinson and Pozzi (2011)

The south-west of Nigeria produces more than 65% of chicken nationwide with the remaining 35% spread across 15 states in the north-central, north-west, and north-east geopolitical zones. Nigeria is home to 17,000 commercial poultry farms with a total chicken population of 45 million (Masaki et al., 2020)[2]. To sell outputs directly to customers, large-scale integrators invest in large feed mills, hatcheries, and slaughterhouses (Sahel, 2015).

Due to limited nationwide survey data, Sonaiya et al. (2022) estimated Nigeria's commercial poultry sector size using proxies including imports of grandparent stock, production of parent stock and DOCs, feed ingredients (e.g., lysine, methionine, fish meal, and soybean meal), and local production and distribution of poultry medicines and vaccines. The sector produces about 345,000 MT of meat and 650,000 MT of eggs annually. Rising consumer demand has driven investment in large-scale production, with most farms classified as FAO Sector 2, though farms of sectors 1 and 3 also exist.

In Senegal, commercial poultry farming is primarily concentrated in the peri-urban coastal northern region known as Niayes, which extends from the capital region (Dakar) to the northern region (Saint-Louis), passing through the Thies and Louga regions. This concentration is largely attributed to the area's favourable climatic conditions for the development of exotic poultry breeds (Traoré, 2006). Additionally, Niayes and surroundings host all the country's feed mills and hatcheries, as well as numerous veterinary clinics, providing poultry farms with easy access to essential inputs, equipment, and services, both locally sourced and imported through the nearby port and international airport in Dakar. However, Ba et al (2022) report that increasing land pressure is a major constraint to the viability of commercial poultry farms, as rapid urbanization continues to increase land prices for urban settlement.

Between 2015 and 2019, Senegal's commercial poultry sector experienced an increasing trend across all chicken products (Table 4). During this period, broiler and layer chick production grew by more than 40% and 30%, respectively[3]. Poultry feed production also saw a notable increase of approximately 43%. Consequently, the quantities of chicken (broilers and culled layers) and table eggs rose by over 50% and 72%, respectively. This expansion led to a significant rise in the sector's turnover, which increased from USD 271.7 million in 2016 to USD 536.5 million in 2019 (Ba et al., 2022).

[2] In Nigeria, multiple breeds are used by both commercial broilers and layers. Local integrated companies of sector 1 introduce broiler breeds such as Anak, Abor and Cobb and layer breeds including black (Nera Black and Harco Black), brown (Isa Brown, Amo Brown, Swiss Brown and Babcock) and white (Hyline). These integrated companies import their grandparent stocks from Europe (Adene and Oguntade, 2006; Adeyonu et al, 2021).

[3] In 2019, the leading chick producers in Senegal were SEDIMA (35.01%), AVIBOYE (14.49%), PRODAS (11.96%), and AMAR (11.28%). Additionally, seven smaller producers—SOSEPRA, EMAAP, JAI, LAXMI, SAPRAM, SENAV, and VIRIDIS—contributed between 2% and 7% each to the national total.

Table 4: Evolution of commercial poultry production from 2015 to 2019 in Senegal

Years	Output				
	Poultry feed (ton)	**Broiler chicks (millions)**	**Laying chicks (million)**	**Chicken meat (ton)**	**Table eggs (million)**
2015	229,000	35	2.6	51,000	514
2019	328,000	51.4	3.4	78,000	885

Source: Authors based on data from Ba et al. (2022)

4.2 Success drivers of the commercial poultry sector: insights from in-depth interviews with poultry businesses

4.2.1 Entrepreneurial drivers

The main entrepreneurial factors that emerged as success drivers for poultry businesses are the educational background, professional experience and network or influence of entrepreneurs and managers (see Tables S4 and S5 in the supplementary materials).

In Nigeria, for example, three out of five entrepreneurs (and one in Senegal) hold degrees in agriculture or veterinary medicine, or are poultry professionals. This is particularly important given that animal health and biosecurity are major risk factors in poultry. Such expertise is invaluable in managing disease outbreaks, which can result in substantial losses. Additionally, a veterinary background enables the in-house sourcing of such skills or personnel training, implying cost reduction. For instance, the owners of company five in Senegal provide regular training for their employees, saving on training costs.

While education in agriculture or veterinary medicine is important, non-veterinary educational backgrounds seem no less important or advantageous. Indeed, the entrepreneurs of the remaining farms did not have a formal education in agriculture-related fields. In Senegal, for example, most businesses had shareholders with backgrounds in banking, engineering, IT and so on, who had business management experience from their previous work or businesses. These businesses usually outsource animal care and health services by recruiting animal production specialists or by entering into contracts with private veterinarians. One respondent from the Senegal sample reported that the network of veterinarians in the production area was a major asset for producers.

Prior work experience has proven very useful in managing their poultry activities and building their customer base. For example, the co-owner of company three was a bank customer advisor whose experience helped the company build and diversify its customer base. Similarly, prior business management experience enabled entrepreneurs in both countries to handle crisis situations with timely strategies, which will be discussed later. This was particularly evident among entrepreneurs with prior experience in the poultry industry (e.g. company four in Senegal, which was initially involved in providing consultancy services to poultry businesses).

In Nigeria, the sampled poultry enterprises tend to be established and owned by wealthy individuals who mainly occupy or have occupied high-responsibility positions in national or state-level public or private institutions/businesses. Consequently, they have strong connections to the banking sector and government circles, giving them easier access to loans and information on policy shifts. In Senegal, some entrepreneurs are former army generals, which gives them influential backgrounds and potentially justifies their easy access to credit from financing institutions, even after retirement.

4.2.2 Enterprise drivers

This section describes the business characteristics and strategies that either emerged or were expressly stated as success factors (see Table S5 in the supplementary materials).

Diversification: The sampled businesses demonstrated diversification within and beyond the poultry value chain.

In Nigeria, all firms primarily diversified within the value chain by producing and commercialising DOCs, feed, chicken meat and/or eggs. Three out of five businesses also invested in other sectors, including other agricultural sectors, the food industry, oil and gas, and real estate. In Senegal, diversification within the poultry value chain was more prevalent, with five firms combining broiler and layer enterprises. Two of these firms also engaged in selling poultry equipment and installing poultry buildings, or supplying inputs such as ready-to-lay pullets or feed to other broilers and layers. Other firms specialising in meat or eggs diversified into activities such as tree farming, dairy production, market gardening or construction.

This diversification has strengthened businesses by spreading risk across activities or sectors and improving their ability to handle uncertainty. For example, after egg sales declined due to overproduction, company five in Senegal expanded into broiler production. Company three, which specialized in eggs, reported being vulnerable to market shocks resulting from frequent surpluses and low prices, which led them to diversify beyond poultry. Diversification has also improved access to finance, with some firms using profits from existing businesses to fund initial or working capital.

Access to financial resources: Commercial poultry production is a capital-intensive industry, making access to initial and working capital essential for entry and sustaining growth.

Three companies in Senegal explicitly reported that access to finance has enabled to increase their production capacity and access to inputs. To finance their initial or working capital most businesses relied on a mix of personal funds primarily from prior businesses or savings, bank or microfinance institutions (MFIs) loans or credit from large integrated firms. Six out of ten businesses used their own funds. Of these, three family-owned businesses display a preference towards exclusive (or with a small loan for one) self-financing where family members contribute to the capital in form of shares. Exclusive self-financing in individually-owned firms occurs with wealthy individuals, usually still active professionally and evolving in high earning sectors (e.g. international soccer player in company two). At least two companies reported either getting credit from the largest integrated firm SEDIMA for inputs (chicks and feed) or benefiting from its support to access bank loans within the framework of contractual agreements. However, these arrangements had restrictive conditions that we discuss in the following point.

