IMPACT OF DIGITAL ECONOMY ON YOUTH UNEMPLOYMENT IN NIGERIA

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Abstract

The new Information and Communication Technologies (ICTs) are widely perceived as major tools for kick-starting ailing economies and consequently assist developing societies `catch up' with the developed world, including those groups that have lost out of the mainstream of development. This study examined the impact of the digital economy on youth unemployment in Nigeria. The study adopts an ex post facto research design, utilizing pre-existing time series data from the National Bureau of Statistics (NBS) for the years 2000 to 2023. Data analysis techniques such as descriptive statistics and regression analysis are employed to explore the relationship between variables. The findings indicate that the digital economy has a significant impact on youth unemployment in Nigeria, with approximately 67.3% of the variation in youth unemployment being explained by the digital economy variable. The inclusion of the digital economy variable improves the model's performance, as evidenced by higher coefficient of determination (R^2) and lower Root Mean Square Error (RMSE). The study also reveals a positive relationship between the rate of youth unemployment and youth unemployment itself. While ICT usage does not show a statistically significant relationship, the percentage change in GDP is found to be significant. Recommendations include enhancing digital skills development, fostering entrepreneurship and start-up support, improving internet access and infrastructure, promoting digital financial inclusion, collaborating with the private sector and encourage collaboration between educational institutions and industries.

Keywords: *ICT, digital economy, youth unemployment, regression, Nigeria*

JEL classification:

1. Introduction

Digital economy is a rapidly growing field that encompasses a wide range of activities and industries. There are various definitions of digital economy based on different perspectives and contexts. The Organisation for Economic Co-operation and Development (OECD) defines digital economy as "the economic and social activities enabled by the internet and related technologies" (OECD, 2019). The European Commission defines digital economy as "the economy that results from billions of everyday online connections among people, businesses, devices, data, and processes" (European

Commission, 2016). The World Bank defines digital economy as "the production, distribution, and consumption of goods and services, mediated by digital technologies" (World Bank, 2019). In fact, the importance of digital technology has rarely been greater understood than during the 2020 global economic shutdown as a result of the COVID-19 pandemic (De' *et al*., 2020). Around the world, governments mandated social distance measures to slow the spread of the virus, catalysing the use of digital technology for the virtual delivery of school classes and for remote working (Brynjolfson *et al*., 2020; Prasad *et al*., 2020; Willcocks, 2020).

There is a well-documented contention that digitalisation creates economic growth (Bukht & Heeks, 2017). Digitalisation is enabled through information and communication technology, which is defined by Kabongo and Okpara (2014) as "any communication device or application, including radio, television, mobiles phones, computers, network hardware and software and satellite systems as well as any associated applications." From e-commerce to business process outsourcing, digital technology has transformed how firms operate globally (Lacity *et al*., 2016). Furthermore, it has revolutionised how people communicate (e.g., social media) and how governments engage with citizens through e-government platforms. The implications of successful implementation of digital technologies are substantial (Tong & Wohlmuth, 2019).

Unemployment creates negative impact on the standard of living of entire citizenry. The unemployed can be described as numbers of the economically active population who are without work but available for and seeking work, including people who have lost their jobs and those who have voluntarily left work. International Labour Organization (ILO) defines the unemployed as numbers of the economically active population who are without work but available for and seeking work, including people who have lost their jobs and those who have voluntarily left work (World Bank, 2018). According to Fajana (2013), unemployment refers to a situation where people who are willing and capable of working are unable to find suitable paid employment. It is one of the macroeconomic problems which every responsible government is expected to monitor and regulate.

The new Information and Communication Technologies (ICTs) are widely perceived as major tools for kick-starting ailing economies and consequently assist developing societies `catch up' with the developed world, including those groups that have lost out of the mainstream of development. (Levi, Inayatullah & Tony, 2013). Despite investment efforts, African countries have faltered in reaping the expected economic prosperity associated with digitalisation because of a persistent digital divide, including digital skills shortages, deficits in ICT infrastructure, and high-cost structures (Banga & Velde, 2018; Melia, 2020; Yoon, 2020).

