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Government Integrated Financial Management Information System and Sustainable Public Procurement in Nigeria

Sistema Integrado de Informação de Gestão Financeira do Governo e Compras Públicas Sustentáveis na Nigéria

> Udochukwu Uneke Alo Obiamaka Adaeze Nwobu Alex Adegboye

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La discriminación ex post de los oferentes de una licitación pública como infracción administrativa y de libre competência*

A discriminação ex post dos ofertantes de uma licitação pública como infração administrativa e de livre concorrência

> Udochukwu Uneke Alo** Obiamaka Adaeze Nwobu*** Alex Adegboye****

Abstract

This study aimed at examining the role Government Integrated Financial Information System GIFMIS will play in implementing Sustainable Public Procurement SPP in the Nigeria public sector. The rising global campaign on how developed and developing countries can position their public procurement to help achieve United Nations Sustainable Development Goals SDGs, has necessitated studies on how to position the public sectors of different countries to achieve SPP. Survey research technique was adopted in this study, questionnaire issued to procurement officers in 15 federal ministries of Nigeria was the primary source of gathering data, Data collected was tested using multiple regression model which was carried out with stata statistical tool, in order to measure the effect of different implementation independent variables on a single variable of SPP. The key findings from the study include that obstacles have a negative and significant effect on the implementation of SPP in Nigeria, IFMIS has a positive and significant role to play in implementation of SPP, while IFMIS is also sustainable as a system for managing public procurement in Nigeria. The findings from this study will be useful for developing accounting for sustainable development. The study recommends that the government develop a policy and implementation framework that will back the implementation of SPP and overcome identified obstacles, also the adoption of GIFMIS in public procurement functions should be followed up to ensure full adoption and increase the knowledge level of the system in the public sectors of Nigeria.

Keywords: Government Integrated Financial Management Information System; public financial management; Sustainable Development Goals; Sustainable Public Procurement.

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** Ph.D candidate in Accounting at Covenant University. E-mail: udochukwualo@gmail.com

*** Ph.D in Accounting at Covenant University.E-mail: obiamaka.nwobu@covenantuniversity.edu.ng

**** Ph.D candidate in Accounting at Covenant University. E-mail: adegboyea1@gmail.com

Resumo

Este estudo teve como objetivo examinar o papel que o Sistema Integrado de Informação Financeira do Governo GIFMIS desempenhará na implementação de Compras Públicas Sustentáveis SPP no setor público da Nigéria. A crescente campanha global sobre como os países desenvolvidos e em desenvolvimento podem posicionar suas compras públicas para ajudar a alcançar os ODS dos Objetivos de Desenvolvimento Sustentável das Nações Unidas exigiu estudos sobre como posicionar os setores públicos de diferentes países para alcançar o SPP. A técnica de pesquisa de levantamento foi adotada neste estudo, o questionário emitido para oficiais de compras em 15 ministérios federais da Nigéria foi a principal fonte de coleta de dados. efeito de diferentes variáveis independentes de implementação em uma única variável de SPP. As principais conclusões do estudo incluem que os obstáculos têm um efeito negativo e significativo na implementação do SPP na Nigéria, o IFMIS tem um papel positivo e significativo a desempenhar na implementação do SPP, enquanto o IFMIS também é sustentável como um sistema de gestão de compras públicas em Nigéria. Os resultados deste estudo serão úteis para o desenvolvimento da contabilidade para o desenvolvimento sustentável. O estudo recomenda que o governo desenvolva uma política e um quadro de implementação que apoie a implementação do SPP e supere os obstáculos identificados, também a adoção do GIFMIS nas funções de contratação pública deve ser acompanhada para garantir a adoção plena e aumentar o nível de conhecimento do sistema em os setores públicos da Nigéria.

Palavras-chave: Sistema Integrado de Informação de Gestão Financeira Governamental, Gestão Financeira Pública, Objetivos de Desenvolvimento Sustentável, Compras Públicas Sustentáveis.

1 Introduction

Public procurement is an integral activity in the management of the public sector of any country. The development or under development of a country can be tied to how effectively operational the system of the government is, in terms of managing the public sector resources. African governments have taken steps to improve public finance management through public procurement, despite series of public procurement reforms in Africa, the results have not been sustainable¹.

