


Article

Barriers to Adoption of Sustainable Procurement in the Nigerian Public Construction Sector

Luqman Oyekunle Oyewobi ¹ and Richard Ajayi Jimoh ^{2,*} ¹ Department of Quantity Surveying, Federal University of Technology, Minna 920101, Nigeria² Department of Building, Federal University of Technology, Minna 920101, Nigeria

* Correspondence: rosney@futminna.edu.ng

Abstract: Construction industry tenders are usually awarded to the lowest bidder, with emphasis being placed on the past, on price, quality, and timeliness, with little to no attention paid to the commitment of contractors to sustainability. It is not all construction firms and other stakeholders have an understanding of what sustainable procurement is about in the Nigerian construction industry, resulting in the limited adoption by those that understood it due to the level of risk they claimed it involved. This research examines the barriers to implementing sustainable procurement in the Nigerian construction industry by adopting a survey approach using self-administered questionnaires to obtain data from a purposively sampled group of 116 procurement practitioners in Abuja, Nigeria. The data were analyzed using descriptive statistics and exploratory factor analysis. Factor analysis was used in categorizing the barriers to sustainable procurement into four: attitude and poor fiscal incentive; financial restrictions; insufficient leadership and knowledge; and regulatory constraints. The result showed that there was no sustainable procurement regulatory framework in the country and that a lack of government commitment, poor economic conditions, and a lack of knowledge were the major barriers to the adoption of sustainable procurement in the Nigerian public construction sector. It is therefore suggested that to make the construction industry's activities more sustainable, practitioners need to learn more about sustainability, and governments should make policies that encourage and support low tariffs and taxes on sustainable goods and provide government subsidies. The research adds to the ongoing discussion about sustainable procurement practices in developing economies. It does this by drawing on a variety of theoretical perspectives to give a deep understanding of the challenges of sustainability from the public sector's point of view.

Keywords: barriers; construction industry; Nigeria; public sector; sustainable procurement



Citation: Oyewobi, L.O.; Jimoh, R.A. Barriers to Adoption of Sustainable Procurement in the Nigerian Public Construction Sector. *Sustainability* **2022**, *14*, 14832. <https://doi.org/10.3390/su142214832>

Academic Editor: Antonio Caggiano

Received: 11 October 2022

Accepted: 8 November 2022

Published: 10 November 2022

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1. Introduction

At the 2002 World Summit on Sustainable Development, the United Nations (UN) urged governments around the world to embrace public procurement practices that encourage the spread of environmentally sound goods and services. One of the numerous suggestions made was that nations needed to develop means to integrate sustainability issues into the government process of procurement [1]. In response to this appeal, many, particularly in advanced countries, have taken this opportunity to promote the necessity of environmentally friendly procurement procedures in government [2]. In 2007, in response to the United Nations World Summit on Sustainable Development, the Nigerian government established an agency called the Nigerian Environmental Standards and Regulatory Enforcement via a legislative Act to domesticate and replicate some of the sustainability Agenda 21 in Nigeria (Nigerian Environmental Standards and Regulatory Enforcement Act (NESREA Act)). The agency was given the task of implementing Agenda 21, a comprehensive strategy for use by governments on a global, national, and local scale. The primary goal is for governments and their agencies to incorporate environmental dimensions into programs and projects to usher in the direction of sustainable development through the

consideration of sectorial priorities, the development of plans and strategies for implementation, the pooling of regional and global resources, and the collaboration of these groups. As a result, it is now required that an Environmental Impact Assessment (EIA) be conducted before any public facilities are built, that corrective measures be implemented to lessen the impact of construction, and that post-construction review assessments be initiated [3]. In the same year, the President of Nigeria signed the Public Procurement Act 2007 to establish some sort of framework for the public procurement process in Nigeria. As part of its mandate, the Act created the Bureau of Public Procurement (BPP), an agency charged with coordinating, harmonizing, and establishing price benchmarks for government procurement. As a result of its lack of specificity, the Public Procurement Act of 2007 was unable to advance sustainable procurement in the public construction sector [4]. Despite Nigeria's prime efforts to advance sustainable development, the country's construction industry still faces unresolved sustainability issues. Because of this, the country does not have the policy tools—like laws—it needs to make procurement sustainable in the construction sector [4].

