

E-governance and Green Public Management for Sustainable Development in Selected Agencies in Southwest Nigeria

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Abstract

Like many other developing countries, Nigeria is beset with environmental problems; these problems emanate mainly from human activities created to achieve a higher level of development. The implication is that sufficient precautions have not been taken to balance development objectives against the need to maintain desirable environmental quality for sustainable development by buying into responsive and simplified bureaucratic processes in dealing with citizens and businesses. This study aims to investigate E-governance and Green Public Management for Sustainable Development in selected agencies in Southwest Nigeria. This study made use of primary data and adopted a descriptive research design. The population of the study was 340. The study used a multistage sampling technique. Data generated were analysed using Statistical Package for Social Sciences (SPSS) version 24 (for the descriptive statistics) and SmartPLS version 3.3.9 (for the inferential statistics). A response rate of 97.4% was achieved for the selected employees. Findings revealed that E-governance implementation significantly and substantially affects sustainable development with sufficient predictive quality ($\text{Adj } R^2 = 0.475$, $p = 0.000$, $Q^2 = 0.195$). Green Public Management significantly and substantially affects sustainable development with predictive quality ($\text{Adj } R^2 = 0.461$, $p = 0.000$, $Q^2 = 0.207$). E-governance and green public management have significant and substantial joint effects on sustainable development with sufficient predictive quality ($\text{Adj } R^2 = 0.542$, $p = 0.000$, $Q^2 = 0.244$) in the selected agencies, Southwest, Nigeria. This study concluded that e-governance and green public management affect sustainable development in the selected agencies in Southwest Nigeria. The study recommended that government agencies build institutional linkages that promote interconnectedness and strengthen e-governance and eco-friendly environment in public agencies.

Keywords: E-governance, Green Public Management, Sustainable Development, Agencies

Introduction

Societies worldwide yearn for one form of development or the other. Development is part of every society in the world, and it can be economic, social or environmental. With the increasing rate of environmental problems, the effect of globalisation worldwide, particularly in Nigeria, is generating a

significant concern for the sustainability of the environment and how it can be sustained for future generations. Brundtland report (our common future), defined sustainable development as the human ability to meet the needs of the present without compromising the ability of the future generations to meet their own needs (WCED, 1987). It has three components; economic, social and environmental. The foremost concern of public institutions around the world is to find practical and efficient means of delivering public services to the citizens by buying into the idea of responsive and simplified bureaucratic processes in dealing with citizens and businesses by adopting digital and eco-friendly policies to enhance efficient and effective public services delivery for sustainable development.

E-governance has become an essential tool to be used in the day-to-day workings of government both within the government agencies, in dealing with the citizens and in doing business, as was witnessed during the Covid-19 pandemic (Yang et al., 2020).

It is evident that achieving sustainable development, especially SDGs goals number nine and twelve; (Industry, Innovation and Infrastructure and responsible consumption and production patterns), might be difficult in Nigeria without conscious effort of public authorities in the adoption of e-governance and green public management policies to deliver efficient and effective public service to the citizenry.

However, a new phase has emerged about creating a green economy through governance and how it can be achieved via e-governance. Initially, e-government strategies were targeted at re-engineering public processes to produce a cost-effective public sector and eliminating bureaucracy, New Public Management (NPM), that demands governmental bodies be modernised and marketised for effective and efficient service delivery (Hage, 2016). Even though economic burdens, under such phenomenon, and cost reduction remains a critical dimension, a new dimension has evolved, which speaks of the transformation of the society and the public sector into a digital, green and eco-friendly system through green public management (Amodu, 2020).

Statement of the Problem

Nigeria, like many other developing countries, is beset with such environmental problems as desertification, deterioration of urban physical quality, land degradation, deforestation, soil erosion, flooding, pollution, global warming, overpopulation, indiscriminate waste disposal, ocean acidification, loss of biodiversity, ozone layer depletion, public health issues and many others, these problems are associated with sustainable development. These problems emanate mainly from human activities created to achieve a higher level of development (Ogunkan, 2022).

