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EFFECT OF SUSTAINABLE PROCUREMENT ON PERFORMANCE OF RICE PRODUCTION FIRMS IN BENUE STATE

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Abstract: *This study examined the effect of sustainable procurement practices on the performance of rice-producing firms in Benue State. The specific objectives were to ascertain the effect of the environmental aspect of sustainable procurement, the economic aspect of sustainable procurement, and the social aspect of sustainable procurement on the performance of rice producing firms in Benue State. The study adopted a survey research design. Data needed for the study were collected from a sample of 193 management and field staff of selected organizations using five Likert Scale questionnaires. The collected data were analyzed using simple frequency tables and regression analysis. The study showed that the environmental aspect of sustainable procurement (t=6.89, p=0.014), and the economic aspect of sustainable procurement (t=8.08, p=0.002) had significant positive effect on the performance of Rice producing firms in Benue state. The findings revealed a significant positive effect of the environmental aspect of sustainable procurement, and the economic aspect of sustainable procurement on the performance of rice-producing firms in Benue State. The study concluded that sustainable procurement improves the performance of rice-producing firms in Benue state. The study recommended amongst others, that Rice producing firms should improve their capacity to optimally incorporate the environmental aspect of sustainable procurement to help preserve Biodiversity and conserve natural Resources, thereby increasing the quality of output and efficiency, hence improving performance.*

1.0 INTRODUCTION

1.1 *Background of the Study*

There is increasing concern about the performance of rice production globally because rice is one of the major cereal crops grown worldwide, and its production also contributes to substantial adverse changes in the environment. This can be attested to the fact that Paddy rice production is a large agricultural contributor of greenhouse gas (GHG) emissions, as it contributes about 10% of global methane emissions, according to Earth Security Group (2023). It also accounts for 11 percent of global agricultural nitrogen emissions (OECD, 2020). Secondly, the production of Rice provides sustenance to approximately 3.5 billion individuals who rely on it as a source of staple food and, at the same time, addresses food security (Dawe *et al*., 2010 as cited in UNCTAD, 2022). It also serves as a means of livelihood for many individuals, companies, and communities.

The increase in projected rice production to meet the current demands both locally and internationally will likely put significant pressure on limited natural resources such as water and could increase environmental damage such as soil acidification and pollution. Thus, in light of

increased global warming, environmental degradation, reduced water catchment reserves, costs of waste management, health concerns, natural resource depletion, as well as reduced and unpredictable weather changes have made society more conscious of their environment and enacted legislation and policies relating to environment conservation. The Overall Performance in the downtime in industries has triggered management and academic concerns to determine its root causes, with countries such as the United States, Germany, Spain, and France currently experiencing a decline in financial and non-financial industry performance (UNCTAD, 2022).

In Nigeria, the agricultural sector, particularly the Rice Value Chain sector, has been recognized as a vital area, as it generates employment opportunities within the country and attracts investments from both foreign and local companies, significantly contributing to the country's gross domestic product (GDP) (Soyege *et al.,* 2023). The nation grapples with the bitter taste of international rejection as its agricultural products are turned away from global markets (World Bank, 2020). Despite Nigeria's rich agricultural potential characterized by vast fertile lands and a favorable climatic condition, the nation grapples with systemic issues that hinder its growth and sustainability as well as the harsh reality of rejection of its products as its agricultural products are turned away from global markets (World Bank, 2020). Stringent quality standards and ethical sourcing requirements expose glaring inadequacies in our production process. Our agricultural sector still uses unsustainable means of production, ranging from unsustainable procurement practices, excessive use of chemical inputs, and sometimes improper use of nitrogenous fertilizers, which leads to repeated rejection of our product from the international market. Thus, resulting in repeated rejections, and lost opportunities to earn foreign income for the nation's farmers and economy. Additionally, greenhouse gas (GHG) emissions can be increased by the excessive and sometimes improper use of chemical inputs, mainly nitrogen fertilizer (an important input in rice production), and result in other environmental issues such as soil acidification and water pollution (UNCTAD, 2021).

