Technology, Good Governance In Nigeria and Economic Growth

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Abstract
The study examined the contributions of technology and good governance as a panacea for economic growth in Nigeria using the autoregressive distributed lagged model ARDL model. The results revealed that in the short run, E-Participation Index Rank (e-PIR) positively (0.155) but insignificantly impacted on Accountability (ACC) and positively (0.225) but significantly on Transparency (TRANS), and negatively (-209.62) but insignificantly on Real Gross Domestic Product (RGDP). It also revealed that Online Service Index (OSI) impacted negatively (-0.565) and significantly on Accountability (ACC) and Transparency (TRANS) (-0.174), but positively (15129.90) and significantly on Real Gross Domestic Product (RGDP). The outcome of the relationship revealed that Nigeria's technology is still growing and is yet to get to the point to result to high degree of accountability, transparency and ultimately sustained economic growth. The study recommended that the government of Nigeria should deploy more technology in the public sector to enhance better performance in the public sector and hence economic growth. Basic infrastructure such as electricity must be provided and government should improve internet access and make it affordable and efficient to avoid problems usually associated with its use. This study also recommended that since E-participation Index Rank (e-PIR) positively impacted on accountability and transparency, the entire public sector in Nigeria be digitized in order to achieve remarkable degree of accountability and transparency in the public sector in Nigeria. The significance of this research lies in the fact that it revealed that technology can improve accountability and transparency in Nigeria, hence good governance and that when more technology is deployed in the public sector in such a way that it can be sustainable over time, it could enhance economic growth in Nigeria.

Keywords: Technology, Good Governance, Economic Growth, Public Sector
JEL Classification: O30, A13, O40, D73

Introduction

From the mid-1990s onward, there has been growing consensus among governments across the globe of the need to change public administration and services from manual methods to electronic operations to facilitate customer – centred, cost- effective delivery and user- friendly services to citizens and businesses thereby improving the quality of governmental services. Public administration emphasizes how Information Communication Technology (ICT) can be used to support transformational change in governmental functions globally to achieve efficiency

and cost-effective service delivery to citizens (Balisany, Ozgit & Rjoub, 2022). ICT has productively transformed the provision of traditional government services into an electronic governance process. Tang, Hou, Fay and Annis (2021) have e

mphasized that this socio- technological development has led to organizational transformation, the adaption of political administration and the public apparatus. The initiation of e-governance provides an extension for the use of e-government information platforms (e-GIP). These platforms provide benefits such as convenience, efficiency, lower costs, increased productivity and transparency for its stakeholders. This innovation enables not only electronic services but also contemporary government activities to become a reality, especially at all levels of society.

Tella, Amaghionyeodiwe and Adesoye (2007) have maintained that ICT contributes significantly to economic growth by helping to support the economy and playing vital roles in specific practices that lead to economic growth. Therefore, advances in ICT have steered an era of innovative thinking and increasing integration in service delivery founded on community of infrastructures, data and improved business processes (Organization for Economic Cooperation and Development – OECD, 2005). The use of ICT in the public sector in Nigeria, particularly in Ministries, Departments and Agencies (MDAs) of government would entrench higher levels of effectiveness and efficiency in governmental operations, the improvement of processes and procedures and quality service delivery thereby increasing productivity, producing better output and increasing economic growth. Deploying the use of technology in the public sector also establishes advanced systems of procurement, enhances business and industry collaboration and empowers citizens through access to information all of which aids economic activities to involve lesser hassles thereby enhancing economic growth. When good governance is entrenched in the public sector, it would dramatically reduce corruption and wasted and promote transparency thereby cutting down those leakages that are brought about as a result of lack of accountability and corruption, thereby saving the nation from capital loss and causing more monies to be injected into other sectors of the economy thus encouraging economic growth.

