

Perceived Determinants Contributing to the Sustainability of Youth Broiler Farming: A Comparative Analysis between Self-Funded and Sponsored Broiler Projects

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Abstract

Sustaining agricultural production is essential to enhance food security and livelihood, particularly for rural-based societies. Broiler production has offered a lifeline for most rural inhabitants through food security and income generation, significantly contributing to their livelihood upliftment. Due to the gradual increases in demand for broiler meat and unemployment among youth, the study sought to investigate determinants that significantly contributed to the sustainability of broiler farming among youth. The study was conducted in the emerging economic zone, Thulamela municipality of Limpopo province. Simple random sampling was used to select 118 youth-owned broiler projects. The discriminant analysis method was used to draw distinct differences in determinants contributing towards the sustainability of broiler farming between self-funded and externally sponsored youth farmers. The findings revealed that most farmers within the study sample had funded their projects. Furthermore, the study findings revealed that determinants such as market linkage and mentorship significantly contributed to the sustainability of sponsored broiler farmers, while bulk buying and feed types sustained the broiler farming of self-funded farmers. The study recommended establishing suitable and cost-friendly feeds and bulk ordering to minimize transactional costs as it significantly enhances the project viability and contributes to its long-term sustainability.

Keywords: *Broiler, farmers; projects; sustainability; viable.*

Introduction

Poultry farming is essential for improving livelihoods through the provision of protein requirements of humans through meat and egg consumption within societies and income generation for small-scale farmers in developing countries (Attia et al., 2022). Consumption of chicken products globally is now outstripping that of other foods of animal origin (Erdaw et al., 2023). Broiler meat is the most widely consumed meat product around the globe, and its production is expected to rise due to its increase in consumption and being within the fast-growing industry in third-world countries (Asghar et al., 2018). Similar studies have alluded to the prediction that broiler meat production remains the primary kind of total meat production and is expected to increase (Limbergen et al., 2020; OECD, 2021). The South African poultry industry is not exempt from this; domestic production still needs to be increased to meet the growing local consumption (DALLRD, 2020). It has also been noted that broiler meat consumption has significantly increased in the last two decades, while its production has stagnated, and domestic producers need help to satisfy the local market (Chibanda et al., 2022). The South African broiler industry consists primarily of subsistence, small-scale, and commercial producers, with a small number of large commercial producers accounting for the most significant part of national production (Queenan et al., 2021). In the South African setup, the broiler commercial production system is divided into three categories based on the size of their operations: commercial scale (>50,000 birds), medium scale (20,001–50,000 birds), and small scale (20,000 birds) (DALLRD, 2020). Furthermore, despite broiler meat being in demand, the South African poultry industry is dominated by large-scale producers producing 70 percent of the total chicken production, with two giant producers accounting for approximately 50 percent of the market (GAIN, 2023). Large-scale broiler producers in South Africa supply their chickens to abattoirs, while small-scale producers thrive on the live broiler meat market (Attia et al., 2022). Youth involvement in broiler production in South Africa is relatively low. A supplementary study conducted in the Eastern Cape province of South Africa indicates that most broiler farmers were pensioners (Simbizi et al., 2021). A similar study conducted in South Africa also alluded to the involvement of youth in broiler production being notably scanty (Ndashe et al., 2024). Recent studies suggest that most small-scale and emerging broiler farmers fail to sustain their operations due to various elements, such as the inability to pay off high short-term operational costs and feed prices

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(McFadden et al., 2022; SAPA, 2021). Furthermore, young small-scale broiler farmers in South Africa are also plagued with load shedding and the inability to secure proper infrastructure, which hampers their growth and sustainability, with most developing countries continuing to suffer from insufficient supply of broiler meat due to their poor policies (SAPA, 2021; Rizov et al., 2023). The South African poultry industry has developed a poultry master plan for refocusing the country's poultry sector considering current shocks (Myeki et al., 2022). Against this backdrop, the study intends to investigate critical determinants contributing to the sustainability of youth-owned broiler projects by comparing self-funded and sponsored broiler farming projects.