The advent of information technology has redefined business process, leading to the development of models for more effective and efficient business operation. Developing countries are investing heavily in information management systems in order to take advantage of the benefits arising from information technology and be able to come up to the economic growth and development of developed countries. GIF-MIS is an information system which facilitates efficient resource allocation, improves management decision making process through provision of timely financial and non-financial information, which is applicable in both private and public organizations. The World Bank has been active in the development of GIFMIS since 1984, in order to help countries, manage their public funds effectively and efficiently². ³poses that developing countries particularly in Africa have reported positive progress, either in the form of specific countries scoring better on assessments over time or in better performance across countries which have adopted integrated financial management systems. The Push for adoption and implementation of GIFMIS

¹ NYIGMAH, B.; PETER, A. Public procurement and public financial management in Africa: dynamics and influences. *Journal of Public Organization Review*. DOI: 10.1007/s11115-019-00443-7.

² OTIENO, O.; STEPHEN, M.; EMMANUEL, M. Integrated Financial Management Information System: a conceptual framework for Migori County, Kenya. *Public and Municipal Finance*, v. 6, n. 1, p. 37-45. DOI: 10.21511/pmf.06(1).2017.04.

³ DE RENZIO, P.; DOROTINSKY, W. *Tracking progress in the quality of PFM systems in HIPCs*: an update on past assessments using PEFA data. Washington, DC: PEFA Secretariat.

in sub-Saharan African countries, stems from the mismanagement of resources which has characterized public sectors in the region.

Public procurement accounts for as much as 70% of government budgets across Africa⁴. According to⁵, public procurement expenditure in Nigeria amounts to as much as 20% of the GDP. This high proportion of the public procurement of Nigeria to the GDP has not been meaningfully translated into a tool to manage the excruciating development challenges facing Nigeria since 1960 when she obtained her independence. The greatest amount of financial corruption resides in national procurement systems, and as much as 20-60 percent of public spending on procurement is lost due to leakages and malpractices in developing countries which Nigeria is part of⁶. The management of the Nigerian public sector has since independence of Nigeria in 1960, been a major concern to the government of Nigeria and the stakeholders. In a quest to achieve efficient resources allocation in the public sector, the government of Nigeria had come up with different types of policies, adopted and implemented into the public sector management. Despite the application of different policies and legislations like the Bureau of Price Monitoring and Intelligence Unit (BPMIU) and the Country Procurement Assessment Report (CPAR).

The recommendations in the CPAR was the brain behind the enactment of the Public Procurement Act (PPA) in 2007. The Act was enacted to guide all procurement activities of the government in Nigeria. The PPA (2007) has failed to address the unethical, corrupt, inefficient, ineffective and other vices which it was meant to correct in the public sector procurement system in Nigeria. The PPA 2007 as complete as it seems to be does not address the sustainability consideration in the content of procurement⁷. It is highly appalling that after 11years of implementing the PPA 2007, the status of the Nigeria's Public sector has not been lifted from corrupt and unprofessional practices. According to⁸, the government has through the PPA 2007, made a lot of savings since inception, but the gains are mainly economical because the Act has been silent about sustainability considerations.

According to United Nations world population prospect in 2018, Nigeria is to become the third most populous country in the world come 2050, it was also reported by world poverty clock in 2018 that Nigeria has become the world poverty headquarters having the largest number of people of about 86.9 million living in poverty, with this figure bound to increase from 44.2% to 45.5% by 2030. These figures are of concern to the government and stakeholder in Nigeria, if the developmental problems facing Nigeria is not addressed as a matter of national emergency, then the effect of the will be adverse on the growing population. Identifying the failure of the Public procurement act 2007 to address the developmental problems in Nigeria, studies are being carried out to proffer solution on how the public sector of Nigeria can be positioned in other to achieve sustainable development in line with United nations agenda on sustainable development.

Nigeria's government just like other developing countries in quest for systems and methods to modernize and improve public sector management has adopted GIFMIS. Prior studies have looked at the impact of GIFMIS on: financial probity, corruption, procurement performance, economic development and financial reporting, with no study focusing on the role IFMIS can play in achieving sustainable public procurement in Nigeria or other African countries.

⁴ AFRICAN DEVELOPMENT BANK. ADB. *The Infrastructure Action Plan for Nigeria:* closing the infrastructure gap and accelerating economic transformation report. Available from: http://www.afdb.org/en/countries/Western African/Nigeria. Access on: jan. 10, 2019.

⁵ DAKWANG, D.; ABDULLAHI, M.; ABIGAIL, M. Sustainable Public Procurement Practice: panacea to good governance in Nigeria. *International Journal of Scientific Research in Social Sciences & Management Studies*, v. 2, n. 1, sept. 2017.

⁶ AIGHEYISI, O.; EDORE, O. Public procurement, governance and economic growth: some policy recommendations for Africa's growth and development. *International Journal of Development and Management Review*, v. 10, p. 235-342.

⁷ DAVID, A.; PETER, A. *Maximizing the gains of Public Procurement Act for Improved Sustainable Practices in Nigeria.* Unpublished review of the PPA.