According to African Development Bank (AfDB) (2018) in their report of Jobs for Youth in Africa, Africa has a population of 420 million between ages 15 and 35 years and is regarded as the world's youngest continent. This is a great asset and suggestive of abundant untapped potential that if properly harnessed, the young growing working-age population would drive Africa's economic transformation. These potentials may not be attained as majority of African youths are without secured jobs or economic future. The situation is more worrisome in the case of sub-Saharan Africa, where youth unemployment is roughly double the rate for adults (AfDB, 2018). For instance, 60% of the total unemployed in Africa, the youth make up the bulk of the underemployed and unemployed (Soucat, Nzau, Elaheebocus, & Cunha-Duarte, 2013). Also, International Labour Organisation (ILO) (2019) shows that youth unemployment rate in sub- Sahara Africa (SSA) was 13.27% in 2018, surpassing other populous regions such as East Asia and South Asia.

The menace of youth unemployment in Africa is very severe, pervasive and multifaceted, as tens of millions of youths join the labour market every year, while only about 3 million formal jobs are available per annum (AfDB, 2018). One of the recommendations given by AfDB (2018) is ICT development and penetration, aided by digital literacy, computational thinking as well as developing coding academics that teach skills ranging from basic digital design to advanced coding languages. The recent advancement in ICTs is changing old ways of carrying out activities, as well as creating new ones, from the agricultural sector to industry, and to service sectors.

This advancement in ICTs makes digital literacy imperative, not only for wage employment, but also for the creation of new businesses by individuals. This is so because ICT development and literacy qualify people for employment in the job market driven by technologically advancement, as well as the opportunities to participate in rapidly growing markets inform of business process crowdsourcing and microwork (Coward *et al*., 2014). Hence, a great opportunity presents itself for the youths who take the right steps. Youths with knowledge and access to ICTs are in better positions to harness the power of ICTs in new and magical ways than those without the required knowledge and access to ICTs. This calls for serious concern on how to maximize these opportunities.

There are three lacunae in the literature that this study aims to fill regarding the relationship between digitalisation and youth unemployment. First, the preponderance of qualitative digitalisation studies (Dewa *et al*., 2018) may not fully enable the causal effects of digitalisation on productivity to be established. Second, despite the established link between digital infrastructure and productivity in several studies (Evangelista *et al*., 2014), there is a deficit of knowledge about this relationship for African countries, particularly regarding the impact of the usage of digital technology on economic growth, employment, and trade (Myovella *et al*., 2020). In fact, Wamboye *et al*. (2015) called for more research to be conducted on these relationships in an African context due to the rapid growth in ICT and the use of cellular technology in the expansion of digital financial transactions. The present study seeks to examine the impact of digital economy on youth unemployment in Nigeria.

2. Literature Review

In this section, various issues would be debated across developed and developing countries on the relationship between digital economy and youth unemployment.

2.1. Digital Transformation

Digital transformation represents a real opportunity for youth employment, especially of the most qualified young people, and has the potential to accelerate West African countries' achievement of the goals set out under Agenda 2063, adopted by the African Union (AU). This jobs dividend can be realised by shifting activity to the formal economy to create stable and decent jobs. Digital transformation also offers an opportunity to remove the barriers facing companies when they start the formalisation process.

Accounting for more than 92.4% of total employment in West Africa (ILO, 2019a), the informal sector is a major obstacle to the achievement of the Sustainable Development Goals (SDGs)2 and Goal 4 of the African Union's Agenda 2063 to build transformed economies able to create jobs. For example, SDG 8 on stable and decent employment was only 16% achieved in 2019, and West Africa's performance on this goal remains low (12%). Although the informal sector enables a large proportion of the population to participate in economic activity and facilitates labour market flexibility, it also

increases workers' vulnerability. The in-work poverty rate remains very high in most countries, especially in the most informal economies: 61.7% in Guinea-Bissau, 47.9% in Mali and 44.8% in Benin (ILO, 2019b).

Young people are most at risk of unemployment in West Africa, with average unemployment rates twice as high as among people aged over 25, according to African Development Bank (AfDB) figures. In Senegal, 63% of unemployed people are aged 15-34, with unemployment particularly high among the 20–29-year-old age group (18.8% of 20-24 year olds and 16.3% of 25-29 year olds) and graduates, with 22.8% unemployed among those with two years of higher education (ANSD, 2018). At around 9% in Ghana, youth unemployment goes hand in hand with widespread underemployment, where young graduates work in small businesses in the informal sector. In Nigeria, youth unemployment (15–24-year-olds) stands at 36.5% (NBS, 2018). Moreover, political crises and post-conflict situations have an impact on youth unemployment, which peaked at 18% in Mali in 2015 and settled at around 15% in 2019 (ILO, 2019b).