In Nigeria, access to investment capital was equally critical, especially for firms adopting advanced technologies in production. Yet they also cited prohibitively high interest rates, described as “killing.” Similar to Senegal, firms secured start-up capital through personal savings, bank loans, or both, with access to bank loans depending on maintaining a "good reputation with bankers and credit suppliers."

The importance of access to finance is further demonstrated by Senegal businesses’ multiple crises that they were capable to surmount thanks to having access to finance, allowing them to restart investments (e.g. company eight), diversify or vertically integrate (e.g. company five, discussed later), or overcome occasional cash flow difficulties by borrowing from family members (e.g. company nine).

Vertical (backward or forward) contracting[4]: In Senegal, almost all the sampled companies have established contracts with large integrated firms, mainly SEDIMA. Around four firms cited SEDIMA

[4] We distinguish between vertical integration and backward or forward contracting. The former is used to refer to the integration of value chain activities within the same company (i.e., in-house production of different

support and guidance, through input supply (chicks and feed), financing support, technical and veterinary assistance, as well as a guaranteed outlet for their output, as critical to their success. This strategy enables outgrowers access to needed resources but also creates risks to their success. Businesses implicitly reported that the integrated farms seem to benefit more with a guaranteed sale of their inputs, and a consistent supply of products for distribution.

Most of the outgrowers (five out of ten) reported low bargaining power as the integrated firm imposes or modifies contract terms and conditions, not always in their favour. For instance, outgrowers must use the integrated firm's inputs, often criticized for poor quality or delayed deliveries with disastrous implications on production and productivity. The integrated business can increase feed prices while refusing to increase output prices or fail to absorb outgrowers' production during periods of shock. Some firms also faced contract discontinuation. Different cases illustrate these disadvantages. Company four reported that certified analyses revealed poor feed quality, poor transport conditions and inappropriate sorting of chicks which, all together can lead to stunted chick growth and mortality. Chicks are also not always properly vaccinated, which can lead to respiratory diseases. Companies four and six reported poor sales because SEDIMA was no longer able to absorb production or terminated the contract abruptly during the COVID-19 pandemic, citing limited storage capacity with losses totalling nearly 5 million FCFA for company six. Company three reported delays in orders negatively affecting production costs or recurrent payment delays while company eight stopped broiler production due to SEDIMAS' failed commitments (input quality, payment delays, etc.).

Contracting broilers and layers adopted multiple strategies to reduce suppliers' power. For instance, some firms want to form horizontal agreements with other upstream firms to pool their input purchases in order to increase their bargaining power and capacity to influence prices and quality of inputs (e.g. company four). They also seek to diversify their input providers or internalize input production through vertical integration and diversify their distribution channels as we will discuss later.

Some outgrowers have started or plan to disrupt their contracts (e.g. companies two and four), while others are more balanced and want to continue benefiting from the guidance and technical support of the large integrated firms.

In Nigeria, contracts have been especially beneficial to egg-laying farms whose agreements with suppliers and end-users (powdered egg manufacturers and home-grown school feeding programmes) have been instrumental in preventing egg surpluses and ensuring stable demand. Furthermore, two companies are involved in broiler outgrower schemes by supplying broiler DOC to outgrowers, leading to increased demand for broiler DOCs. This has partly enabled them to increase investments in their business.

Vertical integration: Some selected firms exhibit a certain degree of vertical integration, primarily in Nigeria where four out of the five enterprises are vertically integrated to varying extents, engaging in feed production, parent stock breeding, meat production, and the processing of live chickens into fresh, frozen whole and cut-up products. These companies associate vertical integration with success. For instance, backward integration into parent breeding stock and feed mills has enabled them to secure a stable supply of inputs and maintain consistent poultry meat and egg production. Additionally, integrating all value chain functions within the same organization has allowed for better risk management compared to backward or forward contracting.

For smaller firms, such as those in Senegal, vertical integration, although not common, is reported as a potential strategy to reduce their dependence on large integrated firms or other suppliers and buyers and ensure steady supply of quality input and secured output market. For instance, the promoters of company two are setting up a poultry feed manufacturing unit. Company four's

outputs) along the value chain. The latter refers to the integration of backward or forward value chain activities through contracts with a separate company in the backward or forward value chain segment.

promoters are planning to establish a feed production unit and a modern slaughterhouse. Company five in Senegal (Box 1) is a good illustration of using vertical integration as a strategic reaction to external shocks.

Box 1: Illustration of vertical integration as a survival strategy

Company five started as a poultry consulting firm, offering poultry-related services, including project design, equipment assembly, building sales, and farm monitoring services to new investors. They entered poultry production accidentally in 2012 after repurchasing a bankrupt farm's industrial building with a capacity of 30,000 ready-to-lay pullets that they supplied to egg producers. A sales failure of 7,000 pullets in 2014 led them to produce table eggs- a period coinciding with market overproduction forcing them to go as far as Mali to sell their products. Adapting again, they shifted to broiler production in 2015, starting with 8,000 birds sold to a slaughterhouse. Success induced a rapid flock size increase reaching 35,000 broilers (with one production cycle every two months, i.e., six cycles/year). Meanwhile, pullet production continued. Broiler overproduction in 2016 caused unsold stock, prompting investment in a cold room, a slaughterhouse, and later a branded product line, including whole chickens, chicken cuts, and deli meats, distributed in supermarkets, hypermarkets, institutional catering, and gas stations. To capture more profit, they eventually replaced resellers with two direct shops under their brand in Dakar.

Marketing strategies: In Senegal, many poultry companies are diversifying into geographically dispersed and mixed marketing channels-ranging from contracts with industrial slaughterhouses to informal channels, such as bana-banas traders, to counter large industries' dominance and enhance bargaining power. Firms sustain demand through customer loyalty, leveraging social and business networks, and proactive client acquisition. For example, company three maintains strong demand combining these approaches, while company seven protects its client base through fixed quotas by client type and minimum order requirements. It also ensures consistent supply despite market or production fluctuations, thereby retaining its customers even when competitors offer higher prices.

COVID-19 disruptions prompted some businesses to shift from exclusive contracts with integrated firms to more flexible arrangements. Company six, for instance, targets informal markets to reduce dependence on outgrower agreements, benefiting from quicker spot market payments and pricing flexibility. However, this shift introduces risks, including irregular demand, longer sales cycles, and elevated biosecurity threats from increased farm-to-farm interactions resulting from bana-banas movements. Moreover, despite their informal nature, bana-banas are often well-organized and may exert significant influence over prices, limiting farmers' bargaining power (company seven).

In Nigeria, innovation in delivery strategies has been critical for firms in the chicken meat segment during crises. In response to COVID-19 restrictions, businesses leveraged digital platforms to reach urban middle-class consumers. The pandemic even led to capacity expansion, driven by rising demand for takeout and home delivery from fast-food restaurants.

Human resource and staff management: In Senegal, five firms attribute part of their success to strong personnel management achieved through hiring experienced managers, motivating staff (e.g., early salary payments), fostering collaborative work environments under the manager's guidance, and providing continuous managerial training. However, heavy reliance on managerial supervision creates vulnerabilities. For instance, company one reports low workforce performance and rigor in production tasks, with the manager's temporary absence directly leading to losses, indicating limited worker autonomy.

