



# Appraisal of Government Recurrent Expenditure Pre- and Post-Integrated Personnel Payroll Information System Implementation in Nigeria

Onuaguluchi Florence Ifeoma <sup>a</sup>, Oliver Ike Inyama <sup>a++</sup>  
and Oshim Judethadeus Chukwuebuka <sup>a++\*</sup>

<sup>a</sup> Department of Accountancy, Enugu State University of Science and Technology, Enugu, Nigeria.

## **Authors' contributions**

*This work was carried out in collaboration among all the authors. The three authors read and approved the final manuscript.*

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## **ABSTRACT**

The study appraised government recurrent expenditure pre- and post-Integrated Personnel Payroll Information System implementation in Nigeria. Government recurrent expenditure on general administration, government recurrent expenditure on education, government recurrent expenditure on defence, and government recurrent expenditure on health, formed the dependent variables of the study. The study adopted an *ex-post-facto* research design, covering the period between 1995 and 2019. Secondary data were extracted from the Central Bank of Nigeria Statistical Bulletin. Paired Sample T-test technique was used for the data analysis. In line with the specific objectives of the study which was to appraise the difference in the mean of government recurrent expenditure on general administration, education, defence, and health pre and post Integrated Personnel and Payroll Information System implementation in Nigeria, it was revealed that all the recurrent

<sup>\*\*</sup>Professor;

<sup>\*</sup>Corresponding author: E-mail: [Judethadeusoshim@gmail.com](mailto:Judethadeusoshim@gmail.com);

expenditures studied have a positive and significant difference in mean after IPPIS implementation in Nigeria. This implies that IPPIS has not been able to cut down government recurrent expenditure in Nigeria. It is recommended therefore that the federal government should adequately monitor and utilize the money saved from recurrent expenditure due to implementation of IPPIS. They should employ more administrative staff using the money saved from eradicated ghost workers. The government should consider an upward review of the educational budget to meet up with the 26% allocation recommended by UNESCO and above. The government should monitor how the huge amount of money spent on defence was appropriated. This will help in preventing and stamping out corruption. An encompassing stakeholders' forum in the Nigerian health sector remain essential. The national health system needs a solid administrative policy foundation that allows coordination of priorities and partnerships in the health workforce and among various stakeholders. This will help stamp out embezzlement and corruption in the system.

*Keywords: Integrated personnel payroll information system; government recurrent expenditure; social services; recurrent expenditures; economic reform and governance project.*

## 1. INTRODUCTION

### 1.1 Background of the Study

The governments of all nations, whether developed or developing, have the responsibility of fulfilling various statutory roles, including safeguarding citizens against internal and external threats, addressing welfare needs, and providing social services [1]. These roles necessitate significant government spending. In Nigeria, government expenditure has been rapidly increasing across multiple sectors of the economy [1]. An analysis of the 2019 budget proposal reveals that the Federal Government plans to spend USD 24.41 billion, which is approximately 2.5% higher than the 2018 estimates and 16% higher than the 2017 estimates [1]. A substantial portion of this proposed expenditure is allocated to recurrent expenditure (USD 11.18 billion), followed by capital expenditure (USD 5.6 billion) and debt servicing (USD 5.92 billion), representing approximately a quarter of the total estimate [1].

Considering that the government's primary concern is the welfare and living conditions of the population, which determines the government's spending pattern, there is significant apprehension regarding the excessive government spending in Nigeria, while the masses continue to suffer from extreme poverty [1,2]. It is alarming to note that previous administrations have allocated substantial funds to both capital and recurrent expenditures, yet infrastructural gaps and impoverishment persist [3]. Recurrent expenditures now exceed capital expenditures by almost twice their size [4]. Recurrent expenditure encompasses payments

made by the government for all purposes except capital costs, including personnel costs, payments for goods and services, social services, healthcare, provision of educational materials, interest, and subsidies. Personnel and related costs constitute a significant aspect of recurrent expenditure in Nigeria [4].

Mela [5] suggests that in Nigeria, the personnel costs of all Ministries, Departments, and Agencies (MDAs) are drawn from the Consolidated Revenue Fund (CRF). However, the exact number of personnel receiving payments in Nigeria is difficult to ascertain due to the lack of necessary information. Consequently, the government faces challenges in obtaining accurate wage data for planning and budgeting purposes [5]. The Integrated Personnel and Payroll Information System (IPPIS) project aims to address this issue and reduce the federal government's overhead expenditure [5].

IPPIS is a crucial component of the Government Integrated Financial Management Information System (GIFMIS), which forms part of the Nigerian Government Economic Reform and Governance Project (ERGP) [6]. According to Kaoje, Nabila, and Gambarawa [6], IPPIS is a computerized financial package that enhances the effectiveness and transparency of public resource management by automating the government's payroll management and accounting system. These researchers further note that IPPIS is a result of the civil service reform program aimed at ensuring transparency and accountability in the Nigerian civil service by digitizing the manual payroll system. This study aims to evaluate government recurrent expenditure before and after the implementation of IPPIS in Nigeria [6].

