

Information and Communication Technology and Effective Public Administration: A Study of The Delta State Public Service

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Abstract

Information and communication technology (ICT) is a tool that supports the work of governmental institutions and agencies with the objective of delivering public services in a more convenient and cost effective manner. Despite its importance worldwide, researchers have paid less attention to those employed in governmental institutions and agencies in Nigeria. The study examined the effect of ICT on effective public administration in Delta State public service. The study used survey research design and the questionnaire served as the instrument for data collection. A total of 447 workers took part in the study. The respondents were sampled using the systematic random sampling technique. The correlation and linear regression analysis were used to analyze data for the study. ICT significantly and positively influence effective public administration in Delta State public service. ICT has a positive and significant impact on effective public administration in Delta State public service. The study has helped to establish the nexus between ICT and effective public administration in Delta State public service. The administrators of Delta State public service should prioritise investment in ICT. This will significantly advance the improvement of effective public administration in Delta State.

Keyword: Effective public administration, ICT, public sector

1. INTRODUCTION

It is generally acknowledged that technological advancements are what propel endured prosperity in many nations around the world. This is especially true in regards to information and communication technology (ICT) capacity to boost productivity and efficiency in the public and private sectors that make use of and invest in it. One of the main issues in many nations and the centre of political discussion is the advancement of information and communication technologies and the implications it anticipates for improving the administration of the public service, or the organisations tasked with providing public goods and services for and on behalf of a government (Akintoye, 2021). ICT describes the tools that an organisation uses to manage the information it needs to accomplish its goals. ICT also includes software that makes it easier for systems to manage information in a manner that benefits managers, administrators, and staff members in an organisation. They are electronic software and hardware used for information and communications processing. ICT can also be referred to as a new techno-economic model that has advanced at the fastest rate and brought the fields of micro electronics, information systems, processing of data, and communication into spheres of life that were previously the sole domain of advanced manufacturing systems and outer space (Teryima & Ayegba, 2019). There is no doubt that advancements in communication, information processing, and microelectronics technology have revolutionised the world system today. More information is being exchanged globally than ever before. Networks mediated by computers are growing as a result of the integration of a computer and communication technologies. In order to send and receive data and other forms of information throughout national boundaries, these networks are made up of systems of device and communication software and hardware (Anikeze, Abonyi, & Okafor, 2023). According to Nwakoby, Okoye, and Chukwurah (2021), the use of ICT to improve payment systems in both developed and developing countries has resulted in some payments being made electronically and a decrease in the total amount of cash transactions. The positive effects of ICT on business, manufacturing, politics, education, administration, culture, and other human endeavours have been repeatedly documented. Akintoye (2021)

claims that the exponential growth of ICT, especially the internet, has had a significant impact on online interaction and communication among people of all ages; Teryima and Ayegba (2019) assert that colonialism is to blame for the public system of services in Nigeria, which was first put in place as a means of swiftly establishing the administrative framework and practises of the British colonialist for subjugation and fraud.

Since gaining independence in 1960, Nigeria has evolved into a vast and intricate system for utilising the nation's resources to promote economic development. In order to convert the resources that surround us into services and products that satisfy the increasing demands of the populace, planning and dealing with growth and development issues have been among the responsibilities of the Nigerian public service. For an economy to develop socioeconomically, particularly in developing nations, technologies for communication and information must be implemented in public sector organisations. ICT is unquestionably seen as a key growth sector in this century, particularly in the dynamic and fiercely competitive environment of today (Anikeze et al., 2023). This environment necessitates the use of advanced ICT tools to increase efficiency, deliver high-quality goods and services, and be cost-effective. Delivering services to the public effectively and efficiently is currently one of Nigeria's biggest challenges. Delivery of public services in Nigeria has been criticised as being subpar, ineffective, and in contradiction to citizen preferences. Because of its rigidity, it is frequently the target of ridicule. The main causes of these issues are a lack of transparency, high administrative costs, inefficiency, waste, and a lack of commitment to improving the quality of services for the general public. All citizens who need high-quality services from the public sector are impacted by the problem of service delivery as a result of the aforementioned. There is no denying that the Nigerian public sector is facing growing difficulties and complexity in providing services. As a result, in a setting that is complex and undergoing rapid change, administrators must gather extensive data about their rivals, regulators, and other parties globally. However, despite all the efforts to reposition public sector organisations in Nigeria for efficient and effective administration via ICT, the Delta State public service remains ineffective in administration and the level of services provided to the public are less than expectations as a result of inadequate working conditions, computer failure, poor connections, staff lack of interest and abilities in learning and using ICT. It is against this background that this study examined the effect of ICT on effective public administration in Nigeria with particular reference to Delta State public service.

