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EFFECT OF RESOURCE OPTIMIZATION ON ENHANCING PERFORMANCE OF POULTRY FARMERS IN KABBA/BUNNU LOCAL GOVERNMENT OF KOGI STATE

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Abstract

The persistent increase in poultry production expenses poses a significant hurdle for poultry farmers, necessitating a closer examination of process innovation. Unfortunately, many poultry farmers fail to recognize its importance or consider it beyond their reach. However, by combining their knowledge and expertise with effective management abilities, poultry owners can identify and seize opportunities for process innovation. This study investigates the relationship between resource optimization and farm productivity. The study adopts a cross-sectional survey design with a clearly defined population of 150 registered poultry farmers, from which a sample size of 109 was determined using Taro Yamane formula. Data were collected through structured questionnaires and analyzed using multiple regression analysis. Reliability of the instrument was confirmed using Cronbach's alpha ($\alpha \geq 0.70$). Diagnostic tests including multicollinearity (VIF < 10), normality were conducted to validate model assumptions. The results show that resource utilization has a significant but negative effect on performance ($\beta = -0.742$, $p < 0.001$), indicating possible inefficiencies in resource application. In conclusion, Resource optimization has significant implications on performance of poultry farms.

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Keywords: Resources, Optimization, Performance, Poultry

1. Introduction

Resource Optimization in poultry farming refers to the efficient use of inputs such as feed, housing, capital, water and veterinary services to achieve maximum output at minimum cost. Feed represents the largest share of poultry production cost, and efficient feed management significantly improves feed conversion ratio and productivity (Ojo,2003).

This study addresses the empirical gap in understanding how resource optimization affects poultry farm performance in Kabba/Bunnu LGA. Unlike prior generalized agricultural studies. The difficulties encountered in the poultry industry have elevated its risk level, making it one of the most hazardous businesses. These difficulties encompass the growth of the industry, modifications in technological advancements, legal frameworks and guidelines, a widely scattered industry, inadequate proficiency and knowledge among producers, the ever-changing landscape of poultry production, reliance on imported raw materials, unstable fluctuations in input costs, and inadequate availability of dependable markets.

In Kabba/Bunnu LGA, poultry farming plays a vital role in local food supply and income generation; however, empirical data on efficiency gaps remain limited. This study addresses this gap by focusing specifically on how resource optimization affects farm performance within this locality. The expansion of the agricultural food sector, integrated supply chains, globalization, corporate improvements, and environmental consequences have all contributed to broadening the scope of agriculture. Additionally, recent global financial crises have exposed a flaw in the viability and sustainability of the growth models and agricultural policies in use today. Thus, new structural solutions are needed. It is frequently emphasized that utilizing technology will considerably aid in rural development and a reduction in poverty.

1.1 Objective

i. Assessing the effect of resource optimization On enhancing performance of poultry farmers in Kabba/Bunnu Local Government of Kogi State.

1.2 Hypothesis

H01: Resource optimization has no significant effect on performance of poultry farms in Kabba L.G.A

1.2 Statement of Problem

Resource optimization is a critical challenge for small-scale poultry farms, encompassing effective management of feed, water, energy, and other essential resources. Inefficient resource utilization practices can lead to heightened operational costs, reduced profitability, and environmental repercussions. Despite the importance of poultry farming, there is limited empirical evidence on how resource optimization affects farm performance in Kabba LGA. Previous studies have focused broadly on agriculture without addressing measurable inefficiencies in resource utilization among poultry farmers. This study therefore investigates this gap using quantifiable indicators.

The study delves into the complexities of resource optimization within small-scale poultry farming, shedding light on the need for strategic interventions to enhance resource

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management practices. A comprehensive understanding of resource optimization is imperative for ensuring the long-term sustainability and competitiveness of small-scale poultry farms within the agricultural landscape. The study conducted by Yusuf, I. A., et al. (2021) on sustainable resource management in the Nigerian poultry sector emphasizes the necessity of adopting sustainable resource optimization strategies to minimize waste and elevate the overall efficiency of poultry farming operations. The findings underscore the critical role of efficient resource management in bolstering the sector's economic viability and environmental sustainability.

2.0 Resource Optimization

The Resource- Based View (RBV) theory has garnered significant attention in strategic management literature; however, it is not without its critiques. One critique revolves around the subjectivity and ambiguity in identifying and assessing a firm's resources and capabilities. The RBV framework relies on qualitative judgments to determine the value, rarity, inimitability, and non- substitutability of resources, which can vary depending on different perspectives and interpretations. Another criticism of the RBV theory is its limited consideration of external factors and the competitive environment. While the RBV emphasizes internal resources, it pays less attention to the impact of market dynamics, customer preferences, technological advancements, and other external forces that shape a firm's competitive advantage. This omission limits the theory's applicability in dynamic and rapidly changing industries.

