Assessing the contribution of poultry farming to household food security within urban farming systems. The case of Bindura District.

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RELEASE FORM

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DECLARATION

I Tyser Adiel Mutize, l declare that l have conducted original research work for this project titled ‘Assessing the contribution of poultry farming to household food security within urban farming sytems it is the product of my original work and conducted under the supervision of M.M Kusinira. Any reference made within this research project to the work of others has been specifically acknowledge and cited. The research project is being submitted in the partial fulfillment of the requirements for the award of a Master of Science Degree in Food Security and Sustainable Agriculture.

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DEDICATION

I dedicate this dissertation to my dearest family who have been a pillar of strength and constant source of encouragement.

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I would like to appreciate my supervisor and the project co-ordinator, M.M Kusinira for their support and guidance on this project. Lastly but not least, I would like to thank my family for their constant support. They have believed so much in me and have sacrificed a lot to see me up to this moment. I would also like to acknowledge my friends and colleagues for their moral and social support.

ABSTRACT

Urban food insecurity remains a major challenge in many developing countries, where rapid urbanisation, unemployment, poverty, and rising food prices have reduced household access to adequate and nutritious food. In this context, urban agriculture, particularly poultry farming, has emerged as an important livelihood strategy that contributes to household food security through the provision of food and income. This study examined the role of poultry farming in enhancing household food security among urban households, with particular emphasis on its contribution to dietary diversity and food accessibility, while also identifying the factors influencing poultry production and the constraints faced by urban poultry farmers. A quantitative cross-sectional research design was employed to collect data from urban poultry-producing households using structured questionnaires. Descriptive and inferential statistical analyses were used to examine poultry production characteristics, household dietary diversity, food accessibility, and production constraints. Household Dietary Diversity Score (HDDS) was used to assess dietary diversity, while respondents' perceptions and production characteristics were analysed to establish the relationship between poultry farming and household food security. The findings revealed that poultry farming is an integral component of urban livelihood strategies rather than a stand-alone agricultural activity. Most households operated small- to medium-scale poultry enterprises, typically keeping between five and twenty birds, primarily for both household consumption and income generation. Poultry production was found to contribute significantly to household food security through two complementary pathways: the direct consumption of eggs and poultry meat and the sale of poultry products to generate income for purchasing other food items. Eggs emerged as the principal animal-source food consumed by households because they provide a continuous supply of highly nutritious food without reducing flock size. The study recorded a mean Household Dietary Diversity Score (HDDS) of 5.75 (median = 6), indicating moderate dietary diversity among participating households. The majority of respondents reported increased consumption of animal-source foods, improved dietary diversity, and enhanced access to a wider variety of foods as a result of poultry production. Furthermore, approximately 70% of respondents indicated that income generated from poultry enabled them to purchase a broader range of food items, while 73% reported using poultry income specifically to improve household food purchases.

Despite these positive contributions, the study identified several structural constraints limiting the productivity and expansion of urban poultry farming. These included limited access to credit, inadequate extension services, high feed costs, disease and biosecurity challenges, limited market access, and urban space constraints associated with insecure land tenure and restrictive urban planning policies. More than half of the respondents lacked access to formal credit and extension support, thereby constraining their ability to adopt improved poultry management practices, expand production, and increase productivity. These findings demonstrate that the benefits of poultry farming coexist with significant institutional and structural barriers that limit its full potential as a sustainable urban livelihood strategy. The study concludes that urban poultry farming makes a substantial contribution to household food security by improving food availability, enhancing food accessibility through income generation, and promoting dietary diversity. However, its effectiveness is constrained by interconnected financial, technical, institutional, and spatial challenges that require integrated policy interventions. The study recommends that urban poultry farming be formally recognised within urban planning and food system policies; that access to affordable credit, extension services, quality veterinary support, and structured markets be strengthened; and that integrated programmes addressing multiple production constraints simultaneously be implemented. The study further recommends promoting women's participation and decision-making in poultry production, given their central role in managing poultry enterprises and household food allocation. Overall, the study contributes empirical evidence to the growing body of literature on urban agriculture by demonstrating that poultry farming represents a viable livelihood strategy capable of enhancing household food security in low-income urban settings when supported by enabling policies and institutional frameworks.

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CHAPTER ONE: INTRODUCTION AND BACKGROUND

1.1 Introduction

A broiler is a type of chicken *(Gallus domesticus*) that was specifically bred for efficient meat production. Broiler breeds grow much faster than layer breeds or traditional dual-purpose breeds. Furthermore, broiler chickens have desirable carcass confirmation, require low amounts of feed per unit mass of meat produced and typically reach a live weight of about two kilograms in just under 40 days. Small-scale commercial broiler production follows a well-established production system. Basically, it involves the rearing of day-old broiler chicks, obtained from a reputable hatchery, until they reach the desired body weight, which typically is attained at the age of six to seven weeks. It is at this stage that broilers are ready to be sold to the public, local traders or abattoirs. Broiler enterprises are often categorised on the basis of batch size (the number of broiler chicks being reared at the same time. Poultry products (meat and eggs) play an important role for the nutrition of the human population as a whole and in Africa in particular. Demand for these products in Africa is high and is expected to increase significantly in the next 20 years (FAO, 2017). In addition to profits, small-scale poultry production provides valuable nutrition to the most vulnerable populations (children, pregnant women and nursing mothers) in the form of proteins, vitamins and micronutrients, while contributing to poverty reduction. It is also an important economic opportunity for smallholder farmers or those without land, particularly for rural youth and women (Melesse, 2014).

Poultry production is a fast growing sector in Zimbabwe. The imposition of stringent measures on importation of poultry meat has also boosted local production with the main suppliers expanding their breeding and hatchery facilities to cope with increasing demand, 65% of which has mainly emanated from the ‘informal’ or small-scale sector. The Ross, Cobb 500 and Hubbard Flex are the main broiler breeds in the country. However, the majority of producers in this sector lack the prerequisite skills and technical know-how on the basics of broiler production and this manual seeks to address that gap in order to optimize broiler production.

Over the past few decades, the poultry industry has become one of the fastest-growing sectors of agriculture due to its relatively low investment cost, quick return on investment and capacity to contribute to food security (Food and Agriculture Organization [FAO], 2021). Poultry meat provide affordable, high-quality protein, essential amino acids and micronutrients, making them crucial in combating malnutrition and enhancing human health (Mottet & Tempio, 2017). Globally, the demand for poultry products has risen due to population growth, urbanization and changes in dietary preferences toward white meat which is perceived as healthier and more environmentally sustainable compared to red meat (Ritchie & Roser, 2023).

Urbanization is proceeding at an accelerated pace, thus, increasing pressure on urban food systems and a growing household food insecurity, particularly among the low-income urban populations. Urban farming is becoming a cornerstone of livelihood and food security with poultry farming having emerged as one of urban agriculture's most accessible and frequent forms. Poultry production requires relatively little space, low initial capital and fast returns. Poultry has proliferated at a breakneck pace in developing nations, especially in Africa and Asia, with production systems ranging from smallholder backyard operations to large-scale commercial enterprises (Akinola & Essien, 2011). This shift has significantly impacted economies by creating employment opportunities, increasing household income, and contributing to gender inclusivity (Guèye, 2009). But although it has potential, poultry farming is plagued by disease outbreaks, high feed prices, limited access to credit and narrow extension services (Nduthu et al., 2020). Therefore, these challenges must be mitigated through technological innovations, policy interventions and sustainable management practices to achieve the true potential of the sector in contributing to national and global food systems.

1.2 Background of the study

Over the last hundred years the poultry industry has evolved considerably. Initially a small family-scale activity, it has transformed into a focused and specialized agribusiness sector (Rauw et al., 2020). The expansion of commercial poultry farming was fueled by advances in genetics, nutrition, housing and disease control which led to improved productivity and efficiency (FAO, 2021).

In developed economies, poultry farming is dominated by vertically integrated systems where production, processing and marketing are coordinated under unified management structures (Windhorst, 2016). Conversely, in developing nations, smallholder farmers still dominate the sector, supplying both local and urban markets (Sonaiya & Swan, 2004).

Agriculture is conventionally a rural based economic activity. However, with the global food crisis and the surging urban population have become the drivers of urban agriculture to tackle food insecurity. Increasing food demand for the growing urban population contributes to accelerating growth in demand for poultry products, meats and milk products. Urban agriculture is defined as a farming system with varying characteristics depending on local socio-economic, geographic and political conditions (Mensah, 2023). The most common definition is defined as an industry located within urban and peri-urban of a town, a city or a metropolis, which grows and raises, processes and distributes a diversity of food and food-products found in and around that urban area (Stewart et al., 2014).

Urbanization and economic challenges in many developing countries have intensified concerns about household food security especially among low income families. Urban areas once considered largely non-agricultural are increasingly turning to urban agriculture as a critical livelihood strategy to combat food insecurity (Kwiringira et al., 2024) .Urban agriculture includes diverse practices such as crop cultivation and livestock rearing within city and peri-urban environments. Among these urban poultry farming, particularly small scale or backyard poultry is becoming prominent because it requires relatively little land offers a quick turnover of products and can be practiced even in space constrained urban setting.

Poultry production is an important sector of the agricultural economy, which in most African countries contributes to household nutrition and income diversification (Akinola and Essien, 2011). Poultry constitutes around 35% of the total animal protein consumption worldwide (FAO 2021), and chicken meat and eggs are the majority of all animal-based foods consumed. However, there is limited productivity in smallholder poultry farms of developing countries and most of the problems, such as lack of access to improved breeds, poor biosecurity and inadequate veterinary services (Nduthu et al., 2020). Furthermore, environmental sustainability has become an important issue in contemporary poultry farming. The industry contributes to greenhouse gas emissions and environmental degradation due to waste mismanagement and excessive use of

resources (Gerber et al., 2013). In contrast to traditional crop production, backyard poultry cultivation does not require large amounts of land and may be located in compound gardens or small homes, which can be advantageous at the urban level as the land is scarce and expensive. Poultry keeping is not only a significant source of food but also a source of economic empowerment and household welfare, as women and other vulnerable groups continue to engage in poultry keeping in disproportionate numbers. Despite this ability, there is limited research about urban poultry compared to rural poultry systems and little research about how poultry farming contributes uniquely to household food security in relation to urban gradients (Idamikoro, Hosu, 2022). This highlights the importance of targeted studies which evaluate the multidimensionality of poultry in urban food systems through its roles in nutrition and income, social resilience, livelihoods support, especially in rapidly urbanizing settings in sub-Saharan Africa and other low-income areas. Thus, the application of sustainable poultry production technologies such as renewable energy, feeding efficiency and waste recycling are critical for maintaining environmental and economic sustainability (Shukla et al., 2021). So poultry farming is among the focal points of agricultural transformation and food security projects globally. It is important to see what happened and what are the issues and the opportunities for the intervention to design and facilitate sustainable development based on an appreciation of it for the betterment of productivity, to provide greater economic and farmers' and consumers' welfare and security.

1.3 Statement of the problem

Rapid urbanization in many developing nations has increased pressure on urban food systems, leading to rising food insecurity among low- and middle-income households. Urban agriculture is one of the most important livelihood strategies to enrich this population's diet and living standards. Out of all the urban farming activities, poultry cultivation is popularly used for its small size, low capital cost, and fast returns. It seems that despite urban poultry farming’s popularity, urban households still suffer from food insecurity, i.e., limited access to nutritious and affordable food. Poultry production may greatly contribute to household food security in terms of direct consumption and income generation, but how much it contributes to the household's food security in these urban farms has yet to be properly reported.1.4 Research Objectives

1.4.1 Main Objective

To assess the contribution of poultry farming to household food security within urban farming system.