Similarly, in Nigeria, most respondents (three out of five) emphasized human resource quality as critical to success. "Constant and intentional human resource development" and "the team of personnel comes with talents and experiences from 10 different nationalities" are among the approaches to human resources.

Staff profiles across businesses highlight the need to have a team with diversified skills in business management, poultry production, marketing, and animal health. While non-integrated firms often outsource animal health services, business management and production tasks typically rely on recruited personnel.

Technological innovation: In Nigeria, all businesses recognized investments in cutting-edge technology as a key success factor that have contributed to their expansion**,** in terms of size and output. Specific investments allowed to reach a certain degree of automation in the production process (including automation of feeding; harvesting of market birds; egg collection, branding and packaging; processing meat into cut-up portions before freezing; and vacuum packaging of carcass), leading to reduced labour costs and management challenges while improving sanitary control. Additionally, automation allowed poultry farms to process and repurpose waste and by-products from chicken meat production, such as trimmings, offal, and feathers, into value-added outputs, creating additional revenue streams. Investments in slaughterhouses and cold storage facilities have further benefited farms by meeting the growing demand for poultry meat.

Business takeover strategies: Most businesses in Senegal are owner-managed, which helps mitigate principal–agent issues between managers and owners but also poses succession challenges. Family-owned firms often express uncertainty about future leadership. For example, company three's retired owners can no longer invest full-time in poultry production, making expansion and diversification contingent on their children willingness to take over the business. Similarly, company six's owner avoids long-term projects because his children live abroad and cannot take over the business.

In contrast, some Nigerian firms illustrate smoother succession planning. Some firms owned by one household member are managed by another (e.g. the owner's son), facilitating business continuity in cases of retirement or death.

4.2.3 Business environment

The main elements of the business environment that emerged as success factors or that may impede success are categorized as industry factors and policy environment.

Industry factors

Demand: In Senegal, four businesses identified rising chicken meat demand and changing eating habits as key drivers of the poultry industry's development, encouraging companies to expand production. In Nigeria, growing urban populations similarly increased poultry demand. However, demand as a driving force seems more common in the broiler segment as egg producers in both countries frequently face market saturation (reported by four Senegalese firms and Nigerian egg producers), leading to losses.

Company eight in Senegal sees intraregional trade as a way to absorb surplus supply, while company nine recalls that in 2012, after the government change, new investors, including businessmen and politicians, caused egg market saturation. This reduced prices, and led to bankruptcies, especially among small-scale producers, ultimately stabilising supply and demand. Many firms highlight investment opportunities in the processing of eggs into liquid or powder (companies one and seven) or expanding poultry products processing in general (company eight), which may help mitigate saturation.

Sector organization: A lack of effective interprofessional organizations limits coordinated action across the sector. Most Senegalese firms (six) are not member of poultry associations, citing poor communication, lack of benefits, or inefficiency. The absence of reliable data, and weak collective advocacy reduce the sector's ability to address shared challenges including biosecurity, feed supply, and import dependency on key inputs (e.g. on hatching eggs). In Nigeria, some firms called for stronger engagement from the Poultry Association of Nigeria (PAN) to influence policy.

Concentration of poultry farms in peri-urban areas: In Senegal, poultry farms concentration in peri-urban areas offers proximity to modern slaughterhouses and markets but also heightens biosecurity risks (companies four and ten). Firms emphasize that effective disease prevention and control requires collective implementation of biosecurity measures. Neglect by some farms creates negative externalities, such as disease outbreaks affecting neighbouring farms (company five). Because biosecurity is a collective good, businesses call for stronger industry standards, mandatory vaccination, improved input quality control, and rapid disease response mechanisms supported by regulation and producer cooperation.

Input supply: Input supply issues, particularly related to quantity, quality, and prices, emerge as major challenges for poultry businesses. While Nigeria firms report poor quality of feed ingredients, despite their elevated costs, less integrated Senegal firms (four companies) report poor quality of feed and chick, despite their high prices.

In Senegal, input quality concerns coupled with delayed deliveries, lead to increased mortality and reduced productivity. These problems stem partly from weak contract enforcement due to suppliers' dominance but more critically from inadequate regulation to ensure quality standards (companies four, five, nine). Additionally, sufficient supply is not always guaranteed because of the reliance on imports for certain inputs or raw materials (companies five, ten).

Company nine attributes the insufficient quality control to the dominance of large producers and the "apparent complicity of the State[5], which fails to play a regulatory role". It also highlights that "feed producers violate the commercial code that prohibits price-fixing". Company ten suggests liberalizing the import/export sector for inputs to reduce the production costs.

Policy environment

Cited policy factors as success drivers include trade policies and factors related to the ease of doing business such as land access, utilities, etc.

Trade policies: In Senegal, the suspension of chicken imports is seen as critical to domestic poultry growth by fostering investment, stabilising markets, and protecting local producers (companies one, six, seven). Several firms associate this policy with their ability to enter and expand in the sector (companies one, seven). However, many view the ban as temporary, anticipating its eventual removal. This uncertainty discourages long-term investments and pushes some businesses to diversify or exit the sector (companies one, two). Company four warns that lifting the ban could trigger bankruptcies since local farms are not yet competitive with imports. Promoters of company seven advocate for maintaining the ban to secure the industry's future.

In Nigeria, respondents similarly reported that the ban on poultry product imports (excluding eggs) led to the establishment of more broilers and a subsequent increase in broiler production. However, they found that the general border closure, blocking imports of key feed ingredients such as soybean and groundnut cake from neighbouring countries, reduced their availability and raised costs. Conversely, lifting the maize import embargo[6] and releasing maize from the strategic grain reserve were seen as positive measures, offering temporary relief from increasing feed costs.

Ease of doing business

Sampled firms identified multiple constraints affecting business operations, notably issues related to land tenure, utilities (electricity and water), road infrastructure, and security.

[5] Senegal has a new government since 2024.

[6] In Nigeria, since 2020, the Central Bank of Nigeria (CBN) has restricted maize imports to protect local maize production. Adekoya et al. (2023) reported that some stakeholders found that local maize had become expensive compared to imported maize due to the restriction.

In Senegal, land was not generally reported as a major issue since most firms own their land and equipment. However, space constraints were noted by company one that has struggled to secure additional land. Renting unused farms was highlighted by companies four and six as an accessible and less costly strategy for scaling production in the short term. Nonetheless, insecure tenure can disrupt or discourage long-term investments, as evidenced by company nine, which was notified to vacate one of its production sites within a few weeks. In Nigeria, respondents emphasized that improving access to land for cultivating feed ingredients such as maize and soybeans is essential for enhancing profitability. While the Land Use Act was designed to simplify the issuance of land documentation, many firms considered the accompanying land-use taxes to be counterproductive.

Access to reliable utilities emerged as a significant operational bottleneck in both countries. In Senegal, three companies (one, eight, and ten) reported high electricity costs and frequent, unannounced power outages. These disruptions caused severe production and financial consequences, including equipment damage costing up to 6 million CFA francs (company one) and the loss of over 10,000 birds valued at more than 12 million CFA francs (company ten). Similarly, Nigerian respondents highlighted "absence of steady supply of electricity coupled with the exorbitant tariffs and the need to run operations on diesel generators".