The implication is that sufficient precautions have not been taken to balance development objectives against the need to maintain desirable environmental quality for sustainable development (Wonah, 2017). In the Nigerian context, these problems are not unconnected to the inefficiency and ineffectiveness of public service policy implementation. Most often than not, public officers saddled

with the implementation of public policies have been described as showing negative attitudes and traits such as insensitivity towards implementation, poor organisation, lack of planning, unbridled corruption, lack of accountability and transparency, indiscipline, unnecessary delay and red-tapism. Though many scholars have reported these problems, such scholars have largely overlooked the role of e-governance and green public management in achieving sustainable deployment (Meuleman, 2021). Against this background, this study examined the influence of e-governance and green public management on sustainable development in selected agencies in Southwest, Nigeria.

Objectives of the Research

The broad objective of this research is to investigate e-governance and green public management for sustainable development in public establishments. The factors facilitating and impeding their implementations in public agencies in Nigeria will also be identified. However, the specific objectives of this research are as follows:

- i. ascertain the influence of e-governance implementation on sustainable development in selected agencies in Southwest, Nigeria.
- ii. examine the influence of e-governance and green public management on the sustainable development of selected agencies in Southwest Nigeria.
- iii. determine various challenges confronting implementing e-governance for sustainable development in selected agencies in Southwest, Nigeria.

Research Questions

- I. To what extent does e-governance implementation influence sustainable development in selected agencies in Southwest Nigeria?
- ii. To what extent do e-governance and green public management significantly influence sustainable development in selected agencies in Southwest Nigeria?
- iii. What are the various challenges confronting the implementation of e-governance for sustainable development in selected agencies in Southwest Nigeria?

Research Hypotheses

The research hypotheses for this study were tested at 0.05 level of significance.

- i. Ho1: E-governance will not significantly influence the sustainable development of selected agencies
- ii. Ho2: Green Public Management will not significantly influence the sustainable development of selected agencies
- iii. Ho3: E-governance and Green Public Management will not jointly, significantly influence sustainable development

Scope of the Study

The study is centred on e-governance and green public management for sustainable development. The study used four (4) selected agencies in Oyo State, Southwest Nigeria, and covered ten years from 2011 to 2021. The study focused on implementing digital and eco-friendly policies and practices in governance in public service delivery in government agencies and institutions in Nigeria.

Review of Related Literature

Concept of Sustainable Development

The concept of sustainable development can be interpreted in many different ways, but at its core is an approach to development that looks to balance different, and often competing, needs against an awareness of the environmental, social and economic limitations we face as a society. Development is often driven by one particular need without fully considering the wider or future impacts. The longer we pursue unsustainable development, the more frequent and severe its consequences are likely to become, hence the need to presently take action.

The three basic components of sustainable development are economic, social and environmental, often called the Triple Bottom Line (TBL). The three components are interrelated. Economic sustainability is a guiding principle that demands that societies seek growth trajectories that create an optimal flow of income while preserving their basic stock of manmade, human, and natural capital. Environmental costs linked with manufacturing and consumption must also be internalised for economic viability. The social aspect of sustainable development is founded on the twin tenets of justice and equality (UNCED, 1992).

Concept of E-governance

Electronic governance is a two-way communication process that deals with the use of information and communication technology to supply government services and ensure the accessibility of such services for citizens. Available evidence in the literature points to the fact that an increasing number of governments around the world are implementing e-governance platforms to improve citizens' participation, monitor government's initiatives, ensure accountability, and circulate information between sectors (Hovik, et al. 2022; Shakya, 2017). In general, the motive behind implementing e-governance platforms can be discussed under three broad categories: E-administration aims to improve government operations, particularly in the public sector. E-services are an effort to improve the delivery of public services, such as delivering public papers online like birth and so on. E-democracy aims to increase public participation in a country's government decision-making process through electoral processes and e-voting mechanisms, among other means (Tejedo-Romero, et al., 2022).

Measuring E-governance

The level of E-governance implementation has now become a yardstick with which people can evaluate the current condition and type of e-governance in countries worldwide. E-governance surveys conducted by the United Nations have adopted a comprehensive approach to measuring the quality of the nation's e-governance infrastructure, online service availability, and human capital index since its founding (UNDESA, 2003).

