

## COMPARATIVE STUDY OF NIGERIA ECONOMY BEFORE, DURING, AND AFTER THE CORONA VIRUS DISEASE 2019 (COVID-19) LOCKDOWN

Nwosu, D. F.<sup>1</sup>, Ibeh, G. C.<sup>1\*</sup> and Onyenekwe, C. E.<sup>2</sup>

<sup>1</sup>*Department of Mathematics/Statistics, Federal Polytechnic Nekede, Owerri, Imo State, Nigeria;*  
[fedocon2003@gmail.com](mailto:fedocon2003@gmail.com)

<sup>1</sup>*Department of Mathematics/Statistics, Federal Polytechnic Nekede, Owerri, Imo State, Nigeria;*  
[gibeh@fpno.edu.ng](mailto:gibeh@fpno.edu.ng)

<sup>2</sup>*Department of Statistics, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria;*  
[ce.onyenekwe@unizik.edu.ng](mailto:ce.onyenekwe@unizik.edu.ng)

\* Correspondence: [gibeh@fpno.edu.ng](mailto:gibeh@fpno.edu.ng); +2348065955372

### ABSTRACT

This study investigates the state of Nigeria's economy before, during, and after the COVID-19 lockdown by examining monthly data on Gross Domestic Product (GDP), inflation rate, unemployment rate, and interest rate from January 2019 to December 2021. The data were obtained from reputable sources including the National Bureau of Statistics, Central Bank of Nigeria, International Monetary Fund, and World Bank. To analyze the data, repeated measures ANOVA and Friedman's test were employed, depending on the distribution of each variable. Since the normality assumption was not met for GDP, interest rate, and unemployment rate, Friedman's test was used. Results showed statistically significant changes across the three years. Post-hoc analysis with the Nemenyi test identified specific year-on-year differences: GDP (2020–2021), interest rate (2019–2020, 2019–2021), and unemployment rate (2019–2020, 2020–2021). The inflation rate, which met the normality condition, was analyzed using repeated measures ANOVA, also revealing significant variation across the years. The findings demonstrate that all four economic indicators experienced significant fluctuations over the study period, highlighting the considerable economic impact of the COVID-19 lockdown in Nigeria.

Keywords: COVID-19 Pandemic, Nigerian Economy, Economic Indicators, Friedman Test, Repeated Measures ANOVA

### 1. 1 Introduction

The COVID-19 pandemic, which emerged in late 2019, brought about widespread economic disruption across the globe. Nigeria, like many other nations, felt the impact deeply. As one of the largest economies in Africa, the country faced significant challenges across multiple sectors. These challenges were reflected in vital economic indicators such as gross domestic product (GDP), inflation, unemployment, interest rates, and others.

To understand the scale and nature of this impact, it is important to compare how these indicators behaved before, during, and after the lockdown period. A study structured around these three distinct phases can help isolate the specific effects of the crisis and provide a basis for assessing the policies

implemented to reduce its negative consequences. This approach also offers insights into broader economic implications and helps identify lessons for managing future crises.

A number of scholars have already examined how the pandemic affected Nigeria's economy. For example, Kanu (2020) pointed out the rise in unemployment and drop in household income, arguing that the pandemic disrupted recovery efforts from the earlier oil price-induced recession. In a related study, Ozili (2020) attributed much of the downturn to existing structural weaknesses, noting that fear and uncertainty further slowed the pace of economic recovery, despite policy interventions.

Nseobot et al. (2020), drawing on official records in their ex-post facto study, concluded that declining global oil prices during the pandemic period intensified the country's economic difficulties. Orhero and Oghuvbu (2020), through a qualitative study, reported increased unemployment, declining revenues, and a rise in criminal activity.

Faruk (2020), using ARDL analysis from data covering January 2019 to June 2021, found that the crisis reduced GDP, trade volume, and government revenue. Similarly, Andam et al. (2020) used a multiplier model and estimated a GDP loss of 34.1% (about \$16 billion) and a 33% drop in household income, pushing 27 million Nigerians into poverty.

