



# Value Chain Development Programme on Rice Farming Performance in Lafia, Wamba, And Karu Local Government Areas of Nasarawa State, Nigeria

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## ABSTRACT

*This study examined the effect of the value chain development programme on rice farming performance (sales) in Lafia, Wamba, and Karu local government areas of Nasarawa State, Nigeria. The study variables are the marketing programme, packaging programme, and storage programme. A descriptive research design using a survey method was employed. A sample size of 440 respondents from Lafia, Wamba, and Karu Local Government Areas in Nasarawa State was selected using a stratified random sampling technique. Data were collected using structured, closed-ended questionnaires administered to the respondents. The data were analysed using descriptive statistics and a linear regression model. Findings revealed that Marketing Programmes (MP) have a negative and insignificant effect on the output sales of rice farming, while packaging and storage had a positive and statistically insignificant impact on output sales. The study suggested an improved and broader integrated approach in the implementation of VCDP programmes to enhance farmer income and rural development for rice farming in Nasarawa State.*

**Keywords:** *Marketing Programme, Packaging Programme, Storage Programme, Sales Output, Rice Farming Performance.*

## I. INTRODUCTION

Agriculture is the cornerstone of Nigeria's economy, employing over 65% of the population and contributing approximately 25% to the national

GDP (FAO, 2025). This sector is vital for attaining sustainable food security, creating employment opportunities, providing industrial raw materials, and generating foreign exchange. In recent years, several efforts have been made to increase farmers' production capacity for staple crops, such as rice, to ensure food security. However, domestic food crop production has struggled to keep up with population growth, leading to increased food imports and a decline in national food self-sufficiency.

The Value Chain Development Programme (VCDP), initiated by the Federal Government of Nigeria in collaboration with the International Fund for Agricultural Development (IFAD), is involved in the cassava and rice value chains, including production, processing, branding and packaging, marketing and sale, post-harvest loss reduction, and agro-waste to wealth of by-products. Focusing on Profitability, access to dependable markets, value addition, and cluster arrangements among producers to better meet market demands and ensure a sustainable food supply in Nigeria (IFAD, 2025).

Rice farming encompasses land preparation and planting through watering, weeding, and harvesting. Grain quality, post-harvest cleanliness, dryness, and suitability for milling. Good performance in rice farming means obtaining a high yield, using water and fertilizer efficiently, and selling rice at a competitive price (Nwachukwu et al., 2020).

Marketing programmes within agricultural value chains are vital mechanisms that facilitate sales growth, ensure profitability, and support the broader goal of sustainable agricultural and rural



development. Within the Value Chain Development Programme, marketing is a means of improving access to reliable markets, strengthening bargaining power, and ensuring that farmers remain competitive in a dynamic agricultural economy (Ezeudu & Obimbua, 2024). The Programme is meant to employ mechanisms such as aggregation centers, digital platforms, and cooperatives to consolidate farmers' sales and connect them with more profitable markets (Sanusi et al., 2025). According to Aamohammed et al., (2025), cooperative marketing should empower smallholder farmers to pool their resources and negotiate better prices. While digital platforms should give visibility, direct buyer access, and real-time data to farmers, cutting out middlemen. These strategies collectively enhance farmers' market position and profitability while promoting sustainability and inclusivity.

The packaging programme focuses on enhancing the quality and appeal of agricultural products through processing, value addition, and branding. Branding and product differentiation are key packaging strategies that enhance the competitiveness of agricultural products in both local and international markets. Branding involves creating a unique identity for a product through packaging, labeling, and promotion, while differentiation emphasizes the unique qualities that set a product apart from competitors (Kumar et al., 2024). Branding strategies are particularly effective in elevating the marketability of agricultural products. VCDP Nigeria (2021) reported that branding initiatives under VCDP have enabled rice farmers to market their produce as "premium-grade, stone-free rice." This approach not only improves consumer confidence but also allows farmers to command higher prices and sales growth.