According to the United Nations (UN), a five-stage paradigm for e-government development can be used to examine the online service delivery index. Emerging, enhanced, interactive and transactional stages are all included in this list.

According to some experts, determining the degree to which a country's telecommunications infrastructure meets the six basic criteria for an ICT-enabled economy is part of measuring that country's overall development. Personal computers, internet users, phone lines, online users, mobile phones, and televisions all fall under this category. The basis of a nation's state of e-government readiness is a product of the country's economic, technological, and human resource development (United Nations E-government Survey, 2008). E-government progress in Africa is unequal and slow, according to the United Nations e-government report of 2014. E-government development index ranks Nigeria as the 19th best African country, ahead of only Egypt and South.

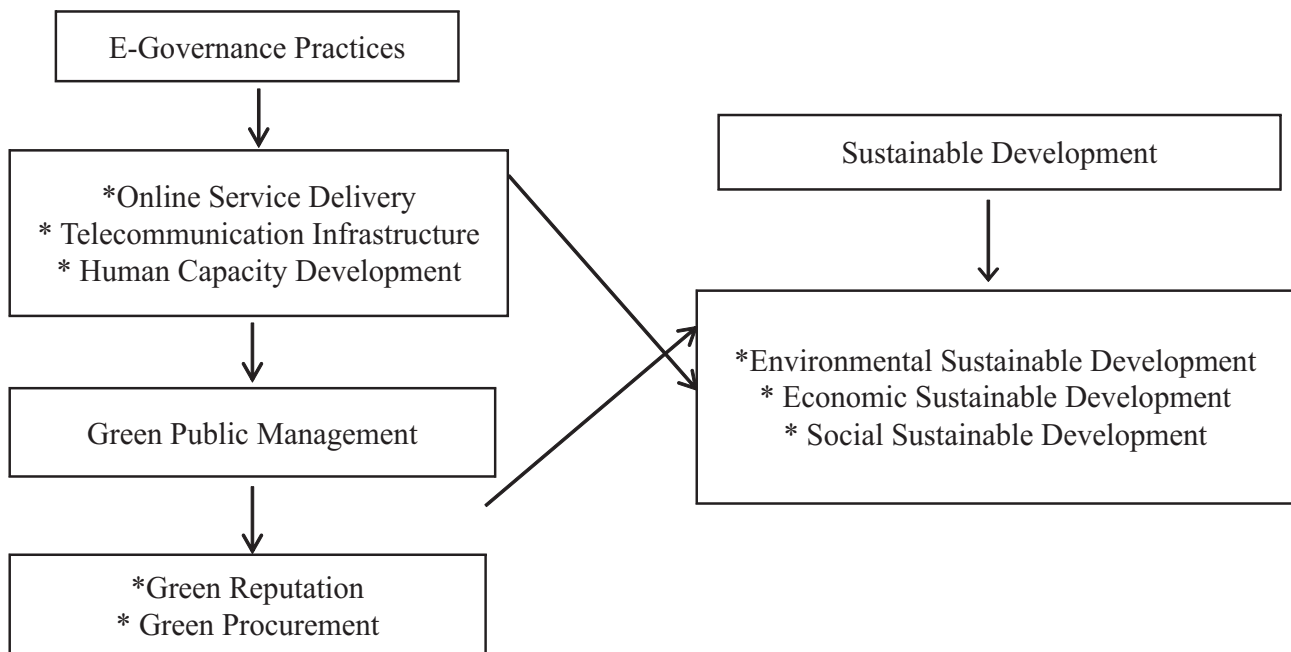
Concept of Green Public Management

Organisations are increasingly finding it challenging to balance economic and environmental performance, particularly those that face competitive, regulatory and community pressure. With the increasing pressure for environmental sustainability, ecological principles have to become new state management rules (Pogodina et al., 2019). Many government organisations have enacted policies to lessen the environmental impact of their operations. Even in the absence of formal policies, however, public employees might engage in several discretionary pro-environmental behaviours like eco-friendly initiatives (Egawat, 2020). From the theoretically based literatures concerning green management, green public management is the process of applying innovation to achieve sustainability, waste reduction, social responsibility, and competitive advantage via continuous learning and development and by embracing environmental goals and strategies that are fully integrated with the goals and strategies of the organisation (UNEP, 2011, Shan et al., 2021). Green management is all about sustainability for business without compromising the future need. Sustainability concerning corporate plans implies the opportunity for businesses to provide a long-term solution, such need to enhance the quality of the workplace and natural environment (UNEP, 2011).