⁸ DAVID, A.; PETER, A. Maximizing the gains of Public Procurement Act for Improved Sustainable Practices in Nigeria. Unpublished review of the PPA.

According to⁹, Public procurement can contribute to achieving sustainable development goals, which can only be possible if the three pillars of sustainable development which are economic development, social development and environmental protection are integrated into public procurement practices. This study therefore aimed at finding out: obstacles in the implementation of SPP in Nigeria; the role that GIFMIS can play in the implementation of sustainable public procurement and the sustainability implication of GIFMIS as a system for carrying out procurement functions in the Nigeria's public sector.

The result from this study adds to the body of literature on sustainable public procurement. The first result was based on obstacle affecting the implementation of sustainable public procurement¹⁰. These authors from their findings highlighted: Financial pressures, lack of budgetary allocation, lack of training of procurement officers and cost of sustainable products as obstacles affecting implementation of SPP. The second finding from this study established that IFMIS has a positive significant role to play in the implementation of SPP in Nigeria's public sector, this finding sets the stage for further study on how IFMIS can assist implementation of SPP. The third result found out that GIFMIS is sustainable as a system for the management of procurement functions in the public sector.¹¹ These authors found out that implementation of IFMIS has led to reduction in procurement transaction cost, create trust among contractors and government, led to streamlined and standardized process and documentation, reduced corruption in the procurement cycle and made the process open. This corroborates with our finding that GIFMIS is sustainable having economic, environmental and social benefits as a system for carrying out procurement functions in the public sector.

The rest of this paper is arranged thus: Literature review which gives a brief insight to the concept of GIFMIS and SPP; the theoretical framework and empirical review of previous studies. The next section covers the research method adopted, giving a detailed description of the source of data, the variables and the measurement techniques adopted. The presentation and discussion of results of the survey findings follows while conclusion section follows with some recommendations for policy makers.

2 Literature review

2.1 Conceptual Framework

The introductory part of this study has given a quick overview of the concept of Integrated Financial Management Information System (GIFMIS) and the role it plays in the public financial management. The procurement functions of GIFMIS in Nigeria includes: commitment of purchase orders, maintenance of central supplier register and support for E-procurement in the public sector¹². All government Ministries, Departments and Agencies (MDA's) are to apply GIFMIS in carrying out its procurement functions to ensure openness fairness and accountability throughout the process.

⁹ WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT. *Plan of implementation of the World Summit on Sustainable Development*. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1156926.

¹⁰ HELEN, W.; STEPHEN, B. Sustainable procurement practice in the public sector: an international comparative study. *International Journal of Operations & Production Management*. DOI: 10110601443571111149551.; ISLAM, M.; SIWAR, C. A comparative study of public sector sustainable procurement practices, opportunities and barriers. *International Review of Business Research Papers*, v. 9, n. 3, p. 62-84, mar. 2013.; AKINTOYE, V.; OPEYEMI, A. Prospects for achieving sustainable development through the Millennium Development Goals in Nigeria. *European Journal of Sustainable Development*, v. 3, n. 1, p. 3346. DOI: 10.14207/ejsd.2014.v3n1p33.

¹¹ OGBONNA, G.; OJEABURU, F. Integrated Financial Management Information System (GIFMIS) on economic development of Nigeria. *West African Journal of Business and Management Sciences*, v. 4, n. 1, apr. 2015.; KEVIN, G.; DANIEL, M. Influence of Integrated Financial Management Information System on procurement performance in The County Government Of Nakuru, Kenya. *International Journal of Economics, Commerce and Management*, v. 4, n. 10, oct. 2016.

¹² GOVERNMENT INTEGRATED FINANCIAL MANAGEMENT INFORMATION SYSTEM. GIFMIS. *Welcome to GIFMIS*. Available from: http://www.gifmis.gov.ng/gifmis. Access on: jan. 10, 2019.

Figure 1: Conceptual Framework



Source: (Author 2019)

2.1.1 Sustainable Public Procurement

Sustainable Public procurement deals with ways in which public organizations conduct their activities of buying products and services to meet their need with recourse to value for money measured on a whole life basis, ensuring that benefit accrue not only to the organization but to the citizens and economy, also reducing the negative impacts of such products and services to the environment¹³. Public Procurement has historically been based on two criteria, Price and quality, sustainable public procurement advocates for public procurement that would take into consideration the three pillars of sustainable development which include: economic, environmental and social factors. Public Procurement despite its long history and magnitude, has only relatively recently been the subject of considerable academic research¹⁴.