## 1.2 Statement of the Problem

Governments worldwide have the responsibility of fulfilling statutory roles, necessitating significant spending. In Nigeria, government expenditure has rapidly increased, with the 2019 budget proposing a substantial amount allocated to recurrent, capital, and debt servicing expenditures. However, excessive government spending in Nigeria raises concerns as poverty persists and infrastructural gaps remain despite previous administrations allocating substantial funds. Recurrent expenditures now surpass capital expenditures, with personnel costs being a significant part. The lack of accurate wage data for planning and budgeting poses challenges due to the difficulty in determining the exact number of personnel receiving payments. To address this, the Integrated Personnel and Payroll Information System (IPPIS) aims to reduce overhead expenditure by automating the government's payroll management and accounting system. IPPIS is part of the Nigerian Government Economic Reform and Governance Project (ERGP) and seeks to enhance transparency and accountability. This study evaluates government recurrent expenditure pre and post IPPIS implementation in Nigeria.

## 1.3 Objectives of the Study

The main objective of the study is to appraise government recurrent expenditure pre- and post-Integrated Personnel Payroll Information System implementation in Nigeria. The study must strive to achieve the following specific objectives:

1. Examine the difference in the mean of government recurrent expenditure on general administration pre and post Integrated Personnel and Payroll Information System implementation in Nigeria.
2. Appraise the difference in the mean of government recurrent expenditure on education pre and post Integrated Personnel and Payroll Information System implementation in Nigeria.
3. Ascertain the difference in the mean of government recurrent expenditure on defence pre and post Integrated Personnel and Payroll Information System implementation in Nigeria.
4. Investigate the difference in the mean of government recurrent expenditure on

health pre and post Integrated Personnel and Payroll Information System implementation in Nigeria.

## 2. REVIEW OF RELATED LITERATURE

### 2.1 Integrated Personnel and Payroll Information System (IPPIS)

The Integrated Personnel and Payroll Information System (IPPIS) is a department responsible for direct payment of salaries and wages to government employees, as well as deductions and remittances to various third-party organizations (Department of IPPIS, 2012). IPPIS aims to establish a reliable database, facilitate manpower planning, and eliminate fraud while improving record storage and retrieval [7]. Since its inception, IPPIS has saved the Nigerian government billions of Naira by eliminating ghost workers through verification exercises [7]. Supported by the World Bank, IPPIS was introduced as part of civil service reform to address financial misconduct and misuse of funds in Ministries, Departments, and Agencies (MDAs) [8].

The manual computation of salaries and documentation of personnel information have hindered transparency and accuracy, leading to overpayments, underpayments, and other errors [9]. IPPIS, if properly implemented, can mitigate these issues and centralize salary payments, improve record keeping, and enhance manpower planning [9]. IPPIS has significantly reduced corruption by eliminating ghost-worker syndrome and has saved the government ₦185 billion by streamlining payments and eliminating discrepancies between estimated and actual payroll submissions [9]. With over 237,917 staff enrolled and 60,450 ghost workers identified, IPPIS has also streamlined payroll administration and reduced red tape [9].

### 2.2 Challenges to IPPIS Implementation

IPPIS faces various challenges despite its numerous benefits. Minister of Finance, Zainab Ahmed, identified challenges such as the lack of a reliable and comprehensive public service database, inability to forecast manpower needs, and growing wage-bill [7]. The Accountant General of the Federation, Idris Ahmed, also highlighted issues such as change management, institutional resistance, and delays in enrollment processes [7].

Furthermore, infrastructure limitations and inaccurate employee information pose challenges for IPPIS (Olusegun, 2019). The agency struggles when employees provide incorrect bank account details or personal information, resulting in payment discrepancies (Olusegun, 2019). Despite these challenges, IPPIS continues to work towards improving its operations and addressing these issues.

### **2.3 IPPIS Implementation and Payroll Fraud in Nigeria**

Payroll fraud and salary leakages pose significant challenges in many countries, particularly in less developed nations [10]. In Nigeria, the public sector has been criticized for resource wastage, including financial, facility, utility, and human resource wastage [11]. To address these issues, the federal government introduced the Integrated Payroll and Personnel Information System (IPPIS) as a transformation agenda. IPPIS aims to establish a centralized database system for the Nigerian public service, providing accurate employee information and integration with other business applications [11].

IPPIS was launched in April 2007 and gradually implemented in 17 Ministries, Departments, and Agencies (MDAs) by 2010. It addressed challenges related to personnel information and payroll by utilizing a biometric data capture machine, which exposed fraudulent practices [11]. Ghost workers, who lack fingerprints, were identified, highlighting the collusion and fraudulent activities within the MDAs. Resolving such issues is crucial to prevent the government from losing substantial amounts of money to unscrupulous officials [11].