Farayibi and Asongu (2020) applied the AS–AD model and observed mixed results. While inflation and employment trends were somewhat linked to the downturn, the overall macroeconomic effects were largely insignificant. Mallum et al. (2020), using Regression Discontinuity Design, noted that strict public health measures such as lockdowns led to considerable tax revenue losses, particularly in Abuja.

Otache (2020) examined broader socioeconomic outcomes, including informal job losses, food insecurity, business closures, and heightened uncertainty. Iluno et al. (2021) modeled mortality effects using various predictive models and found a non-linear but adverse relationship between death rates and GDP per capita.

Nweze and Nnadi (2021) employed a survey method and statistical tools (Godden and Yamane) to reveal a significant positive relationship between lockdown periods and economic decline. Abdulyakeen (2021), through descriptive analysis of secondary data, found significant negative impacts on Nigeria's financial sector.

Inegbedion (2021), using both primary and secondary data, reported a sharp decline in economic activities. Adenomon et al. (2022) analyzed the stock market using GARCH models and showed that the public health crisis led to sharp losses and high volatility in stock returns.

Thomas et al. (2022) examined implications for crime, poverty, and employment, noting negative impacts on GDP and worsening youth unemployment, especially in SMEs. Bello et al. (2022) focused on sectoral stock performance and revealed that the banking sector was hardest hit.

Anyadike and Mgbomene (2023), using data from January 2018 to October 2022, identified a structural break in May 2020. Their findings revealed that agriculture became a stronger contributor to GDP, while the services sector, heavily affected by the crisis, contributed less in the post-lockdown period.

Sani and Mulyanto (2024) highlighted worsening fiscal performance, budget deficits, and increased borrowing from international sources. Usman et al. (2024) found severe consequences such as reduced oil revenue and widespread business shutdowns, using data from 2019 to 2022.

Although extensive studies exist, few have holistically evaluated all four major economic indicators—GDP, interest rate, inflation, unemployment rate—within the same framework. This study intends to bridge that gap by offering a more comprehensive comparative analysis across the three phases.

Such a study is necessary for shaping future economic policies. It will benefit policymakers, researchers, and stakeholders interested in Nigeria's development. By revealing the extent and patterns of economic changes before, during, and after the lockdown, this research will also highlight lessons learned and recommend ways to better prepare for future economic shocks.

## **1.2 Statement of the Problem**

The economy of any country is influenced by various key economic indicators, which provide insights into its overall health and stability. Among these, four critical indicators—gross domestic product (GDP), interest rate, unemployment rate and inflation rate — serve as essential metrics for evaluating economic performance. Understanding the impact of significant global events, such as the COVID-19 pandemic lockdown, on these indicators is crucial for a comprehensive assessment of a country's economic status.

In the context of Nigeria, the COVID-19 pandemic and the resulting lockdown had profound effects on various aspects of the economy. However, despite the importance of these economic indicators,

there is a noticeable gap in the literature. To the best of our knowledge, no existing study has holistically examined the influence of COVID-19 on these four key economic indicators in Nigeria. This gap in the research leaves an incomplete understanding of how the pandemic and the subsequent lockdown impacted the Nigerian economy.

### 1.3 Objectives of the Study

- (i) To assess the impact of the COVID-19 pandemic on Nigeria's Gross Domestic Product (GDP) across pre-lockdown, lockdown, and post-lockdown periods.
- (ii) To analyze how the COVID-19 outbreak affected Nigeria's unemployment rate across the three periods.
- (iii) To evaluate the changes in Nigeria's interest rates during the pandemic.
- (iv) To investigate how the COVID-19 pandemic affected inflation rates in Nigeria.

### 1.4 Research Questions

This study seeks to address the following research questions

- (i) How did the COVID-19 pandemic affect Nigeria's GDP across the study periods?
- (ii) What changes occurred in Nigeria's unemployment rate due to the COVID-19 pandemic?
- (iii) How were Nigeria's interest rates impacted by the COVID-19 pandemic?
- (iv) In what way did the COVID-19 pandemic influence inflation rates in Nigeria?

