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ICT Usage and Economic Growth of Nigeria

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ABSTRACT

This study explores the relationship between the usage of Information and Communication Technology (ICT) and the economic growth of Nigeria. The data used for this study was obtained from the World Bank, Central Bank of Nigeria (CBN) Statistical Bulletin, and other internet sources. The primary objective of this study is to evaluate the impact of the import and export of ICT on Nigeria's economic growth. The findings demonstrate that the use of ICT is mainly prevalent in cloud accounting and ICT facilities in the oil and gas industry and banking sector. At the same time, ICT imports and exports in Nigeria's entrepreneurship businesses are relatively insignificant. The study concludes that Nigerian entrepreneurs use inadequate ICT facilities mainly due to the need for more information technology knowledge, especially cloud accounting systems, which are relatively new and unfamiliar to most Nigerian entrepreneurs. Based on these findings and conclusions, this study recommends that the government should use relevant agencies to create greater ICT awareness and capacity building among Nigerian entrepreneurs, particularly the youth, by providing massive ICT practical training and retraining to acquaint and arm them with adequate and innovative knowledge and skills of what cloud accounting and other ICT facilities are all about, their benefits and challenges. Moreover, the agency should encourage entrepreneurs to use locally made ICT tools and facilities and improve their capacity to acquire and export them to boost foreign exchange earnings for more significant economic growth.

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1. INTRODUCTION

Digitalization is widely accepted as a driving force for economic growth (Pan et al., 2022). It is made possible by information, communication, and technology (ICT), which Kabongo and Okpara (2014, p. 315) define as "any communication device or application, including radio, television, mobile phones, computers, network hardware, software, satellite systems, as well as any associated applications." The growth of global business operations has been revolutionized by digital technology, including cloud computing (Solomon & van Klyton, 2020). This study was conducted due to the increasing use of ICT in Nigeria despite little to no exportation of these tools (Azu et al., 2024; Oke & Sibomana, 2025). The investigation aims to identify and evaluate the impact of imported ICT infrastructure on Nigeria's economic growth. It is widely believed that the economic drivers of most developed and developing nations are linked to their population growth, GDP per capita, inflation rate, and the utilization of ICT facilities and products (Fahlevi et al., 2024; Ukwuoma, 2019). ICT, particularly cloud accounting, has sparked discussions and worries in several Nigerian industries (Olaoye et al., 02025; Nduokafor et al., 2024; Ogundajo et al., 2022). The usage of ICT is especially true for businesses in the oil and gas and banking sectors but is lacking in entrepreneurship sectors, which comprise most of Nigeria's economy (Gwani et al., 2020). Cloud accounting employs an accounting system that is available on the Internet and offers affordable self-service options for organizations (Vadisetty, 2024; Ionescu, 2019). Economic growth is generally measured by changes in output volume, real expenditure, or resident income over one year (Frans & Aryani, 2020). ICT tools and facilities are connected to economic growth because they produce goods and services (Erixon & Pontusson, 2022). ICT progress has resulted in many structural changes in recent years, including economic reorganization, globalization, trade expansion, capital flows, and increased information availability (Vlados & Chatzinikolaou, 2025; Farhadi et al., 2012). Additionally, the development of each economic sector, especially during the liberalization process, is significantly influenced by ICT (Farhadi et al.,2012).

ICT facilities like computer labs, electronic whiteboards, and tools such as spreadsheets and presentation software are valuable educational resources for the nations (Adelabu & Adu., 2015). The Latest devices and techniques, like clicker devices and flipped classrooms, are used to encourage student interaction, significantly impacting economic growth (Dzvinchuk et al., 2020; Gomez et al., 2020; Pathak, 2023). However, Nigeria launched the National Digital Economy Policy and Strategy in 2019 to diversify the economy (WHO, Bank, 2019). The program has eight pillars, including cloud adoption for SMEs (International Trade Administration, ITA, 2022). The benefits of cloud accounting software include automatic backup, real-time data, and easy accessibility (Chen et al., 2022; Konstantinos et al., 2015; Yvanovich, 2019). However, Nigeria lost over 500 million due to importing cloud computing goods, negatively impacting economic growth (Akingbolu, 2021). Emerging technology trends such as cloud computing, Artificial Intelligence (AI) and Machine Learning, Robotic Process Automation (RPA), Edge Computing, Quantum Computing, Virtual Reality and Augmented Reality, Blockchain, Internet of Things (IoT), Cyber Security and 5G, are quickly changing the way people live their lives (d BH et al., 2022; Taj & Zaman,2022; Jain et al., 2023; Ogunyemi & Adesanya, 2020). These technologies are a major driving force towards the Fourth Industrial Revolution (4IR) and economic growth (Eugeni et al., 2022). Cloud accounting offers the advantage of accessing information from anywhere at any time by logging onto a system (Miller, 2008). Additionally, cloud accounting provides scalable systems and software to access data whenever and wherever it is needed, according to the Schema of Cloud Computing Applications (Herbert, 2022).