1.4.2 Specific Objectives

1. To assess the scale of poultry production among urban households

2. To analyze the factors driving or inhibiting the scale of poultry production urban food systems.

3. To assess the contribution of poultry production to household dietary diversity

4. To assess the contribution of poultry production to food accessibility among urban households

1.5 Research Questions

1. To what extent does poultry farming contribute to household food availability in urban areas?

2. How does income from poultry farming affect household access to food?

3. What is the impact of poultry farming on household dietary diversity and nutrition?

4. What challenges limit the effectiveness of poultry farming in enhancing household food security?

5. How do urban farming systems and municipal regulations influence poultry farming practices?

1.6 Hypothesis

H_0 Poultry farming has no significant contribution to household food security within urban farming system

H_1 Poultry farming significantly contributes to household food security within urban farming systems

1.7 Significance of the study/justification

Assessing the contribution of urban poultry farming to household food security is significant at household, community, policy and academic levels particularly in the context of rapid urbanization and rising food insecurity in developing countries. Urban household especially those with low incomes face challenges such as high food prices, limited access to nutritious foods and unstable livelihoods. This study is therefore important in generating evidence on how urban poultry farming can serve as a sustainable strategy to enhance food availability, accessibility and utilization at the household level.

At the household level, the findings of this study are expected to highlight the role of poultry farming in improving dietary diversity and nutritional intake through the consumption of poultry meat which is rich sources of protein and essential micronutrients. By documenting how poultry production contribute to household diets and income, the study will help households and urban farmers better understand the potential of poultry farming as a reliable food security intervention.

At the community and livelihood level, the study is significant in demonstrating how urban poultry farming contributes to income generation, employment creation and resilience among vulnerable groups, particularly women and youth who are often the primary actors in small scale poultry production (Munyanyi., 2018). Income generated from the sale of poultry meat and live birds can enable households to purchase other food items, pay for health care and education and cope with economic shocks thereby strengthening overall household welfare.

From a policy and planning perspective, this study provides empirical evidence that can inform urban agricultural policies and food security strategies. Many urban development plans overlook or marginalize livestock keeping due to concerns over public health, land use and environmental management.

By assessing the actual contribution of urban poultry farming to food security, the study can support the formulation of inclusive policies to recognize and regulate urban poultry farming rather than discourage it. Such evidence is essential for guiding municipal authorities, non-governmental organizations and development agencies in designing interventions that promote safe, sustainable and productive urban poultry systems.

Academically, the study contributes to the existing body of knowledge on urban agriculture and food security. While several studies focus on commercial or rural poultry production, fewer have examined urban poultry farming and its specific contribution to household food security. This study therefore helps to bridge this knowledge gap by providing context-specific insights into urban livestock systems and their role in addressing food security (Idamokoro Hosu., 2022) The findings may also serve as a reference for future researchers interested inurban food systems, livelihood strategies and sustainable development.

1.8 Delimitations and limitation of the study

Delimitation

Geographic scope – the study focuses only on Bindura District not the entire Mashonaland Central Province or other districts

Type of poultry activity – the study considers only broiler poultry production within urban farming systems, excluding large scale commercial farms and layers

Target population – only households directly involved in poultry production are studied

Time frame – the research covers data from a specific period not a long term longitudinal analysis

Indicators of food security – the study assesses food security using selected indicators such as Household Dietary Diversity Score and income contribution not all possible dimensions of food security

Analytical focus – the study emphasises economic and nutritional contributions of poultry farming excluding other potential social or environmental impacts unless directly relevant

Limitation

Data availability and reliability – some households may not keep accurate records of poultry production, feed use or income

Seasonal variations – poultry productivity and food security levels can fluctuate seasonally especially during droughts or festive peaks but the study may capture data at only one time of the year

Sample size and representativeness – limited financial and time resources may restrict the number of households surveyed affecting the representativeness of the sample

Market and price volatility – feed and chicken prices can vary rapidly affecting profitability and food security contributions but these changes may occur outside the data collection window

Disease outbreaks – poultry diseases may disrupt production and bias findings if they occur during the study period

Respondent bias – some respondents might overstate or understate their income, production or food security status due to social desirability or fear of taxation

Limited secondary data – official statistics on small scale urban poultry operations may be scarce affecting the robustness of secondary data analysis

CHAPTER TWO: LITERATURE REVIEW

2.1 Literature review

Feeding, chicks, housing quality, veterinary inputs and management practices are all crucial in poultry farming as production efficiency is based upon the balance. The theory highlights that the law of diminishing returns suggests that overuse of one input and holding all other alternatives constant eventually leads to reduced output (Timmer, 2012). This theory can be also applied to appraise the impact of resource utilization and input management on poultry farm productivity. The Sustainable Livelihood Framework (SLF) proposed by the DFID (1999) helps to understand how the household applies resources (natural, physical, financial and social) to achieve sustainability. With regard to poultry farming, the SLF discusses how farmers' use of resources and skills along with networks help them secure livelihoods even when exposed to economic, social and environmental shocks (Ellis, 2000). First formulated by Rogers (2003), the Diffusion of Innovation Theory describes how new technologies or ways of doing things move in a social system. Poultry adoption in terms of new bird breed technology, biosecurity and automated housing technologies has been found to be affected by perceived benefits, access to information and/or social persuasion (Melesse, 2014). Grasping this diffusion phenomena is critical to promoting modern ways of poultry production and driving productivity. These theoretical perspectives combined are an excellent basis for understanding the economic, social and technological relations that determine poultry farming performance and sustainability

2.1 Brief description of urban agriculture

According to Food and Agriculture Organization (FAO), urban agricultural is also known as the growing or production of plants and the raising of animals within and around cities in urban and peri-urban areas (FAO, 2021. With the growth of urban populations in most developing countries during the last half of the 20th century, urban food production and distribution systems became less and less reliable. Urban hunger grew in parallel with the urban population, accelerated by political and economic instability in too many places.

Urban agriculture is also linked to livelihood diversification, allowing households to cope with economic shocks, especially in low-income urban settings (Chihambakwe et al., 2019). Poultry is considered a nutrition-sensitive agricultural intervention, especially for vulnerable urban

households (Wong et al., 2017). This makes poultry a key livelihood option for urban poor households, especially women (Wong et al., 2017). Urban poultry systems therefore contribute not only to food security but also to household empowerment and social capital. Urban livestock systems (including poultry) are becoming more important, yet remain poorly integrated into urban planning frameworks (Hatab et al., 2019).

In response, urban agriculture became increasingly common in an ever-growing number of countries. Initially, urban residents undertook urban farming, but it was only later that urban and agricultural researchers and policymakers took notice of its significance (Veenhuizen, 2006).In most countries, agriculture was considered a rural activity until recently but this has changed due to the rapid increase in urban population especially in the developing countries (UNEP, 2002). Urban agriculture in Africa presents a contradiction towards long tradition and is widely practiced, yet in most African countries urban agriculture has been undervalued and resisted by generations of public officials. This attitude has only recently begun to change as leaders realize the potential of urban agriculture to alleviate the growing hunger, economic and environmental crisis in the ever-expanding metropolitan areas of Africa.

The International Resource Panel (IRP) describes the importance of urban agriculture as attached to its connection to Sustainable Development Goals (SDGs) including eradicating poverty, ending hunger, achieving gender equality, contributing to well- being, and promoting sustainable cities (IRP, 2021). Urban agriculture is also important for circular economy and climate change mitigations (Manríquez-Altamirano et al., 2020; Steenkamp et al., 2021; Weidner et al., 2019). It is reported by the World Food Programme (WFP) the global trend shows that the burden of food insecurity is shifting from rural to urban due to the increasing urban population (WFP, 2023). One of the challenges for overcoming poverty is the rapid urbanization is the increasing urban population (Gómez-Villarino et al., 2021) following the rural-urban migration which reduces the rural capacity to produce food on the other hand increases food demand in urban areas.

The rapid urban population growth is mainly experienced in developing countries and in Africa in particular where agriculture is a key economic sector underpinning their economies in terms of food security and major source of employment (Christiaensen & Maertens, 2022).

Food security means that safe and nutritious food is consistently available, accessible, and reasonably priced. Though the crisis in world food prices exploded during 2008, the problem of urban food insecurity in Africa has been a fact of life for many low-income urban dwellers for decades, and especially since the period of structural adjustment in the 1980s. It is not that there is no food; it's that poor urban consumers cannot afford it.

This is the stark but simple truth lying behind much of the agriculture that is widespread within and around African cities. What urban households have known and practiced for generations, urban decision-makers have begun to recognize much more recently: urban agriculture is a livelihood strategy (Urban harvest, 2010)

Poultry farming in Zimbabwe has evolved significantly in recent decades to support food security, particularly within urban areas. This evolution can be traced through various phases that encompass changes in production methods, policy interventions, and the socio-economic dynamics of urbanization. Before 2015, Zimbabwe's poultry sector was largely dominated by smallholder farmers, with the formal poultry industry largely concentrated in rural areas. However, poultry for protein was also an important part of the food in urbanizing places and therefore there was a gradual movement towards including more commercial poultry farms in these areas. Urban farming, frequently embedded in peri-urban areas, proved a practical approach to satisfying food demand (Madzimure & Nyoni, 2017). Poultry farming technology (improvement of feed formulations, breeding and disease control) also supported a greener urban poultry production industry. Urban farms have installed technologies like climate-controlled poultry houses and automated feeding facilities to produce year-round and not only reduce the role of imports (Chikodzi, 2018). The Zimbabwean government, aware that poultry industry is a key aspect to food security, has implemented a range of policy programmes facilitating development. Policies aimed to lower the cost of production, enhance access to poultry feed, and extend services to the smallholder farmer sector. These interventions were important for enabling urban poultry farmers to continue production while facing the economic challenges facing the country (Zhou, 2015). Economic resilience of Zimbabwe's economic challenges including inflation and loss of foreign exchange have contributed to the increasing cost of poultry production. Urban poultry farming, however, was not only proved resilient but also led to urban poultry farmers going to maize bran and other locally sourced ingredients to counter increase in

feeds, because of rising costs (Chikodzi, 2018). Moreover, those who live in urban settings have the benefits of rural poultry producers' economic development as the markets for poultry products, as well as increasing access to markets for poultry products as a cost-efficient means of increasing profitability of poultry production could be more easily reached. Integration of integrated urban agriculture, including poultry producing, has also been created, which allows farmers to grow food not only in the proximity of the capital city limits but also makes it less dependent on rural food chains. Not only does this model promote food security, it also supports urban peasants' living conditions. Poultry farming in urban communities in Zimbabwe has become an important livelihood and food security tool when faced with economic instability, dislocation, unemployment and soaring food prices. It has been reported thus that poultry farming, and broiler rearing in particular is often conducted on a small scale in urban and peri-urban areas and is also informal in nature, contributing to income through the income earning as well as household food supply (Gororo & Kashangura, 2016). However, urban households are still highly dependent on food purchases which indicates that poultry production has a complementary, rather than direct, role in the food security of households instead of being a main driver (Ziga, 2018). In addition, there are multiple constraints on the sector such as the lack of access to capital, tight municipal by-laws, weak market integration and limited access to agricultural information (Malapela et al., 2016). Notwithstanding its significance, there is little empirical evidence directly connecting poultry production in the urban area to multidimensional household food security implications in Zimbabwe. The studies available are only partial, with a limited emphasis on backyard poultry systems, nutrition outcomes and socio-economic inequalities. This underscores the importance of broad household-level assessment that considers production, consumption and institutional determinants when considering the role that poultry production plays in urban food security. Studies done in cities such as Bulawayo reveal that food insecurity is rampant and protracted, especially in poor households (Ziga, 2018). The study highlights that urban poverty limits people's opportunities for both quality and nutritious food enormously. In addition, the urban economy's informalization has reduced sustainable sources of income, thereby exacerbating one's situation of food insecurity. Urban food systems in Zimbabwe, then, operate under a heavy dependence on markets, little in the way of social safety nets and little access to productive resources. Consequently, households are increasingly adopting alternative livelihood strategies including urban agriculture to compensate for their