It has also become more obvious than ever before that the traditional government structures and systems are no longer suitable to meeting the demands of citizens and challenges of complex global economies. While the adoption and benefit of e-governance have been remarkably visible in many developing countries, there is still much skepticism about its applicability in some developing nations Nigeria inclusive. Overall, developing countries have been lagging behind in e-governance compared to developed nations. For instance, statistics released by the United Nations E-Governance Survey Report (2014) ranked Nigeria 162 out of 193 countries in terms of e-governance status. The survey also reported that Nigeria had 0.2929 as its e-governance development index figure. Feasibly, governments' establishments in Nigeria are yet to transcend beyond the billboard or partial service- delivery to claim e-governance adoption.

In Nigeria, citizen's perception of the government is that the institutionalized systems of service delivery of public services is poor, hence it lacks required structures and capability to deliver services that meet and exceed citizens' epectations. In particular, running of government in Nigeria costs too much to deliver what is far below citizens' expectation, and increasingly perceived as unresponsive or unaccountable. More worrisome is the fact that many public bureaucracies were seen as bloated, incompetent and self-centred, motivated essentially by underlying rent-seeking tendency which is promoted by traditional administration bureaucracy (Olivier, 2015).

Technology and good governance are expected to enhance efficiency, transparency and accountability in governance. However, despite government's effort in deploying technologies in the day-to-day administration of the nation, and in imbibing all cultures and principles of good governance in Nigeria, there is still much to be desired in the country. Therefore, the viability of the technologies deployed in governance and the culture or principle of good governance adopted in the country to enhance economic growth in Nigeria is the concern in this paper. This paper therefore seeks to evaluate how technology and good governance can be a panacea for economic growth in Nigeria.

Therefore, the objectives of the paper are: to determine the impact of technology-use on accountability in the public sector in Nigeria; determine the impact of technology-use on transparency in the public sector in Nigeria; and to evaluate the impact of technology-use on economic growth in Nigeria. To achieve the objectives, the paper is structured into five sections. Section one is the introduction and section two reviews literature related to the study. Section three explains methodology while section four captures the discussion of results. Section five is the concluding segment and policy recommendations of the paper.

Literature Review

Conceptual Review

Ramey (2013) has viewed technology as the tangible and intangible practical application of proven knowledge in a given field, which aims at creating and improving tools, materials and processes. According to Lane (2019), technology concerns itself with understanding how knowledge is creatively applied to organized tasks involving people and machines that meet sustainable goals. Technology is the creation, usage and knowledge of tools, techniques, crafts, systems, or methods of organization to solve a problem or serve some purpose or end (Carvalho, Jeleniewicz, Franczak & Vonkova, 2021). Technology is therefore viewed as the application of scientific knowledge in solving practical problems or meeting particular needs. This definition is adopted because, it best reflects the concept of technology as is being applied in the public sector in Nigeria.

On the other hand, different researchers have viewed the concept of good governance differently. According to the United Nations Secretary General, good governance is seen as creating well-functioning and accountable institutions- political, juridical and administrative – that citizens regard as legitimate, through which they participate in decisions that affect their lives and by which they are empowered (De La Harpe, Rijken & Roos, 2008). It also entails a respect for human rights and the rule of law generally. According to Keping (2018), good governance refers to public administration processes that maximizes public interest. Avci (2022) has defined good governance as the process of measuring how public institutions conduct public affairs and manage public resources and guarantee the realization of human rights in a manner essentially free of abuse and corruption and with due regard for the rule of law. Biswas (2023) sees good governance as mobilizing the people of a country in the best direction possible to ensure proper utilization of all the resources of the state for its citizens which ensures sustainable development. This definition has been adopted as working definition of good governance in this study for the fact that this definition greatly captures the picture of good governance that is desired in Nigeria to achieve economic growth.