Digital transformation in West Africa presents a real opportunity to address the challenges of employment and financial inclusion. Beyond creating direct jobs, the digital ecosystem improves productivity in many sectors. Furthermore, the COVID-19 health crisis has shown that digital transformation will provide innovative solutions in many vital sectors. Access to communications infrastructure is assessed using the telephone penetration rate and Internet and 4G coverage rate.

Despite the number of mobile subscribers continuing to grow, West Africa's digital connectivity is still weak. Overall, in 2018, less than half the population (41.5%) had access to a mobile network, while more than a third (35.1%) had 4G coverage. Only one in four people have Internet access. These figures clearly show that West Africa does not yet have sufficient access to communications infrastructure to draw upon for growth and job creation.

The digital transformation of West African countries has been stimulated by the development of communications infrastructure, particularly submarine cables. In 2019, sub-Saharan Africa was connected to the global telecommunications network via 18 active multilateral submarine cables (excluding bilateral submarine cables), including eight on the west coast. This expansion has led to a 3-5% increase in the Internet penetration rates in West Africa compared with the rest of the continent (Cariolle, 2020).

Access to communications infrastructure remains uneven across the sub region, dampening the benefits not only at the country level, but also at the regional level, due to the difficulty of ensuring digital interconnectivity. Some countries such as Ghana, Côte d'Ivoire, Senegal and to some extent Nigeria have coverage rates above the regional average, but major efforts are yet to be made in Benin, Burkina Faso and Togo. Small countries often face challenges in achieving economies of scale, due to the level of investment required to connect the whole territory.

In addition to the poor digital coverage of many West African countries, the quality of coverage is weak (telephone network, Internet access) leading to suboptimal use. In most countries, mobile phones have replaced fixed-line phones, which have a penetration rate of less than 1%. This situation reduces the potential for asymmetric digital subscriber line (ADSL) connections. On-going investments by individual countries and mobile operators to adopt fibre and accelerate the migration to 4G will ensure that Internet speeds are reasonable over the coming years. For example, in 2019, the Orange Group announced the creation of an international fibre optic network, called the "BAFO" (African fibre optic backbone), which will link eight West African countries where the operator is

active, including major regional capitals (Dakar, Bamako, Abidjan, Accra, etc.). Despite difficulties around access, many companies are using digital tools to increase their visibility by creating websites, to communicate with their customers and to conduct business transactions via online platforms.

High Internet connection costs also discourage the use of applications or technologies that require a continuous connection. Twenty gigabytes (GB) of mobile data cost EUR 30 in Côte d'Ivoire, while the same provider sells packages that include free phone calls and SMS with 100 GB of mobile data for EUR 19.99 throughout Europe (Kouamé, 2019). This high cost is attributable to the lack of communications infrastructure and two types of vulnerability: the risk of submarine cable breakage and "digital isolation" (Cariolle & Goujon, 2019). The multiplicity of stakeholders, competition with incumbent operators, the question of ownership of transactional data and the lack of communications infrastructure in rural areas remain major challenges (World Bank, 2019a).

Although having a website is now essential for running and managing a company, this tool is still underutilised in West Africa. Only 24% of companies have a website, despite its benefits in terms of marketing and access to a very large customer base. This proportion is even lower among small businesses (14%). Moreover, 36% of large companies do not have a website, reflecting low digital coverage and the dominance of the informal sector, especially in small countries with few communications infrastructure, such as Sierra Leone, Liberia, and Guinea-Bissau.

3. Empirical review

In the literature, Edewor, Kollie & Olaoye (2023) evaluated the Conditions Driving Youth Employment in Key Sectors of the Nigerian Economy. They analysed the differential impact of sectoral growth on youth employment across rural and urban areas through a gender lens and identified the specific conditions needed for investment in sectors with potentials for job creation in the Nigerian economy. Data were analysed using descriptive statistics, revealed comparative advantage (RCA), employment elasticity, and Logit regression model. It was observed that Nigeria has demonstrated a comparative advantage in the export of 17 products. Our findings also revealed that all the economic sectors in Nigeria have potential for creating employment at different levels with financial services contributing the highest (0.734) and manufacturing the lowest (0.056). The increase in education influenced employment and a higher likelihood of male youths' employment in the services, construction, and industry sectors as compared to more female youths in the trade sector. Some common conditions that could aid firms' production scale-up and increase job creation across all sectors include increased access to finance, improved infrastructure (road, water, air, power, and rail), and favorable interest rates and exchange rates. The implication is that, the rising incidence of youth unemployment, especially in emerging economies, calls for prompt attention of development experts and policy makers given its effect on sustainable growth. This challenge has worsened in recent times in Nigeria, hence, making it crucial to understand the factors driving youth employment.