Water availability was also problematic, particularly in Senegal. Company three reported concerns over the declining water table, while company seven pointed to recurring supply cuts, partly due to new boreholes diverting water to meet Dakar's growing urban demand, reducing water access for poultry farms in the peri-urban Niayes area. To sustain operations company seven reported incurring significant costs, reaching 700,000 CFA francs on water deliveries in September 2021 alone.

Infrastructure and security challenges further add operational difficulties. In Nigeria, poor road conditions were mentioned to increase input and output transportation costs. In Senegal, despite improved road networks, particularly main roads, more inland roads, usually leading to poultry farms may pose issues. Company three reported difficulties of the feed delivery truck accessing the farm during the rainy season which increases employees' workload as they have to manually fill the feed silos. Last but not least, Nigerian firms identified security of life and property as a major challenge.

5 Discussion, policy implications, future research, and study limitations

This paper investigates the determinants of success among commercial poultry enterprises in Nigeria and Senegal using case studies of successful firms. The analysis draws on interview data and a conceptual framework that identifies entrepreneurial characteristics, business strategies, and the business environment as key factors influencing success.

Findings indicate that while the business environment (including policy measures and industry factors) plays a critical enabling or constraining role, it seems not sufficient on its own. Business characteristics and strategic responses are essential to effectively leverage favourable conditions or mitigate constraints. Consequently, the combined enterprise factors and supportive business environments, emerges as the primary driver of sustained success. Entrepreneurial characteristics, while less evident as direct determinants of success, appear to influence entry capacity and strengthen enterprise strategies, thereby contributing indirectly to sustained business performance. We illustrate this conclusion in our following discussion.

The study highlights entrepreneurial drivers such as education, prior business ownership or management experience, and entrepreneurs' networks as critical to all businesses independent of which sector of the FAO classification (see in Sims, 2008) of poultry production system they belong to. Regarding education, a key takeaway is that for businesses to succeed, entrepreneurs do not necessarily need an educational background in agriculture or veterinary medicine, although such training can be important for managing health shocks. Rather, entrepreneurs' networks, particularly connections to the banking sector and government, or prior business experience provide advantages in possessing business management skills, financing access, and staying informed about policy changes.

While entrepreneurial traits such as networks and prior business ownership experience are largely shaped by individual and social contexts and less directly influenced by policy intervention, governments and development agencies can foster entrepreneurship by investing in education and training programmes. Prior research demonstrates that entrepreneurship education enhances business planning skills, risk perception, and access to finance, thereby increasing the likelihood of business success and attracting private investment (Martin et al., 2013; Cho & Honorati, 2014).

These entrepreneurial backgrounds, in part, facilitate access to finance and the adoption of effective business management strategies, including product diversification, institutional arrangements, strategic marketing, technological innovation, and effective personnel management, all of which have proven essential to successful commercial poultry operations. Some of these strategies need further discussion.

In our sample, access to finance predominantly originates from equity capital or financial institutions, a pattern commonly observed among SMEs (Berger & Udell, 1998). In Senegal, several firms reported starting with small capital amounts. This may limit access to bank loans, as financial institutions often perceive such small ticket sizes as riskier (Perera et al., 2024). Moreover, entrepreneurs lacking supportive networks may face additional barriers in mobilising personal savings or securing credit, potentially excluding them from entering the poultry sector.

Findings also reveal a notable preference for self-financing, particularly among family-owned SMEs (FAO poultry production sectors 2 and 3). While reliance on personal savings may constrain the initial scale of operations, it may also minimize early-stage risks. Businesses in this situation are typically owner-managed, meaning that financing choices may be shaped by the owner-manager's level of risk or loss aversion. Evidence from Vietnam shows that SMEs led by loss-averse managers are less inclined to utilize debts (Kim & Nguyen, 2022).

This underscores the need to complement supply-side initiatives aimed at easing access to finance with a deeper understanding of demand-side factors, particularly entrepreneurs' preferences for different funding sources. Research on such preferences seems important to better tailor financing mechanisms in the poultry industry.

Institutional arrangements, such as backward and forward contracting between large integrated downstream firms and upstream broilers and layers, as well as vertical integration, may require more regulation. The high concentration of the downstream segment, particularly in the Senegal case, places large integrated firms in near-monopoly positions, granting them substantial bargaining power. These firms often leverage their dominance to impose or adjust contract terms in their favour, leaving smaller firms in vulnerable positions. Reardon and Barrett (2000) argue that "contract farming typically displaces decision-making authority from the farmer to the downstream processor or distributor, turning farmers into quasi-employees". A dynamic mirrored in our sample of upstream poultry businesses. This highlights the need for stronger regulatory frameworks to address power imbalances, an issue particularly relevant in Senegal, where a small number of integrated firms (if not one), although instrumental in enabling the growth of non-integrated farms, may also constrain their long-term success.

Effective contract enforcement mechanisms seem crucial for ensuring equitable power dynamics within the poultry industry, more so, if the sector is intended to grow. However, enforcing contracts remains challenging in developing countries where contract laws are often underdeveloped and judicial systems tend to be less efficient or predictable (Reardon & Barrett, 2000). On the other hand, vertical integration can deter new entrants, as established firms benefit from first-mover advantages and strong customer bases. The market power of large firms may also facilitate horizontal agreements in the upstream segment as stipulated by some firms, which may, in turn be anti-competitive. Therefore, for the commercial poultry sector to thrive and develop sustainably, the implementation of robust competition policies and anti-trust laws seems necessary. Context-specific research on vertical arrangements in commercial poultry production is needed to better understand their benefits, drawbacks, and distributional impacts, thereby informing the design of contract enforcement mechanisms that promote mutually beneficial outcomes while being locally relevant.

Regarding the business environment, several industry factors and policy mechanisms have been favourable to the commercial poultry businesses.

The policy environment has been critical to the growth and stability of the businesses by providing a safe environment to invest in. The first takeaway from the business environment, relates to import bans on chicken meat that have been a key driver of businesses success or growth in both countries by reducing competition from imported chicken products. Yet, in Nigeria, restrictions on poultry feed imports intended to protect local maize production have led to a surge in feed ingredients' prices. Policies aimed at lifting this ban helped reduce feed costs and relief poultry businesses.

On the other hand, in Senegal, businesses raised concern on a potential lift of the import ban, which is worth reflecting on. As shown in Duteurtre et al. (2005), opening markets may lead to the disappearance of uncompetitive companies. Chibanda et al. (2024) show that small-scale broiler farms in Senegal are less competitive than those in Germany and the Netherlands in terms of overall efficiency. In contrast, medium-scale farms using high-quality inputs achieve performance levels close to their European counterparts. Nonetheless, production costs in Senegal remain significantly higher, largely due to high feed and DOC costs driven by feed-use inefficiencies and high input prices.

Strengthening the competitiveness of local poultry companies seems to be of particular importance. As a member of the World Trade Organization, Senegal may not be able to maintain the ban indefinitely (Zamani et al., 2023). Therefore, preparing the local businesses to compete with external products should be in the policy lines. As competitiveness' is largely driven by feed and DOC costs, cost-reducing policies seems crucial.

Our findings suggest that high costs of feed ingredients increase feed production costs and affect final feed prices for broilers and layers, suggesting interventions should first target feed production. In Senegal, reliance on imported maize drives these costs up, with limited potential for domestic production and competition between food and feed uses (Ba et al., 2022; Chibanda et al., 2024). Regional trade may help, but many African countries depend on imports. Research is needed to identify countries capable of expanding feed ingredients' (maize and soyabean) production without threatening food security, and promoting intra-African trade to lower costs. Nigeria is among the leaders in local maize production for feed, supported by policies like the Anchor Borrowers Scheme, which facilitates maize cultivation through smallholder financing and outgrower arrangements (Adambge et al., 2020). However, access to land and high interest rates remain barriers. Encouraging competition in the feed production segment might also stimulate cost effectiveness and ultimately contribute to feed price reduction. Chibanda et al. (2024) argue that in Senegal, reducing the cost of DOCs seems more achievable by promoting domestic hatching from imported parent stock.