Storage is a critical intermediary bridging the gap between production and market access. Effective post-harvest handling and storage systems are indispensable for preserving quality and minimizing losses (Bojande, 2021). In agricultural development, storage is not merely a logistical component but a value-preserving mechanism. It serves as a buffer, enabling farmers to delay sales until favorable market conditions arise. Effective storage systems mitigate seasonal supply gluts, ensuring a consistent supply throughout the year and enhancing food security. Standardising Storage systems is vital for post-harvest loss reduction, preserving quality, extending shelf life, enhancing market access, attracting institutional buyers, and enabling participation in high-value markets. Storage systems go beyond simple holding products,

encompassing processes such as drying, grading, processing, and packaging.

The effectiveness of these programmes is vital for proper Rice farming performance, improved sales output, reduction of post-harvest losses, and ultimately boosting sustainable food supply.

### **Statement of the Problem**

Much effort has been made by governments and stakeholders in the agricultural sector to enhance rice farming performance, which is essential to the livelihoods of many Nigerians, by creating employment opportunities, and to boost food availability. To enhance the performance of rice farmers, VCDP offers training, improved tools, access to better seeds, connections to buyers, and solutions for storage and packaging (VCDP, 2025). Therefore, farming performance reflects not only a farmer's hard work but also the effectiveness of support systems in facilitating their success.

Ultimately, high farming performance results in increased production, higher earnings, reduced waste, and the capacity to reinvest in the farm. It is about making farming more reliable, rewarding, and sustainable. Therefore, enhancing agricultural performance is essential for scaling up production, ensuring food security, and enabling sustainable income growth for farmers in Nasarawa State and beyond.

Though Nigeria possesses vast agricultural potential, there are prevailing issues of low domestic food production, resulting in high costs of food items. Nigeria's average rice farming in Nigeria has not achieved its full potential, with local production standing at about 5.4 million metric tons in 2023, far below the estimated national demand of 7 million metric tons (FMARD, 2025).

According to Oyeleke (2025), several government initiatives, including the Value Chain Development Programme, have made interventions such as mechanization services, market access assistance, packaging, and storage programmes to increase access to international trade and improve storage efficiency. These interventions were expected to significantly improve rice farming's profitability and sustainability in Nasarawa State and Nigeria in general (NADP, 2025).

This study, therefore, provides the following research questions:

i. To what extent does the Marketing programme affect Rice farming performance in Nasarawa State, Nigeria?



- ii. To what extent does the Packaging programme affect Rice farming performance in Nasarawa State, Nigeria?
- iii. How does the Storage programme affect Rice farming performance in Nasarawa State, Nigeria?

## II. LITERATURE REVIEW

This section provides insight into the empirical review of the study's variables, identifying research gaps and outcomes in line with the Value Chain Development Programme on Rice farming and the theoretical framework.

### Empirical Review

This section reviews extant literature on the study variables and outcomes and identifies research gaps, including geographical, institutional, structural, and theoretical differences.

### Marketing programme on rice farming

Alabi *et al.*, (2024) examined the economic impact of the Value Chain Development Programme on the net farm income of rice farmers in Niger State, Nigeria. The researchers utilized primary data and employed a multi-stage sampling technique to select a total sample size of 292 rice farmers, including 155 VCDP beneficiaries and 137 non-beneficiaries. The data were analyzed using a range of analytical methods, such as descriptive statistics, gross margin analysis, multiple regression analysis, difference-in-difference method, propensity score matching, principal component analysis, F-Chow test, and t-test. The findings reveal that VCDP beneficiaries enjoyed a higher gross margin ratio of 88% compared to 71% for non-beneficiaries, indicating that rice production was profitable. This suggests that the VCDP had a positive impact on the net farm income of rice farmers. The study recommended that policymakers provide low-interest loans to rice farmers to further boost their incomes.

Okonkwo *et al.*, (2024) researched the Value Chain Development Programme and Agricultural Enterprise Growth in Anambra State, Nigeria. The study sought to examine the rice value chain programme to understand its impact on the growth of agricultural enterprises in Anambra State, Nigeria. A survey research design was utilized. The study population consisted of 12,737 rice and cassava VCDP farmers in Anambra State, and a sample of 427 respondents was selected using simple random sampling. The data was collected through questionnaires. The analysis employed multiple regression techniques. The findings reveal

that the operations, mechanization, procurement, packaging, and storage components have a positive and significant impact on agricultural enterprise growth in Anambra State, Nigeria. In contrast, the marketing programme exhibits a positive yet insignificant relationship with agricultural enterprise growth in the same region. To address this, the study suggest developing and implementing a robust marketing strategy encompassing all aspects of the marketing mix and establishing functional aggregation centers within the participating local government areas.

