

Innovation and sustainability in Anambra State Civil Service, Nigeria

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Abstract

Purpose: This study empirically investigated the relationship between innovation and sustainability in the Anambra State Civil Service.

Method: Three hypotheses were formulated to guide the investigation, and hypothesis testing was conducted using the least-squares regression model. Hence, data were collected using an e-questionnaire survey sent to the respondents (staff of the Ministry of Finance and Ministry of Budget and Economic Planning) through their various WhatsApp group platforms, out of which 112 responses were recorded, received, and used in the data analysis.

Results: A positive and significant influence was found between innovation and sustainability in the Anambra State Civil Service at the 1% significance level. The study therefore concludes that the advent of technological innovation, administrative innovation, and organizational innovation have led to sustainability in the Anambra State Civil Service. Thus, innovation determines sustainability in the Anambra State Civil Service. In lieu of this, the study recommends that civil servants be encouraged to be innovative by appropriately rewarding every innovative idea.

Conclusions: The study concludes that the advent of technological innovation, administrative innovation, and organizational innovation have led to sustainability in the Anambra State Civil Service.

Limitations: Some of the respondents did not attend the e-questionnaire. Thus, notwithstanding, a thorough work was carried out.

Contribution: This study contributed to knowledge by designing a model variable and updating the literature on the subject.

Novelty: This study introduces a new idea on innovation obtainable in the Anambra State Civil Service.

Keywords: *Technological Innovation; Administrative Innovation; Organizational Innovation; Sustainability; Anambra State Civil Service*

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1. Introduction

In the contemporary world system, innovation in civil service has been brought to a front burner and has become a topical issue, as no one wants to remain static. There is a global focus on innovation. Changes in global markets, increased customer expectations, the need for new technologies and processes, improving existing products and services, and government pressure have all led to innovation, which is becoming a key focus in the public sector (Ataire & Campus, 2022). In an increasingly competitive global market, innovation has been considered critical to the advancement of any organization, whether private or public. The perception of the people about civil service can only

be changed through innovation, which will stimulate a more commercial, efficient, and effective service delivery. The public sector identifies innovation as an opportunity to establish relationships that will enhance collaboration between various stakeholders from numerous organizations to improve the delivery of public sector goods and services to create and achieve public value. In particular, it considers the development and implementation of experimentation with new ideas, services, and products as viable, practical, and sustainable public service delivery outputs ([Nel & Masilela, 2020](#)).

In an organized private setting, innovation is considered a tool that has continued to enhance the sustainability of firms through the creation of new products and services that ensure continued customer patronage. Also, in the public sector setting, the key reason for innovativeness is the desire to improve performance, effective use of government resources, and increased competitive edge. However, most public sector organizations in Nigeria are not innovative, which negatively affects their sustainability ([Orga, 2023](#)). In addition, the Nigerian civil service has often been criticized for a number of reasons, such as incompetence, corruption, favoritism, truancy, bureaucratic bottlenecks, and poor organization. However, most public sector organizations have not fully integrated innovation to enhance their competitiveness for sustainability. However, in the Anambra State Civil Service, it was reported that the present regime has brought about many innovations for solutions on administrative effectiveness and efficient service delivery. Hence, the need for the present study to investigate if these innovations (technological innovation, administrative innovation, and organizational innovation) could ensure sustainability in the Anambra State Civil Service in Nigeria.

Also from the literature, it was noted that most studies on innovation and sustainability in Nigeria were limited to private sector organizations ([Agbeyangi, Makinde, & Odun-Ayo, 2024](#); [Ajemije, Olabode, Moronke, & Idika, 2020](#); [Daboh & Omeiza, 2022](#); [Joseph, Umogbai, Kwahar, & Adudu, 2023](#); [Maliki & Amusan, 2019](#); [Okonkwo & Eneh, 2023](#); [Olughor, 2015](#); [Omede & Aghanenu, 2021](#); [Oyerinde, Adeyemi, & Ayantoso, 2023](#); [Ukpong, Uwa, & Ekanem, 2022](#)), while limited attempts were made on Nigeria public sector organizations. For example, [Atairet and Campus \(2022\)](#) examined the relationship between innovative administration and service delivery for sustainable civil services in Nigeria. The study only discussed the relationship between innovation and sustainability in Nigerian Civil Service conceptually, without any empirical evidence and analysis. Thus, there is no empirical evidence on the relationship between innovation and sustainability in the Nigerian Civil Service, which calls for further investigation.