Components of green public management; green reputation is a set of perceptions of people inside and outside the company and agencies on meeting the needs of the present without compromising the ability of future generations to meet their own needs. Corporate reputation is the set of perceptions of

people inside and outside the company. A corporate reputation is based on a company's ability to produce and deliver products and services (Abraham, & P. Pingali, 2020, Nassani, 2019). It helps to save costs, reduce waste and improve productivity. Green procurement is purchasing products and services that cause minimal adverse environmental impacts. It incorporates human health and environmental concerns into the search for high-quality products and services at competitive prices. It is defined as the acquisition of goods, works, services or consultancies whose results have the least possible harmful effects on environment, human health and safety compared to other competing and similar acquisitions, or those that positively impact the environment. Green procurement can play a leading role in resource waste reduction, helping you better manage your resources and improve efficiency (Poplawshi, L, et al., (2021).

Conceptual Model



Theoretical Framework

Passet Theory of Sustainable Development

Rene Passet's 1987 theory of sustainable development suggests that the economic sphere and the human activity sphere are linked by information, knowledge and market processes. However, they are also embedded in the biosphere, considered a global macro-system and energy. These three spheres are directly connected and interface (Vivien, 2011). They are economic, environmental, social, ecology, economy, and equity. The core approach is the development that looks to balance different, and often competing, needs against an awareness of the environmental, social and economic limitations faced by people as a society.

Economic sustainability demands that societies seek growth routes that create the best flow of income while preserving their basic stock of manmade, human, and natural capital. Socially sustainable development is founded on the twin tenets of justice and equality. Wealth, resources, and opportunities must be distributed equally for a growth route to be sustainable over time. Environmental sustainability is the ability to maintain ecological stability in our planet's natural environment and conserve natural resources to support the well-being of current and future generations (Hens, L, & J. Ren, J, 2022).

The argument is that sustainable development refers to the all-encompassing strategy and temporal processes that lead us to the ultimate state of sustainability that should be understood as humanity's target goal of human-ecosystem equilibrium, contrasting the demands of ambitious economic expansion and the duty to safeguard ecosystems and natural resources are being balanced by modern economies. A better approach is to use sustainability commitments and other sustainability measures as a catalyst for economic growth rather than as a solution. To manage sustainable development, it is necessary to use analytical tools and management practices that analyse and integrate environmental, social, and economic objectives and problems spanning several years or decades. Some of the measures that can be adopted in managing sustainable development are; technology, reduce, reuse and recycle approach, promoting environmental education and awareness, resource utilisation as carry capacity, improving quality of life including social, cultural and economic dimension by replacing resources utilised with resources of equal or greater value without compromising or jeopardising natural environment with these, stability of the environment can be maintained for present and future generation (Yunzhao, L, 2022).

New Public Management Model of Green Public Management

In the 1980s and 1990s, a new approach called New Public Management (NPM) was created in response to the shortcomings of the traditional public administration model. The model focused on issues such as restructuring efforts to enhance the standard of public services, reduce government spending, and boost government operations' effectiveness. NPM ideas can be classified into different threads. Decentralisation, debureaucratization, disaggregation, new managerialism, privatisation, performance evaluation and downsizing are all part of the first school of thought, which focuses on better management and organisational reform (Indahsari & Raharja, 2020, (Hood & Lodge, 2003).

Gaps in Literature

There appears to be a scarcity of work on e-governance and green public management for sustainable development in Nigeria; no framework incorporates the relationship between e-governance and green public management for sustainable development in Nigeria, hence the need to examine the existing gap. Limited empirical studies focus on e-governance and green public management for sustainable development.

Research Methods and Research Design

The study adopted descriptive designs. The quantitative data engaged the use of a structural questionnaire. Descriptive research is an approach that blends quantitative and qualitative data to provide relevant and accurate information.