food/income needs. Data from Gweru and other cities show that urban agriculture promotes both domestic food availability and income generation. It allows households to cover limited food needs and saves money on groceries (Chaminuka & Dube, 2017). Moreover, urban agriculture promotes the diversification of livelihoods that is critical to coping with economic shocks. Yet as significant as urban agriculture is, most of Zimbabwe's urban farmers are informal and working under limited circumstances. Municipal legislations often prohibit agricultural development within the urban limits, thus restricting the nature and extent of urban agriculture. Also, weak institutional support and resources limit its viability as a food security strategy. A case study with the study on Norton town was described by Munyanyi (2018), who showed how backyard poultry farming provides a financial outlet for urban households. Poultry farming supplies income and food for households, particularly under challenging economic circumstances (Munyanyi, 2018). Women are the major actors in this community and, through poultry farming, help nourish households and maintain their livelihoods. Poultry production provides a relief for households on unemployment and high food costs. Backyard poultry farming creates diversity of diets, and it is a mechanism that increases household resilience, mainly for low-income urban families (Munyanyi, 2018). It is well-supported with research that poverty is the leading cause of domestic food insecurity restricting the availability of sufficient and nutritious nutrition in the city (Muzah, 2015).

2.2. Economic importance of poultry farming

One more of the studies cited was conducted by Gororo and Kashangura (2016) of broiler production in urban and peri-urban areas. Poultry farming is considered as an important way of livelihood in the population of urban households, it can contribute as an instrument of income and a food source (Gororo & Kashangura, 2016). It revealed that poultry farming is predominantly a backyard, small business activity. With about 79% of farmers keeping fewer than 200 birds per cycle, low-capital entry is evident (Gororo & Kashangura, 2016). Women are central to the sector and are in charge of production and control. Poultry delivers both cash income and consumption (including meat and eggs), a process that contributes to better family nutrition. Nevertheless, limitations identified by the study were inadequate capital, outbreaks of diseases, and lack of formal market access (Gororo & Kashangura, 2016). Farming poultry provides urban areas with more and more protein, making it a critical ingredient of urban food

systems. Many studies emphasize the high importance of poultry farming to rural economies and food security. More than a third of the world's total animal protein consumption is supplied by poultry meat and eggs (FAO, 2021). Smallholder poultry farming is a significant contributor to household incomes and employment across Africa. Akinola and Essien (2011) also reported that poultry farming has made a notable impact in fighting poverty in their study in Nigeria since it offers both immediate financial relief and increases women's involvement in agribusiness. Urban agriculture is increasingly being seen as a climate-smart system, yet its resilience particularly poultry systems is an under-researched area of focus (Khumalo et al., 2024). However, the empirical evidence for its success is mixed for methodological reasons and fragmented analysis. Gender plays a significant role in the context of urban poultry systems, as well. And women are often directly involved in the poultry industry, especially in small scale poultry production. This would allow them to play a more meaningful role in household decision-making and the development of better food security outcomes. Existing studies often carry weak designs, lack sufficient quantitative data and emphasize food availability over multi-dimensional aspects of food security (Hatab et al., 2019). In urban poultry farming systems, especially informal and backyard systems, little has been investigated although they are indispensable for the lives of low-income households. Moreover, nutrition outcomes, gender dynamics, and institutional factors have been rarely integrated to evaluate the role poultry production plays in household food security. Therefore, thorough household level analyses based on systemic-level systems approaches that address the urban poultry contribution to sustainable food security are recommended. Nevertheless, data from Zimbabwe indicate that poultry farming is not enough to guarantee whole household food security on its own. Ziga (2018) found that urban households continue to heavily rely on purchased food with urban agriculture playing a supplementary role. This means that although poultry production, if it improves access and supply of food, has only modest or limited benefits to overall food supply because of broader set of socio-economic restrictions on the population.

2.3 Research gap affecting urban poultry production

Access to capital, a major challenge for urban poultry producers, is the current condition. Particularly feed and day-old chicks are expensive to buy so much that production capacity is severely limited. Moreover, because they cannot access credit facilities, small-scale producers

cannot expand their operations. Another is access to the market. A large number of producers depend on informal markets that frequently lack stability and pay relatively little. This not only diminishes profitability but also discourages investment in poultry production. Urban agriculture and poultry production are often constrained by municipal by-laws. Because of problems with sanitation, noise, and environmental impact, these laws may prohibit or limit livestock rearing within residential areas. Many poultry producers are therefore working informally, limiting their access to support services and markets (Gororo & Kashangura, 2016). Most research is on production and revenue, with very sparse knowledge for dietary variety, nutrition, and food utilization. Urban poultry systems are impacted by numerous technical problems such as disease outbreaks, substandard housing conditions and insufficient veterinary interventions. High mortality decreases efficiency and profitability, and thus reduces the contribution the poultry industry will make to food security. Additionally poor training and extension services are often experienced, and that leaves many producers without the education and training that can change the situation, make production more efficient (Malapela et al., 2016). Disposal of unsanitary waste may also carry the risk to the disease transmission and pollution of the environment. These difficulties reveal that adequate regulation and support should be given to sustainable urban poultry systems, in particular those that involve the management of poultry, including the supply of animal husbandry and poultry-derived feed. Existing studies are scattered and do not incorporate an integrated analytical framework across production, markets and household food security. The backyard poultry industry is also considered one of the new urban trends in Zimbabwe especially among lower income households. The models are known for their small size of the flock, low input costs and dependence on labor. They are also practiced for survival in times of hardship (Ziga, 2018). However, backyard poultry systems are relatively unexplored. With few if any studies existing, the majority of these focus on commercial broiler production, which is the basis for exploring the dynamics and roles of small-scale, informal poultry systems. This hampers the development of targeted interventions to enhance household food security. It has not been adequately analyzed the gender and the socio-economic differences in the access to poultry production and its benefits.

2.4 Poultry production systems.

Poultry production systems can be categorized broadly into extensive, semi-intensive or intensive (Sonaiya & Swan, 2004). Extensive or backyard systems are prevailing in poorer rural areas with low input and output. Intensive commercial systems on the contrary also use modern housing, better breeds and feed formulations to obtain better productivity (Windhorst 2016). In addition to efficiency, intensive systems demand considerable capital investment and are prone to infectious disease epidemics (Rauw et al., 2020).

2.5 Determinants of poultry productivity.

Various aspects influence the poultry productivity, such as feed quality, breed choice, housing structure, disease management and control systems and control and management of poultry (Nduthu et al., 2020). As production costs are 60–70% of input costs (Akinola & Essien, 2011), feed availability and cost continue to be the two most important influencing factors. Mottet and Tempio (2017) have shown that the integration of improved genetics and biosecurity practices significantly enhances flock performance and survival. Yet, smallholder farmers often don't have access to good quality inputs, extension services and financial resources to achieve their full productivity potential (FAO, 2021).

2.6 Constraints facing poultry farmers

Constraints common to such farmers include high feed prices, diseases in widespread, poor infrastructure and market variability (Nduthu et al., 2020). Disease outbreaks including newcastle disease and avian influenza continue to pose serious threats, particularly in developing countries, where veterinary services are scarce. A significant part of environmental degradation is due to poor waste management practices. Supply chains are also constrained by limited access to inexpensive credit, and reliable markets, which can hinder smallholders in scaling the production (Rauw et al., 2020).

2.7 Sustainability and environmental issues.

Environmental sustainability in poultry farming has become a growing concern due to rising greenhouse gas emissions, water pollution and resource depletion (Shukla et al., 2021). Gerber et al. (2013) argued that adequate waste handling, efficient feed utilization and adoption of renewable energy are crucial factors influencing the reduction of the environmental footprint of

poultry production and other related waste treatment. It allows for economic sustainability over sustainability in poultry farming and guarantees long-term food security by balancing economic viability together with ecological conservation.

2.8 Disease Management

Management of diseases in poultry plays an important role for the progress of the industry. Birds in the commercial farms are reared in open sided houses and maintained under optimum management conditions. Birds are reared under veterinary supervision. Vaccination is regularly practiced to protect the bird against diseases.

In spite of all the measures, the poultry industry in India suffered a major setback last year due to the outbreak of Avian Influenza. The industry suffered serious trade losses following downfall in consumption of poultry meat and eggs for about 6 months. To minimize the occurrence of disease in poultry the three most important components of disease control are biosecurity, vaccination and medication. Biosecurity refers to all measures taken to secure prevention of all types of pathogens in poultry farms. Effective biosecurity and implementation of successful hygienic procedures are increasingly dependent on Hazard Analysis Critical Control Point approach (HACCP). The principles of HACCP such as hazard analysis, critical control points, critical limits, correction, recording and verification should be strictly followed for analyzing risk assessment and risk management.

Indian Journal of Animal Health, December, 2015 priorities for effective disease management in making the poultry industry a sustainable enterprise. Many of the diseases which are not endemic to India (Avian Influenza, VVND) may enter through germplasm and biologicals. This need strict quarantine measures establishing and strengthening surveillance and monitoring system. The surveillance and monitoring system should be carried out in established laboratories. There is need to establish a National Avian Disease Laboratory with all modern facilities for surveillance and monitoring of infectious disease in poultry.

Diagnoses through genomic approach efforts may be made to develop new diagnostics and biological using genomic approaches for rapid and accurate diagnosis and effective control of poultry disease. Impact of climate change on poultry climate change is a shift in the average weather condition in a given area over a period of time. The change is persistent in the mean of

climate parameters viz., temperature, rainfall, humidity and soil moisture (Alade and Adamola 2013). Carbon dioxide, methane, nitrogen oxide and other greenhouse gases increased as an outcome of climate change.

2.9 Organic poultry production

Consumer awareness is growing in terms of organic food products in recent years as almost all the food ingredients are grown under intense production systems which utilize lot of chemicals and pesticides to control the pests and diseases. Organic farming can be defined as an approach to agriculture where the aim is to create integrated, humane, environmentally and economically sustainable agricultural production systems producing acceptable levels of crop, livestock and human nutrition, protection from pests and diseases, and an appropriate return to the human and other resources employed (Lampkin, 1997). Maximum reliance is placed on locally or farm-derived, renewable resources and the management of self-regulating ecological and biological processes and interactions. The usage of chemical and other external inputs are reduced as far as possible.

Organic agriculture is known as ecological agriculture, reflecting this reliance on ecosystem management rather than external inputs. In India free range farming is considered to be organic if birds are reared without any medication and other feed compounds. Some of the important aspects of organic poultry are as follows.