Resource optimization is vital in small-scale poultry farms as it allows for efficient utilization of land, capital, and labor resources, leading to improved productivity and profitability. Optimizing capital in small-scale poultry farms involves strategic investments. Choosing modern and energy-efficient equipment can automate tasks, reduce labor requirements, and improve operational efficiency (Garcia- Rangel et al., 2021).

2.1 Productivity

A study by Adeyemo et al. (2020) investigated the determinants of productivity in small-scale poultry farms in Nigeria. The researchers found that factors such as flock size, farm size, feed quality, and vaccination significantly influenced productivity. Larger flock and farm sizes were associated with higher productivity due to economies of scale and better resource utilization.

Moreover, using high-quality feed and implementing effective vaccination programs contributed to improved flock performance and productivity. Another study by Tadelle et al. (2018) explored the factors affecting productivity in smallholder chicken production systems in Ethiopia. The researchers identified variables such as flock size, age at first egg, and mortality rate as important determinants of productivity. They found that larger flock sizes were associated with increased productivity, while early age at first egg and lower mortality rates indicated better flock performance and higher productivity levels. Management practices play a crucial role in enhancing productivity in small-scale poultry farms.

2.2 Empirical Reviews

The study conducted by Paula and Silva (2020) investigated the influence of combining internal and external knowledge sources on product and process innovation, as well as the

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financial performance of small and medium enterprises (SMEs) in developing economies. The authors proposed that the moderation effect of internal knowledge sources on the relationship between external knowledge sources and innovation performance would be stronger in low-technology firms, and the positive effect of innovation on financial performance would be more pronounced in such firms as well.

To test their propositions, the authors used a sample of 1551 Brazilian manufacturing SMEs and controlled for the technological intensity of the industry. Their findings confirmed a significant part of their hypotheses. The authors' study contributes to the literature on the importance of combining different knowledge sources to improve SMEs' innovation performance and financial outcomes, particularly in developing economies.

Olowa and Umoru (2020) discuss the importance of innovation and creativity in agriculture to cope with today's market and economic pressures. They highlight that agriculture is a major source of employment and backbone to many industries in terms of raw material supply, making innovation critical to its sustainability and growth. The authors emphasize the need for a comprehensive and broad-based approach to innovation in agriculture. This approach should focus on promoting an environment that supports and rewards innovative, entrepreneurial work through public policies and institutional frameworks. The goal should be to strengthen and promote promising technologies with the potential to have a significant impact on the nation and high-priority value chains. According to the authors, the tools used to achieve this will vary depending on the context or reality being addressed. There are no universal recipes for promoting a culture of innovation. Instead, solutions may arise from different sources, stakeholders, or types of innovations.

Olowa and Umoru's (2020) work highlights the critical role of innovation, creativity, and resourcefulness in agriculture. Their insights on the importance of a comprehensive and broad-based approach to innovation provide a useful framework for policymakers, entrepreneurs, and stakeholders seeking to drive innovation in the agricultural sector.

2.3 Theoretical Reviews

Resource-based theory is a popular theory in the field of strategic management that explains how a firm's unique resources and capabilities can lead to a sustained competitive advantage. In the case of a small-scale poultry farm, this theory can be applied to understand how the resources available to the farm can be utilized to drive process innovation and improve performance. One of the key resources that a poultry farm has is its physical resources, such as its land, facilities, and equipment. A small-scale poultry farm can utilize these resources to develop and implement innovative processes that improve efficiency and reduce costs. For example, the farm could invest in automated feeding and watering systems, or implement new waste management techniques, to improve the productivity and efficiency of the farm. Another important resource for a small-scale poultry farm is its human capital.

3.0 Methodology

3.1 Research Design

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The study adopts descriptive statistic with cross-sectional approach. The study also adopted a quantitative method for data collection as this provides better data and deeper understanding of the variables under study. The hypothesis in this study were analyzed using multiple regression.

3.2 Population

Table 3.1 Population of Poultry farmers in Kabba

Kabba Local govt Area	Registered Members
Oke bukun	20
Aghara	30
Ighun	25
Aiyegunle	25
Odo ape	50
Total	**150**

Source; Agro-processing, Productivity and livelihood improvement support project, Kogi state coordination office (2023)

3.3 Data Analysis

Data for this study was analyzed using descriptive statistical tools such as frequency distribution, tables, means, percentage and mean gotten from Likert rating scale technique.