Materials and Methods

The study was conducted in the Thulamela local municipality of the Vhembe District, Limpopo Province of South Africa. Thulamela municipality is one of the four local municipalities within the Vhembe district: Thulamela, Collins Chabane, Makhado, and Musina. The Municipality is situated in the northern parts of the Limpopo Province. It covers approximately 5 835 km², with a population estimate of about 618 462 people, and its GPS coordinates are 22°57'S 30°29'E (StatsSA, 2020). The area was selected for the study as it is part of the Vhembe district, an emerging economic zone with most residents reliant on agricultural activities and informal trading, such as street food and fruit vending (TC et al., 2022). Furthermore, the study area was also suitable in that most youth pursuing livestock-related agricultural farming opt for broilers due to its cost-friendly start-up capital. The study used a simple random sampling technique to select 118 youth-owned broiler enterprises of 167 registered broiler projects with the local agricultural authorities. Simple random sampling was preferred to offer all units within the population an equal chance of being selected.

A structured questionnaire served as a data collection tool. At the same time, face-to-face interviews were conducted with the study participants to collect data and administer questionnaires. The discriminant model was used to analyze the results. Discriminant function scores helped establish existing differences between two groups concerning several variables simultaneously, determining whether meaningful differences exist between the groups and identifying the discriminating power of each variable (Lachenbruch & Goldstein, 1979; Duong et al., 2017). The discriminant model employed in the current study was reduced in the form:

$$D = v_1X_1 + v_2X_2 + v_3X_3 + v_i X_i + a \dots \dots \dots (1)$$

Where:

D = Discriminant function.

v_i = discriminant coefficient of each explanatory variable.

X_i = explanatory variables; and

a = constant

Results and Discussion

Discussion on the Distribution of Socioeconomic Characteristics Among Young Broiler Farmers

The study profiled the distribution of the socioeconomic characteristics among the study participants to gain an insight into their socioeconomic status, as depicted in Table 1 below. The study findings revealed that young females were the dominant broiler producers within the study sample, accounting for 61.9%. About the age group, the study indicated that young farmers aged between 24 and 29 years were the most dominant in broiler farming, followed by those aged between 30 and 35 years. Regarding the participants' years in the farming business, the study results indicated that most had broiler farming for over a year but up to three years. Looking into the lifecycle of broiler farming, the period of twelve months and three years is still suitable to determine their sustainability as there would have been at least eight to twenty-six production cycles if we were using the average of six weeks per production, respectively.

Furthermore, the second largest broiler farmers were in the business for about four to six years. Moreover, the study findings also reveal that most broiler farmers within the study sample had funded their broiler projects, accounting for 61.9%, while those running externally sponsored projects accounted for 38.1%. Regarding operational size, most farmers kept between five hundred and one thousand chicks per batch,

or 48.2%. This operational size is desirable for the study sample in that most of them have only been in broiler farming for a year up to three years. The study findings also revealed that the second largest group kept between one and five hundred chicks per batch at 21.5%. At the same time, those keeping more than one thousand and five hundred chicks per batch were the most minor group, accounting for 10.3%. Furthermore, most broiler farmers within the study sample owned their projects under sole proprietorship at 52.7%, followed by those who owned their projects under agricultural cooperatives accounting for 32.7%. The most minor form of ownership was those projects owned under partnership at 14.6%.

Table 1. Distribution of socioeconomic characteristics among participants.

Variable	Percentage (%)
Gender of respondent	
Female	61.9
Male	38.1
Age group	
18-23 years	19.1
24-29 years	57.8
30-35 years	23.1
Years in Farming Business	
Between 1-3 years	67
Between 4-6 years	17.4
Between 7-10 years	15.6
Source of Funding	
Self-funding	61.9
Sponsored	38.1
Batch size	
1-500	21.5
501-1000	48.2
1001-1500	20
More than 1500	10.3
Business ownership	
Sole-proprietorship	52.7
Partnership	14.6
Cooperative	32.7
Total	100%

Source: Author's computation (2024).