In addition, no known study has investigated the relationship between innovation and sustainability in the Anambra State Civil Service in Nigeria. Therefore, the present study becomes a necessity in order to fill this gap in knowledge using Ministry of Finance and Ministry of Budget and Economic Planning as a reference point. Specifically, this study seeks to achieve the following objectives:

1. To examine the effect of technological innovation on sustainability in Anambra State Civil Service
2. To determine the effect of administrative innovation on sustainability in Anambra State Civil Service
3. To ascertain the effect of organizational innovation on sustainability in Anambra State Civil Service

To achieve this, the following hypothesis was formulated:

H₀₁: Technological Innovation has no effect on Sustainability in Anambra State Civil Service

H₀₂: Administrative Innovation has no effect on Sustainability in Anambra State Civil Service

H₀₃: Organizational Innovation has no effect on Sustainability in Anambra State Civil Service

1.1. Significance of the Study

The outcome of this study contributes to the existing body of knowledge in the field of accounting, especially in areas of sustainability and innovation, among others. It will be of utmost benefit to policy makers (government/management) to put more light on the problems faced by the civil service with regard to service delivery. In addition, the study is of immense assistance to academicians and other prospective researchers, as the present study serves as a base for reference points and further studies. The findings and recommendations of the study are also invaluable to researchers, students, and the

academic community for learning on innovation and sustainability in the Anambra State Civil Service, Nigeria.

The remainder of this paper is organized as follows. Therefore, the remainder of this paper is structured as follows: Section 2 provides an overview of the current state of the relevant literature. This is followed by Section 3, which deals with the methodology, and Section 4 presents and discusses the results, while Section 5 presents the conclusion, recommendations, and contribution to knowledge.

2. Literature review

2.1 Innovation

Innovation as a concept has been popularized by individuals, organizations, and governments worldwide. As a concept, there is no generally acceptable definition of the word; however, it simply has a lot to do with new things, new ideas of an individual, organization, and even government that improves its services in a changing world. Human beings are dynamic in nature; as the world is changing on a daily basis, they cannot be static. Adjustments to meet changing ideas and situations are often said to be innovation. Innovation is what we cannot do without because no one or government is static. Innovation has been practiced throughout human history and has become a way to improve human life ([Orga, 2023](#)). According to [Atairet and Campus \(2022\)](#), governments around the world see innovation as a significant means to improve public service. It entails the introduction of new ideas that enhance the achievement of organizational purposes, thereby ensuring growth in the organization.

In the government circle, innovation brings about change to the governance of public services by improving their level of accountability and transparency, their performance, or the user involvement and satisfaction level ([Atairet & Campus, 2022](#)). According to this study, it seems to propel political consideration and ambition. Innovation is a more specialized type of change, but not all changes necessarily involve new ideas or lead to significant improvements. According to [Twaliwi and Isaac \(2017\)](#), innovation is the process of novelty, which implies that new things are done, or old things are done in new ways to increase performance in terms of sales, profitability, and market share in an organization. To them, it is an application of technological, institutional, human resources, and discoveries to productive processes, resulting in new practices, products, markets, institutions, and firms that need expansion. . Innovation is not a matter of sheer luck; it requires systematic and rational work, well organized, and managed for results.

2.1.1 Technological Innovation

[Tacheva, Simpson, and Ivanov \(2020\)](#) state that technology is a body of knowledge that might be seen as a building block for technological innovation, serving as a cornerstone to research, design, development, manufacturing, and marketing. Technological innovation is a part of the total innovation discipline, which focuses specifically on technology and how to use it successfully in products, services, and processes. According to [Orga \(2023\)](#), technological innovation is a key factor in a firm's competitiveness. This is unavoidable for firms that want to develop and maintain a competitive advantage and gain entry into new markets. [Harrison and Watson \(1998\)](#) noted that public organizations are generally more flexible, can adapt themselves easily, and are better placed to develop and implement new ideas. This study shows that technological changes ensure the sustainability of an organization. [Irikefe and Bob-Alli \(2019\)](#) opine that technological innovation is a unified process that entails activities of technology, organizations, business, and finance. It means that the entrepreneurs seize the market prospects for commercial benefits as the goal to create a stronger performance, more efficient, and lower cost of production and operation system. Technological innovation is also seen as an organization's ability to swiftly implement and adapt to digital solutions within its capacity to navigate uncertainties ([Anoke, Ngozi, Uchekukwu, & Joyce, 2022](#); [Nosike, Ojobor, & Nosike, 2024](#)).