Sustainable procurement is considered by this study as ethical business practices that center on the delivery of socially and economically beneficial solutions to an organization as well as the procurement of products and services, all while minimizing an organization's negative influence on the environment across the supply chain [5]. Sustainable procurement practices include: following environmental laws, getting rid of harmful substances and waste from the supply chain, and carefully checking suppliers and contractors to ensure projects are executed in the best of conditions. According to [6], sustainable procurement is a critical concept and practice for achieving sustainable development. Ruparathna and Hewage [7] gave credence to this statement by alluding to the fact that the construction industry as a whole can improve its overall sustainability performance by adopting sustainable procurement practices, which can also enhance procurement processes. Considering this assertion from [8,9], Oyewobi et al. [4] posited that the Nigerian construction sector lacks social, economic, and environmental sustainability standards that are capable of promoting sustainable procurement, hence the need for this study.

In Nigeria, public infrastructure contracts have long been awarded and completed without proper consideration for sustainability and the quality of the job. Repeated delays, cost overruns, and numerous construction collapses are evidence of this [4,10]. Nigeria's rising number of delayed and unfinished projects not only undermines sustainable development but also raises questions about the procurement techniques used to execute these projects. It is clear that public procurement procedures are lacking in both ideas and strategy when it comes to sustainability. So, for long-term growth and development in the new millennium, construction procurement strategies need to take into account challenges and issues as well as progress in economic growth and development. While construction activities have an impact on and are affected by the environment, sustainability is a major problem in the construction industry [11]. In order to achieve sustainable development, there is a need to strike a balance between the triple bottom line of sustainability (i.e., environmental, social, and economic concerns). At the moment, sustainable development is focused on society, and its goal is to include environmental concerns in societal change, especially by making changes to how economic systems are designed [12].

Similar studies have been conducted in Nigeria, but the results have varied. For instance, in Nigeria, [8] analyzed what factors stand in the way of achieving sustainable procurement for publicly funded building projects. The study categorized the obstacles into four groups: lack of sustainability knowledge, lack of transparency and governance, a lack of alignment between procurement and sustainability goals, and difficulties at the national policy level. While [9] investigated what hinders the Nigerian construction industry from adopting sustainable procurement practices, they found that a lack of compelling legislation, a dearth of affordable alternative green products, and general unfamiliarity with the concept of sustainable procurement as the most significant challenges. However, what informs the categorization of these barriers is not known. Drawing on the theoretical underpinning of this concept would have provided a better understanding of the full

complexity of sustainable procurement in the public sector and the naming of the clusters. These studies did not provide this missing link, and they also did not look into why sustainability concerns were not taken into account during the procurement process.

This study makes a contribution to the current discourse about sustainability by examining the adoption of sustainable procurement practices and by drawing concurrently on TPL theory [13,14], institutional theory [14], and ecological modernization theory [15] in order to improve understanding of the concept within the construction management field as applicable to sustainable growth. The study will also assess the challenges that the Ministries, Departments, and Agencies (MDAs) of the Federal Government of Nigeria face while attempting to implement environmentally responsible procurement policies and procedures.

The purpose of including a number of different theories in this research is not to demonstrate that one theory is superior to the others but rather to highlight the ways in which the various theories complement one another in explaining sustainability in a way that will be helpful to businesses as they work toward implementing sustainable procurement. There are a number of challenges in sustainable procurement that could be better addressed by utilizing a combination of theories. The theories that are presented in this study are significant in that they offer a full grasp of the challenges that could be overcome in the process of putting sustainable public procurement efforts into action. The obstacles include issues like regulations, people's resistance to change, and sociocultural and environmental concerns, among others, all of which will, in the end, help to conserve critical natural resources for both current and future generations.