Sustainable Procurement practices have not received adequate attention in developing economies as opposed to what is obtainable in developed Economies¹⁵. The Nigeria's public procurement reform therefore needs to consider the concept of sustainability as it is the only way that it can derive real value for money over a longer term without compromising environmental and social responsibilities. Public procurement in African countries takes up to 70% of the annual government budget¹⁶. The global importance of public procurement led to the birth of the concept of Sustainable Procurement which was first used at UNs summit at Johannesburg in 2002 to foster SDGs. In the summit, there was a call for governments to promote public procurement policies that encourage development and environmental good practices for provision of goods and services¹⁷. Strengthening the procurement system is a pre-requisite for economic growth and development which would in turn reduce poverty in a country.

The Public Procurement Act (PPA) 2007 was designed basically using United Nations Commission on International Trade Law On Procurement, But there are areas in the act which need reformation in order to entrench sustainable procurement in line with UNs SDGs. Public Procurement corruption has been named one of the factors hindering the Sustainable development progress of Nigeria and other developing African countries, where some stakeholders especially MDAs officials, consultants, contractors, service providers, politicians and indigenes have refused to accept the public procurement reform and paradigm, but always on

¹³ UNITED NATIONS ENVIRONMENT PROGRAMME. Global review of sustainable public procurement. 2017. Available from: https://web.unep.org/ourplanet/unep-publications/2017.

¹⁴ HELEN, W.; STEPHEN, B. Sustainable procurement practice in the public sector: an international comparative study. International Journal of Operations & Production Management. DOI: 10110601443571111149551.

¹⁵ ISLAM, M.; SIWAR, C. A comparative study of public sector sustainable procurement practices, opportunities and barriers. International Review of Business Research Papers, v. 9, n. 3, p. 62-84, mar. 2013.

¹⁶ AFRICAN DEVELOPMENT BANK. ADB. The Infrastructure Action Plan for Nigeria: closing the infrastructure gap and accelerating economic transformation report. Available from: http://www.afdb.org/en/countries/Western African/Nigeria. Access on: jan. 10, 2019.

¹⁷ WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT. Plan of implementation of the World Summit on Sustainable Development. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1156926.

the lookout of loopholes from the system through which they can take undue advantage¹⁸. Thus this study is important in establishing if there is a role IFMIS can play in implementing sustainable public procurement in the Nigeria public sector in order to achieve sustainable development in line with the agenda of United Nations.

2.2 Theoretical Framework

This study was underpinned by the following theory:

2.2.1 Technology Acceptance Model (TAM)

TAM is a widely adopted model in the field of information technology. It is an information system theory first developed by Davis in 1989, which give a model description on how information technology is perceived, adopted and used by the proposed users. Many researchers have adopted TAM in examining the individual technology acceptance behavior for different information system innovation. The model was developed as a guide to researchers and practitioners in study of factors that impacts on implementation of new technology such as GIFMIS. TAM is based on two theoretical framework which explain factors responsible for information systems adoption. The Factors according to Davis, are the Perceived Usefulness (PU) and Perceived Ease Of Use of the information system. The perceived usefulness and the perceived ease of use, can be used to predict attitudes, which invariably influence the intended use of the system.

PU means the degree to which an information system user believe that the system will have positive effect on their job performance. An information system with a high degree of perceived usefulness, will tend to enjoy high level acceptance from users, all things being equal. PEOU on the other hand refers to the degree of user friendliness of a system experienced by the users. TAM in this study, is used to elicit the level of acceptance of GIFMIS as a new system for public financial management in the public sector of Nigeria. It also give an insight if the system is perceived useful for managing public procurement in order to establish if it can be a tool that will facilitate implementation of sustainable public procurement.

2.3 Empirical Review

A number of studies have been carried out on Integrated Financial Management Information system and Sustainable Public Procurement, but the studies treated these two concepts separately. Prior studies discovered that: IFMIS has positive impact on cash management, flexibility of IFMIS is important in PFM management¹⁹. GIFMIS affects suppliers performance positively, help eliminate delays in procurement, boos trust between government and suppliers, reduced cost of procurement and increase efficiency²⁰.

GIFMIS has a positive effect on: budgeting, payroll and cash management²¹.

¹⁸ EMMANUEL, O. Integrating environmental and social considerations into Public Work Procurement in Ghana. (Unpublished Master's Dissertation) – Kwame Nkrumah University of Science and Technology, Kumas, Ghana.

¹⁹ ODOYO, F.; ADERO, P.; CHUMBA, S. Integrated Financial Management Information System and its effect on cash management in Eldoret West District Treasury, Kenya. *International Journal of Business and Social Science*, v. 5, n. 8; jul. 2014.