Some of the examples of technological innovation in Anambra State Civil Service include; digital identity management used for identification of staff that comes to work and at what time the person comes to work and also digital innovation used to enhance automation and data collection through the use of Internet of Things (IoT) devices e.t.c

2.1.2 Administrative Innovation

In Nigeria, civil service was traditionally structured and tailored towards the British colonial administration, which the colonial masters used to report the performance of the government to their home country. Civil service in most countries was based on the traditional system, and thus, there was a need for a paradigm shift. Governments around the globe have identified the inherent challenges associated with traditional and outdated public sector organizational designs, hierarchical structures, processes, and functions within government departments ([Nel & Masilela, 2020](#)). The Nigerian civil service was tradition-bound, somewhat ponderous, and showed signs of deterioration and several undesirable characteristics, of which the following were the most prominent: over-centralization, incessant conflict between cadres, little emphasis on results and concrete performance, counter-productive, separation of authority from responsibility, some topmost hierarchy, dangerously low staff morale and productivity, and inadequate staff development practices ([Amegayibor, 2021](#); [Awosika, 2014](#)). It is against the above backdrop that innovative ideas for an effective and efficient administrative civil service were initiated and encouraged.

Some examples of administrative innovation in the Anambra State Civil Service include the use of Microsoft Office applications, business offices, communication design, and web technology for office procedures and management and document processing. Also the use of digital payroll administration for payroll system which has proven to enhance accountability and expedite timeliness for service delivery without sacrificing quality in process

2.1.3 Organizational Innovation

Organizational innovation is broadly defined as changes in firm structure or management methods intended to improve a firm's use of knowledge, quality of goods and services, or efficiency of workflows ([Kleiner-Schäfer & Liefner, 2021](#)). It is also referred to as a means of implementing a new organizational method in undertaking business practices, workplace organization, or external relations. In the words of [Irikefe and Bob-Alli \(2019\)](#), organizational innovations are strongly linked with all administrative efforts to renew organizational routines, procedures, mechanisms, systems, etc. in order to renew teamwork, sharing of information, coordination, learning, and innovation. The components of organizational innovation include workforce training, employee voice, work design (including the use of cross-functional production processes), and shared rewards. The study goes further and refers to organizational innovation as the introduction of new ideas, processes, and practices that bring significant improvements in the way a business operates. Implementing organizational innovation can lead to several benefits that can contribute to the success of a business.

Some of the organizational innovations in the Anambra State Civil Service include the implementation of an open office layout to foster communication and idea sharing. The establishment of this is dedicated to research and development in order to encourage rewards for innovative thinking, teamwork etc

2.1.4 Reasons for Innovation

[Nel and Masilela \(2020\)](#) clearly identified the following as the reasons for innovation in an organization be it in the public or private setting;

1. An unexpected event, failure, or success
2. Newly acquired knowledge
3. Incongruity between what is assumed and what is really is.
4. Changes in the market or industry structure
5. A process or task that needs improvement
6. Changes in demographics
7. Change in meaning or in the way things are perceived

2.1.5 Factors Inhibiting Innovation in Anambra State Civil Service

a. Political Interference

Despite the usefulness of innovation in the Anambra State Civil Service, there are some inhibiting factors that affect innovative ideas in the state's civil service, such as political interference in the

activities of the civil service, which has affected almost every part of the Nigerian civil service as well as innovation in the Nigerian civil service. From the recruitment processes, merits are sometimes relegated to the background, giving room to unqualified persons who may not add value to the service to be recruited. Most people recruited are based on political recommendations; even posting to some offices/places within the service is most time based on political interest, as noted by [Onwe, Abah, and Nwokwu \(2015\)](#). Heavy political weights often take advantage of any recruitment privileges available to sneaks in their clientele cum loyalist who might have helped them in their political career. Apparently, the persons recruited may not have innovative ideas because they do not have the capacity to function in the position they find themselves. Also, some innovative ideas may not be allowed to see the light of the day since considerations seem to be given to political colonies. Political office holders, like taking glory, often overlook any innovative ideas that may not bring glory to them. Innovation has a lot to do with merit, but when meritocracy is relegated, innovation suffers.

b. Bureaucratic Bottleneck

Bureaucratic principles also affect innovation in the Anambra State Civil Service. Senior officers tend to capitalize on the ills of bureaucracy to prevent the implementation of innovative ideas, particularly where such ideas emanate from subordinate civil servants ([Atairet & Campus, 2022](#)). Some senior officers may resist directly/indirect innovative ideas that tend to bring commendation to subordinate staff because every effort made by the subordinate must be reported accordingly through the senior staff. This type of behavior could be likened to what, according to the study, is referred to as Bureaupathology, which implies the negative administrative behaviors of professionals and experts in organizations that thwart the achievement of public goals and delivery of quality public service to consumers ([Onyekwelu, Monyei, & Muogbo, 2022](#)). They use their status and position to violate basic operational procedures for their benefit.