The public sector is that part of the economic system that is controlled by national, state or provincial and local governments and provides several governmental services (Morim, Inacio & Vieira, 2020). Adjei (2021) has viewed the public sector as consisting of the government and all publicly – controlled or publicly –funded entities that deliver public programmes, goods or services. It is made up of entities established by law for the purpose of meeting the public interest without a profit-making motive. According to Trevino (2022), the public sector consists of organizations owned and operated by the government. It provides services deemed necessary for society's welfare. Mahr (2023) has defined the public sector as a part of the economy that consists of government entities. It is responsible for providing services and managing resources to citizens, businesses and other organizations. On the other hand, economic growth as seen by Abdalla (2015) is the increase in the market value of the goods and services produced by an economy over time. According to Amadeo (2022), economic growth is an increase in the production of goods and services over a specific period. It is an increase in the production of goods in an economy (Ackerman, 2022). To Surbhi (2022), economic growth refers to the rise in the value of everything produced in the economy. It implies the yearly increase in the country's Gross Domestic Product (GDP) or Gross National Product (GNP), in percentage terms. Tamplin (2023) defined economic growth as growth in the production of goods and services within a particular period, commonly assessed by using indicators such as GDP or GNP.

Theoretical Review

The Good Governance Theory developed from a set of principles or policies first introduced by the World Bank in relating with and in assisting developing or third world countries it was first proposed in 1992. Good governance theory, therefore, sets some basic principles according to which a good government, whatever its form, must be run. Such principles include accountability, control, responsiveness, transparency, public participation, economy and efficiency. In sum, the theory of good governance is created to reflect all the principles enunciated above and many more (Minogue, Polidano & Hulme, 1998). In view of the foregoing and in line with the World Bank principles and policy interventions in third world countries, good governance involves an efficient public service, an independent judicial system and legal framework to enforce contracts and responsible administration of public funds. Good governance theory helps to assess whether the principles of good governance have been well-adhered-to in Nigeria and the need to ensure good governance particularly in the public sector if Nigeria truly desires to achieve economic growth.

On the other hand, there are several theories that explain governance and technology. These include Cultural Lag Theory and The New Public Management Theory. This study is anchored on the Cultural Lag Theory of Technology which examines how new technologies bring about vital changes in people's lives and work and how it could take time for people to adapt to these changes. Besides, the Cultural Lag Theory was first proposed by William Ogburn in the 1920s. Ogburn's work "Social Change with Respect to Cultural and Original Nature" introduced the main idea (Ogburn, 1922). The author argued that technological change often occurs more quickly than social change and that this can lead to difficulties as people struggle to adapt to new ways of doing things. The Cultural Lag Theory posts that new technologies often bring about significant changes in the way people live and work, but it can take time for people to adapt to these changes and for the related social norms and values to catch up. This could be seen in the public sector in Nigeria where the use of technology has been adopted at a slow pace. The widespread adoption of the internet has changed the way people communicate and access information particularly in the public sector and has also led to debates about online privacy and the role of social media particularly in public sector governance. A major strength of this theory is that it helps explain how societies change and adapt over time and also highlights the importance of considering the social and cultural impacts of technological change (Drew, 2023). One of its major weaknesses is that it is seen as a critical ethical issue because failure to develop broad social consensus on appropriate uses of modern technology may lead to breakdowns in social solidarity and the rise of social conflict.

Empirical Review

Dimelis and Papaioannou (2011) undertook a Panel Data analysis of the effects of ICTs on aggregate technical inefficiency using a maximum likelihood and translog stochastic production frontier of 42 developed and developing countries between 1993 and 2001. They reported that ICT had a significant impact on efficiency and labour productivity (i.e. ICT was effective in reducing country inefficiencies). Westraeus (2016) investigated whether normative institutions such as good governance cause economic growth. By assessing and correlating gross domestic product per capita growth and governance levels in the cases of Botswana, Namibia and South Africa, the analysis methodologically sought after congruence in the empirical evidence with institutional theory. Numeric data derived from the World Bank were used as dataset. The findings indicated, despite a coincidental occurrence of high institutional quality and economic performance in the three cases, that good governance lacked causality on economic growth. Akinwale, Sanusi & Surujlal (2018) examined the relationship and impact of ICT on economic growth in Nigeria. Using a secure internet server per 1 million, mobile cellular subscription per 100 people, and investment in telecoms with private sector participation (in current USD) as proxies for ICT, and GDP as proxy for economic growth for the period 1997 to 2016. The outcome of the autoregressive distributed lag (ARDL) reveals that there is a cointegration between ICT and economic growth, which establishes the existence of a long -run relationship

between them. In the short run, only secure interest server per 1 million and mobile cellular subscription per 100 people have a positive and significant impact on economic growth, whereas investment in telecoms with private sector participation was not significant. The Granger causality test showed the bidirectional causality between secure internet server per 1 million and economic growth.