Maintenance of health through preventive management, biosecurity and good husbandry practices to preventive treatment, thereby reducing the potential for the development of resistance to therapeutic medicines as well as contamination of workers, food products and the environment. Housing systems which allow natural behaviour patterns to be used and give high priority to animal welfare considerations, with the emphasis on free-range systems for poultry.

Value addition in Poultry Value addition in poultry plays in important role in increasing the profits. The value addition may be through nutritional manipulations, processing and transgenesis. Omega-3 enriched eggs and meats are available in the market for premium price developed by nutritional approaches.

Poultry production in India feeding the chicks with rich sources of omega-3 fatty acids will aid in increasing the levels of omega-3 fatty acids in eggs and meat of the birds. Experiments on fortification of zinc and vitamin B12 in chicken egg and meat through dietary manipulation for enhanced value addition and shelf life are going on and need commercialization. The second one is through biotechnological approaches, where in the gene (inter species) responsible for specific trait can be made through transgenesis. However, this approach is still in primitive stage where in research is being carried out. The commonly utilized method for value addition is processing of the poultry products. By value addition low valued meats and by products can processed in to a highly nutritious finished products adding to the returns.

2.10 Opportunities for improved chicken rearing

In Ethiopia, it acted as a tool for poverty alleviation and women's empowerment forty-four percent (44%) of broiler beneficiaries were women. It provided employment opportunities and generated family income for them and thus, their status in family and society has been enhanced (Rahman et al., 2006). A large number of women in the household often with the assistance of children actively engaged in the production of chicken, which helps them to generate revenue and/or complement the nutrition requirements of the family (Tesfahun et al., 2018). African Chicken Genetic Gains Program (2017), prepared farmer training manuals for poultry management (including animal healthcare) have been published in Amharic and Oromo languages and made available to endusers. Formulations for chicks, growers and layers were done using local ingredients targeting commercial, semi intensive and scavenging systems (Dessie, 2018).

The government is investing in livestock sector development according to Demese et al. (2010), MRDA drawn up a development strategy for poultry and poultry products indicates that there are plans to bring about improvements through five key measures. The measures are the following which is properly delineating potential production areas; organizing producers into different specialized tasks and linking them up through market chains (e.g. fertile egg producers, hatchery and chick growers, pullet growers, broiler growers, feed producers, health care takers); improving input services (increasing the production capacity of existing poultry-multiplication centers, establishing new parent stock farms and chick-rearing centers);

Numbers of NGOs and FAO are also involved in the implementation of poultry development projects to support vulnerable households. Donors and NGOs involved in training on household poultry and hay-box chick brooding technology and distribution of chicks of exotic breeds. They also assisted the implementation of national/regional training courses accompanied by the distribution of chicks and pullets/cockerels and to raise awareness on avian and human Influenza Smallholder poultry production has been a frequent sub-component of several donor-funded projects, for example, the credit project of the International Fund for Agricultural Development (IFAD) targeting poorer rural women (Jobre, 2007).

2.11 Challenges

In spite of rapid growth, the poultry industry suffered many setbacks in recent times due to rising cost of feed, emergence of new or reemerging of existing diseases, fluctuating market price of egg and broilers, etc. which need to be addressed to make the poultry sector as a sustainable enterprise. Issues relating to animal welfare and environmental pollution by poultry units have been of increasing concern. A major constraint affecting the growth of the poultry industry in India is the lack of basic infrastructure such as storage and transportation, including cold chain. As a result, there are wide price fluctuations in the prices of poultry products, i.e., eggs and broilers. The presence of so many market intermediaries harms both the producer and the consumer. The price and availability of feed resources.

Maize or corn plays a major role in broiler production, as it constitutes 50 to 55 percent of broiler feed. As the broiler industry is growing at the rate of 8-10 percent per annum, the demand for maize and soya is thus likely to increase. Emerging and re-emerging diseases of poultry. Mutations in viral genomes leading to new variants in viruses and developing resistance to vaccines and antibiotics. Avian Influenza outbreaks occurring in parts of India, is a very good example.

2.12 Concept of food security and its pillars

Definition: “Food security is a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO,2002). This widely accepted definition points to the following dimensions of food security:

Food availability: The availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid).

Food access: Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet. Entitlements are defined as the set of all commodity bundles over which a person can establish command given the legal, political, economic and social arrangements of the community in which they live (including traditional rights such as access to common resources).

Utilisation: Utilisation of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met. This brings out the importance of non-food inputs in food security.

Stability: To be food secure, a population, household or individual must have access to adequate food at all times. They should not risk losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity). The concept of stability can, therefore, refer to both the availability and access dimensions of food security.

2.13 Conceptual Framework

Based on the literature reviewed and theoretical models, a conceptual framework of this study is developed. The relationship describes the interaction between the input factors, management practices, institutional support, and farm productivity within the context of sustainable poultry farming.

Independent Variables:

Socio-economic characteristics of farmers (age, education, experience). Production inputs (feed quality, breed type, housing).

Access to extension services and finance.

Disease control and biosecurity measures.

Intervening Variables:

Government policy and market access.

Technological adoption. Environmental management practices.

Dependent Variables:

Poultry farm productivity (meat output).

Profitability.

Sustainability (economic, social and environmental outcomes).

In conclusion the model suggests, then, that production inputs used productively and sustainable practices adopted in management, supported by institutional and policy frameworks, enhance productivity and livelihood for poultry farmers. The review of the literature underlines the significance of poultry farming as a fundamental sector of agriculture and of food security.

CHAPTER THREE: RESEARCH METHODOLOGY

In this chapter, a research methodology for reaching the objectives of the study is presented. It details the research design that the research was performed in the area where the study occured, the target population, the sampling method, data collection tools and analysis methods. As well as this chapter examines the validity and reliability of the instruments and discusses the ethical considerations conducted during the research process.

3.1 Research Design.

A descriptive survey research design was used for this study. This kind of research is suited to asking a sample of respondents to describe the characteristics, opinions, attitudes, or behaviors related to poultry farming practices (Kothari, 2014). The descriptive nature of the design supports both quantitative and qualitative data collection to enable a full understanding of the factors influencing poultry productivity and sustainability. This design was selected as it allows for an understanding to be established about what conditions are present, the relationships amongst variables and the limits experienced by poultry farmers without any manipulation of the study environment (Creswell & Creswell, 2018).

3.2 Study Area.

The study was carried out in Bindura District of Mashonaland Central Province, about 88km northeast of Harare, an area where small and commercial poultry farming is widely practised. The area was chosen due to a great concentration of poultry producers; diversity in production systems; and an ease of access to field data collection. Given the milder climate and demand for poultry products in surrounding urban areas, the region is ideal for poultry rearing. A warm temperature climate with a unimodal rainfall pattern.

The gently undulating landscape with some hilly terrain. Soil erosion, deforestation, artisanal mining impacts and climate change effects.

3.3 Sampling Techniques.

The researcher employed multi-stage sampling technique. The study area was subdivided into sub-regions or wards in the beginning. From these identified communities whose production sector contains active poultry producers where purposively selected. Poultry farmers where selected from a sampling pool (simple random sampling) within each of the respective communities to ensure fair representation and reduce selection bias (Mugenda & Mugenda, 2012).

3.4 Data Collection Methods.

3.4.1 Primary Data.

Primary data was collected, directly from poultry farmers, questionnaires and key informant interviews. The questionnaire includes closed- and open-ended questions that was to obtain information on socio-economic characteristics, production practices, constraints and sustainability measures.

3.4.2 Secondary Data.

Secondary data from published journals, reports and statistical bulletins from Food and Agriculture Organization (FAO), Ministry of Agriculture, and relevant institutions. This data will be used for background information and to compare findings from other regions or nations.

3.5 Data Analysis.

Quantitative and qualitative methods for analyses was used. The questionnaires was to be given numeric numbers, and they are coded and entered into the Statistical Package for Social Sciences (SPSS) by means of quantitative statistics. The statistics for information such as frequencies, percentages and means and standard deviation have been extracted. Inferential statistics including but not limited to correlation and regression analyses was to help find the relationships between independent variables (like inputs (or) management) and dependent variables (e.g. productivity and profitability). The qualitative data collected directly through interviews was analysed using thematic codes to find commonalities and emerging patterns, pertinent to research questions posed (Creswell and Poth, 2018).

3.6 Ethical Considerations.

The ethical approach to the study was followed without exception. Participants where to be made aware of the study's purpose and the right to voluntary participation and withdrawal at any time. Confidentiality was ensured by anonymizing respondents' identities and by ensuring data are used only for academic purposes. The necessary ethical approval from the appropriate university research ethics committee was provided prior to data collection (Resnik, 2020).

CHAPTER FOUR: RESULTS

The chapter is organised in four movements. Section 4.1 sketches the respondent profile so the reader can locate the numbers in a real place. Section 4.2 walks through the findings organised by the four research objectives: the scale of poultry keeping, the factors that drive or inhibit it, its contribution to dietary diversity and its contribution to food accessibility. Section 5.1 is the discussion, where I put the findings in conversation with the existing scholarship — the urban agriculture and food security literature, the literature on small-scale poultry, the work on household dietary diversity, and the broader conceptual literature on what food security actually means (Berry et al., 2015; Bilali, 2019; Calloway et al., 2023; Devereux et al., 2020). Section 6.1 concludes the chapter with a summary of contributions and pointers for future research. Throughout, every claim that rests on published evidence is cited inline, and the full reference list sits at the end.

A small note on terminology before the chapter begins. Throughout, "poultry" refers primarily to chickens, which overwhelmingly dominated the flocks in this study. " “Small-scale poultry” and “backyard poultry” are used in tandem as is customary in smallholder poultry literature (Singh et al., 2022; Wong et al., 2017). Household food security is conceptualised in the broader four-pillar structure described in the food security literature: availability, access, utilisation, and stability (Berry et al., 2015; Bilali, 2019; Calloway et al., 2023) while the access dimension is conceptualised by reference to recent literature on household command over food (Devereux et al., 2020). That choice is significant because narrower meanings of food security tend to boil down to food supply, while the present study from the start sought to investigate multiple pillars at once.

4.1 Study field and respondent profile details

Before proceeding to the findings proper, a quick contextualising is helpful. These were urban households that are, in urbanised language, both producers and consumers of food. The majority

of respondents were female and their participation illustrates a well-established trend in sub-Saharan Africa where poultry is commonly considered a domestic practice and many women are involved in it (Alemayehu et al., 2018; Anil, 2023; Galié et al., 2022). A significant proportion of the respondents had only primary-level education, and many combined their poultry activities with petty trade and casual labour, a trend that mirrors the general picture of how lower income urban African households can become resilient through more diversified livelihood portfolios in alternative to specialised full-time farming (Hatab et al., 2019; Orsini et al., 2013; Pradhan et al., 2023). The common sizes of household members were usually four to six and many who responded felt that they were significantly contributing to school fees, medical costs and buying food from their poultry sales. None of these contextual details are incidental; each one is the organisational context in which the rest of the findings should be read.