Sadiq *et al.*, (2021) examined the profitability and constraints of the IFAD/VCDP rice programme among smallholder farmers in Niger State, Nigeria. The study assessed the feasibility of the IFAD rice programme for these beneficiaries. Data was collected from 111 farmers during the 2018 rainfed growing season using a multi-stage sampling approach. Information was gathered through structured questionnaires and interview schedules, and the data was analyzed using both descriptive and inferential statistics. The analysis revealed that the rice programme in the study region may not be sustainable beyond the programme's designated timeframe. Despite the initiative's aim of increasing farmers' earnings through the value chain approach, the capital investment failed to generate adequate returns to support a typical farming household of eight individuals cultivating less than two hectares of land. Based on these findings, the study suggested providing farmers with both consumption credit and production credit facilities to help them succeed.

### Packaging programme on rice farming

Kwaku and Fan, (2020) examined the impact of effective product packaging design on the market value and performance of agricultural goods in the Ghanaian market. The study surveyed a total of 250 agro product processors, marketers, and consumers from 25 municipal and district assemblies across the Bono, Bono East, and Ahafo Regions of Ghana. The respondents were carefully selected using a combination of purposive and random sampling techniques. The study utilized a mix of qualitative and quantitative research methods, including interviews and questionnaires, to gather the necessary data, which was then analyzed using Microsoft Excel and SPSS statistical software.

The findings revealed that most consumers exhibit a stronger preference for agricultural products produced and/or packaged outside Ghana, as they perceive these products to have more attractive designs compared to those manufactured



within Ghana. The study recommended the integration of good product packaging design for agricultural goods.

**Storage facilities and loss reduction**

Afodu et al., (2022) investigated the determinants and intensity of technology adoption among rice farming households in Ogun State, Nigeria, aiming to understand factors contributing to low agricultural productivity in Sub-Saharan Africa. Utilizing a multi-stage sampling technique, data was collected from 158 rice farming households using structured questionnaires and analyzed with descriptive statistics, adoption index, and a Tobit regression model. Key findings revealed that younger farmers had higher technology adoption rates than older farmers, household size positively influenced the probability of adopting all production technologies, and access to credit facilities significantly and positively impacted technology adoption. Based on these findings, the study recommended encouraging young people to adopt modern technologies, educating farmers on new rice production techniques, and making credit facilities more accessible to farm households.

**Theoretical Frameworks**

This study is guided by a Resource-Based View (RBV). The Resource-Based View (RBV) emphasized the importance of an organization's internal resources as the foundation for achieving sustainable competitive advantage. Developed by

Wernerfelt (1984) and expanded by Khawka et al., (2025), RBV posited that resources must meet the Valuable, Rare, Inimitable, and Non-sustainable (VRIN) criteria to confer a lasting advantage in the agricultural sector. This theory is instrumental in analyzing how marketing, packaging, storage infrastructure, financial access, and human capital drive productivity and efficiency.

**III. METHODOLOGY**

This section discussed research design, population and sampling techniques, methods of data collection, reliability and validity tests, techniques for data analysis and model specification, justification of methods, and limitations of the study.

**Research Design**

This study employed a survey research design to examine the effect of the Value Chain Development Programme (VCDP) on rice farming in Lafia, Wamba and Karu LGAs of Nasarawa State. Survey research involve collecting data from a sample to analyze relationships between variables in a population

**Population and Sampling Techniques**

The population of the study is 609,083 VCDP rice farmers in the Local government area: Lafia - 330,712, Wamba - 72,894, and Karu - 205,477 (NIPC, 2025).