2. Literature Review

The topic of sustainable procurement is one that has only recently been brought to the attention of academics and business professionals, especially in the construction industry [16,17]. The general public's knowledge of environmental and social issues has been evolving, which has encouraged businesses and other organizations to incorporate more sustainable business practices into their operations [18]. Despite the fact that the relevance of implementing sustainable procurement in developed nations in order to contribute to sustainable development goals (SDGs) is continually growing on a global scale, the public construction sector in Nigeria is yet to incorporate sustainability issues into the procurement process. However, it is anticipated by procurement professionals that they will seek items and services that adhere to ethical standards, are economically feasible, socially worthwhile, and have reduced environmental effects [19,20]. In addition, the procurement process needs to follow both the rules that have been set up and the needs of the clients [18]. Because of the emphasis placed on finding solutions to real-world issues, applied disciplines like construction and supply chain management frequently do not have a solid theoretical foundation [21]. Therefore, in the following part, an effort will be made to explain sustainable procurement and develop a theoretical foundation for sustainable procurement. The identified theories offered the necessary assistance to provide an in-depth understanding of the idea in relation to the field of construction management.

2.1. Theoretical Background

The concept of sustainable development refers to the belief that human civilizations must find a way to survive and satisfy their needs without endangering the capacity of future generations to fulfill their own requirements [13]. To gain a better understanding of the idea, researchers have used several theoretical perspectives to describe sustainability in the literature. For example, [14] employed institutional theory and Triple Bottom Line (TBL) theory, among others, have been used to explore the sustainable supplier selection process, while a school of thought in the social sciences known as ecological modernization was applied to sustainable operations to gain a deep insight into sustainable procurement [15,22]. This line of thinking contends that the system can benefit from more environmentally conscious policies and practices. Consequently, academics and practitioners throughout

the world have been paying increasing attention to it over the past few decades. Ecological modernization is the ecological transformation of global modernity brought about by contemporary ecological and environmental consciousness [23]. This is an example of how modernization and the natural environment may work together in harmony. Ecological modernization is relevant to this study because it focuses on the sociocultural or philosophical aspects of the current environmental rhetoric, which is a shift in the social environment and economic development issues [24].

The ecological modernization theory is thought to be a good complement to [25] Triple Bottom Line theory, which considers both economic and environmental values. Sustainability in procurement is based on the TBL method, as [26] emphasized, as this approach considers the three pillars or bottom lines of the procurement process. The adoption and maintenance of organizational practices, some of which are influenced by social factors, can also be explained by institutional theory [27] as a valuable explanatory tool for construction sustainable procurement implementation [28]. Although it has been criticized for its broader application in relation to the persistence of homogeneity, it has also been regarded as a vibrant theory that has been synthesized and contrasted using a wide range of methodologies, and its scope has been substantially increased [29]. As such, an institution's relationship with the outside world is the primary subject of institutional theory, which examines policy and management issues. In relation to the construction industry in Nigeria, the 2007 procurement Act is an example that was enacted to provide guidelines on how the public sector gets its goods and services. While the organization's existence is a primary concern, this context is characterized by ambiguous aims, technology, and inconsistencies in the engagement of actors, with legitimacy as a central theme [27]. Institutional theory's flaw resides in its consideration of intrinsic dynamics for the purpose of organizational change, which ignores the significance of dominance and a desire for one's personal gain and well-being [28,30]. Critics contended that the New Public Management (NPM) paradigm undermines the core ideals of governance that set the public sector apart from the commercial sector, notwithstanding its success in helping to shape public sector change [31]. Institutional theory, however, can be used to study organizations on a wide range of scales. It has been shown to be a useful tool for explaining things even in modern studies [27,32].

2.2. Sustainable Procurement and the Construction Industry

According to [33], in the construction industry, tenders are usually awarded to the lowest bidder, with emphasis being placed on the past, on price, quality, and timeliness, with little to no attention paid to the commitment of contractors to sustainability. Nevertheless, in reality, an evaluation of a potential contractor's plan for addressing sustainability issues is conducted based on main concerns, which are typically broken down into different types of socioeconomic and environmental considerations [34]. Therefore, as the construction industry faces growing pressure to aid in the achievement of sustainable development goals by incorporating environmental and social criteria into the procurement process [13], sustainable procurement has been implemented to help make construction projects more environmentally and socially responsible. Sustainable procurement is a way to achieve environmental, social, and economic goals in a way that is integrated [35]. It takes into account criteria like resource efficiency, improved product quality, and cost optimization over the whole life cycle of a product [35]. According to [36], research on sustainable construction procurement contributes to the accomplishment of this goal by incorporating the basics of corporate social responsibility into the procurement decisions that are made by all parties engaged in the execution of construction projects. Sustainable construction procurement has provided a basis for the successful completion of sustainable buildings, which cannot be achieved without establishing clear-cut objectives so that the expected outcomes can be obtained in terms of expected performance and value, as well as characterizing the budget and environmental constraints [37].