In an attempt to address these concerns and enhance the performance of rice both locally and globally, there is a need to embrace sustainable procurement practices in Rice production. Oyedokun and Garba (2022) averred that Procurement is deemed sustainable when organizations expand their framework to meet their needs for goods, services, works, and utilities in a manner that delivers value for money while fostering positive outcomes not just for the organization, but also for the economy, environment, and society at large. Sustainable Procurement is therefore seen as very relevant to achieving sustainable performance for the organization. Sustainable procurement is one of the sustainable supply chain activities that encourage not only the focus business but also its supply chain units to work toward a common objective of a sustainability roadmap (Iherobiem, 2023). To promote global initiatives, sustainable development now recognizes the implementation of sustainability principles in procurement as a key component towards environmental sustainability, economic sustainability, and social sustainability (Johnson, 2021), and these are the basic strategies and or practices that sustainable procurement is built on. Recently, more and more people are beginning to realize the significance of incorporating these principles into procurement processes, especially within the emergent economy of third-world countries like Nigeria (Ogomegbunam, 2023).

In the African continent, Nigeria, as one of the countries with the biggest economies, faces challenges and significant difficulties in its sustainable development plan (Omimakinde, 2022). According to Ojo *et al*. (2022), a nation's sustenance development programs and projects rely

heavily on its procurement systems. The Procurement Act 2007, established to guide procurement in Nigeria, currently lay more emphasis on cost and quick wins rather than gains on the sustainable basis (Areguamen *et al,* 2022). It should be realized that in the Nigerian context, where there is a lack of resources, an increasing population, degradation of the environment, and other development challenges, sustainable procurement principles become important (Oyedokun and Garba, 2022).

As consumers increasingly demand transparency, ethical sourcing, and environmental stewardship, the spotlight has intensified on the practices and policies governing product production activities and distribution (OECD, 2020). From farm to fork, stakeholders are scrutinized to ensure that food production aligns with sustainability principles, social responsibility, and fair labour practices (ILO, 2021). Sustainable procurement discussions in the agricultural context commonly reference three objectives: which is Economic Aspect, Social Aspect and Environmental Aspect of sustainable procurement. That is, economic viability, social supportiveness, and ecological soundness, (Sharma *et al*. 2022). Sustainability standards typically consist of four components: the standard to ensure the application of the assurance systems to ensure compliance with the standards, possibilities for the creation of sustainability labels to enable the differentiation of goods that are produced sustainably in the market and training and technical support for the implementation of the standards appropriately (Chen, 2020).

New drifts in the procurement field call for the integration of sustainability principles in the implementation of the procurement process. Silva and Nunes (2022) explained that in the last few years, both theorists and professionals have wanted to find out how organizations influence the environment, society, and the economy. Sustainable procurement is now on the regional agenda for government that seeks to illustrate sustainable development. This was necessitated in light of the actuality of the Sustainable Development World Summit. These intertwined challenges encapsulate the multifaceted crisis gripping Nigeria's agricultural sector, particularly its rice production (World Bank, 2021).

Given this backdrop, the concept of sustainable procurement emerges as a beacon of hope, offering a pathway toward positive change and revitalization (UNCTAD, 2022). By prioritizing ethical sourcing, environmental stewardship, and social responsibility, sustainable procurement practices aim to transform the way agricultural products are produced, sourced, and distributed (UNCTAD, 2021). This study seeks to examine how sustainable procurement practices can enhance performance in rice-producing firms in Benue State.

1.2 *Statement of the Problem*

Production firms' use of sustainable procurement practices has increased over the years in both developed and developing countries. This growth is largely due to the pressure these firms face to adopt sustainable practices that reduce carbon footprints, minimize waste, and use resources efficiently to achieve optimal performance, Secondly, in developing countries, government and international organizations like the United Nations and other multilateral development Banks (MDBs) have also promoted sustainability through procurement and social standards, especially in infrastructure projects, agricultural value chains, and supply chains so as to address economic and environmental issues associated with production. In Nigeria, production firms face various challenges that affect their performance and sustainability. However, the rice value chain just like other agricultural value chains has also adopted the use of sustainable procurement as a means to