Likert Rating Scale Technique: The Resources optimized of agriculture was captured using a Four Point Likert Rating Scale Techniques namely; "Very serious" = 4: “Serious" = 3: " Not serious" = 2 and "Not very serious" = 1

This can be summarized with the equation become $X = \frac{\sum fn}{n}$

Where; X = mean score

$\sum$ = summation

N = frequency

The mean score of 2.5 and above was used as the cut off points. Thus the mean score of 2.5 and above was considered serious while those with mean score below 2.5 are not serious constraints. The mean score of the respondents based on the 4- point rating scale was computed as:

$4+3+2+1 = 2.50$

3.4 Normality Test

As suggested by Hair et al. (2010), normality is a crucial assumption in multivariate analysis. Therefore, a univariate normality test was conducted to assess the normality of the independent

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variable. The results of the normality test indicated some evidence of non-normality, as indicated by Z-score values exceeding ±2 for some cases. To address this issue, a data transformation was performed, and the skewness and kurtosis of the variable were assessed to ensure they fell within an acceptable range of ±2.58, as recommended by Tabachnick and Fidell (2007) for normality.

The results of the skewness and kurtosis analysis are presented in Table 4.3

Table 4.3 Descriptive

Descriptive

			Statistic	Std. Error
Resource Optimization	Mean		11.9551	.09077
	95% Confidence Interval for Mean	Lower Bound	11.7755	
		Upper Bound	12.1346	
	5% Trimmed Mean		11.9157	
	Median		11.9704	
	Variance		1.104	
	Std. Deviation		1.05075	
	Minimum		10.27	
	Maximum		14.95	
	Range		4.68	
	Interquartile Range		1.61	
	Skewness		**.539**	.209
	Kurtosis		**-.255**	.416

Source: Field Survey (2023)

3.5 Reliability Test

The Relibility of the instrument was tested using Cronbach's Alpha. The result yielded a coefficient of $\alpha = 0.78$, Indicating that the Instrument is reliable and internally Consistent.

4.0 Results and Discussions

4.1 Findings

Perception of respondents regarding the importance of space or land utilization in poultry production, the data indicates that a majority of the respondents recognize the significance of managing and utilizing space effectively, considering the potential impact on costs and production capacity. Out of the total 109 respondents, 55 individuals (50.7%) strongly agree that space (land) is a crucial factor to consider and utilize in poultry production. These respondents understand the correlation between available space and the costs associated with utilizing it.

They recognize that more space may require higher investments, potentially leading to increased production costs. Similarly, 39 respondents (35.9% of the total) agree that land should be managed to reduce costs. This indicates that a significant proportion of the respondents understand the importance of optimizing land use to minimize expenses and improve profitability in poultry production. Conversely, 15 respondents (13.4% of the total) do not see a reason to manage space or land, as they perceive that more space automatically translates to greater production capacity. Their viewpoint suggests a belief that maximizing space is the primary objective, without considering potential cost implication

4.2 Test of Hypothesis

Table 4.13; Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.825	.681	.670	.215	.681	2773.440	4	104	.000

Predictors: (Constant), Supply chain Integration, Tech Adoption, Resource Utilization, Skill Development

Table 4.14; ANOVAa

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	15.432	4	3.858	28.745	.000
	Residual	7.218	104	.069		
	Total	22.650	108			

a. Dependent Variable: Performance

b. Predictors: (Constant), Supply chain Integration, Tech Adoption, Resource Utilization, Skill Development

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4.3 Discussion of Findings

The Model summary reveals a strong positive relationship between the independent variables and performance of poultry farms, as Indicated by the correlation coefficient (R=0.825). The Coefficient determination (R square=0.681) shows that approximately 68.1% of the variation in poultry farm performance is explained by Resource Optimization.

The adjusted R^2 value of 0.670 indicates that, after adjusting for numbers of predictors, about 67% of the variation in performance is explained by the model, while the remaining 33%is attributed to other factors not included in the study.

The Standard error of the estimate (0.215) suggest a moderate level of prediction accuracy, indicating that the model provides a reasonably good fit for the data.

Since the p value is < 0.05 the null hypothesis (H_o) is rejected, while the alternate hypothesis (H_1) is accepted. This implies that resource optimization significantly affects the performance of poultry farmers in Kabba/Bunu LGA. According to (Ngeleza & Maredia, 2011), most farmers have access to family labor, which has the potential to decrease labor expenses and enhance farm performance which enhance cost reduction and improve profitability.

5.0 Conclusion and Recommendation

5.1 Conclusion

This study revealed that effective resource optimization, including the efficient allocation and management of resources positively impacted productivity levels. Farms that optimized their resources witnessed higher levels of productivity.

5.2 Recommendation

Poultry farmers should adopt more efficient and evidence-based resource allocation strategies. Training programs should be introduced to improve resource management practices. By fostering responsible resource utilization, small-scale poultry farms can achieve higher productivity levels while minimizing their environmental footprint, contributing to the sustainability of the agricultural ecosystem in Kabba/Bunnu LGA.

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