c. Systemic Issues

In addition, innovative ideas are not deliberately encouraged by the system. This encouragement could come in terms of recognition of the efforts of staff with innovative ideas, and enabling environments are provided by the government for staff who are innovative. The absence of a deliberate innovative culture in Nigerian civil service has affected innovative initiatives in the service. This is one of the challenges confronting innovation in the Anambra State civil service.

d. Resistance to Change

Resistance to change is another factor inhibiting innovation in the Anambra State civil service. Most civil servants do not want to adapt to the current global trend; they believe in the old method of service delivery, which is not relevant in the contemporary world. In addition, some bureaucrats resist innovation, especially when such innovative ideas tend to be ineffective in line with global trends ([Emeka, Kelvin, & Amara, 2023](#)).

e. Lack of Funding

Innovation becomes impossible when funds are not available to handle it effectively. Every innovative initiative requires funds to operate as such; when funds are not available, the civil servant will not be encouraged to carry out such an innovative initiative, since everything depends on funds.

f. Corruption

Corruption has constituted an unrelenting bane to innovative ideas in the Anambra State civil service. However, various efforts have been made to curb corruption in a system in which the civil service is part. This effort seems not to have fully checked the cases of corruption among civil servants in the state. Corruption comes in various forms such as during recruitment, posting to preferred places, kickbacks, overpricing, contract inflation, etc., and all these depend on the value of the staff, the value of the society, and the value of government that is in power with regard to corruption. Innovation is not encouraged if the right thing is not done. Kickbacks undermine innovation, and the intending innovators may not be encouraged since the funds may not be used for what it is meant for.

2.1.6 Sustainability

According to [Dyllick and Muff \(2016\)](#), business sustainability is often referred to as corporate sustainability'. The concept implies the integration of conservation of nature and more efficient use of resources, which requires firms to conduct green innovation. From this scenario, it is clear that survival and growth are the two main objectives of any organization in today's competitive world. It has become imperative for every organization to be different and accelerative from its competitors to achieve their goals and become market leaders. Sustainability is growth that can be profitably maintained for future benefits ([Mukherjee & Sen, 2019](#)). Sustainability as a concept was popularized by Higgins' remarkable study in 1977, where he proposed that the sustainable growth rate model should be used to explain its practical limits to growing firms ([Emeka et al., 2023](#)). The study notes that sustainability is all about the performance of an organization, which includes social, economic, and environmental performance that enables them to grow sustainably and friendly.

[Barney \(2018\)](#) submitted that to ensure sustainability, organizations must concede the following:

- i. Responsible for their social, environmental, and economic impact.
- ii. Being transparent in decisions and activities affecting responsibilities.
- iii. Interests of the stakeholders to be responded to.
- iv. The rule of law is mandatory for all individuals.

Sustainability also depicts the general idea of doing good for the environment in which the business operates and the various stakeholders it interacts with. Perhaps, for managers, the business itself benefits more in both the short and long terms ([Atuluku & Uchendu, 2021](#)). According to [Colbert and Kurucz \(2007\)](#), sustainability refers to being in business. The study notes that the concept is based on the idea that an organization is the voluntary association of productive assets, including manpower, physical, and capital resources for the purpose of achieving a shared goal. Sustainability performance can only become a significant and helpful instrument for good changes across industries through sustainability initiatives ([Wijesundara, Khatibi, Azam, & Tham, 2025](#)).

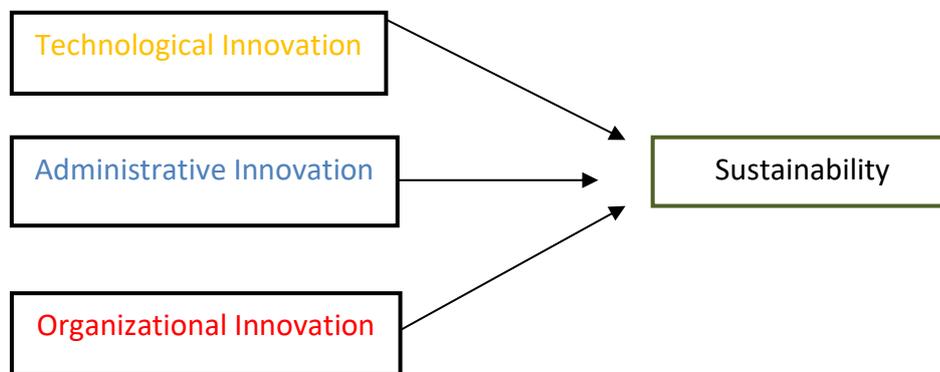


Figure 1. Conceptual Model for the Study
Source: Researcher's Concept (2024)

Figure 1 shows the conceptual model of this study, which focuses on an in-depth assessment of the literature on the impact of innovation on sustainability in the Anambra State Civil Service. Specifically, the conceptual review covers the related issues which include: scholarly definitions of concepts like technological innovation, administrative innovation and organizational innovation as it relates to sustainability in Anambra State Civil Service.