drive improved performance and enhancing sustainability by ensuring resource efficiency, reducing costs over time, reducing carbon footprint, enhancing quality output, environmental compliance, addressing labour rights and fostering positive community relations.
Consequently, there is limited empirical research on how these practices specifically impact the performance of rice production firms in Benue State. Understanding this relationship is essential for developing strategies that can strengthen the performance and sustainability of these firms. Previous studies like; Nsikan *et al*. (2023), Iherobiem (2023), Lopez (2022), Patel (2021), Oga and Onuouha (2020), and Khan (2022) focus on the impact of sustainable procurement practice on the performance of production firms. The studies fail to point out how sustainable criteria such as economic and environmental directly influence the performance outcomes of rice production firms. The studies also did not explain how the inclusion of sustainability criteria in procurement contributes to the overall performance of rice production firms, focusing instead on the economic performance of the rice production firms.

Furthermore, the extent of beneficial impact of sustainable procurement on the performance of the rice producing firms is not clearly established empirically in Benue State where sustainable procurement practice has been employed by rice producing firms over the years. This study offers the opportunity to investigate the effect of sustainable procurement addressing environmental and economic, aspects—on the performance of rice production firms in Benue State.

1.3 *Objectives of the Study*

The broad objective of this study is to examine the effect of sustainable procurement on the performance of rice production firms in Benue State. The specific objectives are to;

i. examine the effect of the environmental aspect of sustainable procurement on the performance of rice production firms in Benue State.
ii. determine the effect of the economic aspect of sustainable procurement on the performance of rice production firms in Benue State.

1.4 *Hypotheses*

To achieve the objectives of this study, the following hypotheses are formulated in null form thus:
Ho_1: The environmental aspect of sustainable procurement has no significant effect on the performance of rice production firms in Benue State.
Ho_2: The economic aspect of sustainable procurement has no significant effect on the performance of rice production firms in Benue State.

2.0 LITERATURE REVIEW

2.1 Concept of Sustainable Procurement

Sustainable procurement, as described by Bolaji *et al*. (2020), is the act of buying goods and services in a socially as well as ethically acceptable manner while at the same time responding to the environmental impacts within a supply chain and, of course, applying an economic feasibility-based solution, all within the confines of legal permissibility. Islam *et al*. (2017) defined sustainable procurement as limiting packaging and waste, assessing the vendor according to their environmental management, safe working records, respect for labor rights, and their capacity to create green products, as well as their ability to lower the carbon footprint associated with goods transport. In other words; when acquiring goods, works, or services for their operations, procuring

entities must consider three parameters: aspects of economic, social, and environmental (Shaikh and Channa, 2022).

Sustainable procurement deals with the procurement function in a responsible manner in consideration of the economic, social as well as environmental impacts of procurement (Shaikh and Channa, 2022). Therefore, successful and sustainable pupils' procurement serves both the organizations and society's interests. Islam *et al*. (2017) found that sustainable procurement ensures that all the safety materials and operations procured from suppliers are manufactured with the aim of protecting the environment. Also, the organization pays attention to the labor rights of its employees before choosing its suppliers. As other authors state sustainable procurement-compliant organizations follow the organization's social responsibility requirements and protect society's assets (Agarwal *et al*., 2020).

Sustainable procurement deals with managing all aspects of the upstream components of the supply chain to maximize triple-bottom-line performance (Sayed *et al.*, 2021). In other words, supplier's activities must be sustainable. Sustainable Procurement is an act or an effort by a firm in an attempt to achieve sustainability development objectives through the means of purchasing and supply (Akpan *et al.*, 2016). This means that firms, in their attempt to achieve economic and organizational goals, must show a positive attitude towards society and the environment through the acquisition of their inputs through responsible purchasing from suppliers who integrate sustainability in their activities. The conceptualization of sustainable procurement practice along the triple-bottom-line reasoning signifies business practices that promote economic viability, social responsibility, and environmental friendliness.