The use of internally produced ICT tools and products contributes to Nigeria's economic growth, while the high rate of imported ICT usage negatively affects it (Myovella et al., 2020; Olusanya, 2013). To disrupt the dominance of imported foreign ICT, innovative production of local ICT tools and using their products is crucial (Caballero-Morales, 2021). This situation is possible through disruptive innovation, a term coined by Professor Clayton Christensen in 1995 to describe the process by which smaller businesses challenge larger, established companies (Bower & Christensen, 1995; Christensen, 1997, 2006; Christensen & Bower, 1996), as highlighted by Herbert (2022). For a young industry to grow and flourish, it must embrace disruptive innovation, including technological advancements leading to radical transformations from traditional practices (Herbert, 2022). Digital technology and ICT are changing how we communicate and do business (Hennessy et al., 2005). It is essential to use technology to improve human interactions with key stakeholders and economic growth (Sontiwanich, 2022; Herbert, 2022).). Cloud computing is a profitable export for developed countries (Shoshtari & Farid, 2013).

Foreign direct investment and technology transfer are vital factors in economic growth because they are the source of cloud computing transfer from one nation to another (Sabir et al., 2019). Cloud accounting is a cost-saving technology that many IT firms worldwide have adopted (Oke et al., 2023). Developed nations like the USA and Britain have integrated it into their operations (Golightly et al., 2022; Muhammed. et al., 2015; Roy & Roy, 2013). However, developing countries like Nigeria need help to realize its benefits. Evidence suggests that SMEs that allocate over 30% of their budget to web technologies such as cloud accounting grow their revenue nine times faster than those that invest less than 10% (The McKinsey Group, 2012; World Bank, 2013). ICTs have become essential for the global workforce, utilizing telecommunications and advanced technology to process information (Raja et al., 2013; Ukwuoma, 2019). Cloud accounting offers economic benefits and contributes to economic growth (Etro, 2009). Both developed and developing nations acknowledge the potential of ICT for sustainable development (Danchev et al., 2011; Hodrab et al., 2016; Ukwuoma, 2019). Nigeria's public and private business environment still relies on traditional accounting systems, and adopting and improving cloud computing usage is concerning (Asogwa, 2013; Mujiono, 2021). Despite its significant ICT sector growth (International Trade Administration, ITA, 2022; Kodongo & Ojah, 2016). Nigeria needs help to provide internet access to its largest population (Gital & Zambuk, 2011; World Bank Group, 2019). In light of the above, this study investigated ICT usage and its effect on Nigeria's economic growth.

1.1 Statement of the problem

A report from ITA in 2022 revealed that despite an annual expenditure of $10 billion by the past government, little effort was made to ensure that cloud computing software was accessible to all citizens in Nigeria (ITA, 2022). The country's high demand for e-services and cloud computing has resulted in the importation of these products and services (Abbah & Ogwo, 2021), which has cost the country over $450 million annually (Akingbolu, 2021). Nigerian banks, financial institutions, and relevant agencies regularly subscribe to services like Amazon Web Services (AWS) from Asia, the United States, and Europe, leading to a loss of $50 million from individual users alone (Akingbolu, 2021). Several issues affect Nigeria's economic development: Firstly, many Nigerians need access to internet facilities (Ariwa & Ariwa, 2017). Secondly, the country needs to export goods, which is a significant concern (Oruma et al., 2021). Thirdly, there needs to be more knowledge about disruptive technology (Onyeji-Nwogu et al., 2017). Another problem is the need for more enforcement of policies and frameworks (Okoye et al., 2014; Abiodun et al., 2013), while education is also a challenge (Solomon & van Klyton, 2020). Even though there have been attempts to adopt cloud computing, data localization remains a critical issue that needs to be addressed (Atiti, 2021; Nordin et al., 2017). To address these problems, the study investigated how ICT can drive economic growth in Nigeria, with specific objectives: determine the relationship between the percentage of internet users' access and the GDP growth rate of Nigeria; ascertain the relationship between the percentage of total ICT goods imports and GDP growth rate of Nigeria; and lastly, to investigate the relationship between the percentage of total ICT goods exports and GDP growth rate of Nigeria.