In a study by Edewor *et al*. (2023) analysed sectoral growth and employment elasticity. the focus was on evaluating the conditions driving youth employment in key sectors of the Nigerian economy, considering rural and urban areas and analysing the gender lens. The present study intends to investigate the relationship between the digital economy, ICT usage, youth unemployment, and economic growth. It seeks to provide insights into the role of digital technologies, digital entrepreneurship, and the digital job market in generating employment opportunities for the youth. By delving into the specific impacts of the digital economy, the present study aims to contribute to a more comprehensive understanding of the factors driving youth employment in Nigeria.

In a qualitative study by Oladeji, Oyediji, Adenika, Ayinla, Otayokhe and Ajiboye (2022), an empirical review of entrepreneurial youth empowerment initiatives in south-western Nigeria was carried out. It was shown that youth empowerment prepares candidates for new venture initiation by transferring knowledge and developing relevant skills that improve the self-efficacy and effectiveness of the potential entrepreneur. Entrepreneurial opportunity recognition is a relevant vehicle for economic development contributing to youth employment worldwide. Findings show that business opportunity recognition influences business sustainability of small-scale businesses. This implies that impact of identifying business opportunities, entrepreneurial knowledge, spotting a particular business industry, transforming business ideas into reality and empowerment initiatives structures influence business sustainability of youth empowerment candidates.

Furthermore, Oladeji *et al*.'s (2022) study utilized a qualitative approach to gain an in-depth understanding of entrepreneurial youth empowerment initiatives South-Western Nigeria. it focused on examining the effectiveness of various empowerment schemes and their impact on youth entrepreneurship. In contrast, the present study intends to employ a quantitative approach, analysing data through statistical techniques such as descriptive statistics, regression models, and comparative analysis. By employing a quantitative methodology, the present study aims to provide empirical evidence and statistical insights into the specific impacts of the digital economy on youth unemployment in Nigeria.

Tatiana and Zrc (2021) conducted a study on conceptualizing youth empowerment entrepreneurship in European Union policy discourse. The study examined the formation of young entrepreneurs as subjects in European Union policy and the roles that they have been accorded in policy discourse. The study concluded that the evolving European Union policy framework is both political and legalistic in nature, based on precedents set by previous documents that are, in turn, laid out in most subsequent documents and serve as a framing mechanism and a tool for demonstrating each new document’s relevance. However, a gap in their study is the lack of examination of the specific impact of youth empowerment entrepreneurship on youth unemployment rates within the European Union. The present study aims to fill this gap by investigating the relationship between youth empowerment entrepreneurship initiatives and youth unemployment rates in European Union member states. By analysing the effectiveness of these initiatives in reducing youth unemployment, the present study aims to provide valuable insights into the policy discourse surrounding youth entrepreneurship in the European Union.

Xavier, Manel, Pere and Jaume, (2020) investigated a study titled exploring the conceptualization and research of empowerment in the field of youth entrepreneurship. The concept of empowerment has become increasingly widespread in recent years. Its use is still, however, somewhat controversial, and diverse, particularly when referring to young people. The study presents a systematic analysis of how empowerment has been conceptualized over the past 15 years and has been applied to young people. The study recommends programme formed of ideas such as leadership, self-efficacy, personal well-being and participation in addition to a defining trait when compared to the global understanding of empowerment. The study concludes that the unanimity among most authors regarding the current ambiguous, imprecise nature of the concept, the cause of its versatile use in the various disciplines in which it appears and the number of ways in which it can be applied. While their study provided a systematic analysis of how empowerment has been conceptualized and applied to young people, it did not specifically address the impact of empowerment on youth entrepreneurship and employment. The present study intends to address this gap by examining the relationship between empowerment, entrepreneurial skills development, and youth employment outcomes. By investigating the role of

empowerment in promoting youth entrepreneurship and employment, the present study aims to contribute to a deeper understanding of the mechanisms through which empowerment initiatives can effectively reduce youth unemployment rates.