2.2 Dimensions of Sustainable Procurement Practices

Sustainable procurement sees economic, environmental, and several other factors as part of the procurement equation (Ayewumi, 2023). It is based on three key pillars: across the environmental perspective and the economic perspective, as reviewed by Brammer and Walker (2011), Sayed and his team (2021), and Ayewumi (2023); that this study is anchored on..

i. Environmental Aspect of Sustainable Procurement

This is the process of obtaining products and services which are favorably disposed toward the environment. Environmental buying is majorly collaborating with vendors (Okpiaito *et al.,*2020). Shao and Unal (2019) averred that integrating environmental thinking into the buying process permits organizations to offer design specifications to providers which, at a minimum, should contain ecological concerns for eco-friendly bought materials. This form of sustainability concentrates on ensuring that the original value of natural resources for the sustenance of mankind is upheld (Gani, 2021). Phan and Phan (2018) make it clear that environmental sustainability is the preservation of the environment for the existence of the human race. In organizations, we also find that there is a need to balance between the opportunity that the environment offers an organization now and the environmental cost that could be incurred in the future. That way, they should embrace management practices that affect the environment, including efficient waste disposal, the use of natural resources, the use of hazardous materials and land, and control of air and noise pollution, among others (Das, 2018).

Gani (2021) posited that one of the main goals of sustainable procurement is to reduce the environmental impact of products and services throughout their entire lifecycle. This includes everything from extracting raw materials to manufacturing to using and disposing of products. Environmental sustainability, according to Kanan (2021) refers to the capacity to preserve

ecological balance within the planet's natural environment while conserving resources to ensure the well-being of both present and future generations. Environmentally sustainable procurement focuses on minimizing environmental impacts throughout the supply chain. This includes reducing carbon emissions, conserving natural resources, promoting renewable energy, and implementing waste reduction and recycling initiatives.

ii. Economic Aspect of Sustainable Procurement

With this approach to sustainability, economic development is assured while safeguarding the environment. According to Erakpotobo (2018), this entails the efficient use of resources to yield long-term benefits while minimizing the adverse effects associated with resource consumption. This, according to Akpan *et al.* (2016), involves more than just increasing the firm's return on investment; it also entails preventing any economic, environmental, or social harm from being caused by organizational activities or business processes. According to the study by Ola *et al.* (2018), economic sustainability refers to making sure that economic welfare is provided with the future in mind. It also refers to making sure that as a business operates, it is not endangering society while still performing better. By doing this, they are able to advocate for the most effective and efficient approach to exploit and deploy the resources in that environment in order to achieve long-term profitability (Dina *et al.*, 2021). Aliu *et al.* (2018) claimed that economic sustainability describes the benefit that an organization's stakeholders would experience as its profits rise.

2.3 Firm Performance

Performance is a distinct and most significant factor for measuring the success of a firm's operations (Odesola and Aderemi. 2022). This is reflected in the firm's capability to effectually craft and enact tactics that actualize laid down goals and objectives of the firm. Tomal and Jones (2015) also viewed firm performance as a firm's actual outcome matched against the firm's expected outcome. These definitions imply that performance measures how well a firm is doing in terms of achieving target objectives, satisfying customers, quality output, and service delivery.

The analysis of organizational performance evaluates the competitive standing of a firm and its level of satisfaction with investors' demands (Lo *et al*., 2015). On a deeper level, it shows how well an organization taps both physical and non–physical assets to accomplish its objectives (Wheelen and Hunger, 2012) and is the end product/result of the organization.

As noted, there are several techniques available for measuring performance effectively, and organizations adopt one or several of these today; financial and non-financial are one of the choices. Most scholars argue that formative and summative assessments are complementary and that both types of measures should be used (Ho *et al.,* 2016). Therefore, in this study performance can be defined as the measure of how effectively and efficiently rice producing firms achieve their set goals being cost effective and efficiently.