### 1.5 Research Hypotheses

To systematically investigate these questions, the following hypotheses are formulated:

- 1)  $H_0$  : The COVID-19 lockdown had no significant impact on Nigeria's GDP.

vs

$H_1$  : The COVID-19 lockdown had a significant impact on Nigeria's GDP.

- 2)  $H_0$  : The unemployment rate in Nigeria was not significantly affected by the COVID-19 lockdown.

vs

$H_1$  : The unemployment rate in Nigeria was significantly affected by the COVID-19 lockdown.

3)  $H_0$  : There was no statistically significant change in Nigeria's interest rate due to the COVID-19 lockdown.

vs

$H_1$  : There was a statistically significant change in Nigeria's interest rate due to the COVID-19 lockdown.

4)  $H_0$  : Nigeria's inflation rate was not significantly influenced by the COVID-19 lockdown.

vs

$H_1$  : Nigeria's inflation rate was significantly influenced by the COVID-19 lockdown.

## 2. Methodology

### 2.1 Source of data

The secondary data used in this study were collected from various sources including National Bureau of Statistics (NBS), the International Monetary Fund (IMF), the Central Bank of Nigeria (CBN) and the World Bank. The data comprise the monthly gross domestic product (GDP), inflation rate, unemployment rate and interest rate from January, 2019 to December, 2021. For want of space, the data collected for the study are not presented here. However, interested readers can access them online through the websites of the agencies/institutions listed above.

### 2.2 Method of Data Analysis

To analyze the data, the repeated measures analysis of variance (ANOVA) method of analysis will be adopted. This method is applied to analyze data where multiple measurements are taken on the same subjects over different time points. So, this method will be suitable in analyzing the data as each of the economic indicators is measured monthly (12 times) over different time periods (three years).

Before the application of the method in analyzing the data, the sphericity and normality assumptions will be tested; and remedial measures applied when the assumptions are violated.

The Statement of Hypothesis

$$H_0 : \mu_1 = \mu_2 = \dots = \mu_k$$

Vs

$H_1$  : At least one  $\mu_i$  is different from the others

Where  $\mu_i$  = mean of the  $i$ th time point

$K$  = number of time points

Significance level ( $\alpha$ ) = 0.05

Test statistic

$$F = \frac{\text{Mean Squares Between (MSB)}}{\text{Mean Squares Error (MSE)}} \quad (1)$$

$$\text{MSB} = \frac{\text{Sum of Squares Between (SSB)}}{\text{Degrees of freedom between (df}_B\text{)}} = \frac{\sum_{i=1}^k n_i (\bar{x}_i - \bar{x}_{..})^2}{k-1} \quad (2)$$

$$\text{MSE} = \frac{\text{Sum of Squares Error (SSE)}}{\text{Degrees of freedom for Error (df}_E\text{)}} = \frac{\sum_{i=1}^k \sum_{j=1}^n (x_{ij} - \bar{x}_i - \bar{x}_{.j} + \bar{x}_{..})^2}{(k-1)(n-1)} \quad (3)$$

where

$x_{ij}$  = observed value for the  $j$ th subject in the  $i$ th time point

$\bar{x}_i$  = mean of the observations in the  $i$ th time point

$\bar{x}_{.j}$  = mean of the observations for the  $j$ th subject across all time points

$\bar{x}_{..}$  = grand mean of all observations

$n_i$  = number of subjects in each time point

$n$  = number of subjects

Critical value,  $F_{\alpha, (k-1), (k-1)(n-1)}$

The null hypothesis is rejected if the test statistic,  $F$  is greater than the critical value, or if the  $p$ -value is less than 0.05; otherwise, it is not rejected.

In case the normality assumption is not satisfied, the Friedman non-parametric test is applied.

Here, we rank each column (year) within each row (month) from 1 to  $k$ , where  $k$  is the number of conditions (years/time points)

$$\text{Test statistic, } \chi^2 = \frac{12}{nk(k+1)} \left( \sum R_j^2 - \frac{nk(k+1)}{4} \right) \sim \chi_{k-1}^2 \quad (4)$$

where  $n$  = number of subjects,  $k$  = number of conditions (years) and  $R_j$  = sum of ranks for condition (year)  $j$ .