Sathyamurthi (2021) conducted a study titled entrepreneurship on youth empowerment model. In the study, the author tries to theorize 'Slum Entrepreneurship' as a Sociological concept which transcends geographical limitations. Experts view slums not as a homogenous but heterogeneous entity depending upon the socio-ecological characteristics. Field investigations were carried out to study the relationship between the slum types such as the central city, industrial and residential slums in Chennai and the level of slum entrepreneurship. Based on the field data, the study developed youth entrepreneurship model for youth empowerment. The study concludes that age of the slum entrepreneurs is associated with the level of slum entrepreneurship. Although the study provided insights into the concept of slum entrepreneurship and its association with youth empowerment, it did not extensively explore the broader context of youth entrepreneurship and unemployment. The present study seeks to fill this gap by examining the relationship between youth entrepreneurship, including both slum and non-slum contexts, and youth unemployment in India. By investigating the factors that contribute to successful youth entrepreneurship and their impact on unemployment reduction, the present study aims to provide a comprehensive understanding of the role of entrepreneurship in empowering youth and reducing unemployment rates.

Brimah, Olanipekun, Wahid, Abu, and Awe (2021) explored a study on evaluation of youth employment and social support operation programme on unemployment reduction in Ilorin Metropolis. Data for the study is obtained from primary sources with the aid of a structured questionnaire. The study in its descriptive nature adopted a survey design. Pearson Product Moment Correlation Coefficient was used to test the hypothesis at 5% level of significance. The findings revealed that there is significant relationship between YESSO Skills for Jobs programmes and employment generation, economic well-being of beneficiaries and skill job enhancement. The correlation coefficients were all found to be higher than 0.70 hence signifying a strong positive relationship between YESSO and employment generation. Based on the findings, the study concluded that Youth Employment and Social Support Operation Programme significantly impacted on Unemployment Reduction in Ilorin Metropolis.

However, the study did not specifically analyse the relationship between vocational and entrepreneurship training schemes and youth unemployment reduction. The present study aims to address this gap by investigating the effectiveness of vocational and entrepreneurship training schemes in reducing youth unemployment in Nigeria. By assessing the correlation between these training programs and employment generation, the present study seeks to provide insights into the role of skill development in enhancing youth employment opportunities and economic well-being.

Isiaka, Kadiri, Salman and Alabi, (2017) explored a study on effect of entrepreneurial practices in managing small-scale business or sustainable development in Nigeria, their study was based on empirical evidence. The study used secondary data, some which are previous research and analyses of scholars, and related journal articles. Findings shown that most SMEs particularly in Nigeria liquidated within their first five years of their operations due to contributing factors such as insufficient capital, lack of focus, inadequate market research, over-concentration on one or two markets for finished products, and lack of succession plan. It is concluded that, the secret behind the success of self-reliant strategy is mainly in peoples' positive attitudes to enterprise, and in the extent to which the right incentive, adequate to make risk worth taking rather than in any political

philosophy. Although their study provided insights into the challenges faced by small-scale businesses in Nigeria, it did not directly address the relationship between entrepreneurial practices and youth unemployment. The present study intends to bridge this gap by examining the impact of entrepreneurial practices on youth employment and sustainable development in Nigeria.

In summary, while previous studies have explored the conditions driving youth employment and the effectiveness of entrepreneurial youth empowerment initiatives in Nigeria, the present study seeks to bridge the gap by specifically examining the impact of the digital economy on youth unemployment. By focusing on the digital economy, ICT usage, and their contributions to youth employment and economic growth, the present study aims to provide valuable insights into the evolving landscape of employment opportunities for Nigerian youth in the digital era.

4. Materials and Method

In consistent with the study objective, an ex post facto research design is adopted. Ex post facto research design is a type of non-experimental design that explores the relationship between independent variables and dependent variables after the events have occurred. This research design is suitable when conducting studies that involve pre-existing conditions, events, or situations where the researcher cannot manipulate the independent variables. Ex post facto studies are useful in situations where it is not feasible or ethical to manipulate variables. This research design is suitable for investigating the impact of digital economy on youth unemployment and the influence of ICT usage on economic growth in Nigeria using the available historical data.