Table 1: Population of the Selected LGA, Nasarawa State

S/N	LGA	Population
1	Lafia	330,712
2	Wamba	72,894
3	Karu	205,477
	<b>Total</b>	<b>609,083</b>

Source: Researcher compilation (2025)

Taro Yamane's (1967) formular was used to determine the appropriate sample size for this study.

$$n = \frac{N}{1 + N(e)^2} \dots\dots\dots (3.1)$$

- Where;
- n = sample size.
- N = population size.
- e= Level of precision required.
- 1 = constant

In determining the sample size, the following variables were used:  
 Confidence interval = 95 %  
 e = Margin of error = 0.05  
 Therefore;



$$n = \frac{609,083}{1 + 609,083(0.05)^2}$$

$$n = \frac{609,083}{1 + 609,083(0.0025)}$$

$$n = \frac{609,083}{1 + 1522.7075} = \frac{609,083}{1523.7075}$$

$$n = 399.73 \cong 400 \text{ Respondents}$$

While the calculated sample size using the Taro Yamane formula is 400 respondents, Singh and Masuku (2014) state the need to add 10% to make up for some questionnaires that may not be returned and those that cannot be contacted. 10 percent of 400 respondents = 40, and it is added to give us = 440 respondents. The sample size = 440.

The idea of proportional allocation in stratified random sampling was first introduced by Arthur L. Bowley (1926). His method involves selecting samples from each group in direct proportion to their size within the whole population. This help ensure that every group is fairly represented, making the data collected more accurate and reflective of the larger population.

Bowley's (1926) proportional allocation formular:

$$nh = \frac{nNh}{N} \dots\dots\dots(3.2)$$

Where;

nh = number allocated to each LGA

n = total sample size

Nh = total population of each LGA

N = total population

Applying the formula, we have:

**Table 2: Sample of the Selected LGA, Nasarawa State**

S/N	LGA	Population	Sample
1	Lafia	330712	$\frac{440*330712}{609,083} = 239$
2	Wamba	72894	$\frac{440*72894}{609,083} = 53$
4	Karu	205477	$\frac{440*205477}{609,083} = 148$
	<b>Total</b>	<b>609,083</b>	<b>440</b>

Source: Researcher's Compilation (2025)

**Data Collection, Technique for Data Analysis and Model Specification**

The study employed a Likert scale questionnaire for data collection purposes from respondents across the three selected Local Government Areas. The study adopted multiple regression as the statistical tool for

data analysis, employing inferential techniques. Multiple regression analysis was conducted to specifically examine the effect of VCDP programmes on rice farming performance, using SPSS version 26 statistical software.

The general regression model was specified as follows:

$$PF = \beta_0 + \beta_1MP + \beta_2PK + \beta_3ST + \mu$$

Where:

PF = Performance (Output and Sales (the dependent variables))



MP = Marketing programme  
PK = Packaging programme  
ST = Storage Programme  
 $\beta_0$  = Intercept  
 $\beta_1, \beta_2, \beta_3$  = Coefficients of explanatory variables  
 $\mu$  = Error term

#### IV. Results And Discussions

This section showed the results of the regression analysis and discussion of the findings:

**Table 3: Regression coefficients**

	Unstandardized		Standardized	t	Sig.
	Coefficients	Std. Error	Coefficients		
(Constant)	1.826	0.313	Beta	5.835	0.000
Marketing programme indicators	-0.111	0.059	-0.125	-1.874	0.062
Packaging programme indicators	-0.116	0.063	-0.122	-1.827	0.069
Storage Programme indicators	0.116	0.060	0.127	1.950	0.052

Source: Researcher's Computation Using SPSS

**Table 4: Model summary**

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.189 <sup>a</sup>	.036	.026	.464	

Source: Researcher's Computation Using SPSS

Results of the multiple regression analysis investigated the effects of the three independent variables, taking together the indicators of each of marketing, packaging, and storage programme, on the dependent variable are shown in Tables 3 and 4. The tables indicate collectively that the three programme indicators offer weak explanatory power in the regression model on the dependent variable, as summarized in Table 4. The coefficient of determination ( $R^2 = 0.036$ ) indicate that the combination of the three predictors only explains 3.6% of the variance in the dependent variable, with 96.4% of the variance left unexplained by the model. The R value, which is low (0.189), indicate that the association between the independent variables and the dependent variable is a weak positive relationship.