Despite the fact that many public institutions, organizations, and authorities on a global scale have been implored to strengthen procurement policies and practices that encourage environmentally sound goods and services and sustainable construction [38,39], there have been few studies on the initiatives that help in promoting the wider utilization of sustainable procurement in the construction industry. It is essential to emphasize the fact that the guidelines for sustainable procurement are interpreted differently in various parts of the world as a consequence of global factors [40]. Rwelamila et al. [41] posited that not taking into account local factors when coming up with solutions for the construction industries of emerging nations could be a recipe for failure. As a result, it is necessary to design guidelines for sustainable procurement that would clearly represent local politics [7].

However, evidence abounds in the literature that suggests that there are substantial social, economic, and environmental benefits for businesses that adopt sustainability practices when procuring new construction projects [42]. Yet, construction companies have not fully integrated green procurement practices [43]. With regard to sustainability adoption and implementation, the construction industry is, in fact, behind the curve compared to other sectors [44]. As noted by [45], sustainable procurement is still in its infancy and has not been widely adopted in the Canadian construction industry, which is a developed country. In a related development, according to [37], it is not all construction firms, and other stakeholders have an understanding of what sustainable procurement is about in the Nigerian construction industry resulting in the limited adoption by those that understood it due to the level of risk they claimed it involved. In spite of the fact that there are a number of reasons why environmental and social procurement strategies have still not become a wholly acceptable method in the public sector and how it continues to struggle to ensure the accomplishment of a contemporary management approach, it is important to note that social and environmental supply chain practices have the potential to become an important part of government [46].

One of these explanations is that public institutions are reluctant to change their procurement policies. It is commonly believed that such procedures, at the very least in the beginning stages, are resource-heavy and expensive [47,48]. In addition, the purpose of integrating environmental responsibility into construction procurement could be fairly difficult, both in terms of the technical factors involved and in respect of traversing the dynamics of the institution [47,49]. This means that the organization's strategic plans have to be in sync with each other and that the government has to be truly committed, both in terms of time and resources [47,50].

2.3. Barriers to Sustainable Procurement

In the existing literature on the barriers to sustainable public procurement, both interpretivist and positivist approaches have been employed. These research efforts on the public procurement process have been recognized [51], and evaluations of initiatives related to the topic have also been found [52]. For example, Ageron et al. [53] examined the critical criteria and conditions that must be met in order to make public purchases that are sustainable. Zhu et al. [54] considered how the techniques and motivators of sustainable public procurement are related. Similarly, previous studies have uncovered obstacles to sustainable procurement, which gives a platform for further research work into each subject. Alvarez et al. [55] carried out a literature analysis on the challenges to sustainability faced by small and medium-sized businesses and compiled a summary of 175 challenges originating from a variety of sectors. They concluded that these barriers could come from either inside or outside of the organizations themselves.

However, research efforts focusing on public procurement's difficulties include a study of psychosomatic barriers to the implementation of sustainable procuring [56], an evaluation of challenges and opportunities in Malaysian organizations [39], and a comparison of enablers and barriers in a global setting [14]. Findings from these studies show that the investment costs and financial limits of sustainable government procurement strategies are the most significant obstacles to the development of sustainable procurement strategies [54,57],

as well as the importance of collaborative efforts, attitudes toward the procurement process, organizational characteristics, and types of leadership [43,46,54]. According to [58], the blend of attitudes, beliefs, values, and norms is what defines a sustainable strategy at the organization or industry level. As a result, the formation of a resilient culture and the maintenance of a high standard of appropriate competencies are both helpful in aligning institutions, people, and processes in order to deliver the maximum value for the attainment of sustainability objectives [59]. The development of a better industrial culture helps the construction supply chain adopt sustainable purchasing practices. In a similar vein, ref. [8] conducted an investigation into the components that, when combined, serve as barriers to the sustainable procurement of government-financed construction projects in Nigeria. According to the findings of the study, there was a lack of understanding, resources, and a long-term perspective on procurement decisions, leadership, and political commitment when sustainable procurement practices were studied between public and private firms. In a related development, engendering sustainable construction is hampered by two key factors; one is the absence of historical data and signature projects that professionals in the construction industry can leverage in the quest to have a better understanding of the concept and the issue of resistance to change in relation to the cultural backgrounds of the major stakeholders [60]. As a result of the construction sector's new concept, the sustainable procurement system faces several obstacles that must be carefully addressed to undertake a project within sustainability guidelines effectively [61]. This study, therefore, examined the barriers that prevent public organizations from adopting sustainable procurement practices because the current procurement practices in the country lack a sustainability strategy.