2.2 Theoretical Framework

The theoretical framework that gives the meaning of a word in terms of the theories on innovation and sustainability established in this study is Psychological/Idiosyncratic Theory of Modernization. It assumes that both the knowledge and acceptance of this theory depend on this study.

2.2.1 Psychological/Idiosyncratic Theory of Modernization

The theoretical framework adopted for this study is the psychological/idiosyncratic theory of modernization propounded by Hagen in 1963, as cited in [Nel and Masilela \(2020\)](#). According to Hagen, traditional societies are characterized by non-innovating personalities. Thus, he maintained that innovative personalities initiate and stimulate economic growth and ensure organizational sustainability. The structure of traditional society is not oriented towards the production of innovative personality. Traditional society is hierarchical and authoritarian, which allows few at the top echelon that is submissive to authoritarian decision above them to exercise authority on persons below them. Possessing these characteristics does not allow the development of creative personalities with a high need for achievement and openness to new ideas, as is the case in developed societies ([Leonard, Anichebe, & Chukwudi, 2016](#); [Okereke & Ekpe, 2002](#)). As a modernization theory, it emphasizes the movement from a traditional approach to a modernized approach. Therefore, third world countries must overcome this traditionalism for its sustainability.

As can be seen from the theoretical foundations of this study, organizational knowledge often leads to sustainability through innovation. In addition, the relationship between strategic orientation and capabilities is enhanced through the process of learning and the knowledge gained through innovative and inventive strategies. Thus, this theory is appropriate because it truly illustrates why some bureaucrats act in the way they do. The Nigerian Civil Service dates back to the colonial era, which is finding it almost difficult to adapt to the changing world. The colonial principle is still highly relevant. As a civil service, there is a need to encourage innovative personality, which will enhance the growth and sustainability of the civil service for effective administration and service delivery. A society with a high achievement motive is likely to be innovative and demonstrates a high level of economic sustainability ([Atairet & Campus, 2022](#)).

The justification for using this theory to underpin the study stems from the fact that the literature review has demonstrated the existence of a relationship between innovations and organizational sustainability.

2.3 Empirical Review

[Ukpong et al. \(2022\)](#) examined the relationship between business innovation and organizational sustainability in Nigeria. A survey research design was adopted, and a sample size of 196 entrepreneurs was drawn for the study. To achieve the objective of the study, three hypotheses were formulated. The major instrument for data collection was a structured questionnaire administered to respondents using purposive sampling techniques. Data collected were analyzed using simple percentage and Pearson Product Moment Correlation. Results show that there is a significant correlation between variables of business innovation such as product innovation, process innovation, and marketing innovation and organizational sustainability variables of environmental, social, and economic sustainability among entrepreneurs in Akwa Ibom State. Consequently, it is recommended first to business consultants, and data on the use of innovations by final consumers is of value to business managers and policymakers.

[Irikefe and Bob-Alli \(2019\)](#) examined the effect of innovation on business sustainability using the Guaranty Trust Bank Plc, Area 3 Branch, Abuja. A survey research design was used. The study used the entire staff of Guaranty Trust Bank Plc, Area 3 Branch, Abuja as the population of the study, which was 192 as the sample size. The data for the study were collected from respondents who are the staff of the organization in various departments in the branch of Guaranty Trust Bank Plc in Area 3, Garki, Abuja. The study utilized primary qualitative data, which were converted to quantitative data using five-point Likert scaling. The study equally utilized correlation and regression analysis with the aid of the statistical software package SPSS version 25.00 on the data collected. The findings show that there is a significant relationship between innovation and business sustainability in Guaranty Trust Bank Plc. This implies that innovation contributes significantly to business sustainability (business survival) of Guaranty Trust Bank Plc. The study, therefore, recommended that Guaranty Trust Bank Plc should continue to adopt innovation by investing more in commercial activities, research and development, new skills, and methods of serving customers since it is statistically significant in achieving business sustainability in the organization.

[Orga \(2023\)](#) investigated the relationship between innovation and sustainability of SMEs in Enugu metropolis. The major objective of the study was to examine innovation and sustainability of SMEs, while the following specific objectives formulated were to: identify product innovation on the circular economy of small and medium enterprises in Enugu metropolis, ascertain technological innovation on management behavior on small and medium enterprises in Enugu metropolis. The population of the study was 300, comprising owners and workers and 35 SMEs. Using the Chi Square test tool, it was found that product innovation had a significant positive effect on the circular economy of small and medium enterprises in the Enugu metropolis. The study therefore recommends that for SMEs to be sustainable, they must have product innovation, especially adopting those methods that will not affect the environment negatively.