4.2 Key Findings

4.2.1 Urban poultry production scale

And by working these data up, I was first struck by how mundane maintaining poultry was. A striking majority of urban households surveyed had chickens, and many kept between five and twenty birds at a time. Thus, the average respondent fits squarely into the small to medium range that characterizes much scholarly research on urban livestock in the Global South (Alarcón et al., 2017; Orsini et al., 2013). Only a handful of households had anything approaching a completely commercial broiler operation in place. Most kept birds for a variety of reasons, some for eggs to make the pot, some for rare meat, and for the chance to transform the occasional bird into cash at a moment’s notice if an expense came to the household. Three complementary explanations that underlie this pattern emerge. First, the cost of entry is honestly low: here a bag of feed, there a wooden coop and some chicks borrowed from a neighbor. Wong et al. (2017) make the same discovery as they refer to small-scale poultry as an animal available to "vulnerable sections" of society specifically since it does not necessarily necessitate the capital investment associated with larger livestock. Second, there’s no massive footprint of flesh. In an urban context where every square metre of land can be the site of contestation, the fact that five chickens are able to

be raised in the corner of a backyard, on a roof, or in a corridor is determinative (Alarcón et al., 2017; Richards & Guendel, 2004; Ushimaru et al., 2024).

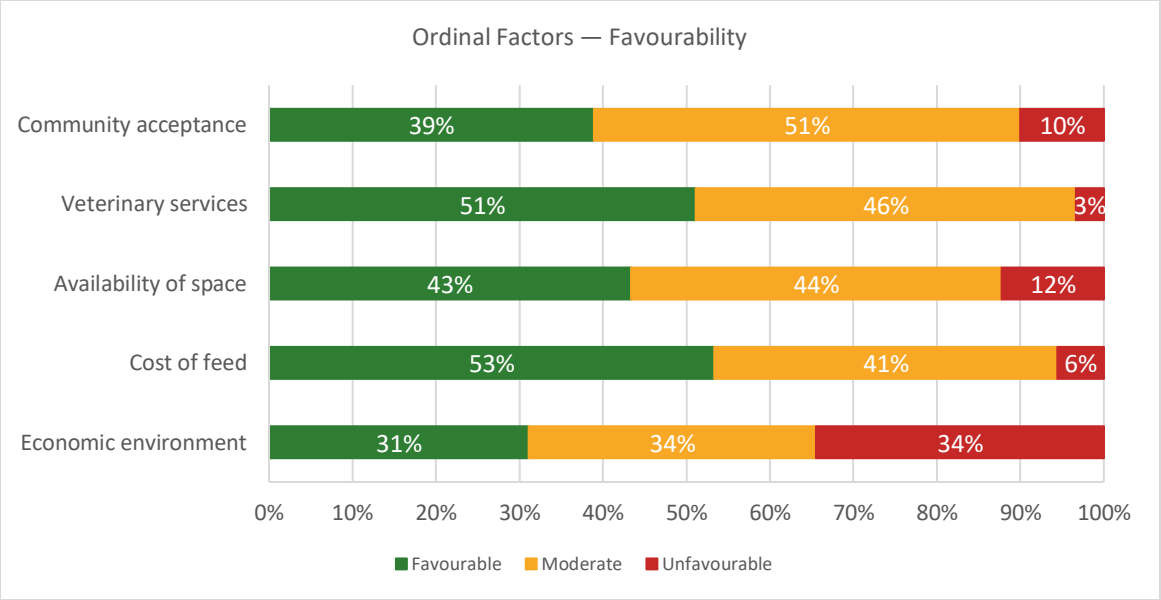
Third, poultry generates multiple outputs like meat, eggs, manure and a tradable asset and these outputs do not compete with each other in the way that, say, dairy and meat outputs can. Eggs are harvested daily without reducing the productive capacity of the flock; the bird itself is a savings account that can be liquidated at short notice (Singh et al., 2022; Wong et al., 2017).

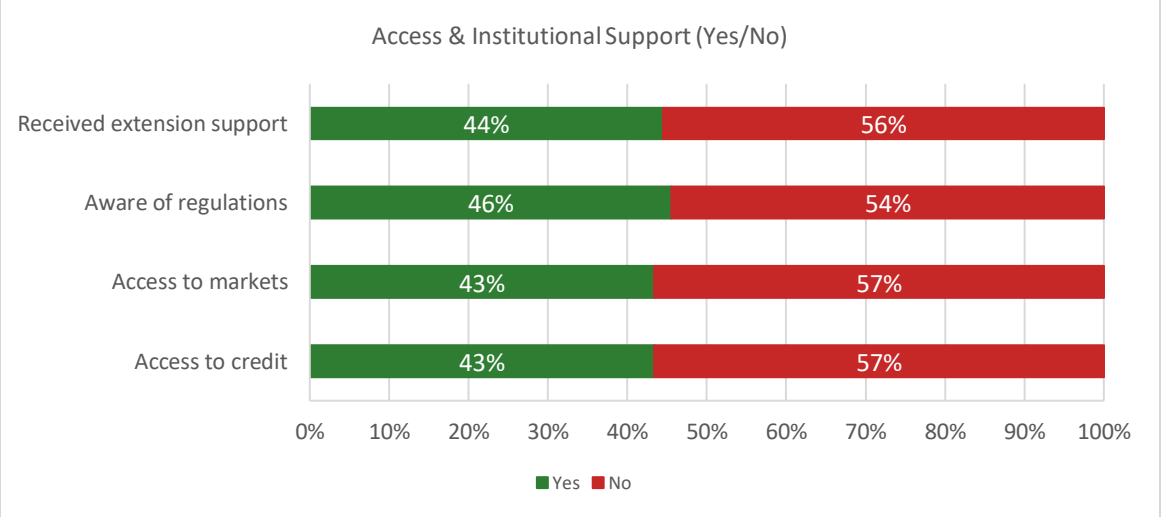
The international evidence converges on the same picture. In urban Bangladesh, Ushimaru and colleagues (Ushimaru et al., 2025) found that more than 20% of urban households and over 30% of the poorest 11% of households engaged in backyard poultry farming, with the participation rate significantly higher among poorer households than among wealthier ones. The same authors show, in a wider study across eight developing Asian countries, that livestock raising is more common where incomes are lower and housing space is tight (Ushimaru et al., 2024). In African cities, comparable patterns have been reported from Ethiopia (Alene & Aga, 2025; Yonas et al., 2019), Kenya (Alarcón et al., 2017; Domínguez-Salas et al., 2016) and Burkina Faso (Becquey et al., 2011). Taken together, these findings suggest that urban poultry is not an eccentric hobby; it is part of the structural response of poor urban households to constrained labour markets, limited social safety nets and the chronic food-price volatility that defines the urban food environment in low-income countries (Hatab et al., 2019; Korth et al., 2014; Pradhan et al., 2023).

What the prevalence of poultry keeping confirms for this study is that the empirical questions presented below — about production drivers, dietary contributions and food access — are not peripheral curiosities. They are questions about an activity that a majority of urban households actually engage in.

4.2.2 Factors driving and inhibiting scale of poultry production

Having established that poultry keeping is widespread, the second objective asked: what is keeping it small, and what could make it bigger? The data show that the production environment is constrained but not uniformly hostile. Different households face different mixes of obstacles and the constraints interact in ways that simple descriptive statistics only begin to reveal.





4.2.2.1 The economic environment

The wider economic atmosphere conveyed itself plainly. The respondents were questioned on the general economic climate that they found favourable, moderate or difficult for poultry production. The responses were spread around equally: 31.1% said favourable, 34.4% moderate, and another 34.4% difficult. Even this narrow margin between favourable and unfavourable responses is instructive — it implies that even where conditions are workable, they are fragile and easily tipped. Recent research published by Chibanda et al around broiler competitiveness in Ghana and Senegal (Chibanda et al., 2025) and Kanyama et al about indigenous chicken farming

in Zambia (Kanyama et al., 2024) does explain why households would feel this way. For example, the cost of broiler feed in Zambia increased 67%-96%, and soybean meal increased 143%-229% over a seven-year period, thereby squeezing margins to the point where small producers were repeatedly forced to go below break-even (Kanyama et al., 2024). That sort of volatility is expressed on the household level when it comes to choices about whether to expand, keep a flock or quietly trim it.

4.2.2.2 Credit and markets

Access to credit is where the economy begins to bite. Only 43.3% respondents used credit, while 56.7% were without. For a family who wants to invest in better housing, feed, vaccines — or a bigger flock — the lack of credit isn't just a minor inconvenience, but rather a structural ceiling. The same applies to markets. However, only 43.3% of respondents reported reliable access to markets for poultry products, leaving the vast majority of farmers to negotiate in a fragmented and very localised marketing environment where smallholders are little better off. As Abu Hatab et al. (Hatab et al., 2019) observe, the literature on urban livestock has tended to focus on producers and end consumers at the expense of mid-chain actors who could connect small producers to credible buyers, leaving producers structurally closed out of the more profitable end of the value chain. That broader observation is similar to the pattern observed in this study.

4.2.2.3 Feed Costs.

Feed is the item at line in particular that hurts the most. While 53.3% of respondents perceived feed costs as affordable, 41.1% reported feed as expensive and 5.6% said it was very expensive. 41.1% reporting expensive feed is rather large and the feeling is in keeping with the larger trends we can observe empirically. Chibanda and others (Chibanda et al., 2023) show that small-scale operators cannot negotiate the unit prices that medium-scale operators enjoy, so even when feed is technically available in the market, the price at which they obtain it is structurally higher than for larger operators. In sub-Saharan Africa more broadly, studies describe "a decline in poultry

farming, particularly chicken production due to high feed costs, mainly protein sources such as fish meal and soyabean meal," with producers substituting lower-quality feed that depresses growth and laying performance (Kolobe et al., 2023; Oluwatayo et al., 2016).

For a poor urban household, the trade-off between slightly cheaper feed and the resulting slower growth or reduced egg output is one of the more consequential choices they make.

4.2.2.4 Institutional support and extension

The institutional fabric supporting poultry producers is thinner than many respondents wished it were. Only 44.4% of respondents had ever received agricultural extension support, while 55.6% had not. Only 45.6% were aware of formal regulations governing poultry production. Comparable numbers appear elsewhere on the continent: in Calabar, Nigeria, only 43% of poultry farmers had been visited by extension agents in the previous year, with the most-cited constraint being inadequate funding (81%) and too few extension agents (68%) (Udoh et al., 2024). In Northwestern Tigray, Ethiopia, Atsbeha and Gebre (Atsbeha & Gebre, 2021) identified women's access to poultry-specific extension services on limited footing due to the irregularity of extension visits and the unevenness of the information that arrived with them. Thus, the under-extension shown here is not a quirk of a particular survey area; it is a continental trend with worrying consequences for productivity, biosecurity and the uptake of innovation. These matters because extension services are widely recognised as a major channel through which new technologies, biosecurity practices and improved husbandry methods can be transmitted to smallholder farmers (Asfaw et al., 2012; Ayenew et al., 2020; Sen et al., 2024).

. When more than half of producers do not see an extension agent from one year to the next, the productive ceiling of the sector is set artificially low. This is reinforced by work on technology adoption among smallholders, which links the quality and frequency of extension contact to improvements in farming practices (Ayenew et al., 2020; Mugari et al., 2025).

4.2.2.5 Space and community attitudes

The spatial constraint familiar to anyone who has lived in a low-income urban settlement showed up clearly: 43.3% of respondents reported having adequate space for poultry, 44.4% reported

limited space and 12.2% reported very limited space. A majority of households are therefore working with less room than they would like.

These constraints are well documented: urban planning regimes designed for industrial and residential uses tend to push agriculture out of the formal city, and the result is a precarious operating environment for the urban farmer (Alemu & Kombe, 2025; Davies et al., 2020; Kanosvamhira & Magidi, 2026). Davies and colleagues (Davies et al., 2020) identify three particularly binding barriers — the formality or informality of a household's settlement status, the security of property rights, and the distance between the producer's home and reliable food retailers.