3. Research Methodology

For the purpose of providing a better understanding of the study subject, a quantitative methodology was applied [62]. The quantitative research approach was chosen because it was the most appropriate for achieving the purpose of this study, which was to investigate the barriers to the implementation of sustainable procurement practices in the Nigerian construction industry. This method is similar to the ones that [15,39] used to look at the challenges of sustainable procurement in the Malaysian construction industry and the Brazilian public sector, respectively. As indicated by [63], desk research, experimental, and survey are the three primary methods that can be utilized while conducting a quantitative study. This study makes use of a questionnaire survey to collect quantitative data through the administration of a cross-sectional survey. The items included in the instrument were determined through the review of the relevant literature. The measures used by [39,45,57] were deployed in the preparation of the questionnaire due to the acceptability and established position these variables hold throughout the body of research. Face and content validity was not an issue because the items of measurement were adopted from previously validated studies. However, efforts were made in order to reduce difficulties of interpretation, understanding, and adaptation relative to the barriers proposed by these authors. During face and content validation, the prepared questionnaire was given to colleagues who were asked to evaluate the statements for clarity, meaning, and interpretation. The main goals of the evaluation were to find out if the items were clear enough and how much they added to the study. After the completion of this stage, the final questionnaire developed was self-administered to procurement experts. This was carried out at the Bureau of Public Procurement (BPP), which is located in Abuja, during the meeting of officers in charge of public procurement from the MDAs of the Federal Government of Nigeria. The study used a purposive sampling method; otherwise, it would have been extremely difficult to acquire a high response rate and a large concentration of these specialists in a single location. This was one of the reasons why this method was chosen. These procurement experts are professionals in the construction industry that work with government organizations such as quantity surveyors, architects, supply chain managers, builders, and engineers; they were given well-structured questionnaires to fill out on their own. A total of 134 questionnaires were self-administered, with 116 completed

and returned correctly, representing an 86.56% response rate. The returned questionnaires were evaluated to determine whether or not they were suitable for the analyses that will be presented in the next section.

4. Results

4.1. Demographic Results

According to the findings on the demographic information of the research respondents, which are presented in Table 1, procurement officers make up 17% of the respondents; quantity surveyors account for 29%; architects make up 5%; engineers make up 8%; supply and purchasing managers make up 5%, and builders make up 34%. According to the table displaying the respondents' academic qualifications, 22% of respondents had a Higher National Diploma (HND), 37% of respondents had a Bachelor's Degree, and 41% of respondents had an MBA, MSc, or Mtech. This suggests that the majority of those who responded have at least a second degree. According to the table, the group of the respondents according to their years of professional experience shows that 17% of participants had 0–5 years of experience, 48% of participants had 6–10 years of experience, 21% of participants had 11–15 years of experience, 9% of respondents had 16–20 years of experience, and 5% of respondents had 20 years of experience or more. In all, the respondents could be deemed to have adequate knowledge of the issues interrogated in the study and hence valid.

Table 1. Demographic information of respondents.

Demography	Frequency Count	Percentage (%)
Work designation		
Procurement Officer	20	17
Quantity Surveyor	34	29
Architect	6	5
Engineer	10	9
Supply and Purchasing Managers	6	5
Builders	40	34
Total		100
Academic Qualification		
Higher National Diploma (HND)	26	22
Bachelor Degree	43	37
MBA/MSc	47	41
Total		100
Years of Experience		
0–5 years	20	17
6–10 years	56	48
11–15 years	24	21
16–20 years	10	9
20 years and above	6	5
Total	116	100