The data for this study are sourced from the National Bureau of Statistics (NBS). The NBS is the official agency responsible for collecting, analysing, and disseminating statistical data in Nigeria. They provide a wide range of data on various economic and social indicators. Also, relevant data on indicators such as youth unemployment rates, digital economy metrics, and other socioeconomic variables can be found there. Additionally, the NBS periodically publishes reports, surveys, and statistical publications that provide valuable insights and analysis on various indicators on the Nigerian economy.

Furthermore, the study employs both the descriptive statistics and regression analysis to determine the relationship between variables and to estimate the impact of the digital economy on youth unemployment and ICT usage on economic growth.

The regression equation for the model is specified as follows:

$$\text{Youth Unemployment} = \beta_0 + \beta_1 \text{Digital Economy} + \beta_2 \text{ICT Usage} + \beta_3 \text{Control Variables} + \varepsilon$$

Where,

β_0 represents the intercept, which captures the baseline level of youth unemployment when all independent variables are zero.

β_1, β_2, β_3 represent the coefficients that quantify the relationship between each independent variable and youth unemployment.

Control Variables are included to control for other factors that may influence youth unemployment.

ε represents the error term, which captures the unexplained variation in youth unemployment not accounted for by the independent variables.

The coefficients (β_1, β_2, β_3) obtained from the regression analysis provides insights into the direction and significance of the relationship between the digital economy, ICT usage, and youth unemployment in Nigeria.

5. Analysis of Results

In this section, the results of regression analysis and other estimated findings are presented as follows:

Table 1: Regression

Model Summary - Digital Economy

					Durbin-Watson		
Model	**R**	**R²**	**Adjusted R²**	**RMSE**	**Autocorrelation**	**Statistic**	**P**
H_0	0.708	0.501	0.468	2.803	0.419	1.156	0.033
H_1	0.820	0.673	0.597	2.438	0.594	0.810	0.002

Note. Null model includes Rate of Youth Unemployment

Source: Author's computation, 2024

Table 2: ANOVA

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**P**
H_0	Regression	118.244	1	118.244	15.049	0.001
	Residual	117.863	15	7.858		
	Total	236.107	16			
H_1	Regression	158.866	3	52.955	8.913	0.002
	Residual	77.241	13	5.942		
	Total	236.107	16			

Note. Null model includes Rate of Youth Unemployment

Source: Author's computation, 2024

Table 1 presents the regression analysis results for the relationship between the digital economy and youth unemployment in Nigeria. The regression model aims to examine the impact of the digital economy on youth unemployment rates. The following sections provide an explanation and interpretation of the key findings. The model summary section provides important statistical measures to assess the regression model's performance. The coefficient of determination (R^2) measures the proportion of variance in the dependent variable (youth unemployment) that can be explained by the independent variable (digital economy). In the null model (H_0), the R^2 value is 0.501, indicating that approximately 50.1% of the variation in youth unemployment can be explained by the digital economy. When the digital economy variable is included (H_0), the R^2 value increases to 0.673, suggesting that the digital economy accounts for approximately 67.3% of the variation in youth unemployment.

The adjusted R^2 takes into account the number of predictors in the model and adjusts the R^2 accordingly. In the null model, the adjusted R^2 is 0.468, while in the model with the digital economy, it becomes 0.597. The increase in the adjusted R^2 from the null model to the digital economy model indicates that the inclusion of the digital economy variable improves the model's explanatory power.

The root mean square error (RMSE) measures the average difference between the observed and predicted values. In the null model, the RMSE is 2.803, which represents the average deviation of youth unemployment from the predicted values. When the digital economy variable is included, the RMSE decreases to 2.438, indicating a better fit of the model.

The Durbin-Watson statistic measures the presence of autocorrelation in the residuals (errors) of the model. In the null model, the Durbin-Watson statistic is 1.156, and in the digital economy model, it is 0.810. Values between 0 and 2 are generally considered acceptable, with 2 indicating no autocorrelation. The decrease in the Durbin-Watson statistic suggests a potential presence of autocorrelation in the digital economy model's residuals.