But the social environment is more welcoming than the spatial environment. Only 10% of respondents reported any community opposition to their poultry activities, with the rest describing their neighbours' attitudes as favourable or neutral. This is a small but important detail. It suggests that the closing of urban agriculture is not so much driven by social hostility as by planning and tenure regimes. Amao's research on urban horticulture in sub-Saharan Africa (Amao, 2020) and Swanepoel and colleagues' work on urban agriculture in informal settlements (Swanepoel et al., 2021) make a related observation: urban agriculture becomes a coping mechanism, rather than a productive one, when the basic enabling conditions (secure land, water, basic extension) are missing, as is evident from the situation observed in the present study.

4.2.2.6 Putting the pieces together

What comes out is a picture of an activity that is widespread but constrained. Of course, it’s not one single factor restraining poultry keeping — it’s a constellation of factors that interrelate. It’s the same with about 34% of households in a challenging economic situation, 57% without credit, 57% without reliable markets, and 56% without extension services. At the same time, the ceiling of productive space for households confronting such entire bundles is severe. A summary view is offered in Table 5.1.

Table 4.1. Summary of Production-Related Findings		

Dimension	Most frequent response	Implication
Scale of poultry keeping	Small to medium (5–20 birds)	Household resilience activity, not commercial enterprise
Economic environment	Mixed (31% favourable, 34% difficult)	Volatile; supportive in some seasons, hostile in others
Credit access	43% have access, 57% do not	Structural ceiling on expansion
Market access	43% have reliable access, 57% do not	Marketing limits production incentive
Feed cost perception	53% affordable, 47% expensive/very expensive	Cost pressure significant for a near-majority
Extension support	44% ever received, 56% have not	Major under-investment in public support
Dietary improvement reported	67% improved, 25% same, 8% worse	Production activity is translating into consumption gains
Food access vs non-poultry households	60% better, 30% same, 10% worse	Clear positive relative position

This pattern constrained production but real dietary and food-access benefits is consistent with the international literature and has direct implications for how interventions should be designed.

4.2.3 Contribution of poultry production to household dietary diversity

The third objective moved from the production side to the consumption side of the ledger. Does poultry keeping actually translate into better diets for the households that keep birds? Here the answer is more optimistic than it was on the production side.

4.2.3.1 Direct consumption of poultry products

Table 4.2 Poultry Product Most Consumed

Category	Frequency	Percent
Eggs	53	53.0%
Chicken meat	47	47.0%

Total	**100**	**100.0%**

Eggs were by far the most frequently consumed poultry product, accounting for 53% of consumption responses, with chicken meat accounting for 47%. The split is itself instructive: eggs can be eaten regularly without depleting the flock, while meat consumption is more episodic and tends to be reserved for special occasions, for sick birds, or for festivals. Alderman and colleagues (Alderman et al., 2022) observe the same pattern in their cluster-randomised trial in Ethiopia, where the introduction of poultry to ultra-poor households shifted egg consumption more sharply than meat consumption, in part because of the operational convenience of eggs as a daily household food.

When asked whether poultry production had increased household consumption of animal protein, 73% of respondents said yes, 14% said no and 13% were uncertain. That is a strong signal. It is consistent with findings from Nigeria that livestock ownership particularly poultry and small ruminants improves household dietary diversity in statistically meaningful ways (Akerele et al., 2025). It is also consistent with the carefully designed work by Khonje and Qaim (Khonje & Qaim, 2024) across five African countries, which estimates that animal-source foods raise child height-for-age Z-scores by about 0.30 of a standard deviation and reduce the probability of stunting by 6.8 percentage points. Although this study did not measure child outcomes directly, the dietary mechanism that drives those child-level findings greater availability of high-quality protein in the household was clearly visible in the data.

Eggs are nutritionally dense in ways that matter for low-income households. They provide high-quality protein, vitamin A, vitamin B-12, riboflavin, folate, iron and zinc micronutrients that are typically deficient in cereal-and-vegetable-based diets (Headey et al., 2018; Khonje & Qaim, 2024; Paro et al., 2024). Paro and colleagues (Paro et al., 2024) note that the micronutrient contributions of even small amounts of animal-source food can be disproportionately large relative to their caloric share of the diet a useful way to think about the marginal contribution of eggs in particular. Headey and colleagues (Headey et al., 2018) report that consumption of multiple animal-source foods including eggs is more strongly associated with child growth outcomes than consumption of any single source in isolation.

4.2.3.2 The household dietary diversity score

Table 4.3 Household Consumption of Animal Protein Increased

Category	Frequency	Percent
Yes	73	73.0%
No	14	14.0%
Not sure	13	13.0%
Total	**100**	**100.0%**

The richest dataset on the consumption question came from the 24-hour dietary recall, from which I computed the Household Dietary Diversity Score. The HDDS counts how many of twelve food groups a household consumed in the previous day (Kennedy et al., 2010; Khandoker et al., 2022; Oyediran & Olajide, 2023), and scores range from 0 to 12. In these data the mean HDDS was 5.75, the median was 6, and responses ranged from 2 to 9. Using the cut-offs proposed by Kundu and colleagues (Kundu et al., 2020) where 0–3 is low, 4–6 is medium and 7–12 is high — the typical respondent sits firmly in the medium band.

The result is meaningful but not celebratory. It suggests that poultry-keeping households have made genuinely significant dietary improvements compared with the worst-case benchmarks (where diets would consist largely of cereals and a few vegetables), but they are still some distance from a fully diversified diet that includes regular dairy, pulses and a wider spread of fruits and vegetables. This is consistent with the observation by Romeo and colleagues (Romeo et al., 2016) in their study of ultra-poor Kenyan farmers, that diversification of farm production (with poultry ownership showing the strongest correlation among all diversified options) is positively and significantly associated with household diet diversification.

4.2.3.3 Food group level patterns

Table 4.4 Food Groups Consumed in Last 24h (% of respondents, multi-response)

Food group	Frequency	Percent
Cereals	93	93.0%
Roots / tubers	52	52.0%
Vegetables	85	85.0%
Fruits	42	42.0%
Meat	45	45.0%
Eggs	63	63.0%
Fish	37	37.0%

The food group breakdown told its own story. Cereals were consumed by 93% of households and vegetables by 85%. These two groups formed the dietary backbone, as expected in cereal-economies of the Global South. Poultry products contributed directly to the protein group through eggs and meat, and indirectly to other groups by releasing income for purchases of pulses, fruit, dairy and condiments that would otherwise have been unaffordable. The cross-group dynamic eggs at the table, cash from sales in the market, more diverse purchases for the household is well documented in work on farm production diversity and dietary diversity (Khandoker et al., 2022; Romeo et al., 2016), and it is the dynamic respondents described when asked why their diets had improved.

Mseleku and colleagues (Mseleku et al., 2024), working along a rural–urban gradient in South Africa, found that consumption of livestock-derived foods increased with an increase in village chicken flock sizes and, interestingly, that consumption of vegetables increased as well. Their explanation that farmers with bigger poultry flocks also had more economic flexibility and more produce from kitchen gardens captures a multiplier effect that mirrors the income pathway observed in this study. Hossain and colleagues (Hossain et al., 2021) likewise report, in a smallscale livestock intervention in Bangladesh, that gains in livestock production translated into measurable gains in household nutrition, particularly in the consumption of animal-source foods.

4.2.3.4 Subjective assessment of dietary change

Table 4.5 Perceived Change in Diet Diversity

Category	Frequency	Percent
Improved	67	67.0%
Same	25	25.0%
Worse	8	8.0%
Total	**100**	**100.0%**

When asked subjectively whether their diet had improved because of poultry production, 67% of respondents said yes, 25% said no and 8% said it had worsened. The subjective and the objective measures self-assessment and HDDS point in the same direction. That alignment matters because subjective measures sometimes overstate change. Here both methods converge on the same conclusion: poultry production is associated with measurable improvements in household dietary diversity.

4.2.3.5 Caveats

Table 4.6 Caveats

Variable	N	Mean	Median	Std Dev
HDDS (food groups / 24h)	100	5.8	6.0	1.4

It is important not to overstate these findings. The HDDS measures dietary diversity at the household level, not intra-household allocation. Eggs or meat produced at home may not be distributed evenly among household members; the nutrition literature consistently suggests that women, young children and pregnant or lactating mothers are prioritised when animal-source foods are scarce (Headey et al., 2018; Paro et al., 2024). Future research should disaggregate these outcomes by household member. The HDDS also does not directly capture nutrient

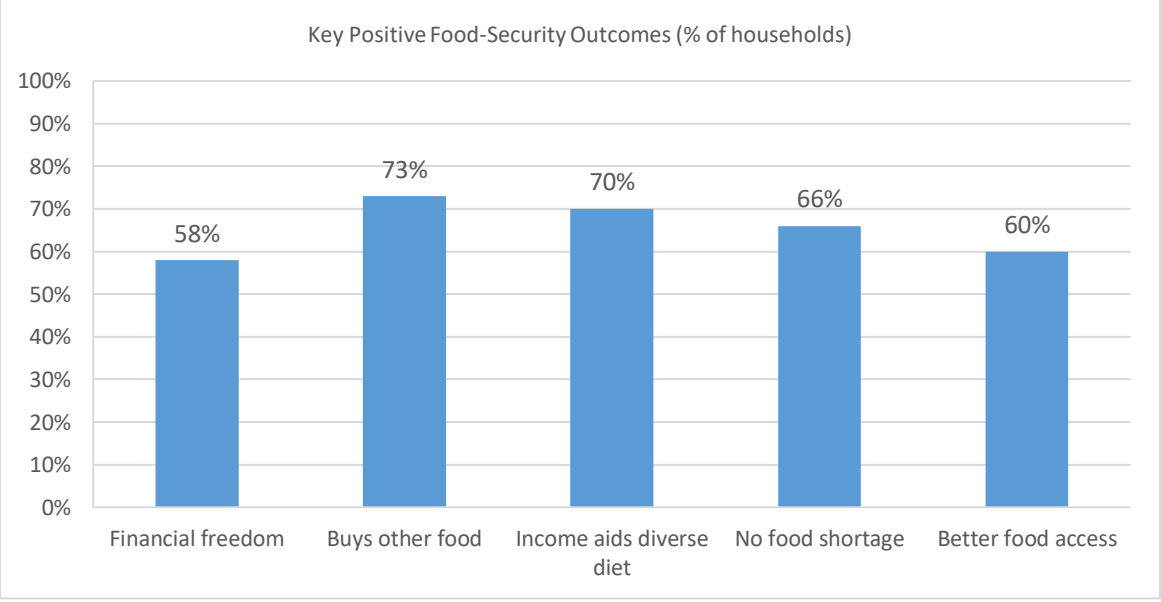
adequacy; it is a proxy for dietary quality rather than a direct measure of nutritional status (Burchi & Muro, 2015; Kennedy et al., 2010; Oyediran & Olajide, 2023). These caveats do not invalidate the findings, but they do bound them.

4.2.4 Contribution of poultry production to household food accessibility

The fourth objective asked how poultry keeping affects the ability of households to access food not only food they have produced themselves, but food they can obtain through markets. This is where the conceptual literature on food security and household command over food becomes most useful, because it reminds us that food security is not the same thing as food production (Berry et al., 2015; Calloway et al., 2023; Devereux et al., 2020). A household with no chickens of its own can still be food secure if it has the income or trade entitlements to buy what it needs, and a household with plenty of chickens can still be food insecure if other access channels collapse.