Study Population

This study focused on four agencies in Southwest Nigeria Nigerian Communication Commission (NCC), National Identity Management Commission (NIMC), National Information Technology Development Agency (NITDA), and Nigerian Postal Service (NIPOST).

Sample Size and Sampling Technique

The researcher found it convenient to follow the tabular approach at 0.05 margin error and confidence level of 95% per cent to determine the sample size,

Three Hundred and forty (340) was the sample size which was derived using a published table by H. Teherdoost (2017). The sample was further spread across the four (4) selected agencies, using the proportionate allocation formula by Bowler (2005)

Table 1: Sample Size Distributions

S/N	Name of Agencies	Population of Staff	Proportionate Ratio	Selected Sample Size
1	Communication Commission (NCC	102	$\frac{340 \times 102}{630}$	55
2	National Identity Management Commission (NIMC	215	$\frac{340 \times 215}{630}$	116
3	National Information Technology Development Agency (NITDA	92	$\frac{340 \times 92}{630}$	50
4	Nigerian Postal Service (NIPOST)	221	$\frac{340 \times 221}{630}$	119
	Total	630		340

Source: Researcher, 2022

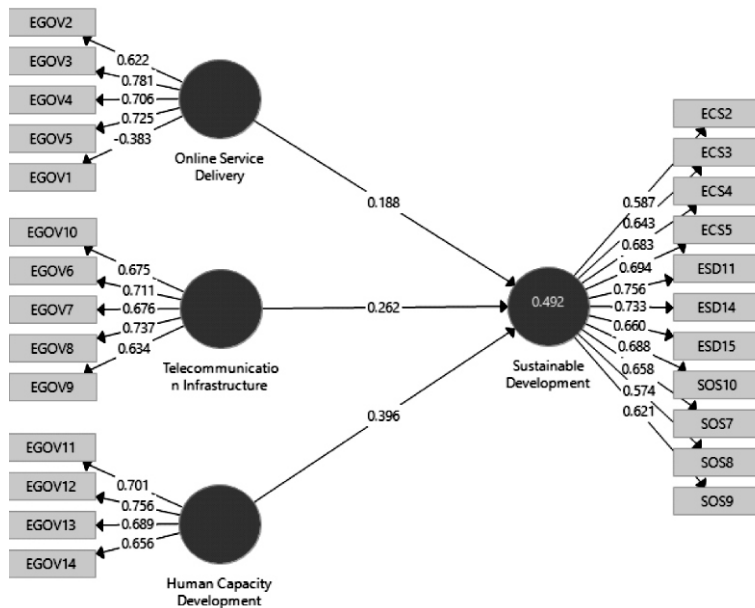
Data Analysis

The researcher made use of quantitative data that emerged from the use of a structured questionnaire.

Results obtained were analysed using simple descriptive statistical tools and interpreted in order to answer the research questions designed for the study.

Data Analysis, Results and Discussion

Ho1: E-governance will not Significantly Influence the Sustainable Development of Selected Agencies in South West, Nigeria.



The Adjusted R^2 was used to establish the predictive power of the study's model

The model is significant at 5% (0.05) 0.475 showed that E-Governance dimensions explained 47.5% of change in SD

Human capacity development had the highest relative effect on SD in Southwest, Nigeria with a coefficient of 0.396 and t value of 4.996

Telecommunication infrastructure ($\beta = 0.262$, $t = 2.366$)

Online service delivery ($\beta = 0.188$, $t = 2.065$)

E-Governance has a medium degree of predictive relevance effects on SD

On the strength of the PLS-SEM summarised results in table 2 ($Adj R^2 = 0.475$, $p = 0.000$, $Q^2 = 0.195$), this study can conclude that E-Governance has a significant and substantial effect on SD of selected agencies, South West, Nigeria hence, the study rejects the null hypothesis one (H_01) which states that E-Governance has no significant effect on SD in Southwest, Nigeria.

Table 2: Summary of the PLS-SEM for the Effect of E-Governance on Sustainable Development, Southwest, Nigeria .