2. RESEARCH METHODOLOGY

The study is based on the executives and employees of Delta State public service, which total 13,120. According to the Delta State Civil Service Commission in 2023, this figure is made up of 7,437 senior staff in salary grade levels 07–17 and 5,683 junior staff in salary grade levels 01–6. The sample size of 643 was determined using the Gill and Johnson (2010) sample size determination table, which indicates that a minimum sample size of 643 respondents was advised for a population of 13,120 at a 95% confidence level and a margin of error of 5%, as shown in the table below.

Table 1: Sample Size Determination Table

	Variance of the Population P=50%		
	Confidence Level=99% Margin of Error		
Population Size	5	3	1
50	46	49	50
75	67	72	75
100	87	95	99
150	122	139	149
200	154	T 80	198
250	181	220	246
300	206	258	295
400	249	328	391
500	285	393	485
600	314	452	597

700	340	507	672
800	362	557	763
1000	398	647	943
1500	459	825	1375
2000	497	957	1784
3000	541	1138	2539
5000	583	1342	3838
10000	620	1550	6228
25000*	643*	1709	9944
50000	652	1770	12413
100000	656	1802	14172
250000	659	1821	15989
500000	660	1828	15984
1000000	660	1836	16244

Source: Gill and Johnson (2010)

These staff categories are justified by the fact that they carry out the state civil service's personnel policies. The study used a method of systematic random sampling. This method's justification hinges on the assertion that it gives all participants in the sampling area the same chances to be chosen in a methodical and unbiased manner. To obtain information from the respondents, the study uses a questionnaire with a five-point Likert-style rating scale. Researchers asked respondents how strongly they agree or disagree with a set of statements on a five-point scale using the Likert-style rating scale design, for example, 5 for strongly agree, 4 for agree, 3 for unsure, 2 for disagree, and 1 for strongly disagree. 447 out of the 643 questionnaires that were distributed to participants at the Delta State Public Service (DSPS) were retrieved, making up 69.5% of all questionnaires distributed. 38 of the 447 returned questionnaire copies, however, were not analysed because they were not completed properly. As a result, 409 or 63.6% of the total copies of the questionnaire that were retrieved was utilised for the data analysis in this study. Face validity was used in this study to guarantee the validity of the instruments by putting them under cross-examination by independent assessors thoroughly reviewed and validated the research instrument used for this study. To assess the reliability and check for internal coherence of the research instrument, a pilot study was conducted. 25 copies of the questionnaire were distributed at random to Delta State public service staff with replacement to determine the respondents' comprehension of the questions' contents as evaluated for structure, language, relevance, and bias. The data gathered at this point did not form part of the data that was generated for this study. The data collected from the retrieved questionnaire was tested with Cronbach's Alpha reliability test to determine the internal consistency of the questionnaire items. The Cronbach's Alpha value for each item on the questionnaire is shown in the table below.

Table 2: Reliability Statistics of Variable

Scale	Number of Items	Cronbach's Alpha
Effective public administration	10	0.795
Information and communication technology	10	0.803

Source: Researcher's fieldwork, 2023

The outcomes produced coefficients that ranged from 0.745 to 0.823, satisfying the generally advised level of 0.70 for the research indicators (Cronbach, 1951). As a result, the researchers met the scale's requirements for validity and reliability. The Statistical Package of Social Science (SPSS version 23.0) was used to compile, code, and input the survey data for data analysis. At a significance level of 0.05, Pearson's coefficient of correlation and linear regression were used to test the hypotheses. These are deemed appropriate given the nature of this work's research.