4.2.4.1 Income generation and financial flexibility

Fig 4.1 Income generation and financial flexibility



The most direct finding here is that poultry production generates meaningful income for the majority of households. Fifty-eight per cent of respondents reported that poultry production had

given them a measure of financial freedom the ability to meet expenses that would otherwise have stressed the household budget. Seventy-three per cent said they used income from poultry sales to purchase other food items, and 70% said poultry income had enabled them to buy a wider variety of foods. Singh and colleagues (Singh et al., 2022) report a closely comparable pattern, observing that the adoption of improved management practices in backyard poultry resulted in increased household income, increased household food security and increased decision-making power for women.

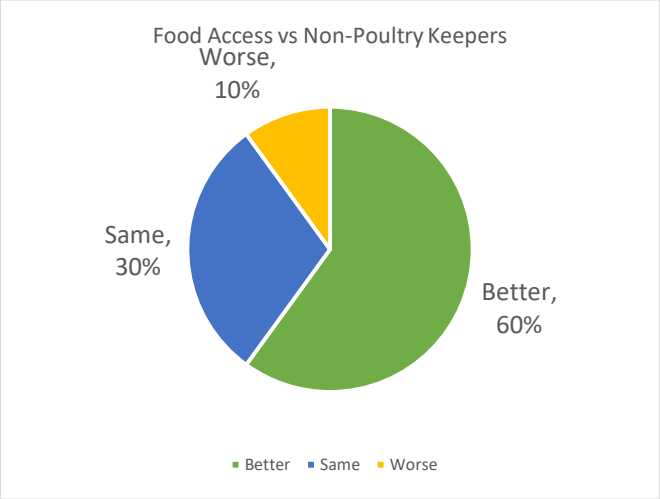
The income pathway matters because, in practice, food is purchased food far more often than it is self-produced food, even for households that farm. Systematic reviews of urban food security in low-income countries consistently find that food expenditures account for 60–80% of total household income among the urban poor (Korth et al., 2014; Pradhan et al., 2023). In such contexts, additional income from any source but particularly from a source as proximate and low-risk as backyard poultry translates almost directly into food access. The nutrition literature makes the same point from the consumption side: animal-source food consumption is positively associated with household prosperity, and increases in prosperity that flow from livestock production are not lost along the way (Headey et al., 2018; Khonje & Qaim, 2024; Paro et al., 2024).

4.2.4.2 Poultry as a liquid asset

Beyond pure income generation, poultry functions as a liquid asset. A household that owns chickens has, in biological form, a savings account that can be drawn down at short notice. If a school fee is due, a medical bill arrives, or a festival meal is being prepared, chickens can be sold within hours. This is the meaning of the 70% who said poultry income enabled them to buy a wider variety of foods: it is not only about the steady drip of eggs sold at the gate, but about the option to liquidate the asset itself when needed. Urban livestock analysts have long recognised this dual character of small livestock (Alarcón et al., 2017; Richards & Guendel, 2004; Singh et al., 2022). Domínguez-Salas and colleagues (Domínguez-Salas et al., 2016), in their Nairobi study, observed that households keeping livestock "might contribute to a diverse livelihood portfolio, and improve resilience, and dietary quality." That resilience framing is exactly what the liquid-asset interpretation of poultry captures.

4.2.4.3 Food Security Outcomes

Fig 4.2 Food security outcomes



Two thirds of the respondents (66%) reported not experiencing food shortages in the twelve months preceding the survey, and only 34% reported food shortages. When asked to compare their own situation with that of non-poultry-keeping households, 60% said they had better food access, 30% said the same and only 10% said worse. The 60 percent figure is striking; it suggests not only that poultry keepers fare better than average, but they themselves see that they do. This approach, based on a subjective comparison, is methodologically useful as it allows respondents to measure where they sit by their food status compared to a peer group with a similar fate. An analysis of cross-tabulation results on poultry-mediated financial freedom and food access produced the expected positive trend: respondents reporting financial freedom from poultry also reported greater food access, whereas those without financial freedom were more clustered between the two categories “similar” and “worse.” It’s a directionality impossible to nail down in cross-sectional data — maybe financially better-off households are just more likely to have poultry in the first place — but is congruent with the broader food security literature, which finds that there are better food access outcomes through the availability of stronger pathways to these pathways (Berry et al., 2015; Calloway et al., 2023; Devereux et al., 2020).

4.2.4.4 Putting It All Together

Poultry service to the accessibility to food plays out along two parallel tracks. The first is the direct food track households consume more eggs and meat and these foods lead to significant dietary modifications (Headey et al., 2018; Khonje & Qaim, 2024; Paro et al., 2024; Wong et al., 2017). The second is the income track household selling birds and eggs to cash flow and thus, in a broader and richer basket of food (Alarcón et al., 2017; Pradhan et al., 2023; Singh et al., 2022). The two tracks support each other. Direct consumption makes the diet better; income generation makes purchasing power better; together they move the household toward the same path to food access. This is what the whole picture that the data present.

CHAPTER FIVE: DISCUSSION

5.1 Poultry farming as an urban livelihood strategy

Looking across the findings, one theme keeps surfacing: poultry keeping is less a discrete agricultural activity than an embedded livelihood strategy. It functions inside a wider bundle of activities petty trade, casual labour, occasional remittances, garden cultivation and the meaning of the poultry activity depends on that bundle. This is why the literature increasingly speaks of "livelihood portfolios" rather than "agricultural activities" when describing low-income urban households (Hatab et al., 2019; Orsini et al., 2013; Pradhan et al., 2023). Poultry fits into that portfolio because of three of its characteristics: low entry cost, low spatial footprint and high product diversity.

The wider urban agriculture tradition established that urban agriculture broadly and not just poultry plays this role in the food security strategies of poor urban households (Korth et al., 2014; Orsini et al., 2013). Orsini and colleagues (Orsini et al., 2013) observed that "the development of urban agriculture in general and urban horticulture in particular is one of the major strategies that is being spontaneously adopted in developing countries to address urban poverty." The findings reported here sit comfortably within that framing.

Pradhan and colleagues (Pradhan et al., 2023), in a recent systematic review, found that the benefits of urban agriculture extend beyond food security and include climate adaptation, social cohesion, biodiversity and waste recycling. They describe urban livestock specifically as "an additional source of household income in many countries." The present study reinforces that conclusion by demonstrating that poultry the most common form of urban livestock across the regions studied by Ushimaru and colleagues (Ushimaru et al., 2024) provides a layered set of food, income and asset-related benefits.

5.2 Structural constraints on urban poultry production

For all the demonstrated benefits, urban poultry production remains constrained. The structural constraints are neither trivial nor new, and the present study adds weight to a literature that has already documented them in detail.

Financial exclusion stands out. With 56.7% of respondents lacking access to credit, the productive ceiling facing urban poultry producers is severe. Abu Hatab and colleagues (Hatab et al., 2019), reviewing the literature on urbanisation, livestock systems and food security, found that financial exclusion and weak market access for smallholders have been widely reported and constitute a major barrier to the development of livestock-based livelihood strategies. The findings here are consistent with that conclusion.

The under-provision of extension services is a second structural constraint. More than half of respondents had never received extension support. This matters because smallholder productivity is built on the steady absorption of new technologies and practices better housing, vaccination regimes, biosecurity measures, improved feeding and the channel through which most of this knowledge reaches smallholders is the extension system (Asfaw et al., 2012; Sen et al., 2024). When that channel is dry, productivity stagnates. In South Africa, Mugari and colleagues (Mugari et al., 2025) found that public agricultural extension services had a measurable influence on the adoption of sustainable land management practices among smallholders, and the same logic applies to poultry husbandry: when extension is present, practices improve; when it is absent, the productive base erodes slowly. The broader literature on smallholder technology adoption also makes a parallel observation across countries (Asfaw et al., 2012; Ayenew et al., 2020; Mugari et al., 2025). The barriers increase by disease and biosecurity hazards. While the incidence of the disease was not directly reported in this study, the wider African literature indicates that poultry disease—newcastle disease in particular—as well as avian influenza, fowlpox, salmonellosis, and coccidiosis significantly contributes to the economic losses for smallholder producers (Grace et al., 2024; Melkamu et al., 2016). According to Grace and colleagues (Grace et al., 2024) “poultry diseases pose major constraints on smallholder production in Africa, causing high flock mortality and economic hardship." The finding is that biosecurity and vaccination are not “nice to have” add-ons, they are essential components of smallholder poultry production. Urban spatial constraints are stubborn.

Although livestock keeping has a long history in African cities, "the uncertain legal status of urban agriculture is such that official projects or programs aimed at improving urban agriculture have been rare.

Typically, urban agriculture is not taken into account in the urban planning process" (Ruel et al., 1999). Davies and colleagues (Davies et al., 2020) make the same point more sharply: the formal status of an urban settlement, the security of property rights, and the distance of the household from functioning markets all shape the productive potential of urban agriculture. Kanosvamhira and Magidi (Kanosvamhira & Magidi, 2026) describe how these structural constraints interact across two sub-Saharan cities, and their case studies are recognisable in the present study area.

Finally, a clarification on the relationship between these findings and a summary view: the production pattern best summarised as "small-scale, mixed-environment, under-served" is the structural baseline against which all of the positive findings about diet and food access have to be read. The flipped summary in Table 4.2 captures that the constraints and the benefits are not independent observations but a single integrated picture.

5.3 Poultry production and household dietary diversity

Among the various findings of this study, the dietary results deserve more sustained discussion because they connect urban livestock production to a long-running conversation in nutrition science.

The first insight is that eggs, not meat, are doing most of the work in the household diet. This is partly because eggs can be eaten daily without reducing the flock, partly because they are nutritionally dense, and partly because intra-household allocation rules tend to prioritise children, pregnant women and the elderly when animal-source foods are scarce (Headey et al., 2018; Paro et al., 2024). Alderman and colleagues (Alderman et al., 2022), in a cluster-randomised intervention in Ethiopia, found that transferring poultry to ultra-poor households increased the frequency of egg consumption among both women and children, with adult women showing the largest gains. The mechanism they identified greater household availability of a protein-dense foodis exactly the mechanism the cross-sectional data here describe.

The second insight is that the dietary improvements are not only about animal protein. Akerele and colleagues (Akerele et al., 2025) found in Nigeria that livestock ownership improved overall dietary diversity, not only the consumption of protein.

Romeo and colleagues (Romeo et al., 2016) found the same in Kenya, with poultry ownership showing the strongest correlation with diversified diets among all the diversified production options they examined. The HDDS results in this study a mean of 5.75 and a median of 6 place most of the sample in a moderate dietary diversity band neither dangerously low nor high but the categorical alignment between self-reported improvement and observed HDDS is reassuring.

The third insight is that there is a plausible mechanism connecting the income pathway with dietary diversity. Households that sell poultry products generate cash, and that cash is used in turn to purchase a broader range of foods. The food groups consumed by respondents cereals at 93%, vegetables at 85%, and smaller but still meaningful shares in protein foods, fats, sugars and condiments reflect exactly that dynamic: a cereal-and-vegetable backbone supplemented by protein from the flock and by income-mediated purchases of complementary food groups.

The fourth insight is that the dietary benefits of poultry are not automatic; they depend on contextual conditions. Where feed costs are high, where markets are inaccessible, or where the household faces competing claims on its limited cash, the nutritional potential of a poultry flock is easily squandered. This is consistent with Becquey and colleagues' (Becquey et al., 2011) observation that seasonality strongly affects the dietary dimension of food security, and with Khandoker and colleagues' (Khandoker et al., 2022) finding that dietary diversity depends on the broader production environment. The implication is that programmes aimed at improving nutrition through poultry production need to address these conditions if they are to achieve measurable results.