2. LITERATURE REVIEW

2.1 The Theory of Reasonable Action

In 1995, Rogers proposed the theory of innovation adoption and acceptance, which differs from the view of reasonable action (Lai, 2017). This theory explains innovation transfer through distinct channels within a social system over time. The process involves various stages: understanding, persuasion, decision, implementation, and confirmation. On the other hand, Fishbein and Ajzen introduced the theory of reasonable action in 1975, which became one of the most widely used theories (Fishbien & Ajzen, 1975). According to the TRA, one's intention to perform a particular activity is greatly affected by one's attitude towards the behaviour as well as the subjective norms they perceive (Zhang et al.,2023). Attitude and belief determine behaviour, with attitudes influenced by thoughts about the object. Cloud computing is a convenient platform, but peer behaviour plays a role. Nigeria should adopt cloud computing and accounting to enjoy the benefits seen in developed nations.

2.2 Concept of ICT Usage

In Nigeria, internet usage is higher than the average standard set by Africa, with a usage rate of 27.7% (ITU, 2018). Cloud computing is a service that offers dynamically scalable and frequently virtualized resources over the Internet (Danchev et al., 2011). Cloud accounting is a technology that allows users to access computer hardware and software settings from anywhere, as the service is delivered by a separate company (Priya, 2011). This model runs over the Internet, providing users easy access to their accounts from any location with an Internet connection (Ou & Zhang, 2021). Cloud accounting is recognized as an accounting information system for the Internet generation (Petcu et al., 2024). The advantages of cloud computing include growth, data security, low maintenance costs, cost savings, and easy accessibility (Konstantinos et al., 2015). However, countries in Sub-Saharan Africa and the Middle East spent more on traditional IT infrastructure than on cloud-based solutions (Soto et al., 2024). The move to cloud computing in African countries only began in 2015 (the United States International Trade Commission, 2020). Some of the top manufacturers of cloud-based software include FreshBooks, Xero, Sage, GoDaddy Bookkeeping, Saasu, Reckon One, Books, Wave, Account-Edge Pro, Intuit QuickBooks Online Plus, Kashoo, One-Up, MYOB Essentials, Zoho and NetSuite.

Studies have shown that cloud accounting offers lower costs and increased flexibility, making starting and running a business more accessible and cheaper (Chitra et al., 2025; Gupta, 2025; Merseedi & Zeebaree, 2024; Attaran & Woods, 2018). This study is significant for companies in developing nations, which increasingly adopt cloud accounting for its advantages (Mujalli et al., 2024). These benefits have a tangible impact on the growth of companies and the overall success of countries (Hayes, 2008; Smith, 2009; Truong, 2010; King et al., 2014; Lavoie, 2015; Bask, 2015; Hassan, 2017; Attaran & Woods, 2018). However, some scholars argue that more evidence is needed to determine whether individuals or companies can benefit from this technology (Rababah & Al-Nassar, 2020; Hassan et al., 2017). While previous studies have been conducted in Nigeria by Muhammed et al. (2015), Hassan et al. (2017), Hassan (2017), and Rababah and Al-Nassar (2020), the empirical studies on the use of ICT, including cloud computing in the context of Nigerian SMEs are still lacking. To fill this gap, our study investigated the relationship between ICT usage, as measured by internet user access, the percentage of ICT goods imported, the percentage of ICT goods exported, and GDP as a proxy for economic growth.

2.3 Percentage internet users' access and GDP growth rate of Nigeria

As of 2022, approximately 84 million people in Nigeria were using the internet. It is predicted that this figure will surge to 117 million by 2027. Furthermore, the percentage of the population with internet access in 2022 was over 38%, and it is expected to reach 48% by 2027 (Sasu, 2022). Internet access plays a vital role in Nigeria's development, with cyber cafes, universities, and research centres providing access in major cities (Achimugu et al., 2009). Despite COVID-19 influencing people to use the internet, over a third of the world's population has never used it, with two-thirds of them from developing nations (The Guardian, 2022). Information technology remains a primary driver of the information society (Umezuruike et al., 2015), with a 2006 study by Ogunsola and Okusaga highlighting infrastructure disparities between developed and industrialized nations. Ukwuoma (2019) has expressed that the number of internet users does not reflect up to 20% of Nigeria's population, and a reduction in GDP per capita also affects the number of internet users. Based on these premised above, the researcher raised the following hypothesis that:

H_{o1} There is no significant relationship between percentage of total ICT goods import sand GDP growth rate of Nigeria?

2.4 Percentage of total ICT goods imports and GDP growth rate of Nigeria

In 2021, Nigeria's CT imports (% total goods imports) were reported at 2.7569%, according to the World Bank's collection of development indicators from officially recognized sources (World Bank, 2023; Trading Economic, 2023). The percentage of imported goods in Nigeria that fall under information and communication technology (ICT) includes computer and peripheral equipment, communication equipment, consumer electronic equipment, electronic components (hardware and software), and other miscellaneous technology goods. In 2000, ICT imports comprised 2.457% of all imported goods, but by 2008, that number had increased to 9.5%, the highest it has ever been. However, in 2019, the percentage dropped to 3.7%, indicating a decrease in the usage of ICT goods and services, such as cloud computing devices, in Nigeria (World Bank, 2022a). Premised on the above, the second hypothesis is formulated in the null form as follows:

$H_{o2:}$ There is no significant relationship between percentage of total ICT goods import sand GDP growth rate of Nigeria?