### **2.4 Government Expenditure on General Administration**

The implementation of the Integrated Personnel and Payroll Information System (IPPIS) in Nigeria's civil service has yielded significant effectiveness in curbing the pervasive issue of ghost-worker syndrome. By accurately capturing and verifying employee information through biometric data, IPPIS has successfully identified and eliminated fraudulent practices within the system. As a result, the nation has saved billions of Naira that would have otherwise fallen into the hands of fraudsters and looters, marking a substantial achievement in ensuring financial accountability and transparency within the government.

However, while the implementation of IPPIS has brought about positive outcomes in addressing ghost-worker syndrome, Nigeria's overall spending on general administration has experienced an upward trend. The recurrent expenditure specifically allocated to the general administration of the government saw an increase from ₦564.42 billion in 2017 to ₦652.26 billion in 2018. This upward trajectory continued in 2019, with the expenditure further rising to ₦847.57 billion. These figures indicate a notable rise in the financial resources allocated to general administrative functions within the government.

It is essential to monitor and assess the factors contributing to the increased spending on general administration to ensure efficient utilization of resources. While the successful implementation of IPPIS has addressed one aspect of financial mismanagement, further scrutiny and evaluation are necessary to optimize budget allocations and enhance overall financial governance in Nigeria.

### **2.5 Government Expenditure on Education**

In fiscal year 2017, Nigerians invested significantly in education-related services, surpassing the previous year's expenditure. However, the Federal Government's spending on education was relatively low, accounting for only about 15% of the total expenditure. The education sector in Nigeria faces challenges like poverty and income contraction, resulting in a recession and negative growth rate in education services. Surprisingly, the government's recurrent expenditure on education increased significantly, indicating that the implementation of IPPIS did not reduce personnel costs. While IPPIS has been effective in curbing fraud and ensuring transparency, understanding the factors behind increased expenditure is crucial. Analyzing fund allocation and utilization can enhance resource efficiency and address sector challenges, promoting sustainable growth (National Bureau of Statistics, Nigeria Budget Office).

### **2.6 Government Expenditure on Defence**

There is a spike in cases of kidnapping, terrorism, clashes between herdsmen and farmers, police brutality among others. The Nigeria Ministry of Defence must correct this abnormally. The government are spending a

huge amount of money on defence yearly, yet the security situation in Nigeria is getting worse. Maybe the spending does not reach its target which can only be caused by corruption and embezzlement of public funds. The country has spent ₦588.9 billion on recurrent expenditure in 2019, up from the 2018 figure of N442.15 billion. In 2016, 2015 and 2014, recurrent expenditure on defence was ₦443 billion, ₦357 billion and ₦340 billion respectively (CBN Statistical Bulletin, 2019).

## **2.7 Government Expenditure on Health**

The government's recurrent spending in the health sector increased significantly in 2019, rising from ₦296.44 billion to ₦388.37 billion (National Bureau of Statistics). Although salary increase may have contributed to this rise, the consistent expenditure throughout the year suggests other factors may also be involved. The successful implementation of measures like IPPIS to eliminate ghost workers and fraud in the health sector did not result in any significant reduction in spending or an increase in employment rates, raising questions about the underlying reasons for sustained spending levels and stagnant employment. Potential factors such as increasing healthcare costs, infrastructure development, and investment in medical technologies may have offset the savings achieved through the elimination of ghost workers and fraud. Policymakers should conduct further analysis to identify the root causes of sustained spending and stagnant employment rates to optimize the utilization of resources and promote cost-effectiveness in the Nigerian healthcare system (National Bureau of Statistics).

## **2.8 Theoretical Review**

The study utilized Public Finance Management Theory and Stakeholders Theory to examine the effectiveness of the Integrated Personnel and Payroll Information System (IPPIS) in preventing financial mismanagement and ensuring accountability [12]. Public Finance Management Theory emphasizes the government's role in efficiently managing financial resources and implementing control measures to mitigate risks [12]. IPPIS aligns with this theory by aiming to combat misappropriation and wastage of public funds through robust financial control mechanisms [12].

Additionally, the study incorporated Stakeholders Theory, recognizing the diverse stakeholders

involved in public fund management, including the government, employees, taxpayers, and the general public [12]. IPPIS is designed to cater to their interests and ensure effective financial resource management and accountability [12].

By employing both theories, the study aimed to evaluate IPPIS's impact on transparent and accountable financial practices, safeguarding public funds for the benefit of society [12]. Through an analysis of these theoretical frameworks and their alignment with IPPIS objectives, the study provided insights into the system's effectiveness in preventing financial mismanagement and promoting responsible financial practices [12].