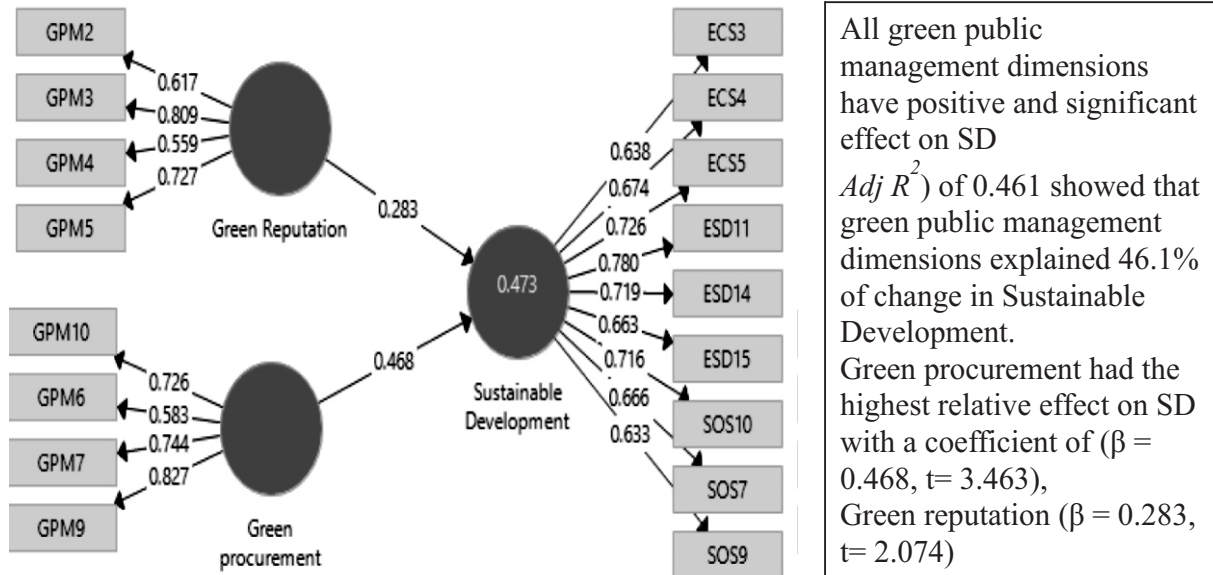
Path Description	Original sample (o) Unstandard ised Beta	T	Sig.	R ²	Adj. R ²	Sig.	Q ²
				0.492	0.475	0.000	0.195
Human Capacity Development → Sustainable development	0.396	4.996	0.000				
Online Service Delivery → Sustainable development	0.188	2.065	0.039				
Telecommunication Infrastructure → Sustainable development	0.262	2.366	0.018				

- The Adjusted R² was used to establish the predictive power of the study's model.
- (*Adj R²*) of 47.5 showed that E-Governance dimensions explained 47.5% of the influence in sustainable development in agencies in the Ministry of Communication and Digital Economy in South West Nigeria.
- The remaining 52.5% variation in sustainable development is explained by external factors different from the E-governance dimensions considered in this study.
- The effect of E-Governance on sustainable development in agencies in the Ministry of Communication and Digital Economy in South West Nigeria is moderate with 0.195.

The findings indicate that e-governance has a significant and substantial effect on SD. The study rejects the null hypothesis one (H₀₁), which states that E-Governance has no significant effect on SD, Human capacity development had the highest relative effect on SD, Southwest, Nigeria.

The qualitative findings indicated that e-governance in Nigeria shows a trend of inconsistency in public reform policies and programmes regarding the implementation of ICT in public-sector organisations.

Ho2: Green Public Management will not Significantly Influence of Sustainable Development of Selected Agencies, South West, Nigeria.



On the strength of the PLS-SEM summarised results in table 3 ($Adj R^2 = 0.461$, $p = 0.000$, $Q^2 = 0.207$), this study can conclude that green public management has a significant and substantial effect on the sustainable development in selected agencies, Ministry of Communication and Digital Economy, South West, Nigeria; hence, the study rejects the null hypothesis two (H_02), which states that green public management has no significant effect on sustainable development in Southwest, Nigeria.