In Table 2, the ANOVA result provides information about the significance of the regression model. The table is split into two sections: one for the null model (H_0) and one for the digital economy model (H_1). The null model's ANOVA table shows that the regression component has a sum of squares of 118.244, degrees of freedom (df) of 1, and a mean square of 118.244. The F-statistic of 15.049 and its associated p-value of 0.001 indicate that the regression model with the digital economy variable is statistically significant compared to the null model.

In the digital economy model, the ANOVA table reveals a sum of squares of 158.866, df of 3, and a mean square of 52.955. The F-statistic of 8.913 and its associated p-value of 0.002 suggest that the overall model, including the digital economy variable, is statistically significant in explaining the variation in youth unemployment rates.

The regression analysis indicates that the digital economy variable has a significant impact on youth unemployment rates in Nigeria. The inclusion of the digital economy variable in the model improves its explanatory power and significantly contributes to explaining the variation in youth unemployment. However, the presence of autocorrelation in the model's residuals suggests that further investigation is needed to address potential issues of autocorrelation.

Table 3: Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p	Collinearity Statistics	
							Tolerance	VIF
H_0	(Intercept)	33.999	1.523		22.325	< .001		
	Rate of Youth Unemployment	0.422	0.109	0.708	3.879	0.001	1.000	1.000
H_1	(Intercept)	32.391	1.471		22.017	< .001		
	Rate of Youth Unemployment	0.332	0.120	0.557	2.770	0.016	0.622	1.607
	ICT Usage	-0.003	0.023	-0.028	-0.147	0.885	0.708	1.412
	% change in GDP	0.434	0.182	0.437	2.383	0.033	0.750	1.334

Source: Author's computation, 2024

Table 3 presents the coefficients and collinearity statistics for the regression model examining the impact of the digital economy on youth unemployment in Nigeria. The coefficients represent the estimated effects of the independent variables on the dependent variable (youth unemployment). The collinearity statistics assess the presence of multicollinearity among the independent variables. The following sections provide an explanation and interpretation of the key findings.

Coefficients: In the null model (H_0), the intercept is 33.999, indicating the expected value of youth unemployment when the digital economy variable is not included. The coefficient for the rate of youth unemployment is 0.422, indicating that a one-unit increase in the rate of youth unemployment is associated with a 0.422-unit increase in youth unemployment when controlling for other factors. This coefficient is statistically significant ($p < .001$), suggesting a significant relationship between youth unemployment and the rate of youth unemployment.

In the model with the digital economy variable (H_1), the intercept is 32.391, representing the expected value of youth unemployment when the rate of youth unemployment, ICT usage, and % change in GDP are held constant. The coefficient for the rate of youth unemployment is 0.332, indicating that for every one-unit increase in the rate of youth unemployment, youth unemployment is expected to increase by 0.332 units, on average. This coefficient is also statistically significant ($p = 0.016$).

Additionally, the coefficient for ICT usage is -0.003, suggesting a weak negative relationship between ICT usage and youth unemployment, although this relationship is not statistically significant ($p = 0.885$). The coefficient for % change in GDP is 0.434, indicating that a one-unit increase in the %

change in GDP is associated with a 0.434-unit increase in youth unemployment. This coefficient is statistically significant (p = 0.033).

Collinearity Statistics: The collinearity statistics assess the presence of multicollinearity among the independent variables. The tolerance values provide an indication of the degree of collinearity, with values close to 1 indicating low collinearity. The variance inflation factor (VIF) is the reciprocal of the tolerance and measures the extent of multicollinearity, with values above 1 suggesting the presence of collinearity.

In both models, all independent variables have tolerances of 1.000 or higher, indicating no issues of severe collinearity. The VIF values are below 2 for all variables, further supporting the absence of significant multicollinearity. This suggests that the independent variables are relatively independent of each other and can be included in the model without concerns about multicollinearity.

The coefficients in Table 3 provide insights into the relationships between the independent variables and youth unemployment in Nigeria. The rate of youth unemployment demonstrates a significant positive relationship with youth unemployment, while the coefficients for ICT usage and % change in GDP show weaker or non-significant associations. The collinearity statistics indicate no severe multicollinearity among the independent variables, enhancing the reliability of the regression model.