As indicated from the regression beta estimates presented in Table 3, the constant value ( $B = 1.826, p < 0.001$ ) is statistically significant and implied the dependent variable has a positive value even though each programme indicator is held constant. The marketing programme indicator ( $B = -0.111, p = 0.062$ ) and the packaging programme indicator ( $B = -0.116, p = 0.069$ ) both have associated negative beta estimates indicating that these programme indicators may have a slight negative effect on the dependent variable; however,

the p-values indicate these two programme indicators are not statistically significant at the 5% level, but marginally at the 10% level.

By contrast, the conditions of the storage programme indicators ( $B = 0.116, p = 0.052$ ) showed a weak, positive, significant effect on the dependent variable, meaning that better storage is likely to account marginally for better conditions.

#### V. Discussion of Findings

The study findings indicated that the Marketing Programme (MP) negatively affected sales output of rice farmers in Nasarawa State, but the negative effect was not statistically significant ( $B = -0.111, p = 0.062$ ). This implied that while marketing interventions were made available to farmers as part of the Value Chain Development Programme (VCDP), improved access to market information, price mechanisms, and connections with buyers has not yet produced a significant measurable impact on output sales by farmers. The negative effect is slight and could imply challenges in implementation. For instance, farmers had unequal access to premises/markets where marketing occurs, the availability and dissemination of market information was insufficient, and perhaps there were challenges related to infrastructure that impede the efficient flow of products to customers.



This finding differs from the findings of Alabi et al. (2024), who found that structured access to essential markets and pricing mechanisms increased profitability for smallholder farmers significantly across sub-Saharan Africa. The difference may be situated in contextual issues in Nasarawa State, where marketing structures that were established as part of the VCDP were developing, or unequal distribution of access among farmer groups.

In a related manner, the Packaging Programme (PK) had a negative and insignificant impression on the sales output ( $B = -0.116$ ,  $p = 0.069$ ). This may mean that while packaging activities are important in principle for improving the quality and sales appeal of farm products, they may not have sufficiently increased farmers' sales performance in this study area. The weak and inverse relationship could be due to limited access to durable packaging materials, their high cost, or inadequate training of farmers in value-addition practices. These findings are contrary to that of Ahmed et al., (2022) and Kwaku and Fan (2020), who reported significant positive contributions of packaging to agricultural profitability in other contexts. The difference indicate that, under the VCDP, the benefit of packaging interventions is low in Nasarawa State, possibly because local implementation or farmers' adoption levels have been low.

Conversely, Storage Programme (ST) had a positive but only marginally significant effect on output sales ( $B = 0.116$ ,  $p = 0.052$ ), which suggest that enhanced storage capacity has some potential to promote higher output sales, albeit to a limited degree, as it relates to minimizing postharvest losses and enabling farmers to sell when the market is more advantageous. However, the findings in the present study suggest that, while there is and continues to be an effect of the storage programme on sales, the near-significance observed in this effect indicate that storage facilities and practices implemented under the VCDP had yet to reach their full optimization across all participant communities. This has been similarly reported by Mbang et al. (2019) and Yeritsyan et al., (2024), who reported that while storage improvements reduced losses, the effect on sales was limited, given challenges with maintenance and integration with marketing systems. Interestingly, the positive directional coefficient supports the general notion that improved storage increase farmers' marketing flexibility.

Finally, the regression model, with  $R^2 = 0.036$ , signifies that the three programme indicators explain jointly only about 3.6% of the variation in

output sales. This low explanatory power suggest that factors not observed, which might include credit access, extension services, product off-taking, transportation, or cooperative participation, may be influencing sales outcomes more strongly. The results emphasized the importance of integrated and balanced implementation of the VCDP components, with marketing, packaging, and storage interventions better aligned and complemented by infrastructural and institutional measures to enhance farmers' commercial performance.