[Joseph et al. \(2023\)](#) investigated the effect of innovation on entrepreneurial success of manufacturing small and medium firms in North-Central Nigeria. This study sought to establish the relationship between innovation and entrepreneurial success in the form of product, process, management, marketing innovations and improved personal wealth, and market expansion as entrepreneurial success. A cross-sectional survey research design was adopted for the study with a target population of 393 selected business owners/managers and heads of finance of manufacturing SMFs in six (6) state capitals of North Central Nigeria, which also form the sample size of the study drawn using the census sampling method. The study used a primary source of data collected with the aid of closed-ended questionnaires, while convenient and purposive sampling were adopted in choosing respondents for the study. Regression analysis was conducted using the Statistical Package for Social Sciences to ascertain the effect of innovation on the entrepreneurial success of manufacturing SMFs in North-Central Nigeria. Findings revealed a positive relationship between the innovation dimensions of product, process, management, and marketing innovations and entrepreneurial success measures of improved personal wealth and market expansion. It was therefore concluded that all the dimensions of innovation in this study (product, process, management, marketing innovations) have a significant influence on entrepreneurial success (improved personal wealth, market expansion) of manufacturing SMFs in North Central Nigeria.

[Daboh and Omeiza \(2022\)](#) examined the effect of innovation on SMEs' international business in Nigeria. This study also focuses on export-oriented SMEs in Nigeria. A descriptive research design was used. A stratified sample size of 228 was drawn from the population of 529 exporters in Nigeria using a structured questionnaire formulated for the purpose of the study. Multiple regressions were used to analyze the data and the existing relationships between selected variables. The findings revealed that both Market and Organizational Innovation exerted significant positive effects on SMEs' international business in Nigeria. The study therefore recommends that SME exporters in Nigeria exhibit market innovation skills and knowledge of products to increase market share across borders and generate more profit for the enterprises. SMEs were also recommended to come up with new organizational methods to improve their services to customers, and also imbibe change as a constant means for achieving business objectives such as profitability, growth, and expansion.

[Babarinde \(2021\)](#) examined the relationship between innovation and firms' sustainable advantages in the Nigerian telecommunications sector.. The study's aim was to assess the contribution of specific service offerings to firms' sustainable advantage in the Nigerian Telecommunication Industry. A descriptive survey system was used. The primary data source was self-administered from 286 respondents who were staff of four randomly selected GSM firms (MTN, GLO, AIRTEL, and 9MOBILE) in Lagos State, Nigeria. At a significance level of 0.05, the hypothesis was tested using linear regression. The results of the analysis indicate that telecommunication firms' specific service offers led to sustained growth in Nigeria. From this finding, the study concludes that there is a substantial relationship between innovation and a firm's sustainable advantage in Nigeria's telecommunications sector. To enjoy increasing market share, it is important that telecom firms build new product designs.

[Ajemije et al. \(2020\)](#) also investigated the influence of information communication technology (ICT) on the innovative possibility and sustainability of entrepreneurship in Nigeria. The Survey research design employed a structured questionnaire administered to 158 respondents selected from three states within the southwest geopolitical zone of Nigeria with the aid of purposeful and judgmental sampling techniques. The data obtained were analyzed using descriptive statistics and a simple regression model. The result showed a strong relationship between ICT and innovative capability of SMEs in Nigeria, which is a clear indication that ICT will cause innovative capacity to go northward. Similarly, in the case of ICT and entrepreneurial sustainability, there is a strong association between ICT and sustainability of entrepreneurship in Nigeria. Thus, it was recommended that entrepreneurs should embrace information technology as this will expose them more to new innovations and better ways of doing things, as well as hasten the transmission of vital information and reduce the time and cost of operation. Moreover, access to the Internet will enhance easy communication with potential customers and business partners.

[Agri, Kennedy, Bonmwa, and Acha \(2018\)](#) examined the impact of technological innovation on sustainable entrepreneurship development in Nigeria. The study used a survey method and interviews with sampled stakeholders in Central Nigeria. Evaluation of findings was performed using the simple percentages statistical technique. The level of technology innovation in Nigeria is low; as such, entrepreneurship is weak. This is caused by economic, political, socio-cultural, and environmental factors. This study focuses on economic factors that are interlinked with other factors. Supplementary multiple regression analysis was performed using secondary data. The diffusion of indigenous technology will have a widespread, albeit differentiated, impact on Nigeria's entrepreneurship through the agricultural, industrial, and service sectors, including telecommunications. The educational and private sectors in Nigeria should play a leading role in indigenous technology incubation, innovation, adoption, and transfer. Innovation and entrepreneurship will increase employment in Nigeria. However, the institutional environment and capacity to encourage innovation are weak. Nigeria needs to evolve a comprehensive public policy for science, technology, and innovation through technical education and training.