Discussion on Determinants Contributing to the Sustainable Broiler Farming

Discussion on Determinants Contributing to the Sustainability of Sponsored Broiler Farmers

Market Linkage

The study findings in Table 2 reveal that market linkage and mentorship provided to sponsored broiler farmers significantly influence their sustainability within the industry. The study also reveals that they are statistically significant at a 1% significance level, implying they are strong influencers of sponsored broiler-farmers' sustainability. The study findings imply that sponsored broiler farmers are more likely to be sustainable within the production through being linked with potential markets than their counterparts. The study findings suggest that when broiler farmers are supported by being linked to various markets, their chances of being sustainable are enhanced and secured. These findings are ideal for small-scale farmers in remote areas who struggle to secure a market. Hence, such market linkage contributes positively to their sustainability. These results are aligned with the findings of Onuwa (2022), who recommended the formation of agricultural cooperatives to boost market linkages for their positive influence on broiler business continuity. From the study findings, market linkage provides farmers with a platform to exchange their goods for currency, enhancing their business continuity. This was alluded to by a study conducted by Banner & Gyekye (2022), who indicated that securing markets for broiler chickens significantly improves total sales and farm capacity.

Furthermore, the study findings emphasize the significant role of market linkage in reducing production costs. Failure to secure the market for broiler chickens means more maintenance fees through feeding and vaccinating, which results in cumulative production costs. However, the study findings suggest that opening agricultural markets through linkage allows farmers and consumers to transact at their doorposts, thereby reducing these costs. Bannor et al. (2021) supplemented the study's findings, through the recommendation of linking farmers with markets through contractual agreements for their benefits, such as reduced postharvest or post-maturity losses. This emphasis on the cost-saving potential of market linkage should reassure policymakers and farmers alike, instilling a sense of confidence in the sustainability of broiler farming.

Mentorship and Operational Records

The study findings also revealed that offering mentorship to broiler farmers positively and significantly impacts their sustainability. The study findings implicate that guiding broiler farmers plays a vital role in the continuity of their businesses. The study findings are commendable in that mentorship is ideal for emerging farmers within the industry. Although mentorship can be in various forms, it significantly helps the inducted to know how to go about their businesses. It can ultimately save such emerging farmers from potential loss of resources. From the study findings, sponsored broiler farmers with access to mentors are more sustainable than their counterparts. This complements the self-funded broiler farmers succeeding through accumulated knowledge and farming experience. Although experience is the best teacher, mentorship goes a long way: it saves time, equips one with desired skills, and saves scarce agricultural resources. The study findings are supported by Mukembo & Edwards (2020) Ozbey & Karduz, (2023), who revealed that collaborations between young and adult farmers improve agribusiness understanding and ultimately enhance broiler production. The study findings also portray the importance of mentorship in the business industry as it cultivates desired results in business operations and their sustainability. It further portrays mentors as agents of growth and sustainability despite the agribusiness sector being risky, particularly for emerging farmers.

The study also revealed that sponsored broiler farmers who archive records regarding their business ventures are more sustainable than their counterparts. The study findings suggest that keeping the business records is essential for its evaluation and monitoring processes and further allows farmers to make informed decisions. The study findings outline that archiving records is essential for business sustainability in that sponsored broiler farmers should submit progress reports on their operations to their sponsors. The reports are then evaluated, and various mechanisms are developed to solve existing and identified challenges, improving farmers' chances to enhance their operations and remain viable within the industry. The study findings further illustrate the importance of record keeping, as it is critical in identifying areas of improvement and where there is deviation from the planned course of action. A similar study noted that lack or limited and inadequate business records contribute towards poor farm performance as critical aspects such as poor governance, misallocation of resources, and nonadherence to regulatory compliance may be overlooked if no records are pointing to such areas of operations within the farm level (Mullan et al., 2021).