2.4 Measures of performance

Performance measurement increases financial outcomes, strengthens the firm's environmental performance, and generates goodwill. Cost and quality, product and service quality and delivery, and operational efficiency are compelling operational performance indicators in organizations supporting the views of Green *et al*. (2012), Laban and Deya (2019), Ehiedu and Olannye (2014), Ehiedu *et al.*(2020, 2022), and others.

i. Cost Effectiveness: According to Leban and Deya (2012), cost-effective means achieving a desired outcome at the lowest possible cost. It is a measure of how well the resources used are

aligned with the results achieved. A cost-effective solution is one that achieves the desired outcome while using the least amount of money. It improves decision-making, resource allocation, and operational optimization. Ehiedu and Olannye (2014) posited that cost-effectiveness is a management strategy through which an enterprise/business attempts to reduce the cost of production in order to enhance revenue.

ii. Operational Efficiency: is the ability of an organization to reduce waste in time, effort, and materials as much as possible while still producing a high-quality service or product (Nsikan *et al.,*2023).There is definite agreement on what operational efficiency is; it can be defined as the process of delivering products or services to customers at the lowest possible cost, without compromising on product and service quality, and quality customer service (Ahmad *et al.,* 2019). Consequently, it assesses the performance of an organization by measuring the number of resources used with a view of utilizing available resources fully in the production of quality goods within the least costs possible. This is a suitable determination based on the number and management of resources available. Other authors, Mbah *et al*. (2019), give a similar definition of operational efficiency as the means through which a service sector is capable of achieving organizational goals of delivering products or services profitably while meeting the quality, service, or support standards.

2.5 Theoretical Framework

This study is grounded on the institutional theory.

2.5.1 Institutional Theory

Scott's (1987) institutional theory is a theoretical framework for the institutional structure as well as stable features of any society. This theory inclines towards the open system view and postulates that the organizational environment plays a strong role in managing it. Here, institutions are the structural set of surface rules that provide for the relationship between different social agents (Biesenthal *et al*., 2018).The institutional theory that applies to how organizations modify in order to gain societal and economic legitimacy through compliance with legal frameworks. Scott (1987) defines institutions as consisting of regulative, normative, and cultural-cognitive elements that, along with their related activities and resources, define order and provide purpose to social experience. He referred to these elements as, institutional conveyors (Scott, 2014).

The first component, the regulatory pillar, works with procedures, rules, and regulations as actual tools of the tire. The second component, the normative pillar, focuses on norms and values in which social requirements are the framework for compliance. The cultural-cognitive pillar is linked to cognition by symbols and common perceiving of reality. The connection of this study to institutional theory is based on Meyer and Rowan's (1977) definition whereby institutions deliver compliance signals but do not reduce the relevance of frameworks that could attract penalties. Burton (1987) made the same observation, pointing out that the institution of procurement was in tune with sustainability goals, especially for future generations.

From the same source, Scott (1987), using institutional theory, other research has attributed social pressure, sanctioning, culture, and self-interest as critical variables that are likely to compel organizations to meet procurement laws and regulations compliance. such elements act as basic components for improving the performance of procurement by proactively building up the procurement functions. As applied to rice-producing firms, public procurement must, therefore, be goal-based. As Grob and Benn (2014) postulated, this framework will be devoted to meeting aims and targets. These aspects mean that by identifying specific and relevant goals for procurement

and positioning strategies accordingly, the improvement of organizational performance in general and a positive impact of procurement on its efficiency and sustainability, in particular, can be achieved.

In this construct, organizations experience pressure from other similar organizations that depend on the societal context in which they operate, according to Grob and Benn (2014). This external pressure can act in the form of the government putting into practice policies that compel firms to start putting into practice green or sustainability and socially responsible policies. This study proves that coercive isomorphism through frameworks and policies play an important role in the ultimate improvement of organizational sustainability.

Institutional theory focuses on the role of institutions in shaping organizational behavior, Sustainable procurement practices can be influenced by firms desire to embrace social and environmental standards to have competitive edge as well as institutional pressures, including regulatory frameworks, industry standards, and societal expectations. Organizations may adopt sustainable practices to conform to institutional norms and expectations. (DiMaggio and Powell, 1983).

2.6 Review of Related Empirical Studies

Nsikan *et al.* (2023) examined the impact of sustainable purchasing among food and beverage firms in Nigeria. The research aimed to identify the key factors influencing sustainable purchasing decisions and their impact on supply chain performance, the study highlighted that, despite the calls for increased integration of social, environmental, and economic considerations in purchasing decision, food and beverages organizations understudied appeared to favor economically sustainable procurement practices.