3. Research Methodology

The study adopted a survey design to examine the effect of innovation on sustainability in the Anambra State Civil Service, using the Anambra State Ministry of Finance and Ministry of Budget and Economic Planning as a reference point. It incorporates personal interviews, observations, and questionnaires to ensure corroboration of facts, thus ensuring the validity and reliability of the data collected. The population of the study covers all the staff of the Ministry of Finance and the Ministry of Budget and Economic Planning, totalling 795 staff members (*Source: Field Survey, 2024*). Data were collected through an electronic questionnaire survey. The e-questionnaire survey was designed where respondents were asked to assess the effect of innovation on sustainability in Anambra State Civil Service using a five-point Likert scale: (1) To a Very High Extent (THE), (2) To a High Extent (HE), (3) Neutral (N), (4) To a Very Low Extent (TLE), and (5) To a Low Extent (LE).

An e-questionnaire (Google Form) was sent to the respondents (staff of the Ministry of Finance and Ministry of Budget and Economic Planning) through their various WhatsApp group platforms, out of which 112 responses were recorded, received, and used in the data analysis. The collected data were transformed to scale measurements using a five-point Likert scale, and the hypotheses were statistically tested using a Least Squares Regression Model with the aid of *E-Views 12*.

3.1 Model Specification

In line with previous research, this study designed a model to determine the effect of innovation on sustainability in the Anambra State Civil Service. The functional model for the study is shown below:

$$SUS = F(TIN, AIN, OIN)$$

The econometric form of the regression modified for this study is expressed as follows:

$$SUS = B_0 + B_1 + TIN + B_2 AIN + B_3 OIN + \mu$$

Where:

SUS = Sustainability

TIN = Technological Innovation

AIN = Administrative Innovation

OIN = Organizational Innovation

μ = Stochastic Term

$\beta_1-\beta_3$ = Coefficient of Regression Equation

β_0 = Constant coefficient (intercept) of the model

Decision Rule: accept H_0 if P-value > 5% significant level otherwise reject H_0

4. Results and discussions

Table 1. Result on Effect of Innovation on Sustainability in Anambra State Civil Service

Dependent Variable: SUS
Method: Least Squares
Date: 03/18/24 Time: 13:48
Sample: 1-5
Included observations: 5

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TIN	0.714929	0.255326	2.800062	0.0055
AIN	0.155472	0.037861	4.106389	0.0004
OIN	3.149192	0.594258	5.299371	0.0000
C	0.133516	0.031570	4.427409	0.0001

R-squared	0.757441	Mean dependent var	1.028979
Adjusted R-squared	0.049419	S.D. dependent var	3.015098
S.E. of regression	2.939653	Akaike info criterion	5.006985
Sum squared resid	2030.766	Schwarz criterion	5.050753
Log likelihood	592.8312	Hannan-Quinn criter.	5.024624
F-statistic	7.160587	Durbin-Watson stat	2.230972
Prob(F-statistic)	0.000958		

Source: Result Output from E-View 12 (2024).

4.2 Discussion of Findings

The coefficient of determination R^2 was 0.76, indicating that the overall model explained 76 percent of the total variation in the dependent variable (sustainability). Thus, these variables (TIN, AIN, and OIN) can explain only 76 percent of the change in sustainability in the Anambra State Civil Service, leaving 24 percent unexplained. This is to say that there are factors other than innovation that can contribute to sustainability in the Anambra State Civil Service. The sig. (or p-value) is .0001, which is below the .01 level; hence, we conclude that the overall model is statistically significant, or that the variables have a significant and joint effect on the dependent variable. Thus, the researcher affirmed the validity of the regression model adopted in this study.

Therefore, the results of the regression are slated as follows:

H₀₁: Technological Innovation has no significant effect on Sustainability in Anambra State Civil Service

This hypothesis was tested, and the result of this regression, as shown in Table 1, indicates that the relationship between TIN and SUS is positive and significant. This can be justified with the P-value (significance) of 0.0055, which is less than the 1% level of significance adopted. Likewise, the positive coefficient of 0.7149 proves that technological innovation ensures sustainability in the Anambra State Civil Service. This implies that technological innovation is a determinant of sustainability in the Anambra State Civil Service. Therefore, we rejected the null hypothesis and accepted the alternate

hypothesis, which contends that technological innovation has a significant effect on sustainability in the Anambra State Civil Service.