Additionally, in the broiler and egg segments, processing could be encouraged to promote competitiveness. For instance, processing of uncooked chicken meat may enable firms to offer more affordable chicken pieces, instead of selling only whole chickens—an expense that may be prohibitive for some consumers (Boimah & Weible, 2021). Processing could therefore expand the customer base for both broilers and layers in countries such as Senegal, where processing capacity remains limited—a potential highlighted by several interviewed businesses. The experience of Nigeria, where growing demand from broiler meat processors has stimulated significant investments in broiler production enterprises, illustrates this benefit.

Still in relation to trade, our findings reveal that some businesses hint towards intraregional trade to absorb frequent episodes of overproduction, particularly in the egg market. Yet, this may have implications on the import ban policies as trade partners could also seek to export their poultry products. Along these lines and given the high reliance on protective trade policies for success in some contexts, the conditions of intraregional trade and its implications on local businesses should be carefully investigated. This is all the more important in the current context of the African Continental Free Trade Area (AfCFTA).

A second and important takeaway of the business environment, particularly industry factors is the biosecurity issue which needs a collective approach involving the responsibility of all farms. Raising awareness on negative externalities from non-biosecure firms and developing an accompanying regulatory environment is a requirement.

Other challenges pertaining to the business environment include costly and unreliable electricity and water service, poor road conditions, and concerns over security of life and property (particularly in Nigeria), all of which continue to hinder the businesses growth and reduce the attractiveness of the poultry industry to investors and financing institutions.

While this paper provides insights on the success drivers of commercial poultry businesses in Nigeria and Senegal, it has many limitations. First, the study lacks a profitability analysis of the companies, which would have enhanced the robustness of the findings, given that profitability is a critical determinant of firms' long-term survival. However, we hypothesized that firms still operating and expanding in flock size are likely profitable. Additionally, other attempts to estimate profits in the sector show profitable businesses (Chibanda et al., 2023). Although such data is sensitive due to the private nature of these enterprises, developing mechanisms to securely collect and anonymize it for research and policy analysis could facilitate more rigorous investigations and lead to more actionable recommendations to support sectoral development. Second, in the case of Senegal, the sample did not include the country's leading downstream large integrated firm. This omission may have may have introduced bias in analysing institutional arrangements, as information was collected only from upstream broilers and layers. Third, this study mainly focuses on two case study countries. Therefore, the findings might not be generalisable to any SSA context as trade-offs and context-specific

conditions need to be considered. However, the insights derived here can inform policymaking in countries with similar socio-economic and policy environments.

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Supplementary material

Section 1: The commercial poultry sector in the literature

Table S1: Characteristics of the commercial poultry farms operating in the broiler or layer segments across Africa using FAO classification

Country		Sector 1	Sector 2	Sector 3	Reference
Ethiopia	Number of firms	>20	NA	NA	Demeke (2008)
	Flock size (birds/firms)	NA	2,500-50.000***	50-1,000*	
Gambia	Number of firms	1	29	Non-existent	Touray (2008)
	Flock size (birds/firms)	19,200	NA	NA	
Ghana	Number of firms	Less than 6	380	991	Andam et al. (2017), Aning (2006)
	Flock size (birds/firms)	NA	>= 10,000	•50-5,000* •5,000-10,000**	
Kenya	Number of firms	1			Nyaga (2007)
	Flock size (birds/firms)	100,000	100-2,000		
Nigeria	Number of firms	NA	NA	NA	
	Flock size (birds/firms)	100,000-1,000000	10,000-100,000	1000-10,000	Sonaiya et al. (2022)
Tanzania	Number of firms	Non-existent	19	25,624	Msami and Das (2009)
	Flock size (birds/firms)		NA	NA	
Mozambique	Number of firms	NA	5000		FAO (2013b)
	Flock size (birds/firms)	NA	•100-2,000* •2,000-20,000** •>=20,000[e]		

Source: Authors using cited literature

*for small scale farmers; ** for medium scale farmers; ***Also referred to as large scale commercial in the country; NA= not available

Section 2: Country selections and qualitative analysis

Table S2: Top countries after selection based on quantitative information in the period 2015-2019

Country	Chicken production (Tonnes)	Average Chicken production growth	Chicken imports (Tonnes)	Chicken Exports (Tonnes)	Egg Production (Tonnes)	Average egg production growth	Egg imports (Tonnes)	Egg Exports (Tonnes)	Average doing business index
Namibia	10278.83	0.05	24060.83	9118.50	2785.67	-0.04	71.00	24.00	60.93
Nigeria	**232997.30**	**0.03**	**9807.75**	**6.50**	**648333.30**	**0.00**	**516.33**	**155.25**	**49.98**
Malawi	119393.30	0.08	283.83	321.60	22980.83	-0.01	77.67	1264.40	52.58
Ghana	59021.00	0.03	140531.50	843.80	48136.00	0.04	64.67	108.00	59.92
Burkina Faso	44079.33	0.02	57.17		54548.83	0.00	50.83		49.50
Zambia	48472.83	0.02	11099.67	1822.50	62950.33	-0.02	8.25	766.33	61.57
Togo	38441.50	0.05	17434.33	47.17	19477.67	0.11	3.75		49.27
Senegal	**88766.50**	**0.09**	**9.80**	**19.00**	**31951.50**	**0.04**	**1984.50**	**18.00**	**50.12**
Uganda	64220.17	0.02	187.33	298.17	42293.33	-0.01	50.83	1310.00	55.32
Tanzania	86693.83	-0.03	1877.83	25.75	92062.50	-0.04	25.83	55.60	53.47
Kenya	75270.67	0.12	806.75	23.80	83643.50	0.05	1603.33	19.33	60.83
Ethiopia	72806.67	0.02	203.83	0.00	52046.00	0.03	5.33	38.67	45.48

Data source: FAOSTAT (2021)

Table S3: Example of coding and categorization steps 1

Script sample	Codes and categories
Poultry business profile: Company name is a private individual SUARL that was formalized in 2019. Yet this informal status has not prevented it from accessing financing from industries and banks. The owner is a retired army general. The equipment and land belong to the owner, and production activities are carried out by 9 employees.	• **Access to Finance despite late formalization** • **Industry and bank financing** • **Owner background**: ○ **retired general army** • **Own land and equipment** • **Hired labour** (9)
Type of production Company name runs a mixed broiler - egg production operation. For table eggs, it operates 23,000 laying hens per flock, and 3,000 broilers per flock.	• **mixed broiler – egg production** • **Current production size** per flock: **23,000 laying hens; 3,000 broilers per flock**