## **2.9 Empirical Review**

Olumuyiwa (2018) conducted a study to evaluate the effectiveness of integrated payroll and personnel information systems (IPPIS) in addressing the issue of ghost workers in the Nigerian public sector. The research utilized primary and secondary data to gather the opinions of public servants working in the Federal Inland Revenue Service (FIRS). The study included a population of 450 individuals, comprising both senior and junior workers from administrative, finance, and audit departments. The findings indicated that the strategies implemented by IPPIS effectively tackled the presence of ghost workers in the Nigerian public sector. The introduction of IPPIS policy in salary administration improved the consistent payment of employees, although challenges still remained in terms of uploading monthly salaries.

Micah and Moses [13] examined the impact of IPPIS on addressing the Ghost Workers' Syndrome in Nigeria's public sector. Their research employed a historical research method and concluded that the introduction and implementation of IPPIS significantly reduced the incentives, capacity, and opportunities for individuals to engage in payroll fraud at various levels. However, they also identified technological barriers and noted that major government agencies were yet to connect to the IPPIS platform through a virtual private network.

Enakirerhi and Temile [7] conducted a study focusing on the challenges, benefits, and prospects of IPPIS in Nigeria. They found several benefits associated with IPPIS, such as accurate and reliable personnel information, the reduction or elimination of corrupt practices, improved

budgeting and forecasting processes, streamlined payroll and personnel management, and increased confidence in payroll costs. The study also highlighted savings for the government by curbing the ghost worker syndrome, improved management reporting and information, and prompt deductions and remittance to various third-party funds. However, they noted challenges related to skills transfer, inadequate supporting infrastructure, technological barriers hindering the transfer of data across government agencies, resistance from stakeholders, and a lack of commitment to accelerated implementation.

Effiong, Oro, Ogar, Raphael, Etop, and Iroushu [12] conducted a study on the application and implementation effects of the Treasury Single Account (TSA), Integrated Payroll and Personnel Information System (IPPIS), and Integrated Financial Management Information System (IFMIS) on fraud management in the public sector in Nigeria. They employed a descriptive research design and administered a questionnaire to randomly selected respondents from various ministries. The study utilized a linear regression model and concluded that TSA, IPPIS, and IFMIS have a positive and significant relationship with fraud management, jointly impacting the performance of Public Interest Entities.

Akande [11] examined accounting control systems and payroll fraud management in a developing economy, focusing on the acceptability of the Integrated Payroll and Personnel Information System (IPPIS) and Biometrics system among the workforce. Both primary and secondary data were collected and analyzed using simple regression statistics and correlation analysis. The results showed a statistically significant relationship between accounting control systems (IPPIS and Biometrics) and payroll fraud, indicating that these systems have a significant impact on payroll fraud in the Nigerian public sector.

Ibanichuka and Sawyer [14] empirically investigated the relationship between the Integrated Payroll System and government recurrent expenditure in Nigeria. They collected data through primary and secondary sources, including annual reports of the Bayelsa State Government and a survey of 30 respondents using a validated questionnaire. Descriptive and ordinary least square regression techniques were employed for data analysis. The study findings

revealed a positive and strong relationship between the integrated payroll system and personnel cost and overhead cost.

Paul, Jumai, and Oluwaseun [15] examined the implementation of the Digital Integrated Personnel and Payroll Information System (IPPIS) in Kenya, Ghana, and Nigeria. They gathered insights from journal articles, newspapers, and published works, highlighting the success of IPPIS in generating accurate, timely, and reliable personnel and financial data. The system effectively eliminated ghost workers and resulted in significant financial savings for the government.

Mela [5] focused on the implementation of the IPPIS policy in Nigerian universities, assessing its benefits and challenges. The study conducted a theoretical analysis of critical issues through a review of periodic publications, journals, and secondary materials. Qualitative methods were employed for data analysis. The findings indicated that while the university system does not reject IPPIS, there are concerns regarding its limited flexibility and compatibility with the unique characteristics of universities. The study highlighted the need for the IPPIS software application to consider the specific demands of the university system.

Kaoje, Nabila, and Gambarawa [6] conducted a study to investigate the impact of the Integrated Personnel and Payroll Information System (IPPIS) on transparency in the Government Payroll Administration of the Nigerian civil service. They employed a descriptive cross-sectional survey research design and utilized descriptive and inferential statistics, analyzed using Statistical Package for the Social Sciences (SPSS) Version 21. The findings of the study indicated a significant and moderate positive relationship between IPPIS, transparency, and accountability.

Mbotor [16] evaluated the implementation and impact of IPPIS using an empirical approach. Secondary data from published works and government reports were utilized. The study concluded that IPPIS is an effective strategy and mechanism in combating corruption, despite some existing challenges during the implementation process. It is recommended that the IPPIS office conduct regular screenings to verify the enrolled personnel and give adequate attention to enrolling all Ministries, Departments, and Agencies (MDAs), paramilitary agencies,

and the military to ensure compliance and maximize the system's utilization.