Iherobiem (2023) study established the effect of sustainable supply chain management practices on the innovative performance of manufacturing firms in Nigeria. the study analyzed how incorporating sustainability initiatives into organizational practices enhanced performance in terms of the economy, society, and environment, and how it influences the capacity for innovation and competitive advantage. Findings highlight the critical role of sustainable supply chain management in driving innovation and competitiveness in the manufacturing sector in Nigeria. By focusing on economic, environmental, and social sustainability dimensions, organizations can not only improve their performance but also contribute positively to society and the environment.

Owusu (2022), examined the effect of sustainable procurement on supply chain surplus mediated by green supply chain learning in pharmaceutical firms in Ghana. The findings revealed that both sustainable procurement and green supply chain learning have a positive and significant effect on supply chain surplus.

Lopez. (2021), examined the impact of sustainable procurement practices on the economic and environmental sustainability of rice farming in the Philippines. The study found out that rice farmers participating in sustainable procurement initiatives experienced increased access to markets, improved farm productivity through sustainable farming techniques, and enhanced environmental stewardship.

Bianchi (2021), examined the impact of sustainable procurement practices on the economic performance of agricultural cooperatives in Northern Italy. The study found that agricultural cooperatives implementing sustainable procurement practices experienced improved economic performance, including increased revenue and cost savings.

Yamamoto (2020) examined the environmental impact of sustainable procurement on rice farming practices in Japan. The study revealed that sustainable procurement initiatives resulted in reduced water usage, pesticide use, and greenhouse gas emissions in rice farming operations. Additionally, biodiversity conservation measures were implemented, contributing to ecosystem resilience.
Duangjan (2018) examined Sustainable purchasing and business performance in manufacturing industries. The study found out that sustainable purchasing positively influences firm performance through improved purchasing performance and competitive advantage. It highlights the importance of integrating social and environmental considerations into procurement practices, especially for large manufacturers in developing countries. The study concludes that embracing sustainable purchasing practices may enhance business performance and provide a competitive edge in the market.

Adegbuyi *et al*. (2017) in "Corporate Social Responsibility and Sustainable Supply Chain Management in Nigeria examined the relationship between corporate social responsibility (CSR) and sustainable supply chain management (SSCM) in Nigeria. The study provides insights into the challenges and opportunities for implementing sustainable practices in Nigerian supply chains, including issues related to stakeholder engagement, regulatory compliance, and resource constraints. The study contributes to the understanding of sustainability initiatives in Nigerian business contexts, which indirectly relates to sustainable procurement practices within the supply chain.

3.0 METHODOLOGY

This study adopted the survey research design approach.; in particular the descriptive research design. The population of this study comprised 193 top management, middle management, operating management, and field staff of thirty (30) rice production firms operating in Benue State. These firms comprised of ten (10) firms in zone A, twelve (12) firms in zone B and eight (8) Firms in zone C senatorial districts. The firms include ORACLE Business Nigeria Limited Makurdi (73), MIKAP Nigeria Limited located in Makurdi (51), and farmers' organizations (Processors, Aggregators, and Cultivators) under the IFAD Value Chain Development Program Benue State (69) as obtained from the human resource department of the respective firms. The One hundred and ninety-three (193) staff form the population of the study because they are involved in sustainable procurement practice in those firms. The choice of the firms is that they embrace sustainable procurement practice, registered with the Benue State Ministry of Industry, Trade and Investment and are members of the Benue Chamber of Commerce, Industries, Mines and Agriculture.

Since the population is of a manageable size, hence all the population served as sample in this study (census method). The sample size for the study comprised of the entire population of 193 respondents from 30 firms, 10 from zone A, twelve from zone B and eight from zone C. The census approach was used to arrive at the sample of the study since the number is of manageable size for the researcher.

The data for this study were collected through questionnaire administration. Validity and reliability were done before the actual study. Primary data served as the major source of data collection for this study.