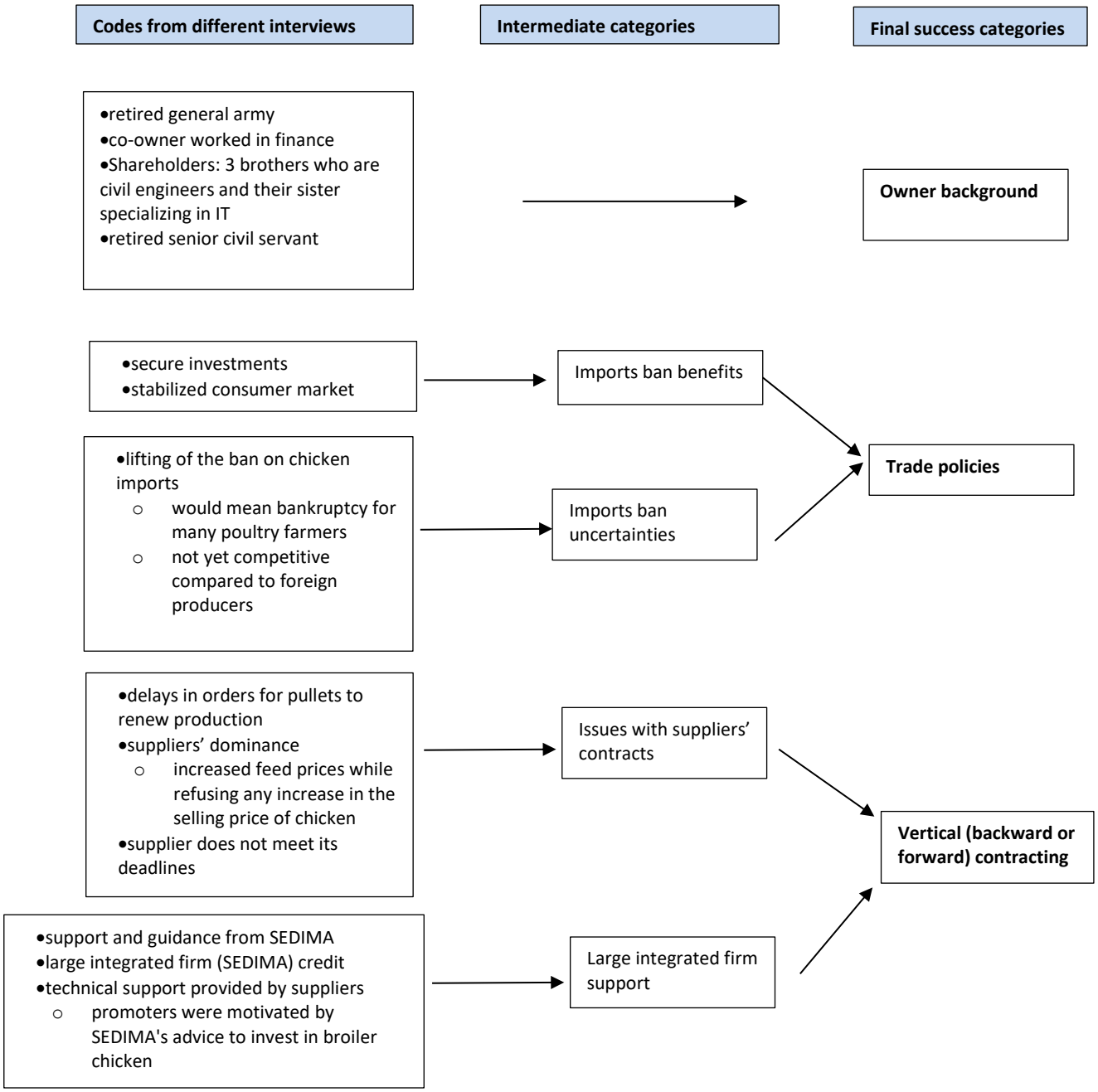
Source of financing
The company was financed by owners' equity and bank loans. In particular, SEDIMA granted him a customer loan worth 46 million FCFA for inputs (30 million FCFA for chicks and 16 million FCFA for feed). For the construction of the second building, he received a loan of 20 million FCFA from Crédit Mutuel du Sénégal.
	•**Financing of initial and running capital**
	  ○ **self-financing**
	  ○ **large integrated firm (SEDIMA) credit** in currency or in form of inputs (chicks or feed)
	  ○ **Microfinance Institutions loan** (Crédit Mutuel du Sénégal)
	•**Barriers to financing: low investment needs (ticket size)** (loan of 20 million FCFA; credit of 46 million FCFA, i.e less than USD 10,000)

Success factors
The company's first success factor is the market, with protection for the poultry industry. The suspension of imports has made it possible to secure investments and stabilize the consumer market for local producers. The support and guidance provided by SEDIMA has also been a determining factor in the company's success. Access to financing is the third factor in the company's success, as financial institutions have enabled it to increase its production capacity.
	•**Business Success factors** (by perceived order of importance)
	  ○ **Imports ban**
	  ▪ Enabled **secure investments** and **stabilized consumer market**
	  ○ **Large integrated firm support: support and guidance from SEDIMA**
	  ○ **Access to credit from MIF** allowed production capacity growth

Building the customer network and marketing
 	
For egg marketing, the company has a stable customer base, with mainly three wholesalers who absorb all production. The selling price of an egg tablet varies between 800 and 1,900 FCFA; the current price is 1,900 FCFA per tablet. As for broiler chickens, the clientele is very uncertain, because employees focus on production and do not take steps to acquire or retain customers. Broiler selling prices vary between 2,200 and 2,300 FCFA, and are mainly sold "bord-champ", with individual customers coming in for supplies. So, while bargaining power is strong for table eggs, it is non-existent for the marketing of broilers.
	•**stable customer base for eggs: three wholesalers who absorb all production**
	•**uncertain clientele for broiler chickens**
	  ○ **no strategy to acquire or retain customer**
	  ○ **farmgate sales**
	  ○ **retail customers**
	•**bargaining power for table eggs**
	•**non-existent bargaining power for the marketing of broilers**

Legend: Green colours represent effortlessly emerging categories, black and bold represent codes.

Figure S1: Example of coding and categorization steps 2



Section 3: Description of case studies

In Nigeria, the age of the firms ranged between five (5) and forty-three (43) years, as indicated in Table S1. This confirms their resilience.
The main outputs produced are broiler and layer birds. Day-old chick is a common output sold by studied firms in Nigeria. In Senegal, three firms specialized in broiler production and three in egg production. The other ones combined both. Three farms specialize in broiler and layer production, while one focuses on pullets ready to lay and broilers. Most firms are located in the Thiès region, where land is more available.
FAO types 1 and 2 are more common in the selected firms in Nigeria, while type 2 and 3 is common in Senegal.

Table S4: Description of cases- entrepreneurs and basic business characteristics

Company number	Year of establishment	Raised birds	Flock size** at onset	Current flock size	Number of entrepreneurs	Background of entrepreneur(s)	Legal status	FAO Sector	Source of capital	Country
1	1983	Layers	5000 Layers	450,000 – 500,000 Layers	1	Doctor of veterinary medicine (DVM) and MBA degrees (past Chairman of the Poultry Association of Nigeria)	Limited (Ltd)	Sector 1	Personal savings and bank loans	Nigeria
2	1990	Broilers	40,000 Broilers	600,000 Broilers	3	•DVM •Former government official •Business owner	Limited Liability Company (LLC)	Sector 1	Promoters' savings and bank loan	Nigeria
3	1978	Broiler	25,000 broilers	200,000 broilers	1	Diploma in Journalism (formerly: Nigeria Police Force reporter, Western Nigeria Television/ Broadcasting Service, Editor and Head of News department, radio Service of Oyo State)	LLC		Promoter's savings	Nigeria
4	2006	Layers Broilers	10,000 birds	330,000 Layers 70,000 Broilers	1	DVM	Public Limited Company (PLC)		promoters' savings and bank loan	Nigeria
5	2016	Layers Broilers	85,000 Layers 10,000 Broilers	85,000 Layers 15,000 Broilers	1	Not available (NA)	LLC	Sector 1	Promoters' savings and bank loan	Nigeria
1	1985	Broilers Layers	1,000 Broilers 2000 Layers	23,000 laying hens 3,000 broiler chicken	1	Retired army general	Single-Member LLC	Sector 2 or 3	•Own funds •Bank loans •SEDIMA input credit	Senegal
2	2018	Broilers Layers	20,000 birds 30,000 birds	60,000 broiler chicken 30,000 laying hens	1	Professional athlete	LLC	Sector 2 or 3	Own funds	Senegal