Abiodun and Anichebe [17] examined the effect of IPPIS implementation on employee welfare in fifty Ministries, Departments, and Agencies in Nigeria. The study employed a survey and descriptive research design, collecting data through questionnaires. Binary logistic regression analysis was used for data analysis. The results showed a weak positive relationship between IPPIS implementation and employee welfare, which was statistically significant. The study revealed that the identification and removal of ghost workers from the payroll through IPPIS implementation could lead to substantial cost savings for the government and ensure regular salary payments.

### 2.10 Research Gap

From the works of literature reviewed above, the researcher observed the following gaps which justify the need for this work. Series of research has been carried out on IPPIS, however, most of those studies focused solely on the impact of IPPIS on ghost worker syndrome in Nigeria. This created a gap in the literature which this study filled by examining government recurrent expenditure pre and post IPPIS implementation in Nigeria.

## 3. METHODOLOGY

### 3.1 Research Design

The study employed an ex-post facto research design, using secondary data from the Central Bank of Nigeria Statistical Bulletin. It focused on the government's recurrent expenditure in Nigeria to assess the impact of the Integrated Personnel and Payroll Information System (IPPIS). The data collected spanned from 1995 to 2019, divided into two periods: pre-IPPIS implementation (1995-2006) and post-IPPIS implementation (2007-2019).

All government expenditure heads constituted the population of the study, and a judgmental sampling technique was used to select specific areas of recurrent expenditure, including general administration, education, defense, and health. The paired sample t-test was chosen as the statistical tool, conducted using Microsoft Excel (2016), to analyze the data. Descriptive statistics were employed to assess the normality of the

time-series data, and the paired sample t-test was used to examine the impact of IPPIS on government recurrent expenditure in Nigeria.

Overall, the study's research design involved the use of secondary data, a focus on recurrent expenditure, the division of data into pre- and post-IPPIS periods, and the application of the paired sample t-test for data analysis.

### 3.2 Model Specification

The model was specified as follows:

$$t = \frac{\bar{x}_{\text{diff}} - 0}{s_{\bar{x}}}$$

$$s_{\bar{x}} = \frac{s_{\text{diff}}}{\sqrt{n}}$$

Where;

$\bar{x}_{\text{diff}}$  = Sample mean of the differences  
 $n$  = Sample size (i.e., number of observations)

$s_{\text{diff}}$  = sample standard deviation of the differences

$s_{\bar{x}}$  = Estimated standard error of the mean ( $s/\text{sqrt}(n)$ )

The Paired Samples  $t$ -Test is commonly used to test the following:

1. Statistical difference between two-time points
2. Statistical difference between two conditions
3. Statistical difference between two measurements
4. Statistical difference between a matched pair

The assumptions are as follows:

$H_0: \mu_1 - \mu_2 = 0$  ("the difference between the paired population means is equal to 0")

$H_1: \mu_1 - \mu_2 \neq 0$  ("the difference between the paired population means is not 0")

#### 4. DATA ANALYSIS

**Table 1. Descriptive statistics for the focal variables**

	<b>GREGA</b>	<b>GREE</b>	<b>GRED</b>	<b>GREH</b>
<b>Mean</b>	331.2782	191.4202	164.0016	114.5013
<b>Median</b>	310.1080	137.1160	76.32437	81.90937
<b>Maximum</b>	847.5744	593.3328	588.9885	388.3671
<b>Minimum</b>	16.90270	9.746400	6.597600	3.023707
<b>Std. Dev.</b>	253.9549	169.0292	158.0494	109.6413
<b>Skewness</b>	0.293224	0.707076	1.008234	0.822334
<b>Kurtosis</b>	1.866753	2.336013	3.150728	2.638766
<b>Jarque-Bera</b>	1.696009	2.542397	4.259228	2.953565
<b>Probability</b>	0.428269	0.280495	0.118883	0.228371
<b>Sum</b>	8281.954	4785.505	4100.039	2862.532
<b>Sum Sq. Dev.</b>	1547834.	685701.2	599510.6	288508.9
<b>Observations</b>	25	25	25	25

Source: Microsoft Excel Statistical Software

Table 1 above reveals the variable description of the time series data collected from the CBN Statistical Bulletin. The normality of the distribution of the data series is shown by the coefficients of Skewness, Kurtosis coefficients, Jarque-Bera Probability. From Table 1, the probability of the Jarque-Bera Statistics for all the explanatory variables have insignificant p-values as follows, Recurrent Expenditure on General Administration (0.428269), Recurrent Expenditure on Education (0.280495), Recurrent Expenditure on Defence (0.118883), and Recurrent Expenditure on Health (0.228371). The insignificance of the p-values depicts normal distribution for all the variables. This is further confirmed by the skewness coefficients which is less than or around figure one in all the variables under study. The kurtosis coefficient also provides a second level of confirmation that all the explanatory variables are normally distributed with a Kurtosis coefficient that is less than or around three.