4.2. Descriptive Statistics Results of the Clustered Variables

The summary of the mean values, standard deviation, and ranks of each of the variables is presented in Table 2. According to Table 2, the most significant barrier to sustainable procurement is a lack of commitment on the part of government officials, which received a mean item score of 4.41. The results are consistent with the findings of [8], who

argued that a lack of political commitment on the part of the government is a significant barrier to the implementation of sustainable procurement in Nigeria. This corroborates the findings of [47] as well as those of [50]. The state of the economy comes in second place as the most significant obstacle to sustainability practice. This provided support for the claim made by [64] that a significant barrier to implementing sustainable practices is financial. On the list of obstacles facing the implementation of sustainable practices, the absence of appropriate knowledge and awareness is rated third. This is consistent with the findings of [39,65], who discovered that a lack of knowledge on the part of policymakers was a barrier. As a potential obstacle to sustainable procurement, the lack of market segmentation received the lowest ranking. The average mean score for all the items based on the clusters after factor analysis was highest for regulatory constraints, which shows that they are the biggest problem with putting sustainable practices into place in Nigeria.

Table 2. Descriptive statistics of the barriers to sustainable procurement.

Variable Description	Mean Value	Std. Deviation	Rank
Lack of government commitment	4.41	0.75	1
Economic conditions	4.23	0.86	2
Lack of education and knowledge in sustainable design	3.88	1.06	3
Unwillingness to change	3.85	1.11	4
Fewer developers undertake green building projects	3.72	1.10	5
Lack of sufficient time to address sustainability issues	3.72	1.19	6
Risk associated with the implementation of new practices	3.70	1.08	7
Poor awareness and delay in decision-making	3.69	1.29	8
Lack of awareness of clients	3.66	1.17	9
Lack of sustainability measurement tools	3.64	1.01	10
Resistance to change	3.63	1.11	11
Lack of funding and restrictions on expenditure	3.61	1.22	12
Separation between capital budget and operational budget	3.43	1.43	13
Lack of leadership	3.41	1.34	14
Lack of market segmentation	3.35	1.41	15

4.3. Exploratory Factor Analysis Results

In order to analyze any possible patterns that may exist between the variables, an exploratory factor analysis was conducted as a method appropriate for exploratory research. A KMO test was also carried out in conjunction with the factor analysis. This test determines whether or not the representative sample is enough for the objectives of analysis in proportion to the number of items that are involved. Cronbach's alpha analysis, which is the consistency and reliability measurement that is employed in factor analysis and whose lower acceptable values range from 0.6 to 0.7, was also used in order to support the factor analysis. Communality measures, which indicate the amount of variability that an underlying variable shares with all others, and Eigenvalue analysis, which estimates the degree of variation described by a factor, were all employed so that the factor analysis could be supported [66].

In addition, the items that were used to measure the possible barriers and criteria for sustainable procurement were first evaluated to determine whether or not they were suitable for factor analysis. This was done to verify that the fundamental principles of linear relationships and homogeneity between factors to be linked, as well as the pairings of items at a reasonable level, were not disregarded. This was done by making sure that the factors were connected at a reasonable level. To identify probable elements, the principal

component analysis (PCA) method with varimax rotation was used, and items with smaller communalities were removed in order to increase the amount of variation that might be accounted for by the factors. When deciding which factors should be kept, Kaiser's criterion, which requires an Eigenvalue of at least one but no more than two, was applied. According to [66,67], the KMO was 0.733, which was higher than the minimum cut-off point of 0.5 that was specified, and the Cronbach's alpha value of 0.839 was found to be higher than 0.7, which was considered acceptable. Table 3 demonstrates that, out of the components that were used to quantify the barriers, four of the components were chosen that had initial Eigenvalues that were more than 1. According to Table 3, the first component explained about 27% of the total variance, whereas components 2, 3, and 4 explained 18%, 17%, and 10% of the variance, respectively. When all of the components are considered together, they accounted for 73.39% of the overall variance shown by the data after it had been rotated. After being rotated using the varimax method, the first factor, which was titled "attitude and poor fiscal incentive", contained seven items; the second factor, which was termed "financial constraints", contained three items; the third factor, which was captioned "poor leadership and awareness", contained three; the final component, which was aptly named "regulatory constraints", contained two components loaded on it. Multiple times, the rotation was carried out in order to remove things with complex construction and to verify that objects were placed on a single factor [67]. In a study that was carried out in a similar manner by [39], this method was utilized in order to determine the opportunities and barriers to sustainable procurement practices by Malaysian organizations. According to the findings, which are consistent with arguments of the theories, especially the Triple-Bottom-Line theory, a company's ability to achieve sustainability depends not just on its fiscal viability but also on its social and ethical well-being and its impact on the environment [68]. Based on the evaluation of the links between the variables that were taken into account and put into groups under each component, as shown in Table 3, this is how the study's findings were interpreted:

Table 3. Factor loadings for the Rotated Components Barriers to sustainable procurement.