3	2014	Laying hens	10,000 laying hens	23,000 laying hens	2	Former bank advisor (co-owner)	Single-Member LLC***	Sector 2 or 3	Own funds	Senegal
4	2019	Broilers	22,000 broiler chicken	28,000 broiler chicken	4	•Three civil engineers •One IT specialist	LLC	Sector 2 or 3	Own funds	Senegal
5	2012	Broilers	8,000	36,000 broiler chicken	2	Poultry professionals	LLC	Sector 2 or 3	Own funds Bank loan	Senegal
		Laying hens	NA	NA						
6	2017	Broilers	5,000 birds	12,000 broiler chicken	1	Retired senior civil servant who worked in finance in an agro-industrial company	Sole proprietorship with a business identification number	Sector 2 or 3	•Own funds •Bank loan	Senegal
7	2016	Laying hens	15,000 laying hens	65,000 laying hens	NA	NA	PLC	Sector 2 or 3	Own funds Government grant	Senegal
8	1985	Laying hens	300 laying hens	25,000 laying hens	1	Telecommunications engineer (main shareholder)	LLC	Sector 2 or 3	•Own funds •Bank loan	Senegal
9	1998	Broilers	1,500 birds	225,000 birds	1	NA	NA	Sector 2 or 3	•Own funds •Bank loan •Family members	Senegal
		Layers	2,000 layers	20,000 laying hens						
10	2018	Broilers	40,000 broilers	60,000 broilers	1	Banker	Single-Member LLC	Sector 2 or 3	Own funds Bank loan	Senegal

*Note: For anonymity concerns, we do not show company names.
**Flock size indicates the production capacity per production cycle. Businesses have multiple production cycles per year.
*** This is the legal status at onset when it was created by one entrepreneur. Another family member joined the capital in 2018. However, the legal status remained unchanged.
Source: Authors based on data from surveys in Sonaiya et al. (2022); Ba et al., (2022)

Table S5: Description of cases- Business characteristics and success factors

Company number	Year of establishment	Other poultry value chain products/services	Other business orientations*	Main challenges	Main success factors	Country
1	1983	• Poultry input (point of lay pullets and feed) production • technical support services for poultry	• Other livestock (ruminants) and aquaculture input production •technical support services for livestock and aquaculture	•High feed cost (leads to high price of outputs and lower demand from buyers) •Uncontrolled feed quality (declining profits and greater competition) •Poor transport infrastructure for egg marketing •Cycles of scarcity and gluts	•Innovation in marketing to survive egg glutes (e.g. branding and packaging) •Access to investment capital	Nigeria
2	1990	•Broilers Parent stocks (PS) •Layer PS •Hatchery	•Oil & gas • Marine fisheries •Grain production	•High feed cost •Uncontrolled feed quality •National security	•Trade policies protecting from foreign competition •Growing demand (population growth, growth of urban middle class, expansion of fast-food chain and rise of supermarkets) •Vertical integration •Innovations •Access to investment capital	
3	1978	•Broiler PS	•Real estate •Food industry	•High feed cost •Uncontrolled feed quality •Access to credit for outgrowers	•Contracting (establishment of broiler outgrower scheme for table bird used for a school feeding programme) •Trade policies protecting from foreign competition •Growing demand (population growth, growth of urban middle class, expansion of fast-food chain and rise of supermarkets) •Vertical integration •Innovations (outgrower scheme) •Access to investment capital	
4	2006	Breeders	None	•Feed ○High feed cost ○Uncontrolled feed quality ○Land allocation for feed crop cultivation •Access to credit for outgrowers	•Trade policies protecting from foreign competition •Growing demand (population growth, growth of urban middle class, expansion of fast-food chain and rise of supermarkets) •Vertical integration	

5	2016	•Hatchery •Slaughterhouse •Processing plant Additional output from outgrowers	None	•High feed cost •Uncontrolled feed quality	•Contracting (establishment of broiler outgrower scheme to feed the slaughterhouse and processing plant) •Growing demand (population growth, growth of urban middle class, expansion of fast-food chain and rise of supermarkets) •Trade policies protecting from foreign competition •Vertical integration •Institutional innovations (e.g. outgrower schemes) •Access to investment capital	
1	1985	None	None	•Quality of the workforce •Mortality	•Suspension of imports •Support and guidance provided by SEDIMA •Access to financing	
2	2018	None	None	•Recurrent power cuts •Mortality of chicks and pullets •Dependence on SEDIMA •Quality of inputs from suppliers	•Good personnel management •Diversified customer base	
3	2014	None	•Market gardening •Arboriculture (mangoes and lemons) •Beef milk production •Pedigree sheep and horse breeding	•Overproduction in the egg market •Access to the farm during the rainy season •Access to water •Involvement of the owners' children •Input supplier not meeting deadlines	•Good staff management •Reducing production costs •Building customer loyalty	Senegal
4	2019	None	Construction business	•Disease •Feed and chick quality •Time constraint for poultry management due to other business •Biosecurity ○Proximity of businesses	•Qualified management and staff •Quality of the equipment ○Technical innovation	

5	2012	•Ready-to-lay pullets sold to egg producers •Design of industrial poultry buildings •Sale of poultry equipment and supplies	•None	•Input quality (feed and chicks) ○Mortality •Egg market saturation	•Secured market for their products •Production technique ○ Producing birds to a calibrated weight, better suited to modern slaughterhouse requirements •Accumulated expertise in industrial poultry farming
6	2017	None	Arboriculture (lemon and mango trees)	•Problems with SEDIMA contract ○Abrupt termination of contract during the first wave of COVID ○Inability to control sales prices with SEDIMA ○SEDIMA, pays one month after delivery ○Inconsistent chick quality ▪Mortality	•Integration contract with SEDIMA •Access to credit for feed •Close management
7	2016	None	None	•Water availability •Input supply ○Insufficient supply of laying hens ○Poor feed quality with high Prices •Mortality caused by heatwaves in hot seasons	•National demand •Solid management with a well-selected team possessing proven poultry production skills •Solid customer base through loyalty and a fixed quota system per client type ○Consistent supply regardless of production or market conditions •Suspension of chicken imports
8	1985	None	None	•Market saturation •SEDIMA's power •Input quality and prices •High cost of energy (fuels for delivery van and electricity) •Quality of technical support from veterinary services	•Demand size •Access to affordable equipment •Cooperative organization •Diversified customer base and client loyalty ○loyal clients who receive weekly quotas ○fixed-location clients (shops in markets or neighbourhoods) ○Products are supplied on credit, and clients pay after selling

9	1998	•Animal feed sales •Sale of poultry equipment	None	•Poultry market saturation •Disease •Input price and quality ○Quality of day-old chicks •Land tenure	•Partnership with SEDIMA •Good management •Market demand (improved purchasing power and changing dietary habits)
10	2018	None	None	•diseases and biosafety standards •mortality •Inputs availability and quality •Costly and unreliable energy (electricity) •No bargaining power with SEDIMA	•Import ban •Partnership with SEDIMA •Access to financing •Tax exemptions on poultry equipment •Staff quality and their continuous training

*Of the business or its shareholders

Section 4: Questionnaires

Nigeria interview guide

This study is jointly sponsored by the ARCN, FARA and ZEF with a view to eliciting information on the key factors affecting the commercial poultry sector in Nigeria.