### 3. Results of the Analyses

For the GDP, interest rate and unemployment rate data, the normality assumption required for the parametric Repeated Measures ANOVA test was violated. Hence, the Friedman non-parametric test, suitable for non-normal data, was used.

Table 1: Results of Friedman Test for the GDP, Interest and Unemployment

Data/Variable	Mean Ranks			$\chi^2$	p-value
	2019	2020	2021		
GDP	2.17	1.25	2.58	11.167	0.004
Interest rate	3	1.79	1.21	22.372	< 0.001
Unemployment rate	1.08	1.96	2.96	22.533	< 0.001

The Friedman tests revealed that significant differences exist in GDP, interest rate, and unemployment rate across the years.

Post-Hoc Test: The Nemenyi post-hoc test is conducted to identify significant pairwise differences.

For the GDP

Table 2: Pairwise Comparisons of GDP Results for Friedman Test

$H_0$	q value	$\Pr(> q )$
GDP_2020 – GDP_2019 = 0	3.175	0.0638
GDP_2021 – GDP_2019 = 0	1.443	0.5638
GDP_2021 – GDP_2020 = 0	4.619	0.0031

The p-value (0.0638) exceeds the significance threshold (0.05), so we do not reject the null hypothesis. Thus, there is no statistically significant difference in GDP between 2020 and 2019 at the 0.05 level of significance. The result is close to borderline, showing a weak indication of a potential difference (not statistically significant at 0.05, but significant at the 0.1 level of significance). Again,

the p-value (0.5638) is significantly higher than the significance level (0.05), therefore, we cannot reject the null hypothesis. Therefore, there is no statistically significant difference between GDP in 2021 and GDP in 2019. Finally, the p-value (0.0031) is lower than the significance threshold (0.05). Therefore, we reject the null hypothesis and conclude that there is a statistically significant difference between GDP in 2021 and GDP in 2020 at the 0.05 significance level.

For the Interest Rate

Table 3: Pairwise Comparisons of Interest Rate Results for Friedman Test

$H_0$	q value	$\Pr(> q )$
InterestRate_2020 – InterestRate_2019 = 0	4.186	0.0086
InterestRate_2021 – InterestRate_2019 = 0	6.207	<0.0001
InterestRate_2021 – InterestRate_2020 = 0	2.021	0.3260

From Table 3, the p-values (0.0086 and 0.00003) are both below the significance threshold (0.05), leading us to reject the null hypothesis and conclude that there is a significant difference between the interest rates in 2020 and 2019, as well as between 2021 and 2019. On the other hand, since the p-value (0.3260) exceeds the significance level (0.05), we do not reject the null hypothesis and infer that there is no statistically significant difference between the interest rates in 2021 and 2020.

For the Unemployment Rate

Table 4: Pairwise Comparisons of Unemployment Rate Results for Friedman Test

$H_0$	q value	$\Pr(> q )$
UnemploymentRate_2020 – UnemploymentRate_2019 = 0	3.031	0.0813
UnemploymentRate_2021 – UnemploymentRate_2019 = 0	6.495	<0.0001
UnemploymentRate_2021 – UnemploymentRate_2020 = 0	3.464	0.0380

According to Table 4, the p-values (0.0380 and 0.00001) are both below the significance threshold (0.05), prompting us to reject the null hypothesis and indicate that there is a significant difference between the unemployment rates in 2021 and 2019, as well as between 2021 and 2020. Conversely, since the p-value (0.0813) exceeds the significance level (0.05), we do not reject the null hypothesis, leading us to determine that there is no statistically significant difference between the unemployment rates in 2020 and 2019.



For the inflation rate, the normality assumption was met, justifying the use of Repeated Measures ANOVA, appropriate for normally distributed data.

For the Inflation Rate

Table 5: ANOVA Table (Type III Tests)

Effect	DFn	DFd	F	p-value	p < 0.05	ges
Year	2	22	88.02	$3.18e^{-11}$	*	0.88

The ANOVA results show a significant effect of the year on inflation rate ( $F(2,22)=88.02$ ,  $p < 0.001$ ,  $ges = 0.88$ ). This indicates that inflation rate varies significantly across the years 2019, 2020 and 2021.