2.5 Percentage of total ICT goods exports and GDP growth rate of Nigeria

Nigeria has been focusing on exporting agricultural raw materials, which only adds a little value to the country. These exports are highly unpredictable globally, deviating significantly from the average (Leo,2022). However, Nigeria has yet to make much progress in exporting ICT products, resulting in zero reports in 2000 and only 0.002 in 2019 (World Bank Database, 2022c). This missed opportunity means that Nigeria is losing out on the potential to tap into the $452 billion global sales market in 2022 (Vailshery, 2022). Based on these premises the third hypothesis is formulated in the null form as follows:

H_{03}: There is no significant relationship between percentage of total ICT goods exports and GDP growth rate of Nigeria?

2.6 Economic Growth

Economic growth can be defined as a continuous increase in the output per individual or net national product over an extended period (Nyoni & Bonga, 2018). It can also be seen as the quantitative rise in the monetary value of goods and services produced within a country in a given year (Daly, 2005). The percentage change in the GDP or Gross National Product (GNP) measures economic growth (Dwivedi, 2004). Additionally, ICT has been identified as a crucial component of economic growth (Jin & Cho, 2015). It is one of the fundamental macroeconomic policy objectives that countries worldwide strive to achieve, including Nigeria (Nyoni & Bonga, 2018). Given the current state of the world's socio-economic climate, it is evident that cloud computing and other ICT tools are essential for future economic development (Frans & Aryani, 2020Erixon & Pontusson, 2022). The impact of COVID-19 has further highlighted the significance of cloud computing as a powerful and relevant device for individuals, firms, and national growth worldwide (Alashhab et al., 2021). Cloud accounting has immense benefits that cannot be overstated. One of the vital economic advantages of cloud accounting is that it creates new opportunities in untapped areas, leading to job creation and contributing to the growth of nations (Etro, 2009). Moreover, adopting cloud accounting has resulted in new SMEs, new job profiles, and increased job opportunities, leading to a multiplier effect on society's growth and social surplus (Filiopoulou et al., 2014). However, potential security and privacy risks must be addressed (Atadoga et al., 2024). SMEs are considered the backbone of the economy, and many countries promote the adoption of the cloud, especially those currently facing a recession in their real economy (Konstantinos et al., 2015). These countries seek solutions to build more competitive and efficient economies. Studies suggest developing countries like Nigeria should adopt this business model to promote economic growth and development (Danchev et al., 2011).

2.7 Empirical Review

A study by Chen et al. (2022) analyzed the effect of cloud service adoption on the performance of globally listed firms from 2010-2016. They used different models, including propensity score-based, to estimate the impact of cloud computing implementation. The findings show that cloud computing has a significant and positive effect on the profitability and market value of listed companies, with varying degrees of effect over both short and long periods. Moreover, the study observed that the extent of performance improvement varies in line with the size and industry type of the company. This research contributes to the empirical examination of the economic benefits of IT investments. Rababah and Al-Nassar (2020) studied factors affecting Cloud Computing adoption among SMEs in Jordan. They found six significant variables: compatibility, security, top management support, technological readiness, prior IT experience, and competitive pressure. Perceived benefits did not have an impact. The study has implications for SMEs in Jordan. Hassan's (2017) research on cloud computing adoption in Malaysian SMEs found that only IT resource availability had a significant impact. However, more evidence is needed to confirm management and employee knowledge support. The findings can benefit decision-makers, improve adoption strategies, and help them formulate better strategies for adopting cloud computing. Hassan et al. (2017) study found that IT resources and external pressure had a significant impact on cloud computing adoption by SMEs. Still, insufficient evidence supported perceived benefits and top management support as essential factors. A quantitative survey and a free-form comment section were conducted to collect qualitative data. Jin and Cho (2015) examined the correlation between ICT and economic development. The research utilized panel data analysis and intervening variables such as national corruption and consumer inflation to determine the relationship between ICT and national development. The study's findings show that these factors facilitate the influence of ICT capacity on each country's economic growth. Meanwhile, Cisco (2003) utilized time series analysis to illustrate that ICT investment positively affected economic growth in the UK from 1992 to 2000. Similarly, Chu et al. (2005) discovered that the IT service sector's profits in New Zealand positively correlated with GDP growth from 1987 to 2001.