Extension Services

From the study findings, having access to extension services influenced the sustainability of sponsored broiler farmers. The study results anchor the common belief within the agribusiness sector that indicates that accessing extension services by farmers enhances their development and continuity within the farming landscape. The study results purport that extension services significantly and positively influence farmers' well-being, enhancing farmers' sustainability at the farm level. The study findings also suggest that farmers with institutional support, such as extension services, have a better chance to remain viable within the sector. The study findings are also supported by the highlighted critical role and potential of agricultural extension and advisory services towards enhancing agriculture intervention nutrition outcomes during and post-COVID-19 (Lee & Moschini, 2022).

Input Subsidy

Furthermore, the study findings revealed that receiving inputs in the form of subsidy has a positive and significant influence on the sustainability of broiler farmers. These findings are supported by various studies

that have noted that the high feed, vaccine, and one-day chicks' costs are among the leading determinants of broiler production failure in developing countries. The study findings suggest that receiving inputs as a subsidy boosts farmers' financial well-being, enhancing their sustainability in the long run. These findings are similar to a study by Onuwa (2022) that sought to determine the profitability of broiler farmers, which later recommended improving poultry feeds, inputs, and credit subsidies as prevalent mechanisms to boost broiler farmers' profitability and sustainability. The study results also suggest that subsidies spent on inputs boost broiler farmers' survival in unfavourable climatic conditions.

Discussion on Determinants Contributing to the Sustainability of Self-Funded Broiler Farmers

Bulk Ordering

The study findings, which reveal that bulk ordering, farming experience, and types of feed statistically contribute to the sustainability of self-funded broiler farmers, are of significant importance. The study findings further reveal that all the factors were statistically significant at a 5% significance level. From the findings, bulk ordering of stock positively influences sustaining self-funded broiler farmers. The study findings imply that securing bulk stock among self-funded broiler farmers is user-friendly for long-term operations instead of repeatedly buying stock. The findings could further imply bulk stocking as a cheaper method to secure capital and save costs that could accumulate from transactional fees; it further serves as a cost management technique. Broiler production is one of the most financially sensitive agricultural enterprises due to mortality rates and disease outbreaks; hence, securing essential resources could be ideal for farmers without short-term insurance. The study's findings are supplemented by Etuah et al. (2020), who indicated cost-inefficiencies as one of the leading determinants of unsustainable broiler production. This is because bulk purchases are ideal for agribusiness ventures, hence the promotion of agricultural cooperatives. The study findings suggest the importance of devising alternative production methods or production flexibility during risky situations, which substantially rely on the capital at disposal. The study findings are also supported by the study of Chiekezie et al. (2022), who indicated that broiler production is primarily hampered by the high costs of feeds, vaccines, and day-old chicks, prompting costs minimizing techniques as the solution for enhanced and sustainable broiler production.

Farming Experience

The study findings also reveal that farming experience is critical in sustaining a self-funded broiler farmer. The study findings imply that farming experience is vital for the operational and sustainability of agribusiness enterprises. Farming experience is essential for the long-term sustainability of agribusiness enterprises in that it incorporates knowledge accumulated over the years and a combination of resources and skills in achieving the set objective. The study findings also suggest that farming experience is crucial for self-funded broiler farmers as it assists them in navigating their way to ensure the long-term operation of their enterprises compared to their counterparts who may receive enhanced support such as mentoring to assist them in coping with challenges associated with running a broiler project. A study by Delpont et al. (2021) indicated that knowledge and farming experience are essential in decision-making relating to interventions aimed at improving and maintaining desired operational levels within the poultry industry. Furthermore, the study finding suggests that farming experience is crucial for the survival of less-resourced farmers as they learn from the trends and experience how to keep their broiler ventures operating.