Table 6: Mauchly's test of Sphericity

Effect	W	p-value	p < 0.05
Year	0.127	$3.35e^{-05}$	*

Mauchly's test for sphericity is significant ( $W = 0.127$ ,  $p < 0.001$ ), indicating that the assumption of sphericity has been violated.

Table 7: Sphericity Corrections using Greenhouse-Geisser and Huynh-Feldt Corrections

Effect	GGe	DF[GG]	p[GG]	HFe	DF[HF]	p[HF]
Year	0.534	1.07, 11.75	$6.7e^{-07}$	0.545	1.09, 11.98	$5.35e^{-07}$

The sphericity corrections (Greenhouse-Geisser (GG) and Huynh-Feldt (HF) corrections) are applied due to the violation of sphericity. Both corrected p-values are still significant ( $p[GG] < 0.001$  and  $p[HF] < 0.001$ ), confirming the significant of the year on inflation rate.

Table 8: Post-Hoc Test (Pair-wise Comparisons)

Measure	Group1	Group2	$n_1$	$n_2$	statistic	df	p-val	p.adj
Infl rate	2019	2020	12	12	-6.36	11	$5.36e^{-05}$	$1.61e^{-04}$
Infl rate	2020	2021	12	12	-16.4	11	$4.52e^{-09}$	$1.36e^{-08}$
Infl rate	2019	2021	12	12	-6.32	11	$5.66e^{-05}$	$1.7e^{-04}$

The Post-hoc tests show significant differences between all pairs of years for inflation rate, indicating that the inflation rate varied significantly from year to year across 2019, 2020 and 2021.

#### **4. Discussion**

The analysis of the Nigerian economy before, during, and after the COVID-19 pandemic reveals significant impacts across multiple economic indicators, shedding light on the substantial disruptions caused by the pandemic.

The mixed results from the comparisons of the GDP over the three years under study provide important insights into economic trends. The near-significance in the comparison of 2019 and 2020 GDP suggests there might have been economic disruptions or changes during these years that warrant closer examination. The lack of significant change between 2019 and 2021 GDP suggests stability in economic conditions over these two years. However, the significant change between 2020 and 2021 highlights a distinct economic shift that could be influenced by policy changes, market conditions or other macroeconomic factors.

The result obtained on interest rates between 2019 and 2020 implies a statistically significant increase in interest rates within the period. This period marks the onset of the COVID-19 pandemic, which brought about considerable economic uncertainty and volatility. The Central Bank of Nigeria likely raised interest rates in an attempt to curb inflationary pressures and stabilize the financial system amidst reduced economic activities and disruptions caused by lockdown measures. The sustained significance difference in the interest rate between 2019 and 2021 suggests that the elevated interest rates observed in 2020 persisted into 2021. The prolonged economic impacts of the pandemic, including continued supply chain disruptions and inflationary trends, could have necessitated the sustained higher interest rates. However, the absence of a significant difference between the interest rates in 2020 and 2021 may suggest that, following the hike in 2020, the Central Bank of Nigeria opted to maintain a relatively stable monetary policy in the following year. This steadiness could reflect an effort to support gradual economic recovery while keeping inflation under control.

The marked increase in unemployment in 2021 compared to both 2019 and 2020, points to considerable disruption in the labour market. These disruptions are likely linked to the lingering effects of the pandemic, such as business closures and reduced hiring. On the other hand, the lack of significant change in unemployment between 2019 and 2020 suggests that the labour market remained

relatively unchanged during this time. This could be an indication that some early interventions or economic relief measures helped cushion the initial shock of the pandemic.

The sharp fluctuations in inflation across the three years examined provide important clues about changing economic conditions. Each year appears to have been shaped by different inflationary forces and policy actions. For instance, the difference observed between 2019 and 2020 may reflect the immediate consequences of the lockdown, including disruptions to production and distribution. Meanwhile, the 2020 to 2021 difference could be linked to the uneven nature of the recovery process, involving various fiscal and monetary responses as well as shifts in demand and supply. The inflation rate difference between 2019 and 2021 may highlight not only the long-lasting effects of the crisis but also the structural adjustments that followed.