All information will remain anonymous and confidential and will only be used for the purposes of obtaining a better understanding of the commercial poultry sector in Nigeria and making policy recommendations that can improve the growth of the sector.

1. Name of farm:

_____

2. Office Address:

_____

_____

3. Farm Address [if different from office address] :

_____

_____

4. Telephone Number: _____
5. E mail: _____
6. Website: _____
7. Type of Business Registration (Tick one)
    i. Sole Proprietorship,
    ii. Limited Liability Company
    iii. Public Limited Company
    iv. Unregistered Family Business
8. Type(s) of enterprise (Tick all relevant entries)
    i. Broilers
    ii. Layers
    iii. Breeders
    iv. Integrated
9. Promoter(s) Profile and background [Name(s) are not required, please]:

    Educational background:
    Previous work experience:
    Current work experiences:
    Involvement in other sectors of the economy:
    Etc:

    _____

    _____

    _____
10. Source of start-up capital:

i. Promoters' Savings

ii. Bank Loan

iii. Promoters' Savings and Bank Loan

iv. Others, please specify: ----------

11. Start-up year: _____

12. Start-up capacity:

    i. Layers: ----------Birds

    ii. Broilers: ----------Birds

    iii. Breeders: ----------Birds

    iv. Others: ----------

13. Current capacity: _____

    i. Layers: ----------Birds

    ii. Broilers: ----------Birds

    iii. Breeders: ----------Birds

    iv. Others: ----------

14. Monthly Output: _____

    i. Layers: ----------Crates of Eggs

    ii. Broilers: ----------Birds

    iii. Breeders: ----------Birds

    iv. Others: ----------

15. Please describe the performance of the commercial poultry business in the last five years

    i. _____

    ii. _____

    iii. _____
    _____

    iv. _____
    _____

16. How has the demand for eggs and poultry meat affected the commercial poultry business in the last five years?

_____
_____
_____
_____

17. Has the poultry sector experienced growth in the last five years and if yes, what factors have triggered the growth?

_____
_____
_____
_____

18. Which of the following will you consider as success factors for your poultry business and why?

    i. Level of integration of poultry value chain activities (e.g., feed, day-old chicks, eggs and meat production) OR Extent of specialization:
    _____
    _____

    ii. Possession of cutting-edge technology OR constant innovation:
    _____
    _____

    iii. Access to investment capital:
    _____
    _____

    iv. Others, specify:
    _____
    _____

19. How have the following government policies affected your poultry business?

    i. Agricultural finance policies like Anchor Borrowers:
    _____
    _____

    ii. Ban on poultry products imports:
    _____
    _____

    iii. General border closure:
    _____
    _____

    iv. Land Use Act implementation by your host State Government:
    _____
    _____

    v. Licensing for Grand Parent Stock Import:
    _____
    _____

    vi. Others, please specify:
    _____
    _____

20. Can you identify the major challenges to your poultry business?

i. _____

ii. _____

iii. _____

iv. _____

21. What do you think can mitigate these challenges?

i. _____

ii. _____

iii. _____

iv. _____

22. What recommendations do you have to make commercial poultry business more profitable?

i. _____

ii. _____

iii. _____

iv. _____

Senegal questionnaire

PRESENTATION

CUSTOMARY THANKS

Purpose of the interview

- Institutions
- Terms and conditions
- Confidentiality and consent statement attached
- Explanatory notes on commercial poultry farming in Senegal
- Rationale for the study

START OF THE INTERVIEW

1. Company profile

- Do you own or lease the production site (land and equipment)?
- Is poultry production your primary or secondary activity?
- What are your other activities (in order of importance)?

2. Brief history of the company

- Tell us your story of setting up your business?
- In what year did you start this activity?
- What motivated you to invest in poultry production and marketing?
- What triggered this interest in you?
- What have been the major phases in the evolution of your company?

3. Main products manufactured

- What types of production do you currently do?
- For each type, how many subjects do you evaluate per production run?
- How many rotations do you make per year and per type of production?
- Do you use employees? If so, how many?

4. Source of funding

- How did you raise capital to start the business?
- Have you raised your own funds? By selling assets, by saving...?
- Have you taken out any loans with banks?
- How much do you estimate the initial amount mobilized?

5. Most important success factors

- Did any of the following contribute to your success? If so, how?
  - Legal structure and membership in the formal sector
  - Access to financing, loans
  - Company size
  - Relationships, partnership
  - Technical innovations and breeding techniques
  - Management and administration
  - Customers
  - Other (please specify) :

6. Growth indicators

- What is your average production per type of production and per cycle during the last 5 years? For each type, what was the selling price?

Number of batches/flocks of broilers per year

Batch size

Number of laying hens per year
Broilers

- Minimum production — Minimum selling price
- Maximum output — Max selling price
- Average production — Average selling price

Eggs for consumption

- Minimum production — Minimum selling price
- Maximum output — Max selling price
- Average production — Average selling price

- During these 5 years, what were the main problems encountered? Its impacts ?
- During these 5 years, what favourable conditions have made your production evolve?
- Have you recruited new specialists or workers during the last 5 years? If so, which ones? How many fo each type of employee?
  - Minimum
  - Maximum
  - Average

- What impact does your staff have on your bottom line?
- Does your staff receive ongoing training? If yes, who? and when? If not, why?
- Have you installed any new infrastructure in the last 5 years? If yes, what type(s) of investment? How many per type? per year? What were the reasons?
- How has your client network been built over the last 5 years?

7. What is the impact of the quality of technical support from input suppliers and service providers?
   - Veterinarians
   - Chick suppliers
   - Feed suppliers
   - Other (please specify)

8. What are the main factors (in order of importance) holding back your business? For each, how ?
9. What are the most common causes of mortality/morbidity?
   - Diseases (which ones)
   - Chick quality
   - Feed quality
   - Staff management
   - Building quality

10. Professional organization

a. Are you a member of a poultry organization? If so, since when? Which one? What are its objectives ?

b. Is your organisation affiliated to IPAS?

11. How would you rate the performance of your operation with respect to:

Forces	1. Low	2. Average	3. Strong
Negotiating power with clients			
Negotiating power with suppliers			
The threat of competing local products			
The threat of imported competing products			
The threat of new market entrants			

12. How do you manage the above factors?

Forces	Management
Negotiating power with clients	
Negotiating power with suppliers	
The threat of the premises	
The threat of imported products	
The threat of new market entrants	

13. What do you think are the best investment opportunities in poultry farming? Please explain
14. What do you think about the future of your business?
    a. What future for the commercial sector? Why ?
    b. How to strengthen the Senegalese poultry industry and modern poultry systems?
    c. What measures are needed to reduce production costs?
    d. What are the alternatives for industrial poultry feed?

15. You have invested in poultry farming, if you had to do it again would you do it? If yes, why ? If not, why not ?

Other information
END OF INTERVIEW
Words of THANKS

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