Variable Description	Component Loading				Communalities
	1	2	3	4	
Attitude and poor fiscal incentive					
Unwillingness to change	0.91				0.854
Fewer developers undertake green building projects	0.765				0.65
Lack of sufficient time to address sustainability issues	0.732				0.765
Poor awareness and delay in decision-making.	0.723				0.549
Economic conditions	0.62				0.69
Lack of market segmentation	0.607				0.687
Risk associated with the implementation of new practices	0.602				0.616
Financial constraints					
Lack of funding and restrictions on expenditure		0.865			0.756
Lack of sustainability measurement tools		0.825			0.709
Separation between capital budget and operational budget		0.782			0.733
Poor leadership and knowledge					
Lack of leadership			0.869		0.789
Lack of awareness of clients			0.836		0.763
Lack of education and knowledge in sustainability			0.689		0.778

Table 3. Cont.

Variable Description	Component Loading				Communalities
	1	2	3	4	
Regulatory constraints					
Resistance to change				0.758	0.83
Lack of government commitment				−0.68	0.84
Total	4.032	2.801	2.58	1.596	
% of Variance	26.882	18.672	17.201	10.639	
Cumulative %	26.882	45.554	62.755	73.394	
KMO = 0.733, Bartlett's Test of Sphericity (Approx. Chi-Square) = 1242.873, df = 105, $p = 0.000$ Cronbach $\alpha = 0.839$					

4.3.1. Factor 1: Attitude and Poor Fiscal Incentive

There were seven variables that contributed to this component, two of which were directly linked to a person's reluctance to change. Unwillingness to adapt and the risk of implementing new techniques are two of these variables. Stakeholders' unwillingness to accept changes to procurement processes is at the heart of this issue. This underscored [46], who stated that many institutions are often hesitant to change their procurement policies. Furthermore, the results of [69] confirmed that state subsidies are a barrier to sustainable procurement, as are attitudes and a lack of them. Fewer developers are undertaking green construction projects; there is insufficient time to deal with sustainability challenges, and low understanding and decision-making delays are three variables clustered on the factor. In addition, ref. [70] found that the lack of green developers and the unwillingness to change were big obstacles to sustainability. Economic factors and a lack of market segmentation were the last remaining unknowns. Sustainable procurement may be hindered by economic factors, and as a result, it needs to be addressed. Hence, a positive public organization attitude toward environmental issues, as well as the institutionalization of specific government policies that provide incentives, such as tax policies for sustainable procurement, would also encourage sustainable solutions.

4.3.2. Factor 2: Financial Constraints

It was found that three variables were grouped on this factor, which included a lack of finance, a lack of separation between capital and operational budgets, and a lack of attention to sustainability issues. The extent to which sustainable procurement may be implemented is determined by the amount of money and capital invested in the project. In the UK construction industry, financial restrictions have been cited as the most significant hurdle to long-term sustainability difficulties by scholars like [57,71]. In addition, Ametepey et al. [64] asserted that a financial barrier is a major impediment to sustainable practices. Preuss [56] found that a lack of available funds made it hard for sustainable procurement procedures to work. Roos [65], on the other hand, thought that this problem is caused by rigid budgetary systems.

4.3.3. Factor 3: Poor Leadership and Knowledge

Grouped under this single factor were three variables. Poor leadership and a lack of familiarity with long-term planning are two of the most common causes of these issues in organizations. It is clear that leadership is a huge issue when it comes to the implementation of sustainability because this component is so heavily weighted. According to [65], a lack in decision-makers' and the general public's understanding of sustainable procurement procedures is a huge obstacle to their implementation. McMurray et al. [39], who studied sustainable procurement in Malaysian firms, concluded that unawareness remained the most prominent barrier to sustainable procurement adoption, irrespective of businesses or sectors. This assumption is consistent with their findings. According to [64,71], a lack of

leadership is a major impediment to long-term success. Thus, decision-makers will be able to get around some of the problems with sustainable procurement if they know enough about sustainability and show the right kind of leadership.