Table 2 shows that Government Recurrent Expenditure on General Administration had a mean of ₦103.609 before IPPIS implementation, but had a mean of ₦560.711 after IPPIS implementation. Furthermore, the variance in Government Recurrent Expenditure on General Administration before and after IPPIS implementation was ₦7,798.218 and 18,903.41, respectively. The t-calculated of 13.368 is greater than the t-tabulated of 2.2009 at two-tailed.

The t-Test result in Table 3 reveals that Government Recurrent Expenditure on Education before implementation of IPPIS has a mean of ₦51.232, while the mean after implementation of IPPIS is ₦334.99. Furthermore, a variance of ₦1,231.42 and ₦17,028.18 was obtained for Government Recurrent Expenditure on Education before and after implementation of IPPIS respectively. At two-tailed, the t-calculated of 9.725 is greater than the t-tabulated of 2.2009.

**Table 2. t-Test: Paired two sample for Govt. recurrent expenses on general Adm**

t-Test: Paired Two Sample for Means		
	<b>GREGA after</b>	<b>GREGA before</b>
Mean	560.7108526	103.6096603
Variance	18903.411	7798.21807
Observations	12	12
Pearson Correlation	0.521839538	
Hypothesized Mean Difference	0	
df	11	
t Stat	13.36826915	
P(T<=t) one-tail	0.0000	
t Critical one-tail	1.795884819	
P(T<=t) two-tail	0.0000	
t Critical two-tail	2.20098516	

Source: Computed by Researcher Using Microsoft Excel 2016 Software



**Table 3. t-Test: Paired two sample for Govt. recurrent expenditure on education**

t-Test: Paired Two Sample for Means		
	<b>GREE after</b>	<b>GREE before</b>
Mean	334.9945292	51.23260313
Variance	17028.18845	1231.423049
Observations	12	12
Pearson Correlation	0.878420995	
Hypothesized Mean Difference	0	
df	11	
t Stat	9.725941672	
P(T<=t) one-tail	0.0000	
t Critical one-tail	1.795884819	
P(T<=t) two-tail	0.0000	
t Critical two-tail	2.20098516	

Source: Computed by Researcher Using Microsoft Excel 2013 Software

**Table 4. t-Test: paired two sample for Govt. recurrent expenditure on defence**

t-Test: Paired Two Sample for Means		
	<b>GREd after</b>	<b>GREd before</b>
Mean	290.4646955	45.19710468
Variance	20122.91608	765.7333526
Observations	12	12
Pearson Correlation	0.869188744	
Hypothesized Mean Difference	0	
df	11	
t Stat	7.16413464	
P(T<=t) one-tail	0.0000	
t Critical one-tail	1.795884819	
P(T<=t) two-tail	0.0000	
t Critical two-tail	2.20098516	

Source: Computed by Researcher Using Microsoft Excel 2016 Software

The t-Test result in Table 4 reveals that Government Recurrent Expenditure on Defence before implementation of IPPIS has a mean of ₦45.197, while the mean after implementation of IPPIS is ₦290.464. Furthermore, a variance of

₦765.73 and ₦20,122.9 was obtained for Government Recurrent Expenditure on Defence before and after implementation of IPPIS respectively. At two-tailed, the t- calculated of 7.164 is greater than the t-tabulated of 2.2009.

**Table 5. t-Test: paired two sample for Govt. recurrent expenditure on health**

t-Test: Paired Two Sample for Means		
	<b>GREH after</b>	<b>GREH before</b>
Mean	206.9384144	24.78011691
Variance	7601.212001	427.2006456
Observations	12	12
Pearson Correlation	0.890429694	
Hypothesized Mean Difference	0	
df	11	
t Stat	9.089673429	
P(T<=t) one-tail	0.0000	
t Critical one-tail	1.795884819	
P(T<=t) two-tail	0.0000	
t Critical two-tail	2.20098516	

Source: Computed by Researcher Using Microsoft Excel 2016 Software

The t-Test result in Table 5 reveals that Government Recurrent Expenditure on Health before implementation of IPPIS has a mean of ₦24.78, while the mean after implementation of IPPIS is ₦206.9. Furthermore, a variance of ₦427.2 and ₦7601.2 was obtained for Government Recurrent Expenditure on Health before and after implementation of IPPIS respectively. At two-tailed, the t- calculated of 9.089 is greater than the t-tabulated of 2.2009.

The t-Test result reveals that the Unemployment rate before implementation of IPPIS has a mean of 3.768, while the mean after implementation of IPPIS is 5.241. Furthermore, a variance of 0.0019 and 4.171 was obtained for the unemployment rate before and after implementation of IPPIS respectively. At two-tailed, the t- calculated of 9.089 is greater than the t-tabulated of 2.2009.