Saidi and Mongi (2018) explored the relationship between ICT and economic growth in high income nations over the period 1990 – 2015. The study used cointegration, unit root, vector error correction model as key methods. The results show unidirectional causality between mobile users and economic growth, and bi-directional between internet users and GDP growth. Chinedu and Hussaini (2018) examined the role of ICT in driving accountability, reliability and transparency of government business in an electronic environment (e-government) by investigating the presence of indices of good governance, the role of e-government for the overall reform and transformation of government business, and the long run impact on stimulating a knowledge-based society in Nigeria. It also investigated the benefits accrued from ICT and e-government implementation. The research adopted a quantitative (hypothetic deductive) methodology, which design administered a survey instrument in form of a questionnaire. Results validate ICT or e-government as a major pillar of governance in driving accountability, reliability and transparency among public servants and institutions in Nigeria.

Izevbigie, Arodoye and Moses (2019) have explained the extent to which ICT has been deployed in tax administration using descriptive statistics in Nigeria. The study showed that ICT was positively correlated with tax revenues in Nigeria. It further showed that ICT was not fully utilized in tax administration because of the low compliance rate in Nigeria.

Akpan- Obong, Trinh, Ayo and Oni (2022) examined assumptions about the relationship between e-governance and governance in 15 West African countries through an analysis of the 2016 and 2018 World Governance Indicators (WGI) and E-government Development Index (EDGI), proxies for governance and e-governance, respectively. A Pearson correlation analysis demonstrated a significant positive correlation between WGI and EDGI. When disaggregated, however, some dimensions of governance failed to correlate with e-government. Notably, governance indicators correlated positively with each other thus reinforcing the critical role of traditional institutions of governance in achieving good governance. The study concluded that ICTs are effective in advancing the goals of government, they achieve better outcomes when integrated with established institutions and structures of governance.

Kurniawati (2022) investigated the casual relationship between information communication technology (ICT) and economic growth in high-income and middle-income Asian countries. The study utilized high quality data from 25 Asian countries from 2000 to 2018. The study employed Panel cointegration and estimation procedures to account for the endogeneity and cross-sectional dependence issues. The results illustrated that high-income Asian countries have achieved positive and significant economic development from high internet penetration. Additionally, the middle-income countries have started to benefit from ICT internet. The findings show that the telephone line and mobile phone penetration is highly capable of promoting economic growth in middle-income Asian countries.

Mahran (2023) examined the impact of governance on economic growth, considering the spatial dependence between countries. The study employed spatial regression models to estimate the impact of governance on economic growth in a sample of 116 countries worldwide in 2017. The findings indicated that the influence of governance on economic growth is positive and statistically significant. Prasetyia (2020) analyzed the effect of good governance on economic growth in ASEAN (Association of Southeast Asian Nations) countries from 2014 to 2018. The good governance variables use World Bank governance indicators which consist of six indicators. The six indicators include: control of corruption, voice and accountability, political stability, rule of law, regulatory quality, government effectiveness. Using regression panel data, the study found that only government effectiveness and rule of law variable had positive and significant effect on economic growth. This result indicated that the rule of law and government effectiveness were expected to ensure that the government ran good governance. Thus, good governance

was expected to have a significant impact on economic growth. Similarly this study empirically examines the impact of technology and good governance particularly on accountability and transparency in the public sector in Nigeria and on economic growth in Nigeria which previous studies have not investigated altogether empirically.

Methodology

Research Design

This study applied the time serial *ex-post facto* and analytical research design to ascertain the relationship between technology – use on accountability, transparency and on economic growth in Nigeria. The justification for the use is that the required data are not manipulatable.