The model employed for this study is multiple regression model which involves the independent variable (sustainable procurement practices), and the dependent variable (firm performance). Therefore, the model specification to test the formulated hypotheses is as follows:
The model for this research is given as

FP = f(SP) = (EN, EC) .....(1)
Where
FP = Firm Performance
SP = Sustainable Procurement
EN = Environmental Aspect of Sustainability
EC = Economic Aspect of Sustainability
FP = x + B_1EN + B_2 EC + e .....(2)
Where
x = Intercept of the regression
B_1-B_2 = parameter estimates
e = error term
A priori expectations are: $B_1 > 0$, $B_2 > 0$, it is expected that the analysis based on the model in question will help to test hypothesis Ho_1 to Ho_2, answer the two research question for this study and achieve the two objectives.

4.0 RESULTS AND DISCUSSION

One hundred and ninety-three (193) questionnaires were administered to the respondents in the sampled rice-producing firms for this study, and one hundred and eighty-four questionnaire (184) were duly completed and recovered.

TABLE 1: MODEL SUMMARY

Model	R	R Square	Adj.R Square	Std. Error of Estimate	Durbin Watson
1	**.893[a]**	**.797**	**.795**	**0.8120**	**2.02**

a: Predictors (constant), Environmental Aspect, Economic Aspect.
b. Dependent variable: Firm Performance
Source: Authors' Computation, from SPSS printout, 2024.

The result of the R-square of 79.7percent indicates that sustainable procurement accounts for only 79.7 percent of the variation in the performance of Rice production Firms in Benue State, while 20.3 percent is accounted by factors other than sustainable procurement, which are not included in the model, and are outside this study. The F-statistics (21.23) signifies that the overall equation is significant at 0.001 percent (below 1%) level. This implies that the model is fit to be used for interpretation.

TABLE 2: **REGRESSION COEFFICIENT RESULT**

Model	Beta	T	Sig
1 (Constant)	1.543	10.94	.000
Environmental	.841	6.89	.014
Economic	.854	8.08	.002

Dependent variable: Firm Performance
Source: SPSS regression printout (version 25.0 for Windows output), 2024.

TABLE 3: ANOVA[B] FOR THE OVERALL SIGNIFICANCE OF THE MODEL

Model	Sum of squares	Df	Mean square	F	Sig
Regression	82.180	2	41.009	21.23	.001[∂]
Residual	70.192	181	0.3878		
Total	152.372	183			

a. Predictors: (constant); EN, EC.
Dependent variable: FP
Source: Authors' Computation, from SPSS printout, 2024.
The result is significant, shown by the F-statistics of the regression model as indicated by a value of the *F*-statistic, 21.23 and significant at the 5.0 percent level.
Table 15 shows that an increase in environmental aspects of sustainable procurement will improve the performance of rice production firms by 0.841 units. this implies that embracing the environmental aspect of sustainable procurement by rice firms has the potential to influence the performance of rice firms positively, thereby making the subsector worthy of investment. The results also indicate, an improvement in the environmental aspect of sustainable procurement practices by way of the use of energy-efficient equipment, adopting renewable energy with low carbon emission during the production process, Environmental management system, use of eco-labelsin buying some production materials, and conversion of waste into other products like Briquette can improve the performance of Rice production firms.
For the economic aspect of sustainable procurement, an increase will also increase the performance of rice firms by 0.854. this means that prioritizing the economic aspect of sustainable procurement by ensuring cost-effectiveness, financial assessment of investment, and carrying out cost-benefit analysis of rice-producing firms will positively affect the performance of the Rice producing firms, making it a profitable venture.

Hypotheses Testing and Discussion of Findings
HO1: Environmental aspect of sustainable procurement has no significant effect on performance of rice producing firms in Benue State-Nigeria.