This is consistent with the findings of [Agri et al. \(2018\)](#), [Babarinde \(2020\)](#), [Ukpong et al. \(2022\)](#) and [Irikefe and Bob, -A, Ili \(2019a, a a a \)](#) who found positive association between technological innovation and organizational sustainability in Nigeria. Accordingly, the observation aligns with the a priori expectations that technological innovation has a positive effect on organizational sustainability in Nigeria.

H₀₂: Administrative Innovation has no significant effect on Sustainability in Anambra State Civil Service

This hypothesis was tested, and the result of this regression, as shown in Table 1, indicates that the relationship between AIN and SUS is positive and significant. This is justified by the P-value (significance) of 0.0004, which is less than the 1% level of significance adopted. Likewise, the positive coefficient of 0.1555 indicates that administrative innovation determines sustainability in the Anambra State Civil Service. Consequently, we rejected the null hypothesis and accepted the alternate hypotheses, which contends that administrative innovation has a significant effect on sustainability in the Anambra State Civil Service.

Accordingly, the observation is in tandem with the a priori expectations that administrative innovation has a positive effect on organizational sustainability in Nigeria.

H₀₃: Organizational Innovation has no effect on Sustainability in Anambra State Civil Service

This hypothesis was tested, and the result of this regression, as expounded in Table 4.2.1, indicates that the relationship between OIN and SUS is positive and significant; this can be justified with the P-value (significance) of 0.000, which is less than the 1% level of significance adopted. Likewise, the result of the positive coefficient of 3.1492 implies that sustainability in the Anambra State Civil Service is a determinant of administrative innovation. This implies that the introduction of organizational technology has led to sustainability in the Anambra State Civil Service. Consequently, we rejected the null hypothesis and accepted alternate hypotheses, which contend that organizational innovation has a significant effect on sustainability in the Anambra State Civil Service.

This result aligns with those of [Ajemije et al. \(2020\)](#); [Daboh and Omeiza organization](#) and innovation have a positive effect on organizational success in Nigeria. Accordingly, the observation agrees with the a priori expectations that organizational innovation has a positive relation with organizational sustainability in Nigeria.

5. Conclusion

5.1 Conclusion and Recommendations

From the statistical analysis, the study concludes that the advent of technological innovation, administrative innovation, and organizational innovation have led to sustainability in the Anambra State Civil Service. Thus, innovation determines sustainability in the Anambra State Civil Service. In lieu of this, the study recommends that civil servants be encouraged to be innovative by appropriately rewarding every innovative idea. Also, every innovation (technological, administrative, and organizational) should be properly and adequately communicated, and civil servants should be trained in line with the new idea so as to actualize its purpose.

The study experienced many challenges, majorly in the inability of the respondents to respond to the e-questionnaire survey (Google form) sent to the official WhatsApp platform of the staff of the two (2) selected ministries. However, this issue notwithstanding, thorough work was carried out and was successfully completed.

5.2 Contribution to Knowledge

The literature on innovation and sustainability shows that there is no known study that has investigated the relationship between innovation and sustainability in the Anambra State Civil Service in Nigeria. This study, therefore, contributes to the body of knowledge by filling this gap.

Second, the study contributes to knowledge through model introduction and methodology in determining the effect of innovation on sustainability in the Anambra State Civil Service as follows:

$$\text{SUS} = \mathbf{B}_0 + \mathbf{B}_1 + \text{TIN} + \mathbf{B}_2 \text{AIN} + \mathbf{B}_3 \text{OIN} + \mu$$

Contributed to knowledge by revealing that:

$$\text{SUS} = \beta_0 + \beta_1 \text{TIN} (0.7149) + \beta_2 \text{AIN} (0.1555\{0.0004\}) + \beta_3 \text{OIN} (03.149\{0.0000\}) + \mu$$

Based on this implication, this study asserts that the overall model is statistically significant. The variables (TIN, AIN, and OIN) have a significant effect on the dependent variable (SUS).

5.3 Suggestions for Further Study

The study suggests the need for further study on the relationship between innovation and sustainability in the Anambra State Civil Service using ministries, departments, and agencies other than the one used in the present study in order to see if similar findings are going to be made. In addition, the present study suggests the need for further study on the same issue in a few years, since innovation is not static; rather, it varies with time.

5.4 Limitations of the Study

Some of the respondents did not attend the e-questionnaire. Thus, the analysis of the study was based on the responses recorded and received through the e-questionnaire.

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