Type of Data and Sources

Type of data sourcing for this study is secondary data. This is collated for a 20 – year period beginning from 2003- 2022. The year 2003 was chosen as it marked the beginning of the successful transfer of power from one civilian administration to another in Nigeria since its return to civil rule in 1999. Also, the period is wide enough to ascertain the effect of technology on good governance in Nigeria.

The specific data collated was about e-governance which is the independent variable (E-Participation Index Rank, Online Service Index), while transparency, accountability and economic growth which are proxied as the dependent variables. The data for this study were sourced from the Transparency International Reports, Worldwide Governance Indicator (WGI) and CBN Annual Statistical Bulletin.

Method of Analysis

The study employed Auto Regressive Distributed Lag (ARDL) Model and descriptive statistics to analyze the variables. The ARDL is efficient when the variables under study were integrated at order, I (0), I (1) or combination of both. Nkoro and Uko (2016) have asserted that ARDL cointegration technique is preferable when dealing with variables that are integrated of different order, I (0), I (1) or combination of both. Similarly, Aliha, Sarmidi, Shaari and Said (2017) have said ARDL has become popular because: It is able to estimate the long and short-run parameters of a model simultaneously.

Model Specification

Autoregressive Distributed Lag (ARDL) Model was utilized to examine the relationship between the dependent variables and the independent variables. The dependent variables are *Accountability* (ACC), Transparency (TRANS) and *Real Gross Domestic Product* (RGDP) while the independent variables are E-Participation Index Rank (e-PIR), and Online Service Index (OSI). The functional relationship for the study is stated as:

$$\Delta ACC_t = \beta_0 + \beta_1 ACC_{t-1+}\beta_2 \Delta e - PIR_{t-1} + \beta_3 \Delta OSI_{t-1} + \beta_4 e - PIR_t + \beta_5 OSI_t + \theta ECM_{t-1} + e_t \ldots(1)$$

$$\Delta TRANS_t = \beta_0 + \beta_1 \Delta TRANS_{t-1+}\beta_2 \Delta e - PIR_{t-1} + \beta_3 \Delta OSI_{t-1} + \beta_4 e - PIR_t + \beta_5 OSI_t + \theta ECM_{t-1} + e_t \ldots. (2)$$

$$\Delta RGDP_t = \beta_0 + \beta_1 \Delta RGDP_{t-1+}\beta_2 \Delta e - PIR_{t-1} + \beta_3 \Delta OSI_{t-1} + \beta_4 e - PIR_t + \beta_5 OSI_t + \theta ECM_{t-1} + e_t \ldots. (3)$$

Where:

ACC= Accountability

TRANS= Transparency

RGDP= Real Gross Domestic Product

e-PIR= E-Participation Index Rank

OSI= Online Service Index

β_0= Constant terms

$\beta_1 \; to \; \beta_2$= Parameter to be estimated

e_t= error term

$\beta_1 to \; \beta_2 > 0$

t= time period (2003-2022) and

Δ=short-run effects

On *a priori* basis, it is expected that as E- Participation Index Rank (e-PIR) increases, it should bring about an increase in Accountability (ACC), Transparency (TRANS) and Real Gross Domestic Product (RGDP). It is also expected that when there is an increase in Online Service Index (OSI), Accountability, Transparency and Real Gross Domestic Product which is a proxy for economic growth should also increase.

Results

The summary of descriptive statistics shows that the mean accountability, mean transparency, mean RGDP, mean E-PIR and mean OSI are -0.615, -1.115, 60821.29, 0.291 and 0.2892 respectively. The result showed that Transparency and RGDP are negatively skewed while Accountability is positively skewed. The implication is that accountability and transparency is still very low in governance in Nigeria despite the over 20 years of democracy.