2.8 Gap in Knowledge

Numerous foreign studies have investigated the correlation between cloud accounting and economic growth, conducted by researchers such as Hayes (2008), Youseff et al. (2008), Smith (2009), Truong (2010), Slaheddine (2012), and Dhar (2012). However, further studies still need to be conducted. While theoretical papers by Muhammed et al. (2015), Hassan et al. (2017), Hassan (2017), Rababah, and Al-Nassar (2020) have been published, other studies have focused on factors such as compatibility, security, top management support, technological readiness, prior IT experience, and competitive pressure. Nonetheless, these studies demand additional statistical data as well as comparative analysis of cloud accounting usage, which is the immediate focus of this paper. Prior studies have identified a knowledge gap, and more empirical studies are necessary. This study takes a unique approach by examining different variables and topics, particularly the relationship between ICT usage and economic growth in Nigeria. The study aims to fill the gaps identified by exploring the extent of ICT usage in Nigeria and its impact on economic growth. The study uses a percentage of internet user access, a portion of ICT goods imported, a share of ICT goods exported as proxies for ICT usage, and a GDP growth rate as a proxy for economic growth.

3. METHODOLOGY – DATA DESCRIPTION

This study adopted an ex post facto research design to gather data from the World Bank Databank, CBN database, Nigeria Statistics Bureau (NBS), and the Internet. This design aligns with positivist philosophy and a deductive approach, making it a quantitative study (Benz & Newman, 2008; Newman & Benz, 1998). Our data analysis methods included descriptive and inferential statistics (Sanders et al., 2019). Our independent variables were ICT usage, which was measured through proxies such as percentage of user access, percentage of imported ICT goods, and percentage of exported ICT goods. The dependent variable was economic growth, proxied as the GDP growth rate in Nigeria. The econometric model we used was the GDP growth rate as our dependent variable for economic growth that aligned with research conducted by the following scholars (Doran, 1989; Shodiyev, 2021).

Modified Model specification, this is written as:

GDP = f (UA, IMP, EXP)
Where UA=X_1, IMP=X_2 and EXP =X_3 and GDP=Y
By turning the equation (1) into econometric model:
$GDP= \alpha 0 + \alpha_1 UA + \alpha_2 IMP + \alpha_3 EXP + \mu$

Where; α, α1, a2 and a3 and μt represent Intercept, GDP growth rate and Error terms, respectively. The apriori expectation is that the GDP growth rate has a positive relationship with the percentage of internet user access (UA), percentage of ICT goods import (IMP)and percentage of ICT goods export (EXP) in the period under study.

3.1 Data Presentation

The data obtained from World Bank and Central bank of Nigeria and other internet sources were presented in Table 1 below which contains ICT usage and economic growth rate:

Table 1: ICT Usage in Nigeria through Documented Channeled

S/N	Years	Percentage internet User Access	Percentage of ICT goods imports	Percentage ICT goods exports)	Gross Domestic Product Growth Rate
		X1	X2	X3	Y
1	2000	0.064	2.457	0.000	5.016
2	2001	0.090	3.216	0.000	5.918
3	2002	0.320	4.026	0.000	15.329
4	2003	0.559	4.763	0.001	7.347
5	2004	1.286	-	-	9.251
6	2005	3.549	-	-	6.439
7	2006	5.545	6.282	0.001	6.059
8	2007	6.770	3.889	0.001	6.591

9	2008	8.000	9.486	0.002	6.764
10	2009	9.300	6.676	0.010	8.039
11	2010	11.500	6.620	0.005	8.006
12	2011	13.800	3.910	0.017	5.308
13	2012	16.100	5.544	0.004	4.230
14	2013	19.100	3.586	0.012	6.671
15	2014	21.000	3.915	0.002	6.310
16	2015	24.500	4.702	0.004	2.653
17	2016	25.670	3.930	0.000	1.617
18	2017	28.000	3.270	0.000	0.806
19	2018	31.900	3.078	0.000	1.923

Source: World Bank (2022a,b,c,d); CBN (2018).

Table 2: Descriptive Statistics

	X1	X2	X3	Y
Mean	11.9502	4.1763	0.0031	5.8444
Standard Error	2.4043	0.5095	0.0011	0.8133
Median	9.3000	3.9150	0.0009	6.3100
Standard Deviation	10.4800	2.2209	0.0048	3.5451
Sample Variance	109.8300	4.9323	0.0000	12.5677
Kurtosis	-1.0634	1.2537	3.0919	2.5052
Skewness	0.4926	0.2161	1.9352	0.3873
Range	31.8359	9.4858	0.0168	16.9460
Minimum	0.0641	0.0000	0.0000	-1.6170
Maximum	31.9000	9.4858	0.0168	15.3290
Sum	227.0533	79.3506	0.0583	111.0430
Count	19.0000	19.0000	19.0000	19.0000
Confidence Level (95.0%)	5.0512	1.0704	0.0023	1.7087

Table 2 shows the descriptive statistics of the variables used in the study for a period of 2000 to 2018 (19 years). The minimum value shown X_1= 0.06, X_2= 0, X_3=0 and Y = -1.617 and the maximum value shown X_1=31.9, X_2= 9.5, X_3=0.01 and Y=15.3.