²⁰ ELIJAH, K. Integrated financial management information systems, implementation and its impact on Public Procurement Performance at National Government of Kenya. (Unpublished Master's thesis) – School of Business, University of Nairobi, Nairobi, Kenya.; MOHAMMAD, B.; MOHAMMAD, N. The role of Government Financial Management Information System in raising the effectiveness of the government budgeting. *International Journal of Business and Social Science*, v. 7, n. 6, jun. 2016.

²¹ OGBONNA, G.; OJEABURU, F. Integrated Financial Management Information System (GIFMIS) on economic development of Nigeria. *West African Journal of Business and Management Sciences*, v. 4, n. 1, apr. 2015.

In other studies²², discovered that lack of enabling policies affects negatively the implementation of sustainable development;²³, pointed out that public procurement is a strong ingredient for economic growth while slow pace of development in Africa is attributed to faulty public procurement system.²⁴ noted that there is a strong relationship between public procurement and sustainable development in European Union; while²⁵, pointed out inconsistencies in decision making, difficulty in imposing change, collusion among stakeholder and lack of planning are barriers to implementation of sustainable procurement in public universities in Nigeria.

3 Research Method

This study adopted a survey design on federal ministries in Nigeria. 15 federal ministries located in the Federal Capital Territory (FCT), Abuja was surveyed with copies of questionnaire. The federal ministries are majorly responsible for the procurement going on in each public sector and they all have implemented GIFMIS in the management of public procurement functions. The questionnaire was designed using information from²⁶, on approach to implement sustainable public procurement and sustainable procurement indices developed by²⁷.

The population of the study was 600 procurement officers in the ministries. The sample size was computed as approximately 300 procurement staffs, based on an assumed 5% margin of error and a 95% confidence level. Items included in the questionnaire are classified into different sections, capturing: General information (e.g gender, working years in procurement department, office rank, level of Education, professional qualification and age group), information on knowledge of the concept of IFMIS and SPP; obstacles affecting implementation of SPP, readiness of the Nigeria public sector to implement SPP, information on the role IFMIS can play in implementing sustainable public procurement and the sustainability implication of IFMIS as a system for the management of procurement functions in the public sector. Analyses was done based on 225 completed and returned copies of questionnaire which represent 75% of the sample size and appropriate for generalization.

The objective of this study was to examine GIFMIS and sustainable public procurement in Nigeria's public sector. The independent variables included: obstacles in implementing SPP, roles of GIFMIS in SPP implementation and sustainability implications of GIFMIS in public procurement. The dependent variable Sustainable Public procurement (SPP) measured by readiness of Nigeria's Public sector to implement SPP. A multiple regression model/analysis was used to test the relationship between the variables.

The regression model equations will be:

$$\begin{split} Y &= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \ + \epsilon \ \text{where:} \\ Y &= SPP \end{split}$$

²² AKINTOYE, V.; OPEYEMI, A. Prospects for achieving sustainable development through the Millennium Development Goals in Nigeria. *European Journal of Sustainable Development*, v. 3, n. 1, p. 3346. DOI: 10.14207/ejsd.2014.v3n1p33.

²³ MUTUI, M. Integrated Financial Management Information System on procurement performance of the public sector. (Unpublished Master's Thesis) – University of Nairobi, Nairobi, Kenya.

²⁴ KAYA, M. Regulating sustainable public procurement in Turkey in the context of the European Union membership. Available from: http://eprints.nottingham.ac.uk/14041/1/Mehmet_Bedii_Kaya.pdf.

²⁵ AMA, A.; JOSHUA, A.; KOFI, A.; DE-GRAFT, J. Barriers to the implementation of environmentally sustainable procurement in public universities. *In:* INTERNATIONAL CONFERENCE ON INFRASTRUCTURE DEVELOPMENT IN AFRICA, 7. *Proceedings...* Available from: https://www.researchgate.net/publication/324721069.

²⁶ UNITED NATIONS ENVIRONMENT PROGRAMME. *Sustainable public procurement:* a global review. 2012. Available from: http://www.unep.fr/scp/procurement/pdf.

²⁷ MANSI, M. Sustainable procurement disclosure practices in central public sector enterprises: evidence from India. *Journal of Purchasing & Supply Management*, v. 18, p. 125-137, 2015.

 β_0 : Intercept

 $\beta_1, \beta_2, \beta_3$: Regression Coefficients

X₁:Implementation obstacles

X₂: Role of IFMIS

X₃: Sustainability implication of IFMIS

ε: Random error.

Two regression model constructs were raised to measure the impact of the independent variables on the dependent variable.