From the regression result in Table 2, the calculated t-value for the environmental aspect (EN) is 6.89, which is greater than the critical value of 1.96. the p-value of 0.014, which is less than 0.05. The result provides the basis for rejecting the null hypothesis that environmental aspects of sustainable procurement do not significantly affect rice firms' performance. This means that environmental aspects of sustainable procurement have a significant and positive effect on the performance of rice-producing firms in Benue State-Nigeria. The findings of this investigation agree with Duangjan, C. (2018), Lopez (2021), Yamamoto (2020), Adegbuyi *et al.* (2017), who all aver that sustainable purchasing positively influences firm performance, they also posited that producers participating in sustainable procurement experience increased yield, resource efficiency which led to increased market accessibility. This implies that obtaining products and services that are favorably disposed toward the environment and collaborating with environmentally conscious vendors can aid product acceptability and quality output that meets human needs. Therefore, this study concludes that the environmental aspect of sustainable procurement has a positive and significant effect on the performance of rice-producing firms in Benue State.

HO_2: Economic aspect of sustainable procurement has no significant effect on performance of rice producing firms in Benue State.
From the regression result in Table 2, the calculated t-value for economic aspect (EC) is 8.08, which is greater than the critical value of 1.96. The p-value of .002 which is less than .05. The result provides the basis for rejecting the Null hypothesis that economic aspects of sustainable procurement have no significant effect on the performance of rice-producing firms. Therefore, economic aspects of sustainable procurement have a significant and positive effect on the performance of rice-producing firms in Benue State.

The findings of this investigation also agree with Bianchi (2021), Nsikan *et al*. (2023), Owusu (2022), Rahman (2021), Iberobiem (2023), posited that the economic aspect of sustainable procurement practices led to improved economic performance, markets Access, delivery efficiency, cost minimization and better supply chain performance. Rahman found that sustainable procurement initiatives, especially the economic aspect of sustainability, positively influence smallholder income by providing stable market access and premium prices, these studies revealed that, the economic aspect of sustainable procurement is designed to create the long-term economic development of a company while also balancing economic growth and generating profit with positive impact on the environment and people such as youth and women empowerment.

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The study examined the effect of sustainable procurement on the performance of rice-producing firms in Benue State. The study had three objectives, three research questions, and three hypotheses tested using multiple regression analysis.

The summary of the findings is presented according to the three objectives and research hypothesis of the study as follows:

v. The environmental aspect of sustainable procurement has a significant and positive effect on the performance of rice-producing firms in Benue State (Beta = .841, t = 6.89, P =.014).

vi. Economic aspect of sustainable procurementsignificantly and positively affects rice producing firms' performance in Benue State (Beta = .854, t = 8.08, P =.002).

5.2 Conclusion

This study concludes that there is a positive/significant effect of Environmental and economic aspects of sustainable procurement on the performance of rice-producing firms in Benue State. The study contributed to the literature about the effect of sustainable procurement on the performance of rice-producing firms in Benue State. The study has proven that some pertinent forms of relationships exist between the variables for sustainable procurement, such as the environmental aspect and economic aspect of sustainable procurement and firm performance. The study concludes that sustainable procurement (environmental aspect, economic aspect, and social aspect of sustainable procurement, respectively) can be considered an effective and viable tool for rice-producing firms performance (in terms of operational efficiency, cost-effectiveness, and quality of output) as they have potentials for enhancing the performance of rice producing firms through creating an environmental, economic and social aspect of sustainability that incorporates the human concerns into their production process.

5.3 Recommendations

Sequel to the findings and conclusions above, the following recommendations are made:

i. Management of rice-producing firms should emphasize more sustainable procurement practices in their production activities.This may be achieved through Investing in green tech and precision tools to boost productivity and reduce environmental impact. Collaborate with policymakers to support sustainable procurement legislation and environmental initiatives. Educating stakeholders through workshops and sharing success stories to inspire responsible practices. Providing firms with subsidies, grants, and certification programs that reward eco-friendly practices as well as align sustainability with business goals, setting performance targets and tracking progress for continuous improvement.

ii. Management of rice-producing firms should also focus more on developing and enhancing the economic aspect of sustainable procurement by reducing cost through the implementation of bulk purchasing agreements, negotiating favorable terms with suppliers to reduce procurement costs while maintaining quality, build reliable, long-term supplier relationships for consistent pricing and dependable delivery while enhancing supply chain transparency to identify cost-cutting opportunities.

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