5.4 Poultry production and food accessibility

The food accessibility findings sit within the broader scholarly treatment of what household food access actually means. The contemporary food security literature treats food security as a multidimensional concept that includes supply-based, demand-based and utilisation-based elements, with particular attention to the conditions under which households can convert other forms of capital into food (Berry et al., 2015; Calloway et al., 2023; Devereux et al., 2020). Poultry production strengthens at least two of these elements simultaneously.

Households produce eggs and meat directly (supply pathway), and they generate cash income that enables them to buy other foods in the market (demand pathway). The confluence of these pathways is partly why poultry keeping has such a strong food-security effect.

Smith (Smith, 1998), in her work on the measurement of chronic undernourishment, frames the access dimension in a complementary way: "access to food may be gained through production or gathering of food by the household for its own members' consumption purchase of food on the market with cash income, and/or receipt of in-kind transfers of food." The study also documented simultaneous production and market-driven channels, with the market channel being reinforced by the liquidity of poultry as an asset. Income-diet diversity relationship has been thoroughly studied (Alarcón et al., 2017; Khandoker et al., 2022; Singh et al., 2022). One that is interesting about current findings is how forcefully respondents describe the income pathway. Seventy per cent said that income from poultry has allowed them to buy more kinds of foods, with 73% of them reporting they used it to buy other food items. These aren't small minorities who express opposing views; these are majorities who clearly and confidently believe that the income pathway works in their lives. The intersection of food accessibility with gender dynamics also deserves attention.

Although this study did not disaggregate outcomes by respondent gender, the literature strongly suggests that women in sub-Saharan African settings play a central role in poultry-keeping, sales of poultry products and decisions about how to allocate the resulting income (Alemayehu et al., 2018; Anil, 2023; Galié et al., 2022). Galié and colleagues (Galié et al., 2022) developed a four-domain framework for understanding livestock-related women's empowerment recognition, resources, opportunities and decision-making and they observed that poultry is among the livestock species through which women most reliably access economic decision-making power. The finding that 70% of respondents used poultry income to buy a wider variety of foods is consistent with this empowerment framing, though a fully gender-disaggregated analysis would be needed to confirm the link quantitatively.

5.5 Policy and development implications

The combined evidence of this study together with the wider literature on urban agriculture and livestock-based livelihoods points to a clear set of policy implications.

First, urban poultry farming should be formally recognised as part of the urban food system. The current tendency of planning regimes to treat urban agriculture as informal land use or to push it out of the city altogether —leaves the productive activity unsanctioned and the underlying household food security benefit unregistered (Davies et al., 2020; Kanosvamhira & Magidi, 2026; Ruel et al., 1999). Formal recognition does not require cities to endorse unrestricted poultry keeping; it does require that poultry keeping be brought into planning frameworks on an equal footing with other economic uses of urban land.

Second, the constraint bundle facing poultry producers should be addressed collectively rather than one constraint at a time. Where feed costs, credit access, market access and extension services are all weak, addressing only one of them tends to leave the household pressed up against the next ceiling. Integrated programmes that simultaneously improve access to credit, reduce feed costs through cooperative purchasing, expand extension contact and develop structured markets for poultry products are likely to be more effective than single-input programmes.

Third, considerations for women's empowerment need to be integrated in poultry development programmes. The literature strongly suggests that when women control poultry assets and the income they generate, the nutritional and educational outcomes for children in the household improve more sharply (Anil, 2023; Atsbeha & Gebre, 2021; Galié et al., 2022). Programmes that design interventions around women's decision-making roles, that recognise them as primary producers, and that address the specific constraints they face (extension visits, mobility, market access) are likely to produce disproportionately positive outcomes.

Fourth, urban planning frameworks should explicitly accommodate urban agriculture, including livestock keeping. Kanosvamhira and Magidi (Kanosvamhira & Magidi, 2026) make the case that legislative accommodation is essential if urban agriculture is to move beyond coping activity

and into productive activity. The same logic applies to poultry specifically: without secure land tenure and supportive regulation, the productive base of urban poultry will remain constrained.

Fifth, alternative feed sources should be explored as a way of reducing reliance on expensive protein-rich imported feeds. Kolobe and colleagues (Kolobe et al., 2023) describe insect-based feed as a potentially transformative alternative in sub-Saharan Africa. Although the technology is still being adapted to smallholder conditions, encouraging research and piloting of these alternatives may help reduce one of the more binding constraints facing urban poultry producers.

Finally, programmes should use a multi-pillar framework for food security that includes the four classical pillar availability, access, utilisation and stability (Berry et al., 2015; Bilali, 2019; Calloway et al., 2023; McCarthy et al., 2018) — supplemented by the emergent pillars of agency and sustainability. Urban poultry production contributes most directly to availability and access, and it contributes indirectly to utilisation (through micronutrient-dense eggs) and stability (through the liquid-asset role of poultry). Programmes that recognise these multiple contributions will be better positioned to evaluate their work than those collapsing food security into a single measure of food supply.

CHAPTER SIX: CONCLUSSION

The aim of this study was to investigate the contribution of poultry farming to food security in urban households. The information, collected from the households themselves, paints a consistent picture. At the scale and prevalence level, the study found that poultry production is common in urban households in this region, most of which are small and moderate in scale. The average household keeps from five to twenty birds, and most are informal or semi-commercial producers rather than fully commercial managers. Poultry keeping is a structural characteristic of urban livelihoods in a low-income environment and has been found to hold true worldwide. In terms of the nature of the activity it found credit access, market access, feed costs, extension support and space to be predictors of production performance. None of these factors operate independently; together they make up a ceiling that urban poultry producers are unable to breach, even when they have the motivation and ability to grow. The analysis indicated that programmes planning to increase urban poultry production cannot be single-input programmes. For dietary results, the authors noted that there is a significant and positive link between poultry yields and household dietary diversity. Eggs are the primary animal-source food in the household diet, and the majority responded positively, as the amount of animal protein consumed has been positively influenced by this. The mean HDDS of 5.75 reflects moderate dietary diversity, and the trajectory aligns with international evidence related to the nutritional contribution of animal-source foods. The study reports at the food accessibility level of poultry production yields income that households would use to purchase more food, and the majority of respondents reported that they had a better food access than households not keeping chickens. The income pathway operates alongside the direct consumption pathway, and the two approaches can facilitate household food access. The study complements the literature on urban agriculture and food security and presents a detailed, data driven picture of poultry production at low income in urban settings. These results support a body of evidence that has already developed in the international literature and provide local evidence for policy and programme design. It is suggested to research the gender-specific effects of urban poultry production, the relative impact of poultry versus other urban agriculture interventions, long-term consequences of poultry keeping on childhood nutrition and household resilience, and to develop integrated programs that

can overcome those multi-dimensional thresholds experienced by current urban poultry producers. The food-security issues that plague fast urbanising low-income countries are not going away, and it is unlikely that the contribution of small livestock to meeting those challenges will.

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APPENDIX

QUESTIONNAIRE

Tittle

Assessing the contribution of poultry farming to household food security within urban farming systems

Introduction

My name is Tyser Adiel Mutize conducting a study on how poultry farming contribute to household food security within urban farming systems in Bindura District. Your participation is voluntary and information provided will be treated with strict confidentiality and used for academic purposes only.

SECTION A: Household Identification and Demographics

Objective 1: To assess the scale of poultry production among urban households

Questionnaire ID: _____

Date: _____

Enumerator Name: _____

Location (City/Zone/Ward): _____

Age of household head: _____ years

Household size: _____ persons

Education level of household head:

☐ No formal education

☐ Primary

☐ Secondary

☐ Tertiary

Do you keep poultry?

☐ Yes

☐ No (If No, skip to Section 5)

Purpose of production (tick all that apply):

☐ Household consumption

☐ Income generation

☐ Both

Average number of birds sold per month: _____

Estimated monthly income from poultry: _____

Years of experience in poultry production: _____

SECTION B: Factors Driving or Inhibiting Scale

Objective 2: To analyze the factors driving or inhibiting the scale of poultry production in urban food systems

A. Economic Factors

Access to start-up capital:

☐ Easy

☐ Moderate

☐ Difficult

Access to credit for poultry production:

☐ Yes

☐ No

Cost of feed (perception):

☐ Affordable

☐ Expensive

☐ Very expensive

Access to reliable markets:

☐ Yes

☐ No

B. Institutional and Policy Factors

Are you aware of urban livestock regulations?

☐ Yes

☐ No

Have you ever received extension support?

☐ Yes

☐ No

C. Environmental and Social Factors

Availability of space:

☐ Adequate

☐ Limited

☐ Very limited

Access to veterinary services:

☐ Good

☐ Fair

☐ Poor

Neighbour/community acceptance of poultry keeping:

☐ Supportive

☐ Neutral

☐ Opposed

SECTION C: Contribution to Household Dietary Diversity

Objective 3: To assess the contribution of poultry production to household dietary diversity

A. Poultry Consumption

How often does your household consume:

Food Item

Never

1–2x/week

3–4x/week

Daily

Eggs

☐

☐

☐

☐

Chicken meat

☐

☐

☐

☐

Has poultry production increased your household's consumption of animal protein?

☐ Yes

☐ No

☐ Not sure

Compared to before keeping poultry, dietary diversity is:

☐ Improved

☐ Same

☐ Worse

B. 24-Hour Dietary Recall (HDDS Indicator)

Please indicate whether any household member consumed the following in the last 24 hours:

☐ Cereals

☐ Roots/Tubers

☐ Vegetables

☐ Fruits

☐ Meat

☐ Eggs

☐ Fish

☐ Legumes

☐ Milk products

☐ Oils/fats

SECTION D: Contribution to Food Accessibility

Objective 4: To assess the contribution of poultry production to food accessibility among urban households

Does poultry production provide food during times of financial difficulty?

☐ Yes

☐ No

Have you ever sold poultry to buy other food?

☐ Yes

☐ No

Does poultry income help you purchase diverse foods?

☐ Yes

☐ No

In the past 12 months, did your household experience food shortage?

☐ Yes

☐ No

Compared to non-poultry keeping households, your food access is:

☐ Better

☐ Same

☐ Worse

KEY INFORMANT / IN-DEPTH INTERVIEW GUIDE

(Qualitative Component)

SECTION A

How would you describe the scale of urban poultry production in this city?

Has urban poultry production increased or declined in recent years? Why?

What types of poultry systems are most common for urban poultry production?

SECTION B

What motivates urban households to engage in poultry production?

What are the major constraints limiting expansion urban poultry production?

How do urban regulations affect poultry production?

What role do feed prices play for urban poultry production?

How significant are disease outbreaks during urban poultry production?

Is access to credit adequate for urban poultry production?

SECTION C

Do urban poultry-keeping households consume more animal protein than non-keepers?

Who benefits most nutritionally between children, women and entire household from urban poultry production?

SECTION D

Does urban poultry production function as a financial safety net?

Is urban poultry production income used to smooth food consumption during shocks?

Does urban poultry production improve year-round food access?

Are there seasonal variations in urban poultry production contribution?

SECTION E: Policy and Recommendations

What policies support or hinder urban poultry production?

What interventions would help scale up urban poultry production sustainably?

How can urban poultry production better improve urban food security?