In order to carry out the measurement of the impact of the variables on the dependent variable, the general regression model was divided into two index model:

SPP1=Obst1+Obst2+R.IFMIS1+R.IFMIS2+SBenft1+SBenft2...Model 1

SPP2= Obst1+Obst2+RGIFMIS1+RGIFMIS2+SBenft1+SBenft2Model 2

Where: SPP = Readiness to implement sustainable public procurement

Obst= Obstacles to implementation of sustainable public procurement

R.GIFM = Role of GIFMIS in implementation of SPP

Benft = Sustainability benefits of GIFMIS as a system for managing public procurement

Furthermore, exploratory factor analysis technique was adapted to condense the cluster of items in each independent variable to a single factor. Factor analysis is relevant in this study as it adapted to identify the relationships between the elements of the original variables and create factors representing the linear combinations of the variables; to prepare rankings for the responses from respondents on the variable items, extracting orthogonal factors for confirming the multiple regression techniques and ensure the absence of multicolinearity.

4 Presentation and Discussion of results

Table 1: Factor Loading for Readiness for Implementation of Sustainable Public Procurement

	Component	
Panel A: The Weight allocated to each component	1	2
The public sector procurement officers have the technical and management capa- city for Sustainable Public Procurement	.805	
There are international trade agreements which Nigeria applies in its procurement practices	.725	
The current procurement cycle can accommodate implementation of SPP	.573	
The government has the political will to implement Sustainable Public Procure- ment		.830
Government contractors and suppliers are ready for Sustainable Public Procure- ment		.673
Public sector organizations can easily collaborate to share information that will help implement SPP in the public sector		.828

	Component			
Panel A: The Weight allocated to each component	1	2		
There is capable steering committee available that can overs of SPP		.722		
There is lack of collaboration with international agencies t tion of SPP		.723		
The Bureau of Public Procurement is capable of planning Public Procurement policy and Action Plan		.713		
The public sector is not just ready for the implementation Procurement		.679		
Panel B: KMO and Bartlett's Test				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy			0.748	
Bartlett's Test of Sphericity	Approx. -Square	Chi-	297.732	
	Df		45	
	Sig.		0.000	

Source: Researcher's field survey (2019)

Panel A of table 1 shows the factor loading for the readiness for implementation of sustainable public procurement, which indicates the content of questions that loads together to identify the common themes. Component 1 relate to the technical capacity of the public procurement officers, the enhancement of public procurement by international trade agreement and the current procurement cycle while component 2 seems to relate the other provisions of sustainable public procurement. Panel B of table 1 shows the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Barlett's test of sphericity. For these datasets, the sampling adequacy of KMO is 0.748, which makes that the factor analysis appropriate. the Bartlett's test is highly significant (p-value<0.000). Thus, the factor analysis is appropriate.

Table 2: Factor Loading for Obstacles Influencing Sustainable Public Procurement (SPP)

Lack of clear sustainability priorities, that is which areas to focus on and implement first. Lack of clear definition of sustainable products and services.	1 .818	2
first.	.818	
Lack of clear definition of sustainable products and services.		
	.786	
Lack of sustainable procurement provision in the Public Procurement Act 2007, as amended 2016.	.777	
Lack of information on the sustainability practices and operations of government suppliers.	.724	
Lack of interest and commitment from the government	.688	
Low technical and Management Capacity of procurement officers.		.828
High cost of sustainable products and services. Examples use of renewable electricity (solar energy); organic materials for government structures and buildings.		.770
Corruption among procurement officers.		.692
Budgetary/resource restrictions		.656
Lack of adequate accounting/reporting system in the public sector		.625

Kaiser-Meyer-Olkin Measure of Sampling Adequacy

		Component	
		1	2
Bartlett's Test of Sphericity	Approx. Chi- -Square	922.345	
	Df	45	
	Sig.	0.000	

Source: Researcher's field survey (2019)

Table 2 panel A shows the factor loading for the obstacles influencing implementation of public procurement. Component 1 relate to the obstacles such as lack of clarity of the sustainable priorities, lack of interest of the government, lack of sustainable procurement provision in the PPA 2007 and lack of information on the sustainability practices and operations and operations of government suppliers. Component 2 captures obstacles such as: low technical and management capacity of procurement officers, corruption among procurement officers and lack of adequate accounting/reporting system in the public sector. Panel B shows the KMO measure of sampling adequacy and the Bartlett's test of sphericity at 0.869 and p-value<0.000 respectively, which makes the factor analysis appropriate and highly significant.