Table 1: Descriptive Statistics

	ACC	TRANS	RGDP	E- PIR	OSI
Mean	-0.615004	-1.115905	60821.29	0.290779	0.289237
Maximum	-0.319363	-0.891880	90028.52	0.690450	0.527800
Minimum	-0.868943	-1.362080	31709.45	0.014280	0.037693
Std. Dev.	0.173025	0.114739	18224.03	0.213378	0.177579
Skewness	0.356880	-0.635416	-0.022452	0.308287	0.176341
Kurtosis	1.872666	3.130029	1.796530	1.839015	1.534487
Jarque- Bera	1.483613	1.359937	1.208629	1.440040	1.893427
Probability	0.476253	0.506633	0.546449	0.486742	0.388014
Sum	-12.30008	-22.31810	1216426.	5.815573	5.784747
Sum Sq. Dev	0.568813	0.250134	6.31E+09	0.865076	0.599154
Observations	20	20	20	20	20

Source: Author's Computation 2023 Using Eviews 10

The Unit root test was conducted to ascertain the level of stationarity of the data. (Appendix II). The Philip- Perron method was applied and the result shows that all the variables are stationary at first difference. This means that ACC, TRANS, RGDP, e- PIR and OSI are stationary at I(1). This means that ARDL application is justified since the unit root is integrated of order I(1) as suggested by Nkoro and Uko (2016).

Table 2: Andrew-Zivot Unit Root Test

Test		ADF		
Test/Variables	**Level**	**1st Diff.**	**2nd Diff**	**Remark/Decision**
ACC		I (1)		Stationary at First Difference
TRANS		I (1)		Stationary at First Difference
RGDP		I (1)		Stationary at First Difference
e-PIR		I (1)		Stationary at First Difference
OSI		I (1)		Stationary at First Difference

Source: Authors Computation 2023 Using Eviews 10.

Table 3 shows result of the bound cointegration for the variables. The result revealed that the models (1, 2 and 3) are not cointegrating. The calculated bounds values; 2.52, 2.35 and 0.38 are all below the critical values at 10%, 5% and 1% respectively. This implies that the short-run values are estimated and interpreted.

Table 3: Bounds Co-integration Test

Variables	Co-integration Value	Sign	I (0)	I (1)
Model 1	2.52	10%	3.17	4.14
Model 2	2.35	5%	3.79	4.85
Model 3	0.38	1%	5.15	6.36

Source: Authors Computation 2023 Using EViews 10.

The coefficients of the variable, Y_{t-1} in Table 4 which represented the previous year impact of (ACC, TRANS and RGDP) which are the dependent variables showed that when there is little or no accountability, transparency and real growth in GDP, it has negative impact on the current year. This means that past negative event affects current positive event.

The impact of E- Participation Index Rank (e-PIR) on *Accountability* (ACC), Transparency (TRANS) and *Real Gross Domestic Product* (RGDP) in the short-run revealed that e-PIR positively (0.155) and insignificantly impacts on *Accountability* (ACC), and positively (0.225) but significantly on Transparency (TRANS) and negatively (-209.62) but insignificantly impacts on *Real Gross Domestic Product* (RGDP). However, Online Service Index (OSI) impacts on *Accountability* (ACC) (-0.565) and Transparency (TRANS) negatively (-0.174) and significantly but positively and significantly on *Real Gross Domestic Product* (RGDP). The outcome of the relationship did not meet the *a priori* expectations, revealing that Nigeria's technology is still growing and is yet to get to the point to result to accountability, transparency and ultimately sustained economic growth.

Breusch-Godfrey Serial Correlation LM Test and Heteroscedasticity were employed to confirm the existence or otherwise of Serial Correlation and heteroscedasticity. The p-values of serial correlation and heteroscedasticity for the three models are 0.8973, 0.9609, 0.1902, 0.9583, 0.5324 and 0.3456 show that all the three models have no serial correlation and heteroscedasticity.