#### 4.1 Test of Hypotheses

**Decision Rule:** If the P-value is greater than the Alpha Level of 0.05, the null hypothesis of no significant effect will be accepted; if otherwise, reject the null and accept the alternative. Also, if the t-tabulated is less than t-calculated null hypotheses should be accepted.

**Hypothesis One:** Integrated Personnel and Payroll Information System (IPPIS) implementation do not significantly affect government capital expenditure on general administration in Nigeria.

The t-Test for the paired two samples for means in Table 2 shows a two-tail probability of 0.0000 which is less than the alpha value of 0.05. Therefore, the null hypothesis is rejected and the alternative hypotheses accepted. The t-tabulated (13.368) which is greater than t-calculated (2.2010) also suggest that the null hypotheses should be rejected. This implies that IPPIS significantly affect government recurrent expenditure on general administration in Nigeria.

**Hypothesis Two:** Integrated Personnel and Payroll Information System (IPPIS) implementation do not significantly affect government recurrent expenditure on education in Nigeria.

The t-Test for the paired two samples for means in Table 3 shows a two-tail probability of 0.0000 which is less than the alpha value of 0.05. Therefore, the null hypothesis is rejected and the

alternative hypotheses accepted. The t-tabulated (9.7259) which is greater than t-calculated (2.2010) also suggest that the null hypotheses should be rejected. This implies that IPPIS significantly affect government recurrent expenditure on education in Nigeria.

**Hypotheses Three:** Integrated Personnel and Payroll Information System (IPPIS) implementation do not significantly affect government recurrent expenditure on defence.

The t-Test for the paired two samples for means in Table 3 shows a two-tail probability of 0.0000 which is less than the alpha value of 0.05. Therefore, the null hypothesis is rejected and the alternative hypotheses accepted. The t-tabulated (9.7259) which is greater than t-calculated (2.2010) also suggest that the null hypotheses should be rejected. This implies that IPPIS significantly affect government recurrent expenditure on defence in Nigeria.

**Hypotheses Three:** Integrated Personnel and Payroll Information System (IPPIS) implementation do not significantly affect government recurrent expenditure on health.

The t-Test for the paired two samples for means in Table 4 shows a two-tail probability of 0.0000 which is less than the alpha value of 0.05. Therefore, the null hypothesis is rejected and the alternative hypotheses accepted. The t-tabulated (9.089) which is greater than t-calculated (2.2010) also suggest that the null hypotheses should be rejected. This implies that IPPIS significantly affect government recurrent expenditure on health in Nigeria.

## 5. RESULTS AND DISCUSSION

The t-test analysis conducted on the means presented in Table 2 demonstrates a significant and positive impact (P-value 0.0000) of the Integrated Personnel and Payroll Information System (IPPIS) on government recurrent expenditure in general administration. Prior to the implementation of IPPIS, the average government recurrent spending on general administration was 103.609 billion, while after the implementation, it increased to 560.710 billion, indicating a substantial rise of 457.101 billion. These findings indicate that the introduction of IPPIS has significantly increased government recurrent spending on general administration in Nigeria. These results align with the research findings of Effiong, Oro, Ogar, Raphael, Etop,

and Iroushu [12], who found that the implementation of an Integrated Personnel and Payroll Information System positively and significantly impacts government spending in Nigeria by improving payroll management.

However, these findings contradict the researcher's expectations. It was anticipated that with the implementation of IPPIS, there would be a decrease in government administrative spending or a reduction in the unemployment rate since the system effectively addresses ghost worker syndrome in the Nigerian public sector. However, the reality is different as the unemployment rate in the country remains alarmingly high and continues to increase.

The t-Test analysis in Table 3 reveals a significant and positive impact (P-value 0.0000) of the Integrated Personnel and Payroll Information System (IPPIS) on government recurrent expenditure in the education sector. Prior to the implementation of IPPIS, the average government recurrent spending on education was 51.2326 billion, whereas after the implementation, it increased to 334.994 billion, reflecting a substantial rise of 283.76 billion. This demonstrates that the introduction of IPPIS has led to a significant increase in government spending on education in Nigeria. These findings align with the research conducted by Ibanichuka and Sawyer [14], who also identified a positive and significant relationship between IPPIS and overhead costs.

However, these findings contradict the initial expectations of the researchers. The education sector in Nigeria is grappling with a high unemployment rate, an unfavorable student-to-lecturer ratio, and delayed payment of salaries and allowances to lecturers. This situation has resulted in numerous strikes by academic supervisory bodies, including the Nigerian Union of Teachers (NUT) and the Academic Staff Union of Universities (ASUU). ASUU's recent strike was primarily driven by inadequate funding of tertiary institutions in Nigeria, particularly the delayed payment of salaries and allowances. Given the poor state of education in the country, ASUU has advocated for a five-year State of Emergency in the education sector, with a minimum allocation of 20% of the budget, as well as the budgets of states, to education. It is worth noting that ASUU has rejected IPPIS and proposed the University Transparency and Accountability Solution (UTAS) as an alternative.