Table 3: Result of the data analysis

Variables	Coefficient	Standard error	t-statistics	prob
intercept	8.0452	1.4615	5.3014	0.0001
XI	-0.2494	0.0602	4.1444	0.0009
X2	0.1020	0.2840	0.3538	0.7343
X3	116.4671	134.4078	0.8665	0.3985
R Square	0.5363	Multiple R		0.7323
Adjusted R square	0.4435	F-statistics		5.7820
S.E of regression	2.6446	Significance F		0.0078

Table 3 displays the Multiple R-value of 0.73, representing the Correlation Coefficient measuring the strength of a linear relationship among three variables. The absolute value of 0.73 indicates a strong relationship between the variables being studied. Additionally, the R Square value of 0.54 reflects the Coefficient of Determination, showing the goodness of fit. It is calculated by determining the sum of squared deviations of the original data from the mean. In this case, 54% of the values fit the regression analysis model, indicating a good fit. Overall, the presented model is reliable and accurate. Moreover, the model is presented as :

$Y= 8.4 -0.25\alpha1+0.10\alpha2+116.5\ \alpha3+ \mu.$

According to Table 3, the percentage of internet users' access, the percentage of ICT goods imported, and the share of ICT goods exported all impact the coefficient of GDP growth rate. The significance F, which is 0.0078, is less than 0.005. As a result, we accept the null hypothesis, which indicates a significant relationship between ICT usage and economic growth in Nigeria.

H_{01}There is no significant relationship between percentage of internet users' access and GDP growth rate of Nigeria?

Table 4: Bivariate Analysis Model 1

Variables	Coefficient	Standard error	t-statistics	Prob
X1	-0.249358	0.0601667	-4.14445	0.00086479

According to Table 4, there is a negative relationship between the GDP growth rate and the one per cent increase in the percentage of internet users' access. The data suggests that a one percent increase in internet users' access will result in a 0.25 percent decrease in economic growth. This relationship is statistically significant at a significance level of 0.00086, less than 5%.

H_{02}There is no significant relationship between percentage of ICT goods import and GDP growth rate of Nigeria?

Table 5: Bivariate Analysis Model 2

Variables	Coefficient	Standard error	t-statistics	Prob
X2	0.10202838	0.2883968	0.353778	0.72842892

Table 5 indicates a positive correlation between the GDP growth rate and a one per cent rise in the import of ICT goods. This connection leads to a 0.10 per cent increase in economic growth, which is not statistically proven significant at 0.72 because it exceeds the 5% significant level.

H_{03}There is no significant relationship between percentage of ICT goods export and GDP growth rate in Nigeria?

Table 6: Bivariate Analysis Model 3

Variables	Coefficient	Standard error	t-statistics	Prob
X3	116.467115	134.4078208	0.866520	0.3998538

Table 6 shows the GDP growth rate is positively related to a one per cent increase in the percentage of ICT goods exported. It will lead to a 0.116 per cent increase in economic growth and is statistically insignificant at 0.3998 because it is greater than the 5% significant level.

3.2 Graphical Presentation of Variables

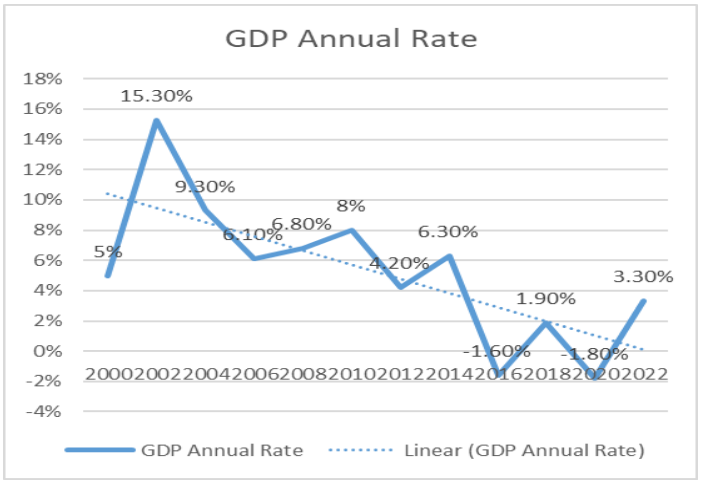

Figure1: GDP Growth Rate: 2000-2021

Source: World Bank (2022b)

Figure 1 displays Nigeria's GDP growth rate declining from 5.065% in 2000 to 2.208% in 2019, which may discourage investors from investing in ICT, except those investors with an interest in oil and gas.