## 5. Conclusions

The outbreak of the COVID-19 pandemic—and particularly the lockdown measures it triggered—had far-reaching consequences for Nigeria's economy. This study has shown that key economic indicators, including GDP, inflation, unemployment, and interest rates, were significantly affected during the pandemic period. GDP figures reflected a notable dip during the height of the crisis in 2020, followed by signs of recovery in 2021, pointing to the economic rebound that began as restrictions were eased.

The labour market, however, did not recover as quickly. High unemployment levels persisted, revealing structural weaknesses and the lasting effects of disruptions in business operations, especially in informal and service-based sectors. Inflation also rose sharply during and after the lockdown, largely due to supply-side constraints, reduced import activity, and shifts in consumer demand. Changes in interest rates during this period appear to align with the Central Bank of Nigeria's efforts to manage inflation and stabilize the economy.

Overall, the results highlight Nigeria's sensitivity to external shocks and emphasize the importance of building economic resilience. There is a pressing need for policy reforms aimed at economic diversification, domestic industrial growth, and the establishment of stronger safety nets to protect vulnerable populations during future crises.

By applying both parametric and non-parametric statistical tools across a three-year dataset, this study offers valuable insights into the dynamic nature of economic responses to a global health emergency. It calls on policymakers to adopt evidence-based strategies that support recovery and enhance preparedness for similar disruptions in the future.

## 6. Patents

### Data Availability Statement:

The data supporting the findings of this study are publicly available from the following sources:

- National Bureau of Statistics (Nigeria): <https://www.nigerianstat.gov.ng>
- International Monetary Fund (IMF) Data: <https://www.imf.org/en/Data>
- Central Bank of Nigeria (CBN): <https://www.cbn.gov.ng>
- World Bank Open Data: <https://data.worldbank.org>

### Author Contributions:

Funding acquisition, review and editing: **Nwosu**; formal analysis, discussion, and typesetting: **Ibeh**; writing – original draft (introduction and references): **Onyenekwe**.

### Funding Statement:

This research work was sponsored by the Tertiary Education Trust Fund (TETFund), Nigeria, under the Institution-Based Research (IBR) Scheme.

### Acknowledgements

We would like to express our profound gratitude to the Tertiary Education Trust Fund (TETFund) for sponsoring this research, making it possible to undertake and complete this study. Our sincere appreciation also goes to the management of Federal Polytechnic Nekede for their unwavering support in facilitating access to the funds.

We would like to acknowledge the efforts of the International Monetary Fund (IMF), Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS), and the World Bank for providing the necessary data that was crucial to the success of this research.

We are immensely grateful to the anonymous reviewers, whose insightful feedback helped refine the article and improve the quality of this study.

### Conflict of Interest / Disclosure Statement:

The authors have no conflicts of interest to disclose.