## VI. Conclusion And Recommendations

This study conclude that the Value Chain Development Programme (VCDP) has, moderately improved rice farmers' output sales performance in Nasarawa State; nonetheless, the impact of specific programme components remains minimal. The regression results showed that marketing and packaging interventions did not have a statistically significant impact on farmers' output sales, despite theory declaring these as pertinent or vital aspects for improved agricultural commercialization. It is possible that challenges of limited market intervention coverage and inadequate marketing information dissemination about packaging interventions negatively impacted their outcomes. In contrast, the storage interventions had a weak, yet positive, and nearly significant impact, indicating that upgrading storage structures and storage practices could potentially improve farmers' ability to minimize post-harvest losses and improve marketing timing.

The findings from the study lead to the following recommendations to improve the validity of the Value Chain Development Programme (VCDP) for rice farming in Lafia, Wamba, and Karu LGAs of Nasarawa State:

### i. Marketing

There is a potential to strengthen the implementation and visibility of marketing interventions within the VCDP. The government and programme coordinators should facilitate easier access to real-time digital market information systems and train farmers to use them. Furthermore, market linkage events that connect farmers directly with institutional buyers, processors, and exporters could be regularized, and farmers' cooperatives could receive training related to collective marketing and negotiation skills to lower farmers' dependency on intermediaries and improve their bargaining power.

### ii. Packaging



Packaging interventions were not substantially effective; however, packaging is still critical for value addition. The VCDP should ensure farmers have access to affordable packaging materials to package their produce. Capacity building activities should ensure farmers are aware of current packaging standards, labeling, and branding options to improve their competitiveness in the market. To help farmers overcome cost and accessibility barriers, appropriate community-based packaging hubs could be established where they can access packaging at subsidized rates.

### iii. Storage

Since storage indicators were found to have a positive and significant effect, investment in decentralized and climate-resilient storage infrastructure is essential. The state government and VCDP coordinators should focus on community-managed warehouses and hermetic storage units to reduce post-harvest losses. The development of periodic training on storage best practices, pest management, and preservation should also be organized to build farmers' capacity towards effective post-harvest management.

Future interventions should provide a more integrated approach that connects marketing, packaging, and storage activities with complementary support of financing, transport, and extension services. By addressing these interlinked challenges, the VCDP should be able to achieve greater and more sustainable changes in farmers' output sales and livelihoods.