The t-Test analysis presented in Table 4 indicates that the implementation of the Integrated Personnel and Payroll Information System (IPPIS) has a significant and positive impact (P-value 0.0000) on government recurrent expenditure on defense. Prior to the adoption of IPPIS, the government's recurrent spending on defense was 45.197 billion, whereas it has now increased to 290.46 billion, representing a substantial rise of 245.263 billion. These findings suggest that the introduction of IPPIS has led to a significant increase in government recurrent spending on defense in Nigeria. This finding is in line with the conclusions drawn by Ibanichuka and Sawyer [14], who also identified a positive and significant relationship between IPPIS and personnel and overhead costs.

Despite the significant increase in the defense budget over the past decade, Nigeria's military performance remains inadequate, and the country continues to face security challenges. This is evidenced by the Global Terrorism Index (2019), which ranks Nigeria as the third-worst country in terms of vulnerability to terrorism, with no improvement since 2017. The disparity between increased funding and the effectiveness of the military suggests that embezzlement and corruption may be contributing factors.

The t-Test analysis in Table 5 demonstrates that the implementation of the Integrated Personnel and Payroll Information System (IPPIS) has a positive and significant impact on government recurrent health expenditure, with a P-value of 0.0000. Before the adoption of IPPIS, government recurrent expenditure on health stood at 24.780 billion, while after its implementation, the expenditure increased to 206.938 billion, indicating a substantial increase of 182.158 billion. This suggests that IPPIS has significantly contributed to the rise in government recurrent expenditure on health in Nigeria.

However, despite the increased expenditure, the Nigerian health system remains relatively weak, lacking a coordinated response across the country. Recent reports have highlighted various challenges faced by the health workforce, including salary arrears, inadequate welfare provisions, insufficient healthcare facilities, and internal conflicts among healthcare professionals. Poor administration and a lack of effective response from different levels of government have further exacerbated these crises, leading to prolonged disputes among healthcare workers. Consequently, these crises

have hindered the delivery of optimal healthcare services to the Nigerian population. This finding aligns with the conclusions of Ibanichuka and Sawyer [14], who also identified a significant relationship between IPPIS and personnel and overhead costs.

## **6. SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION**

### **6.1 Summary of Findings**

This is the summary of findings from the data analysis:

1. There is a positive and significant increase in the mean of government recurrent expenditure on general administration after the implementation of the Integrated Personnel and Payroll Information System in Nigeria.
2. There is a positive and significant increase in the mean of government recurrent expenditure on education after the implementation of the Integrated Personnel and Payroll Information System in Nigeria.
3. There is a positive and significant increase in the mean of government recurrent expenditure on defence after the implementation of the Integrated Personnel and Payroll Information System in Nigeria.
4. There is a positive and significant increase in the mean of government recurrent expenditure on health after the implementation of the Integrated Personnel and Payroll Information System in Nigeria.

### **6.2 Conclusion**

This empirical study investigated the impact of IPPIS on government recurrent expenditure in Nigeria. Through a pre-post analysis using paired sample t-test, the study revealed that IPPIS had a positive and significant effect on government recurrent spending in areas such as general administration, education, defense, and health. The implementation of IPPIS resulted in savings in personnel costs. However, despite the substantial increase in government recurrent expenditure following the adoption of IPPIS, the country's economic growth remained insignificant, and unemployment rates continued to rise. These findings indicate that the funds saved through IPPIS have not been effectively utilized. As a result, the study concluded that IPPIS has not successfully achieved its intended

goal of combating corruption in the public sector and reducing government spending, as initially argued.

### **6.3 Recommendation**

Consequent to the findings of this study, the study, therefore, recommends that:

1. The federal government should adequately monitor and utilize the money saved from recurrent expenditure due to the implementation of IPPIS. They should employ more administrative staff using the money saved from eradicated ghost workers.
2. The government should consider an upward review of the educational budget to meet up with the 26% allocation recommended by UNESCO and above.
3. The government should monitor how the huge amount of money spent on defence was appropriate. This will help in preventing and stamping out corruption.
4. An encompassing stakeholders' forum in the Nigerian health sector remains essential. The national health system needs a solid administrative policy foundation that allows coordination of priorities and partnerships in the health workforce and among various stakeholders. This will help stamp out embezzlement and corruption in the system.

### **6.4 Contribution to Knowledge**

The essence of every research is its contribution to knowledge. This study is the first of its kind that was conducted using this technique and variables. Most studies on this topic focused on ghost workers syndrome. However, this study broadened the discussion by evaluating the major recurrent expenditures of the federal government and established that the fund saved due to IPPIS implementation was misappropriated. Hence, IPPIS did not reduce government spending.

### **COMPETING INTERESTS**

Authors have declared that no competing interests exist.

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