Table 3: Factor Loading for Role of Government Integrated Financial Management and Information System on SPP

		Compone	nt	
		1	2	
GIFMIS can be used to conduct a pilot implementation of SPP in	the public sec-	.790		
tor	.1 11	700		
GIFMIS can be used to raise awareness of the concept of SPP in	1	.789		
GIFMIS can effectively implement SPP into the current procurem	nent cycle	.721		
GIFMIS will help in carrying out analysis of Life cycle of Product	ts	.716		
GIFMIS can be used to conduct training of procuring officers on Sustainable public procurement	.694			
GIFMIS will lead to smooth implementation of sustainable public the public sector	.648			
GIFMIS will help in authentication of qualification/certification of				
goods and services to public sector organizations		.820		
GIFMIS will help in cost minimization of public procurement		.703		
GIFMIS will help eliminate corrupt procurement practices in the				
for instance receiving of kickbacks by procuring officers, to appro		.573		
substandard products and services				
GIFMIS will make the public procurement process open and fair		.489		
Panel B: KMO and Bartlett's Test				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.840		
Bartlett's Test of Sphericity	Approx. Chi- -Square	1160.961		
	Df	45		
	Sig.	0.000		

Source: Researcher's field survey (2019)

From table 3, Panel A the factor loading for the role of government integrated financial management information system on implement SPP was shown, Component 1 captures the role of GIFMIS such as enhancing SPP implementation, creation of awareness, promoting the analysis of life cycle of products and instigating smooth implementation of SPP. Component 2 relate to other roles of GIFMIS such as helping to authentication of qualification/certification of suppliers of goods and services to public sector organizations, cost minimization, eliminate corrupt procurement practices like receiving of kickbacks by procuring officers etc. Panel B of table 3 shows the KMO measure of sampling adequacy and the Bartlett's test of sphericity at 0.840 and (p-value<0.000) respectively, thus the factor analysis is appropriate.

		Component		
		1	2	
GIFMIS will improve effective and efficient products and s eliminating inappropriate procurement (Economic benefit)	ervice by	.799		
GIFMIS can be used to easily ascertain socially responsible government suppliers and contractors		.754		
Use of GIFMIS will lead to markets expansion, by granting opportunity to eligible government contractors and supplies (Economic benefit)	, 1	.747		
GIFMIS can help stimulate innovativeness among suppliers contractors (Economic benefit)	and	.745		
GIFMIS can effectively evaluate the environmental impact and services to be procured by the public sector (Environme benefit)	0	.733		
The system will ensure that suppliers and contractors meet specifications before a contract is awarded (Social benefit)	standard	.684		
GIFMIS will foster government suppliers and contractors t measures to supply environmentally friendly goods and serv (Environmental benefit)	-	.559		
GIFMIS will help increase amount of expenditure channels environmentally friendly products and services (Environme benefit)		.552		
The GIFMIS system is user friendly to all categories of gov suppliers (social benefit)	vernment		.877	
GIFMIS gives equal opportunity to all suppliers and contra government organizations (social benefit)	ctors of		.705	
Panel B: KMO and Bartlett's Test		0.78	2	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy Bartlett's Test of Sphericity	Approx.		,	
Darucu's rest of spiritury	Chi-	1133.7	53	
	Square	1155.1		
	Df	45		
	Sig.	0.00)	

Table 4: Factor Loading for Economic, Environment and Social Benefits of GIFMIS

Source: Researcher's field survey (2019)

ALO, Udochukwu Uneke; NWOBU, Obiamaka Adaeze; ADEGBOYE, Alex. Government Integrated Financial Management Information System and Sustainable Public Procurement in Nigeria. Revista Brasileira de Políticas Públicas, Brasília, v. 11, n. 3. p. 331-347, 2021 342

Table 4, Panel A presents the factor loading for the sustainability implication of IFMIS as a system for managing procurement functions. Component 1 captures mostly economic and environmental benefits of GIFMIS in managing public procurement, while component 2 relates to the social benefits such as user friendliness and equal opportunity to all suppliers and contractor of different categories. Panel B of table 3 show the KMO measure and Bartlett's test of sphericity at 0.783 and (p-value<0.000) respectively, which makes the factor analysis appropriate and highly significant.

4.1 Correlation Presentations

Table 5: Correlation Matrix *p< 0.05, **p< 0.01, ***p< 0.001

	1	2	3	4	5	6	7	8
1.SPPindex1	1							
2. SPP2index2	0.0000003	1						
3. Obsindex1	0.0762	-0.428***	1					
4. Obsindex2	-0.0311	-0.180**	0.000686	1				
5.	0.0965	-0.257***	0.305***	0.348***	1			
R.GIFMindex1								
6.	-0.0491	0.184**	0.00174	-0.0147	0.00682	1		
R.GIFMindex2								
7. Benindex1	0.119	-0.0603	0.108	0.186**	0.419***	0.423***	1	
8. Benindex2	0.148*	0.0420	0.196**	0.150^{*}	0.462***	-0.0357	-0.0136	1

Table 5 presents the Pearson correlation matrix of the independent variables and the dependent variables. The table indicates low correlation between the variables, which indicate unlikely multicollinearity problem in the model. In addition, it is noted that there exists mostly significant relationship between the second proxy for sustainable public procurement and other independent variables such as negative and significant relationship with obstacles impairing the implementation of Sustainable Public Procurement.