## References

- Abdulyakeen, A. (2021). COVID-19 pandemic and the Nigerian economy: The impacts and the way forward. *AIPGG Journal of Humanities and Peace Studies*, 2(1), 53–82. <https://ssrn.com/abstract=3799188>
- Adenomom, M. O., Maijama'a, B., & John, D. O. (2022). The effects of COVID-19 outbreak on the Nigerian stock exchange performance: Evidence from GARCH models. *Journal of Statistical Modeling and Analytics*, 4(2), 25–38. <https://doi.org/10.22452/josma.vol4no1.3>
- Andam, K., Edeh, H., Oboh, V., Pauw, K., & Thurlow, J. (2020). *Estimating the economic costs of COVID-19 in Nigeria* (Strategy Support Program Working Paper No. 63, pp. 1–25). International Food Policy Research Institute. <https://hdl.handle.net/10568/143918>
- Anyadike, K., & Mgbomene, C. (2023). COVID-19 pandemic and Nigeria's economic growth: A comparative analysis of pre and post 2020. *International Journal of Advanced Research in Accounting, Economics and Business Perspectives*, 7(1), 94–111. <https://doi.org/10.48028/ijprds/ijaraebp.v7.i1.08>
- Bello, Y. A., Adekunle, P. A., & Nwachukwu, U. G. (2022). Impact of COVID-19 pandemic on the Nigeria stock market: A sectoral stock prices analysis. *CBN Journal of Applied Statistics*, 13(1), 209–239. <https://dc.cbn.gov.ng/jas>
- Farayibi, A. O., & Asongu, S. A. (2020). *The economic consequences of the COVID-19 pandemic in Nigeria* (AGDI Working Paper No. WP/20/042, pp. 1–25). African Governance and Development Institute. <https://ssrn.com/abstract=3637668>
- Faruk, O. (2020). An analysis on the impact of COVID-19 pandemic on Nigeria economy. *International Journal of Clinical and Biomedical Research*, 6(2), 1–4. <https://www.researchgate.net/publication/377387790>
- Iluno, C., Taylor, J., Akinmoladun, O., Aderele, O., & Ekum, M. (2021). Modelling the effect of COVID-19 mortality on the economy of Nigeria. *Research in Globalization*, 3, 100050. <https://doi.org/10.1016/j.resglo.2021.100050>
- Inegbedion, H. (2021). Impact of COVID-19 on economic growth in Nigeria: Opinions and attitudes. *Heliyon*, 7, e06943. <https://doi.org/10.1016/j.heliyon.2021.e06943>
- Kanu, I. A. (2020). COVID-19 and the economy: An Africa perspective. *Journal of African Studies and Sustainable Development*, 3(2), 1–8. <https://doi.org/10.13140/RG.2.2.18801.43362>

- Mallum, F. B., Kadiri, Y. S., & Thompson, I. S. (2020). An analysis of the impacts of COVID-19 on the Nigerian economy. *Nigerian Defense Academy Journal of Economics and Finance*, 4(2), 92–101. <https://www.researchgate.net/publication/344797193>
- Nseobot, I. R., Soomro, M. A., Effiong, A. I., Solangi, G. M., Idongesit, M., & Soomro, F. A. (2020). COVID-19: A situation analysis of Nigeria's economy. *International Journal of Psychological Rehabilitation*, 24(7), 6845–6850. <https://ssrn.com/abstract=3578149>
- Nweze, A. U., & Nnadi, C. F. (2021). Effect of COVID-19 lockdown on the Nigerian economy: An empirical assessment of Nigerian economy. *Economics and Social Sciences Academic Journal*, 10(10), 23–39. <https://www.researchgate.net/publication/355855838>
- Orhero, A. E., & Oghuvbu, E. A. (2020). The socio-economic effects of COVID-19 global pandemic on Nigeria's development. *Journal of Danubian Studies and Research*, 10(1), 509–520. <https://dj.univ-danubius.ro/index.php/JDSR/article/view/572>
- Otache, I. (2020). The effects of the COVID-19 pandemic on Nigeria's economy and possible coping strategies. *Asian Journal of Social Sciences and Management Studies*, 7(3), 173–179. <https://doi.org/10.20448/journal.500.2020.73.173.179>
- Ozili, P. K. (2020). COVID-19 pandemic and economic crisis: The Nigerian experience and structural causes. *Journal of Economic and Administrative Sciences*, Advance online publication. <https://doi.org/10.1108/JEAS-05-2020-0074>
- Sani, A. S., & Mulyanto. (2024). Comparative analysis of budget performance in Nigeria: Pre and post COVID-19 impact. *The ES Accounting and Finance*, 2(2), 87–106. <https://doi.org/10.58812/esaf.v2i02.222>
- Thomas, I. G., Musa, A. B., Audu, M., Akpata, O. G., Kashin, A., & Alih, L. (2022). The impact of COVID-19 pandemic on Nigeria: A substantial threat to the attainment of Sustainable Development Goals (SDGs). *Journal of Sustainable Development in Africa*, 24(1), 43–54. <https://www.researchgate.net/publication/360160212>
- Usman, S. O., Esomachi, O. S., Nasiru, I. M., & Daniel, A. V. (2024). An assessment of COVID-19 and its impact on Nigeria's socio-economic development. *Cogent Social Sciences*, 10(1), 1–22. <https://doi.org/10.1080/23311886.2024.2306700>