4.3.4. Factor 4: Regulatory Constraints

Both a lack of commitment on the part of the government and resistance to change are key variables that were placed in this component. The adoption of sustainable development will be difficult to achieve if there is no readiness to embrace changes that are brought about by determined effort. Inadequate and inconsistent laws and regulations, as well as a lack of commitment on the part of leadership, were cited by [71] as the primary causes contributing to the lack of sustainable practices. This argument is supported by [69], who contended that government failure and inefficiency in enforcing green building laws and regulations were impediments to sustainable procurement procedures. Sustainable public procurement can be achieved through the implementation of effective regulations and government policies, all of which should be harmonized to reduce client misunderstanding and hindrance. Furthermore, [72] stated that concerted efforts should be made by developing countries, considering that policy decisions still have devastating effects on the environment and still are not based on in-depth scientific evidence in some cases. However, [72] asserted that changes in the public's attitudes and perceptions require time and a preponderance of information about the new concepts.

5. Conclusions

The study assessed the barriers to the adoption of sustainable procurement in the Nigerian public construction sector. It was discovered that there is a lack of policy tools to integrate sustainability into the public procurement process in Nigeria. However, regarding the barriers to the implementation of sustainable procurement, it was concluded that there is no sustainable procurement regulatory framework in the country and a lack of government commitment, poor economic conditions, and lack of knowledge are the major barriers. The practical implications for policymakers and procurement practitioners are that they need to build sustainable procurement management techniques that require improved coordination of public domains and participation in organizational procurement practices. Considering that Nigeria has a bureau of public enterprise tasked with this, it is imperative that organizational training be strengthened to align with sustainability goals for government expenditures and to coordinate efforts among federal, state, and local public establishments in order to foster cultural changes toward sustainable procurement, as evidenced in this study. Although the sovereignty of states and the autonomy of local governments are acknowledged, there is a need for synergies among the three levels of government to ensure the sustainability of the procurement process in the country is achieved. Also, there is an immediate need for the Nigerian government to consider revising the existing procurement act of 2007 in order to promote the sustainability agenda and join the worldwide effort.

Theoretical, Practical Implications, and Limitations of the Study

The theoretical implication of the results is that while it is possible that sustainability may have already been integrated into the procurement process of the developed countries' construction industries, many developing countries like Nigeria need to act on this by taking the lead in meeting their sustainable development goals to which they are signatories. By examining the constraints to sustainability in procurement through the prism of the public sector, this theoretical contribution provides a better understanding of the concept. In terms of what this means in the real world, the study listed the problems that governments should focus on first so that they can make plans to get around institutional and organizational barriers.

The practical implication of this study is that these barriers espoused could be leveraged by all the stakeholders in order to engender procurement systems that are sus-

tainable, which will, in the long run, improve construction contract administration and reduce bottlenecks.

There are some drawbacks to the study. In order to maintain the integrity of the cross-sectional nature of the study, the questionnaire was only given to procurement officers working for MDAs. The fundamental tenets of social research, such as validity and reliability, were strictly observed throughout the course of this investigation. Nevertheless, there were a number of limitations to this study. To begin with, the limited size of the sample makes it difficult to generalize the findings to the entire construction industry. Second, the reliability of the finding may be a source of concern as a single category of respondents who filled out the questionnaire were only procurement officers. It is possible that this problem is caused by different ideas about what constitutes sustainable procurement.

Author Contributions: Conceptualization, L.O.O. and R.A.J.; methodology, R.A.J.; validation L.O.O. and R.A.; formal analysis, L.O.O.; investigation, L.O.O.; resources, L.O.O. and R.A.J.; data curation, L.O.O.; writing—original draft preparation, L.O.O.; writing—review and editing, R.A.J.; visualization, R.A.J.; supervision, R.A.J. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Ethical approval was not required.

Informed Consent Statement: Informed consent was obtained from all the respondents during the survey.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

Acknowledgments: We thank the respondents who participated in the data collection process for their time and efforts.

Conflicts of Interest: The authors declare no conflict of interest.

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