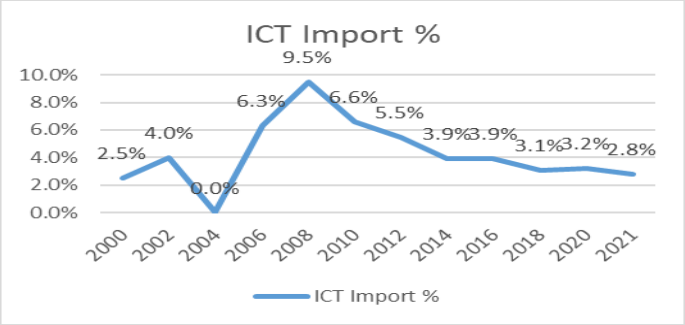

Figure 2: Percentage of ICT goods imports

Source: World Bank (2022a)

Figure 2 illustrates the proportion of imported ICT goods comprising computer and peripheral equipment, communication equipment, consumer electronic equipment, electronic components (hardware and software), and other miscellaneous information and technology goods. 2000 ICT imports accounted for 2.457% of all goods imported into the country. This percentage increased significantly to 9.5% in 2008, the highest ever. However, by 2019, the rate had decreased to 3.7%, indicating the level of ICT usage that includes cloud computing devices and other ICT goods and services in Nigeria.

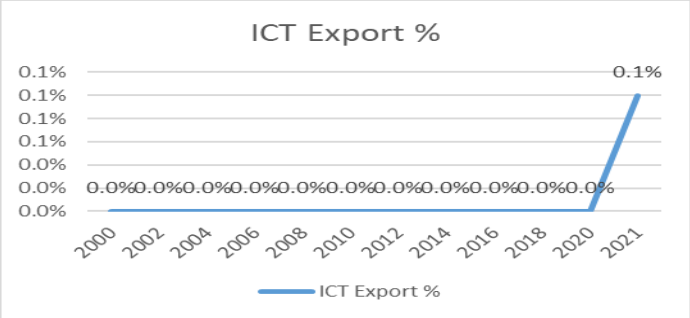

Figure 3: Percentage of ICT goods exports

Source: World Bank Database (2022c)

Figure 3 illustrates the proportion of ICT goods exported, such as computers and peripherals, communication equipment, consumer electronic goods, electronic components, hardware and software, and other information and technology products (miscellaneous), to other parts of the world. 2000, there was no report on Nigeria's exports, but it recorded 0.017% in 2011, which became the highest ICT goods export. As of 2019, Nigeria's share of ICT goods exports has remained at 0.002%. This indicates that Nigeria needs to take advantage of the opportunities to tap into the global sales of $452 billion in 2022 (Vailshery, 2022).

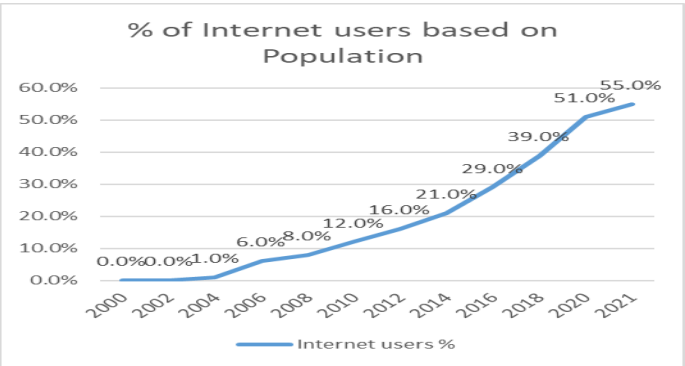

Figure 4: Percentage of internet users access

Source: World Bank (2022d)

Figure 4 displays the percentage of internet users in Nigeria as a proportion of the total population, a critical ICT infrastructure that supports cloud computing. According to the World Bank (2022d), internet users have used the internet in the last three months from any location using a computer, mobile phone, personal digital assistant, games machine, digital TV, and cloud computing. The percentage of internet users in Nigeria based on the total population is shown in Figure 4, and it is one of the key ICT infrastructures that support the use of cloud computing. Although there has been progress in the number of internet users, the population has yet to explore and leverage the opportunities that cloud accounting offers to enhance their business and daily lives, as noted by Muhammed et al. (2015).

3.3 Summary

In this study, the usage of ICT in Nigeria and its influence on economic growth were evaluated with three specific objectives. One of the main focuses of the study was to address the need for more adequate ICT usage in Nigeria's cloud accounting. To measure the usage of ICT, the study used the percentage of internet users' access, the percentage of total ICT goods imports, and the percentage of total ICT goods exports. The GDP growth rate was used as a proxy for Nigeria's economic growth. The study is anchored on The Theory of Reasonable Action, emphasising the essence of adopting new technologies and integrating them into business practices. The data used for this study was sourced from the World Bank and Central Bank of Nigeria (CBN) Statistical Bulletin and other internet sources. The study presented a graphical representation of Nigeria's involvement in the percentage of exports, percentage of imports, and percentage of internet users' access. The study concludes that ICT play important role in Nigeria and more attention should be given to using ICT in entrepreneurial businesses to ensure that the country benefits from the vast global cloud computing market, which has grown to $482 billion. The pandemic outbreak has opened up new business opportunities that Nigeria can tap into to earn millions to finance developmental projects.