4.2 Regression Analysis

Before the full interpretation of the empirical results, there is a need to examine the goodness of fit of the overall model and the strength of the explanatory power of the regressors. From Table 6, although the explanatory power of the model 1 is significant at 5% (0.0434) the model shows the $R^2 = 0.058$, which means that 5.8% of the independent variables explain the dependent variable. This implies that solid interpretation cannot be generated from the model 1.

	SPPindex1	SPP2index2
VARIABLES	Model 1	Model 2
Obsindex1	0.0360	-0.416***
	(0.0698)	(0.0602)
Obsindex2	-0.0799	-0.148**

Table 6: Regression Results

	SPPindex1	SPP2index2	
VARIABLES	Model 1	Model 2	
	(0.0715)	(0.0616)	
R.GIFMindex1	-0.0571	0.206**	
	(0.0930)	(0.0802)	
R.GIFMindex2	-0.135*	0.185***	
	(0.0755)	(0.0651)	
Benindex1	0.215**	0.0242	
	(0.0865)	(0.0745)	
Benindex2	0.179**	0.250***	
	(0.0784)	(0.0675)	
Constant	-0.00156	-0.00632	
	(0.0659)	(0.0568)	
Observations	225	225	
R-squared	0.058	0.300	
RMSE	0.984	0.848	
F-test	2.208	15.44	
Prob > F	0.0434	0	

Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

Furthermore, Model 2 shows $R^2=0.300$, which explains that 30% of the independent variables explain the dependent variable that is Sustainability Public Procurement. The explanatory power of the explanatory variables is significant at 5%, which indicates the reliability and validity of the overall model. Thus, the study relies on model 2 for empirical interpretation.

Given that the coefficients of explanatory variables for implementation obstacles are negative at -0.416 and -0.148, which is more than 5% level of significance in model 2, it is therefore established that the effect of identified obstacles is negative and significant on the implementation of SPP in Nigeria. The readiness of Nigeria's public sector to implement sustainable public procurement is impaired by implementation obstacles.

IFMIS is found to have a positive significant role to play in the implementation of SPP in the Nigeria public sector with coefficients of 0.206 and 0.185 which are greater than 5% level of significance in model 2 of table 6. Therefore if well adopted and applied, GIFMIS can ensure implementation of SPP in Nigeria. Also from the same model and table, the economic, environmental and social benefits of GIFMIS was established and found to be positive and significant for the implementation of SPP in Nigeria with coefficient of 0.250 which is higher than 5% level of significance.

5 Conclusion and Recommendations

This study was conducted to survey Government Integrated Financial Management information System (GIFMIS) and Sustainable Public Procurement (SPP) in Nigeria. The study looked at obstacles to implementation of SPP, the role GIFMIS can play in implementing SPP and the sustainability implication of SPP as a tool for the management of procurement functions. Among other things, obstacles such as Lack of clear definition of sustainable products and services, lack of information on the sustainability practices and

operations of government suppliers and lack of clear sustainability priorities are among the highly mentioned obstacles in the implementation of SPP as elicited from the respondents. These findings corroborate with the finding of²⁸.

Considering the role of Government Integrated Financial Management Information System on implementation of sustainable public procurement, this study has found out that IFMIS has a major role to play in ensuring that procurement in the public sector of Nigeria is sustainable. The study found out that GIF-MIS can be used effectively for authentication of qualification/certification of government suppliers and contractors before they can be awarded government contracts. GIFMIS was discovered to have a positive sustainability implications, using GIFMIS, will lead to market expansion as it will grant equal opportunity to eligible government contractors, stimulate innovativeness among suppliers and contractors throughout the procurement process.

This paper has made a major contribution in literature in the area of achieving sustainable public procurement through the application of management information system GIFMIS. It is recommended that Nigerian government looks into GIFMIS and ensure its full application. Using GIFMIS, will lead to market expansion as it will grant equal opportunity to eligible government contractors, stimulate innovativeness among suppliers and contractors throughout the procurement process. application across government ministries, departments and agencies in performing procurement functions, and benefit from the economic, environmental and social benefits arising from the use of GIFMIS on the process. Also measures should be taken to tackle the identified obstacles in order to ensure smooth implementation of SPP in public sector of Nigeria.

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