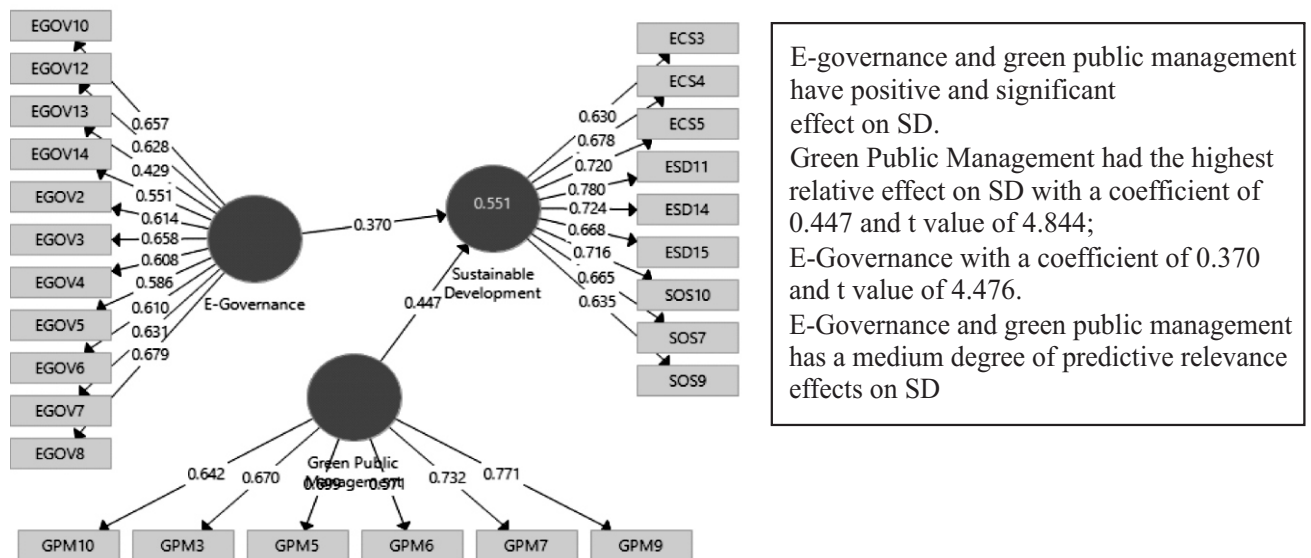
Table 3: Summary of the PLS-SEM for the Effect of Green Public Management on the Sustainable Development in Southwest, Nigeria

Path Description	Original sample (o) Unstandardised Beta	t	Sig.	R^2	Adj. R^2	Sig.	Q^2
				0.473	0.461	0.000	0.207
Green reputation → Sustainable development	0.283	2.074	0.039				
Green procurement → Sustainable development	0.468	3.463	0.001				

- ($Adj R^2$) of 0.461 showed that green public management dimensions explained 46.1% of the influence in sustainable development in agencies, Ministry of Communication and Digital Economy, South West, Nigeria
- The remaining 53.9% of changes in sustainable development is explained by external factors different from those considered in this study.
- The effect of Green Public Management on sustainable development in agencies in the Ministry of Communication and Digital Economy in South West Nigeria is moderate with 0.207.

The findings indicate that green public management has a significant effect on SD. The study rejects the null hypothesis two (H_02), which states that green public management has no significant effect on SD. Green procurement had the highest relative effect on sustainable development in Southwest, Nigeria. The qualitative finding revealed that the effect of green public management is slow due to the unwillingness of government agencies and employees to enforce and adhere to most rules, policies, and regulations already in place that would ensure a healthy, conducive workplace environment and goods and services delivered to the public.

Ho3: E -governance and Green Public Management will not Jointly, Significantly Influence the Sustainable Development of Selected, South West, Nigeria.



$Adj R^2 = 0.542$, $p = 0.000$, $Q^2 = 0.244$), this study can conclude that E-Governance and green public management has significant and substantial joint effect on SD in selected agencies, Ministry of Communication and Digital Economy, South West, Nigeria; hence, the study rejects the null hypothesis three (H_03), which states that E-Governance and green public management has no significant joint effect on SD in Southwest, Nigeria.