Table 4: Collinearity Diagnostics

				Variance Proportions			
Model	**Dimension**	**Eigenvalue**	**Condition Index**	**(Intercept)**	**Rate of Youth Unemployment**	**ICT Usage**	**% change in GDP**
H_0	1	1.895	1.000	0.053	0.053		
	2	0.105	4.244	0.947	0.947		
H_1	1	2.840	1.000	0.018	0.014	0.012	0.020
	2	0.943	1.735	0.004	0.000	0.643	0.015
	3	0.134	4.603	0.493	0.016	0.069	0.809
	4	0.083	5.845	0.484	0.970	0.276	0.155

Source: Author's computation, 2024

Table 4 presents the collinearity diagnostics for the regression model examining the impact of the digital economy on youth unemployment in Nigeria. The collinearity diagnostics provide information about the variance proportions, eigenvalues, and condition indices, which help assess the presence of collinearity among the independent variables. The following sections provide an explanation and interpretation of the key findings.

Variance Proportions: The variance proportions represent the proportion of variance in the independent variables that can be explained by the dimensions (latent variables) extracted from the

correlation matrix. A higher proportion indicates that the dimension captures a larger share of the variance in the corresponding independent variable.

In the null model (H_0), there is only one dimension, which accounts for 1.895 (100%) of the variance. The variance proportions for the intercept and the rate of youth unemployment are both 0.053, indicating that these variables are equally represented by the dimension.

In the model with the digital economy variable (H_1), there are multiple dimensions. The first dimension accounts for 2.840 (100%) of the total variance, while the variance proportions for the intercept, rate of youth unemployment, ICT usage, and % change in GDP are 0.018, 0.014, 0.012, and 0.020, respectively. These proportions indicate that each variable contributes to the first dimension to varying degrees.

The second-dimension accounts for 0.943 (35%) of the variance and captures additional information not explained by the first dimension. The variance proportions for the ICT usage variable are relatively high at 0.643, while the rate of youth unemployment and % change in GDP have smaller proportions of 0.000 and 0.015, respectively.

The third and fourth dimensions explain smaller proportions of the variance, indicating that they capture relatively less information compared to the first and second dimensions.

Condition Index: The condition index measures the severity of multicollinearity by assessing the magnitude of the eigenvalues associated with the dimensions. A higher condition index suggests a higher degree of collinearity, with values above 10 indicating potential issues.

In both models, the condition index is 1.000 for the first dimension, indicating no severe collinearity. However, in the null model, the second dimension has a condition index of 4.244, suggesting a potential moderate collinearity issue.

In the model with the digital economy variable, the condition indices for the second, third, and fourth dimensions are 1.735, 4.603, and 5.845, respectively. These values indicate a low to moderate level of collinearity, but not to a concerning degree.

Overall, the collinearity diagnostics in Table 4 suggest that while there may be some collinearity present among the independent variables, it is not severe. The variance proportions show that each independent variable contributes to the extracted dimensions to varying degrees. The condition indices indicate a generally low to moderate level of collinearity, with no severe collinearity detected.

6. Conclusion and Recommendations

This study has established the significant impact of digital economy on youth unemployment in Nigeria. Findings indicate that the digital economy variable has a substantial influence on youth employment patterns, with approximately 67.3% of the variation in youth unemployment being explained by the digital economy. The study also highlights the importance of considering the rate of youth unemployment and its relationship with overall youth unemployment. It emphasizes the need to address the rising incidence of youth unemployment to promote sustainable growth and development. While the study identifies the presence of collinearity among the independent variables, it still provides valuable insights into the specific impacts of ICT usage and economic factors on youth unemployment. However, the weak relationship between ICT usage and youth unemployment suggests the need for further investigation into the specific mechanisms through which ICT contributes to employment opportunities for young people. In view of the foregoing, the study

recommends that government should enhance and invest in programmes and initiatives that promote digital skills development among young people. This can be done through vocational training, educational curricula revisions, and partnerships between educational institutions and industry players. By equipping youth with relevant digital skills, they will be better prepared to leverage the opportunities presented by the digital economy. In addition, there is need to foster entrepreneurship and start-up support by creating an enabling environment for youth entrepreneurship by providing access to funding, mentorship, and business development resources. Encourage the establishment of start-up incubators and accelerators that focus on digital technologies and innovation. Supporting young entrepreneurs can drive job creation and stimulate economic growth. Furthermore, government should foster partnerships with private sector and civil society organizations to create job opportunities in the digital economy. Encourage private sector investment in sectors with high potential for digitalization, such as e-commerce, software development, and digital marketing.

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