Table 4: Short-run ARDL Estimation

	Model One		*Model Two*		*Model Three*	
	Coeff.	***P-value***	***Coeff.***	***P-value***	***Coeff.***	***P-value***
Constant	-0.135	0.2204	-0.399	0.0514	-2037.37	0.7840
(Y_{t-1})	-0.415	0.0502	-0.261	0.0554	-0.045	0.5908
⊿ (e-PIR)	0.155	0.6004	0.225	0.4151	-209.62	0.9613
⊿ (OSI)	-0.565	0.1181	-0.174	0.4148	15129.90	0.0338
R^2	0.335		0.139		0.996	
Auto-corr.(p-value)	0.8973		0.9609		0.1902	
Heter. (p-value)	0.9583		0.5324		0.3456	
Dependent Variable	***Acc***		***Trans***		***Rgdp***	

Source: Authors Computation 2023 Using Eviews 10.

Discussion of Findings

Findings of the study have revealed that there is a positive (0.155) and insignificant impact of E-Participation Index Rank (e-PIR) on Accountability (ACC) and positive (0.225) but significant impact on Transparency (TRANS) in the short run. The result of this study is consistent with the work of Chinedu and Hussaini (2018) who examined the role of ICT in driving accountability, reliability and transparency of government business in an electronic environment (e-government) using a quantitative (hypothetic deductive) methodology. The findings validate ICT or e-government as a major pillar of the governance in driving accountability, reliability and transparency among public servants and institutions in Nigeria. The result is also in consonance with the submission of Izevbigie, Arodoye and Moses (2019) who explained the extent to which ICT has been deployed in tax administration using descriptive statistics in Nigeria. The study shows that ICT is positively correlated with tax revenues in Nigeria.

Furthermore, findings of the study have also revealed that there is a negative (-209.62) and insignificant impact of E-Participation Index Rank (e-PIR) on Real Gross Domestic Product (RGDP). The result of this study is inconsistent with the work of Dimelis and Papaioannou (2011) who reported that ICT had a significant impact on efficiency and labour productivity (i.e ICT was effective in reducing country inefficiencies). The result is also not in tandem with the study of Kurniawati (2022) whose findings indicate that high-income Asian countries have achieved positive and significant economic development from high internet penetration and that telephone line and mobile phone penetration is highly capable of promoting economic growth in middle-income Asian countries.

The results have also revealed that Online Service Index (OSI) impacted negatively (-0.565) and significantly on Accountability (ACC) and negatively and significantly on Transparency (-0.174). This could be as a result of low internet penetration and connectivity in most parts of Nigeria. Again, Online Service Index (OSI) impacted positively (15129.90) and significantly on Real Gross Domestic Product (RGDP). This could also mean that the quality of online services has improved and needs to grow over time. It could also mean that there is an increase in the mobile phone usage by the Nigerian populace and there is an increase in the number of people in Nigeria who have acquired skills and training to effectively use online services. These results have not meet the *a priori* expectations.

Conclusion and Recommendations

This paper examined the relationship between technology – use and accountability and transparency in the public sector in Nigeria and technology-use and economic growth in Nigeria. The results indicate that in the short run, E-Participation Index Rank (e-PIR) has positively (0.155) but insignificantly impacted on Accountability and positively (0.225) but significantly on Transparency and negatively (-209.62) but insignificantly impacted on Real Gross Domestic Product (RGDP). It has also indicated that Online Service Index (OSI) impacted negatively (-

0.565) and significantly on Accountability and Transparency (-0.174) but positively (15129.90) and significantly on Real Gross Domestic Product.

Based on the findings of this study, it is recommended that more technology should be deployed by the government of Nigeria in the public sector such that it will get to the point of greatly influencing economic growth in Nigeria since the results has indicated that technology has a significant and positive impact on economic growth. This can be done through increasing internet connectivity particularly in the rural areas and promoting digital literacy amongst Nigerians particularly in the public sector. Basic infrastructure required for e-governance to thrive such as electricity must also be provided.

Government of Nigeria should improve internet access and make it affordable, fast and efficient so as to avoid the so-called "network problems" usually associated with its use. Since E-Participation Index Rank positively impacted on Accountability and Transparency though insignificantly and significantly respectively, it is suggested that the entire public sector in Nigeria be digitized in order to achieve remarkable degree of accountability and transparency in the public sector in Nigeria.

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