Table 4: Summary of the PLS-SEM for the Effect of E-Governance and Green Public Management on Sustainable Development in Southwest, Nigeria

Path Description	Original sample (o) Unstandardised Beta	T	Sig.	R ²	Adj. R ²	Sig.	Q ²
				0.551	0.542	0.000	0.244
E-Governance → Sustainable development	0.370	4.476	0.000				
Green Public Management → Sustainable development	0.447	4.844	0.000				

- (*Adj R²*) of 0.542 showed that E-governance and green public management jointly predicted 54.2% of the changes in sustainable development in agencies in Ministry of Communication and Digital Economy in South West, Nigeria.
- Remaining 45.8% changes in sustainable development is explained by external factors different from those considered in this study.
- E-governance and green public management jointly influenced 54.2% of the sustainable development in Southwest, Nigeria.
- The effect of E-governance and green public management on sustainable development in agencies in Ministry of Communication and Digital Economy in South West, Nigeria is moderate.

The findings indicate that E-governance and green public management positively and significantly affect SD. The study rejects the null hypothesis three (H_03), which states that e-governance and green public management has no significant joint effect on SD.

The qualitative findings indicated that the need for use of ICTs for public service delivery is increasing, and nations are prepared to implement the required ICT policies to support their efforts.

Challenges Confronting the Implementation of E-governance in an Organisation

- 91.2% of the respondents strongly agree that there is an absence of teamwork, with a mean of 1.10.
- 49.8% of the respondents strongly agree that there is unequal dissemination of internet services with a mean of 1.51.
- 58.3% of the respondents strongly agree that there is an unwillingness on the part of the government to share vital information to the public, with a mean of 1.48.

- 65.6% of the respondents strongly agree that there is policy summersault, with a mean of 1.38.
- 69.8% of the respondents strongly agree that there is the absence of competent personnel to handle ICT infrastructures, with a mean of 1.34.
- 67.7% of the respondents strongly agree that there is corruption among government personnel, with a mean of 1.37.

The findings on e-governance and green public management for sustainable development in Nigeria shows a trend of slow and inconsistency in public reformation policies and programs as regard to implementing e-governance and green management systems and practice of public-sector organisations.

Conclusion and Recommendations

E- governance and green public management innovation tool in the Nigerian society is agreeable becoming evident the most powerful determinants with the potential to assist governments, if applied appropriately, to improve governance, to alleviate extreme poverty, promote inclusiveness in governance, provide economic opportunities, promote democracy, ensure healthy life and environment, to deliver valuable public-sector services for all the citizens towards sustainable development in Nigeria as demonstrated in the outcome of the agencies of government surveyed in this research work.

Recommendations

- (1) The Nigerian government and its agencies should take the initiative towards upgrading resources and establishing ICT infrastructure in all government agencies following cutting-edge global best practices that ensure a steady electricity supply. These measures will increase efficiency, cut costs, increase accountability for public office holders, promote greater transparency on how government functions in society, foster a democracy that is more centred on the needs of its citizens, ensure team collaboration among government institutions by linking or interconnecting all government websites together to create cross-agency collaboration for an efficient and effective interactive working system in government agencies.
- (2) Government should develop institutional and national level policy frameworks to improve on e-governance and green management practice through the execution of policies that are helpful to the population with easy in gaining access by the citizen for information, training and re-training of staff on (ICT) for maintenance of ICT infrastructure and to increase the rate of Information and Communication Literacy rate in government agencies to guarantee effective service delivery and long-term viability of these agencies.
- (3) Governments must demonstrate a sincere interest and commitment to the reform process to achieve a reformed public-sector organisation that can respond to the citizens' demands in a transformative and supportive political environment in nature and its approach to “change” initiatives.

- (4) Public institutions should endeavour to apply green management innovation and enact eco-environmental policies, goals and strategies to reduce waste, achieve economic sustainability in business, encourage social responsibility that will not compromise future needs and also provide a long-term solution that enhances the quality of the workplace and natural environment towards achieving sustainable development.

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