3.4 Summary of Findings

Table 7: Summary Computation of Hypotheses Results

Hypotheses	Model specifications	Coefficient	T-Stat	Value 0.05	Remark	Decision
H_{01}	GDPGR= β0 + β1 UAC +U1---1	-0.249	-4.144	0.00087	Significant	H_{01} Rejected
H_{02}	GDPGR= β0 + β1 ±IMP+U1—1	0.1029	0.3537	0.7284	Insignificant	H_{02} Accepted
H_{03}	GDPGR= β0 + β1 EXP +U1---1	116.467	0.8665	0,3999	Insignificant	H_{02} Accepted

Based on table 7 above, the following are the findings;

i. There is significant relationship between percentage of ICT internet Users' and access to internet and Gross Domestic Product growth rate in Nigeria
ii. There is no significant relationship between percentage of ICT goods import and Gross Domestic Product in Nigeria
iii. There is no significant relationship between percentage of ICT goods export and Gross Domestic Product in Nigeria

4. DISCUSSION OF FINDINGS

The study found that using ICT in cloud accounting and ICT facilities in the oil and gas industry is relatively fair. At the same time, its usage in entrepreneurship businesses in Nigeria is insignificant. The study concludes that Nigerian entrepreneurs use inadequate ICT facilities mainly due to the lack of information technology knowledge, especially cloud accounting systems, which are relatively new and unfamiliar to Nigerian entrepreneurs. The study's results agree with various other studies that stated that there is a significant connection between ICT usage and economic growth, such as Bilan et al. (2019), Evans (2019), Jin and Cho (2015), Donou-Adonsou (2018), Hodrab et al. (2016), Jorgenson & Vu (2016), Niebel (2018), Romer (1990), and Wamboye et al. (2015). The study also shows that the percentage of internet users' access positively affects GDP per capita, which aligns with Howitt's (1999) analysis. Moreover, Cardona et al. (2013) studies discovered that ICT had little but a positive influence on economic growth. However, some studies, such as Bührer & Hagist (2017), Donou-Adonsou (2019), Rifkin (2015), UNCTAD (2017), and Valenduc & Vendramin (2017), disagree with our research that a negative significant relationship exists between ICT usage and economic growth and development. Meanwhile, Solomon and van Klyton (2020) argue that only individual use of ICT has a meaningful relationship, while business and government ICT usage negatively affects economic growth. Additionally, Ishida (2015) cautioned against overestimating the relationship between ICT and economic growth, as ICT did not significantly affect real GDP in the short or long run after controlling for the impacts of labour and capital stock.

4.1 Conclusion and Recommendations

This study examined the connection between ICT usage and economic growth in Nigeria. Specifically, the study focused on the effect of imported ICT facilities, such as cloud accounting, on Nigeria's economic growth. The study also explored how Nigeria could benefit from acquiring ICT facilities and exporting them to the global market for $482 billion. The theory of reasonable action was used as a basis for this study, as attitudes towards disruptive technologies like cloud accounting must change positively for them to penetrate the Nigerian market and drive economic growth. This change in perspective can be brought about by observing companies of similar size using the technology or through government policies that encourage the usage of ICT for both import and export (Lai, 2017).

Based on these findings and conclusion, this study recommends that:

1. The Nigerian government and other relevant agencies should utilize relevant agencies to increase awareness and empower Nigerian SME entrepreneurs, especially the youth, in the field of ICT.
2. The Nigerian government and other relevant agencies should offer practical ICT training on cloud accounting and other valuable facilities to entrepreneurs. They should also guide people on how to overcome challenges to stimulate economic growth.
3. The Nigerian government and other relevant agencies should encourage SMEs to use locally made ICT tools and facilities and improve their capacity to export them for foreign exchange earnings, boosting economic growth.
4. The Nigerian government and other relevant agencies responsible for regulating information and communication technology (ICT), particularly cloud computing, should focus on improving the existing policies to address the critical issue of inadequate data localization. This is essential because all cloud computing services require local content enhancement.

4.2 Contribution to Knowledge

The study was able to develop three (3) models for the research that can be used to predict the impact of ICT usage on the economic growth of Nigeria and to conduct an analysis of time-series data from 2000 to 2018 (19 years). This study is one of the unique empirical studies carried out in Nigeria in this area of study to the best of the researchers' knowledge

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