### References

- [1]. Aamohammed, C., Emmanuel Behera, & Emmanuel Ok. (2025, February 6). (PDF) *Cooperatives and Farmer Organizations: The role of cooperatives in enhancing farmers' bargaining power and access to resources*. ResearchGate. [https://www.researchgate.net/publication/388659400\\_Cooperatives\\_and\\_Farmer\\_Organizations\\_The\\_role\\_of\\_cooperatives\\_in\\_enhancing\\_farmers'\\_bargaining\\_power\\_and\\_access\\_to\\_resources](https://www.researchgate.net/publication/388659400_Cooperatives_and_Farmer_Organizations_The_role_of_cooperatives_in_enhancing_farmers'_bargaining_power_and_access_to_resources)
- [2]. Afodu, O., Olufunso Akinboye, Adeyinka Akintunde, & Lois Ndubuisi-ogbonna. (2022). (PDF) *Determinants of Technology Adoption and Intensity of Adoption among Rice Farming Households in Ogun State, Nigeria*. ResearchGate. <https://doi.org/10.47672/ejt.1187>
- [3]. Alabi, O. O., Sunday, A. G., Ebukiba, E., Aluwong, J., & Atteh, P. A. (2024). *Economic Impact Analysis of Value Chain Development Programme (VCDP) on Net Farm Income of Rice Farmers in Niger State, Nigeria*. *Manas Journal of Agriculture Veterinary and Life Sciences*, 14(1), Article 1. <https://doi.org/10.53518/mjav1.1349336>
- [4]. Bojande, T. (2021). (Pdf) *Effects of Post-Harvest Losses of Cassava on The Socio-Economic Wellbeing of Tiv Farmers in Benue State*. ResearchGate. <https://doi.org/10.13140/RG.2.2.28000.05128>
- [5]. Ezeudu, T. S., & Obimbua, E. N. (2024). (PDF) *Enhancing Rural Market Access and Value Chain Integration for Sustainable Agricultural Development in Nigeria: A Study of Constraints, Strategies, and Implications*. ResearchGate. <https://doi.org/10.47772/IJRIS.2024.803039>
- [6]. FAO. (2025). *Nigeria at a glance | FAO in Nigeria | Food and Agriculture Organization of the United Nations*. <https://www.fao.org/nigeria/fao-in-nigeria/nigeria-at-a-glance/en/>
- [7]. FMARD. (2025). *NGF Digital Repository: Federal Ministry of Agriculture & Rural Development (FMARD)*. <https://ngfrepository.org.ng:8443/jspui/handle/123456789/799>
- [8]. Khawka, Z. M. H., Rahman, A. A., Bin Sidek, S., Ahmed, S. A. B., & Al-Hadeethi, R. H. F. (2025). *Trim the fat, gain the edge: Lean supply chain activities for cost reduction and competitive advantage*. *Journal of Open Innovation: Technology, Market, and Complexity*, 11(3), 100579. <https://doi.org/10.1016/j.joitmc.2025.100579>
- [9]. Kumar, Anuj, Bapat, G., Kumar, Arya, Hota, S. L., Abishek, G. D., & Vaz, S. (2024). *Unlocking Brand Excellence: Harnessing AI Tools for Enhanced Customer Engagement and Innovation*. *Engineering Proceedings*, 59(1), Article 1. <https://doi.org/10.3390/engproc2023059204>
- [10]. Kwaku, A. R., & Fan, Q. (2020). *Effect of Good Product Design and Packaging on Market Value and the Performance of Agricultural Products in the Ghanaian Market*. *Open Access Library Journal*, 7(9), Article 9. <https://doi.org/10.4236/oalib.1106714>
- [11]. Nwachukwu, C. U., Ukwuaba, I. C., & Umeh, J. O. (2020). *Constraints faced by rice processors in milling and branding of home grown rice in Enugu State, Nigeria*. *Journal of Agricultural Extension*, 24(1), Article 1. <https://doi.org/10.4314/jae.v24i1.12>



- [12]. Okonkwo, L. A., Zwingina, C. T. Ph. D., & Wuyep, T. Ph. D. (2024). *Value Chain Development Programme And Agricultural Enterprise Growth In Anambra State, Nigeria* | *Bingham University Journal*. <https://journal.binghamuni.edu.ng/ceapqk6xg/10/nq6rxkxsp>
- [13]. Oyeleke, R. (2025). *An Overview of Federal Government Policies and Programmes for Food Security in Nigeria*.
- [14]. Sadiq, S. M., Singh, P. I., Ahmad, M. M., Yunnusa, B. J., & Egba, M. S. (2021). Profitability and Constraints of the Rice Project Among Smallholder Farmers in Niger State, Nigeria. *Agricultural Social Economic Journal*, 21(3), 199–208. <https://doi.org/10.21776/ub.agrise.2021.021.3.4>
- [15]. Sanusi, M. S., Odewole Michael Mayokun, Sunmonu musliu olushola, Suleiman Y. Yerima, Dare Mobolaji, & Joshua Olanrewaju Olaoye. (2025). (PDF) Transformative trends: Commercial platforms revolutionizing rice farming in Nigeria's agricultural value chain. *ResearchGate*. [https://www.researchgate.net/publication/389600034\\_Transformative\\_trends\\_commercial\\_platforms\\_revolutionizing\\_rice\\_farming\\_in\\_Nigeria's\\_agricultural\\_value\\_chain](https://www.researchgate.net/publication/389600034_Transformative_trends_commercial_platforms_revolutionizing_rice_farming_in_Nigeria's_agricultural_value_chain)
- [16]. VCDP (Director). (2025). *Nasarawa IFAD-VCDP | Lafia* [Video recording]. <https://web.facebook.com/Nasarawavcdp>
- [17]. VCDP Nigeria. (2021, October 10). Helping farmers increase paddy rice yields. *VCDP Nigeria*. <https://vcdpnigeria.org/helping-farmers-increase-paddy-rice-yields/>