Type of Feeds

Regarding the sustainability of self-funded broiler projects, the study findings also revealed that the type of feed farmers use has a positive and significant influence. The study findings imply that the type of feeds self-funded broiler farmers use significantly influences their sustainability compared to their counterparts. The findings could be largely influenced by the cost variations among feeds, with identifying the best feed combos essential to save feed costs among farmers. The findings could also be substantially influenced by the farming experience, which could be ideal in establishing the types of cost-friendly feeds while meeting market standards among broiler farmers. Experience in broiler production was found to minimize cost inefficiency through the use of self-prepared feeds, which ultimately promotes sustainable broiler

production by cutting costs (Etuah et al., 2020). Farming experience is also handy in picking up ideal feeds as it has critical implications on the nutritional value of the end product, hence the emphasis from the study findings. The study findings are also supported by Massuquetto et al. (2020), who noted that the type of feeds meets specific dietary requirements and further added that feeding pelleted diets and dietary energy reduction are other effective methods farmers can use to reduce feed costs while improving the carcass quality of broilers. The study findings could suggest that a cost-friendly feed combination is ideal for business sustainability due to its financial-saving nature.

Table 2: Group means of variables employed in the analysis.

Variables	Broiler producing farmers		All	All	All
	Self-funded	Sponsored			
Profitability	0.27(0.512)	0.29(0.575)	0.24(0.527)	0.816	0.235
Type of broiler	0.44(0.332)	0.44(0.244)	0.34(0.668)	2.116	0.405
Infrastructure	0.67(0.3241)	0.72(0.786)	0.78(0.399)	3.531	0.410
Extension services	0.67(0.339)	0.32(0.422)	0.44(0.368)	4.356	0.067*
Archive Records	0.33(0.443)	0.74(0.212)	0.37(0.338)	2.516	0.035**
Market linkage	0.23(0.333)	0.47(0.567)	0.19(0.414)	1.517	0.003***
Bulk ordering	0.76(0.455)	0.39(0.378)	0.31(0.274)	3.328	0.050**
Selling price	0.27(0.488)	0.34(0.498)	0.22(0.424)	8.058	0.401
Marketing contract	0.35(0.355)	0.44(0.344)	0.31(0.361)	6.516	0.435
Input subsidy	0.67(0.649)	0.89(0.488)	0.80(0.223)	1.066	0.072*
Farming experiencing	0.86(0.324)	0.68(0.333)	0.60(0.206)	2.328	0.050**
Farm-gate sales	0.66(0.441)	0.92(0.669)	0.79(0.004)	5.411	0.300
Type of Feeds	0.43(0.741)	0.37(0.223)	0.33(0.216)	4.750	0.037**
Mentorship	0.58(0.321)	0.66(0.360)	0.62(0.114)	4.598	0.008***
Dietary formulation	0.13(0.639)	0.29(0.420)	0.12(0.226)	1.516	0.722
Cooperative membership	0.47(0.239)	0.33(0.411)	0.36(0.236)	2.516	0.653
Number of cases (n)	73	45	118	0.816	0.235

Source: survey results (2024). Standard deviations in brackets. Note: ***, **, *Significance levels at 1%, 5%, and 10% probability level, respectively.

The diagnostic test results from Table 2 indicated the discriminant scores and levels of independent variables. From the analysis, the Eigenvalue was 0.643, implying group differences being higher within the groups; Wilks` Lambda scored a high value of 0.863, implying the high percentage of explained variance of the dependent variable, in this case, being self-funded and sponsored broiler farmers. From Table 2, the pooled sample means of the variables employed in the analysis are reflected, with the significant difference levels denoted by P-values, and the comparison between the two groups is based on their means.

Conclusion

In conclusion, broiler production is essential for food security, livelihood enhancement, and economic development in the developing region of Vhembe District, South Africa. The current study uncovered that in sustaining broiler farming, it is essential to ensure that farmers receive extension services, archive the operation records, be linked to the market, receive input subsidies, and mentorship, particularly during their start-up phase. Furthermore, it is essential to establish suitable and cost-friendly feeds and order their stock in bulk to minimize transactional costs. Hence, the current study emphasizes the importance of offering mentorship to young emerging broiler farmers, enhancing extension service accessibility, training young farmers to archive reliable and updated operational farm records, and continuing to promote bulk ordering to enhance the sustainability of young broiler farmers.

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