3. RESULT AND DISCUSSION

Bivariate Analysis (Test of Relationship)

To investigate the relationship between the independent and dependent variables, bivariate analysis is used. If $p < 0.05$, reject the hypothesis because there is insufficient evidence of a relationship; if $p > 0.05$, accept the hypothesis because there is strong evidence of a relationship between the variables. Results from bivariate tests are covered by this decision rule.

Table 3: Correlation Results

	Variables		Information and communication technology	Effective public administration
Spearman's rho	Information and communication technology	Correlation Coefficient Sig. (2-tailed) N	1 409	.793** .000 409
	Effective public administration	Correlation Coefficient Sig. (2-tailed) N	.793** .000 409	1 409

** . Correlation is significant at the 0.05 level (2-tailed)

Source: SPSS Output, 2023

Table 3 illustrates the relationship between ICT and effective public administration using Spearman's correlation coefficients techniques at ($\rho = 0.793$, $N = 409$, and $P = 0.000$). This finding implies that ICT has a very strong significant and favourable association with effective public administration. According to this finding, ICT can support effective public administration in the Delta State public service. However, correlation analysis does not prove a cause or effect. Therefore, a linear regression was used to estimate the effect of ICT on effective public administration in Delta State public service.

Table 4: Summary of Regression Analysis of ICT on Effective Public Administration in Delta State public service^a

Source	DF	Sum of Squares	Mean Square	F- Value	Pr > F
Model	1	375.2551	5.8930	2775.4920	<.0001
Error	408	10.5659	0.3632		
Corrected Total	409	147.8210			

Source: SPSS Output, 2023

Decision Rule

We reject the null hypothesis if the value of F calculated is greater than the value of F tabulated ($F_{cal} > F_{tab}$), otherwise accept it. At 95% level of significance ($\alpha = 0.05$), the F tabulated is given as: $F_{0.05, (1, 409)} = 12.6441$.

Decision

Since $F_{calculated} = 2775.4920 > F_{tabulated} = 12.6441$. We reject the null hypothesis. In conclusion, the results of the regression confirm with 95% confidence that ICT has positive impact on effective public administration in Delta State public service. The results of the hypothesis test demonstrated that the effectiveness of public administration in the Delta State public service is significantly impacted by ICT. The result of this study align with a study by Nwakoby et al. (2021) that looked at the impact of ICT on administrative effectiveness in the Anambra state ministry of information and public enlightenment (2010-2019). Their research showed that the Anambra State Ministry of Information and Public Enlightenment benefits from efficient and effective administration thanks to ICT. This finding is also in line with Ojoh and Uwadia's (2019: 23) assertion that "the task of improving government management practises and policies falls under the purview of public administration". Due to its ability to both simplify tasks and improve the

calibre of work, ICT has significantly improved and supported all tasks carried out by government departments and agencies.

4. CONCLUSION

This study examined the effect of ICT on effective public administration in Nigeria with particular reference to Delta State public service. The results of the study demonstrated that ICT has a significant and advantageous impact on effective public administration in the public service of Delta State. The study came to the conclusion that ICT has a positive and significant impact on Nigeria's effective public administration. Due to its numerous advantages, it is advantageous for Delta State public service to embrace and adopt ICT. These advantages include enhanced operational effectiveness, improved performance, quicker organisational decision-making, increased regional balance growth, and enhanced viable competitive advantage. Improved service delivery quality leads to increased citizen satisfaction. ICT is influencing both our personal and professional lives every day. However, ICT has only recently begun to have a significant impact on politics, which is characterised by group decision-making. The use of ICT in delivering public products and services lowers output and transaction costs, implying improved efficiency, just like in the field of economics. ICT also affects the political expenses related to transactions of deciding on public policies and altering the fundamental institutions that shape the political process to enable further advancements. According to the results of this study, the following recommendations have been made:

1. The administrators of Delta State public service should prioritise investment in ICT. This will significantly advance the improvement of effective public administration in Delta State.
2. To improve accuracy and dependability, Delta State public service management should embrace e-payment systems/transactions, transparency and accountability in their accounting as well as financial systems of operations will result from this. When compared to the current manual payment system, this mechanism makes it much easier to detect irregularities and fraudulent activity.
3. To enhance performance, the Delta State government should upgrade the employees' inadequate ICT skills. Government should create and implement policies that promote open and effective communication between citizens and administrative entities.

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