

## EFFECT OF UNEMPLOYMENT RATE ON ECONOMIC GROWTH IN NIGERIA

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**Abstract:** This study examines the effect of unemployment on economic growth in the Nigerian economy, was examined by this study aiming to determine the impact of unemployment on output levels, ascertain the unemployment rate, and explore the relationship between unemployment rates and economic growth in Nigeria. The findings reveal a statistically significant association between unemployment rates and GDP growth ( $\chi^2=31.111$ ,  $df=2$ ,  $p<0.000$ ). High unemployment rates were predominantly associated with negative GDP growth. Whereas low and moderate unemployment rates corresponded with positive GDP growth. The Kruskal–Wallis test corroborated these results, showing significant differences in GDP growth across unemployment rate categories ( $H=26.133$ ,  $df=2$ ,  $p<0.000$ ). Pairwise comparisons indicated significant differences between high and low unemployment levels (adjusted  $p=0.000$ ) and high and moderate levels (adjusted  $p=0.005$ ), with no significant differences observed between moderate and low levels (adjusted  $p=0.604$ ). The study concludes that unemployment rates significantly influence Nigeria's economic growth, with high unemployment exerting a detrimental effect on GDP growth. It underscore the inverse relationship between unemployment and economic performance, emphasizing the critical role of employment generation in fostering sustainable development.

**Keywords:** relationship, growth, rates, significant, comparison

### 1. INTRODUCTION

#### Background of the Study

Unemployment is regarded as a serious problem faced by most developed and developing countries and resulting to socio-economic problems. In justifying this assertion, Akeju and Olanipeun (2014) noted that one of the greatest challenges of the Sub-Saharan African economies today is the high rate of unemployment that has maintained a rising trend over the years. This rising state of unemployment in Nigeria is known by many with its biting presence on an average Nigerian. For example, a report by the National Bureau of Statistics (2022) as cited in Philip et al. (2013) put the unemployment rate at 23.9 percent and the unemployed youth population at 20.3 million, about 4.5 million new entrants into the labour market annually, 2.2 million primary school leavers not proceeding to secondary school, one million secondary school leavers not proceeding to the tertiary level and roughly 600,000 graduates annually, not finding any placement after graduation. In a theoretical discourse which was further proved by empirical studies CBN (2020) predicted a declining rate of unemployment as the economic experience significant growth.

Johnson and Smith (2022) define unemployment as the total number of individuals who are willing and able to work, available for jobs at the prevailing wage, but cannot find employment. This implies that unemployment represents a state of joblessness within the country. Similarly, according to Brown (2021), unemployment occurs when workers are involuntarily out of work despite being willing and able to work.

In Nigeria, many studies in this regard have shown controversial evidence. For example, Ademola and Badiru (2016), Akeju and Olanipeun (2014), Arewa and Nwakanma (2012) among other confirm positive relationship between unemployment and economic growth, Sodipe (2018) reported mixed evidence, while Njoku and Ihugba (2021) confirm negative evidence only when growth is motivated by the agricultural sector. According to Jones (2022), unemployment can be understood as the number of unemployed individuals in an economy, typically expressed as a percentage of the labour force.

Regarding economic growth, Williams and Davis (2022) associate it with an increase in capital per person. They argued that capital alone is insufficient for growth; a framework for its effective use is

also necessary to prevent wastage. Hemming (2021) supports this by emphasizing that growth is influenced by the composition of expenditure, with certain types of spending having a more significant impact on growth. Key areas include the provision of socioeconomic infrastructure, operations and maintenance, and general administrative and legal frameworks. Economic growth is the process by which a nation's wealth increases over time. Although the term is often used in discussions of short-term economic performance, in the context of economic theory it generally refers to an increase in wealth over an extended period (Aideyan et. al. 2024). Growth can best be described as a process of transformation. Whether one examines an economy that is already modern and industrialized or an economy at an earlier stage of development, one finds that the process of growth is uneven and unbalanced (Aideyan et al. 2024).

#### ■ Scope of the Study

The scope of the study is centered on the effect of unemployment on economic growth in the Nigerian economy. The source of data is the National Bureau of Statistics (NBS) annual abstract of statistics, Statistical Bulletin (2019) and Central Bank Nigeria (CBN) for the period of 34 years ranging from 1985 to 2019.

#### ■ Aim and Objectives of the Study

The aim of this study is to ascertain the effect of unemployment on economic growth in the Nigerian economy, with the following objectives to:

- Determine the effect of unemployment on output level in the Nigerian economy.
- ascertain the level of unemployment rate in Nigeria
- and determine the relationship between unemployment rate and economic growth in Nigeria

## 2. METHODOLOGY

The methods and statistical tools to be used to analyze this research work are:

#### ■ Chi-Square

The formula is:

$$\chi^2 = \sum_{i=1}^R \sum_{j=1}^C \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \sim \chi^2_{(R-1)(C-1)}$$

where:

$O_{ij}$  = observed frequency (ij)<sup>th</sup> cell.

$E_{ij} = \frac{R_i C_j}{N}$  = Expected frequency (ij)<sup>th</sup> cell.

$i = 1, 2, \dots, k$  and  $j = 1, 2$

#### ■ Kruskal-Wallis Test

The formula to calculate the test statistic H is:

$$H = \frac{12}{N(N+1)} \sum_{i=1}^K \frac{R_i^2}{n_i} - 3(N+1)$$

where:

N is the total number of observations across all groups,

k is the number of groups,

$R_i$  is the sum of ranks for the ith group,

$n_i$  is the sample size for the ith group.

## 3. RESULT AND DISCUSSION

The analysis examines the association between unemployment rate categories (low, moderate, and high) and Gross Domestic Product (GDP) growth (categorized as either positive or negative growth) using a Chi-square test.

In the cross-tabulation (Table 1), we observe a stark distribution pattern: For years with low and moderate unemployment rates, there is no recorded instance of negative GDP growth; all cases fall under positive GDP growth, with counts of 7 in each category. In contrast, years with high

unemployment rates are heavily skewed towards negative GDP growth, with 20 instances of negative growth compared to only 1 instance of positive growth. This pattern suggests a strong association between high unemployment and negative GDP growth, pointing towards an inverse association where high unemployment correlates with a reduction in economic growth.

Table 1: Contingency table

Unemployment rate * Gross domestic Product Cross tabulation					
			Gross domestic Product		Total
			negative growth	positive growth	
Unemployment rate	Low	Count	0	7	7
		Expected Count	4.0	3.0	7.0
	Moderate	Count	0	7	7
		Expected Count	4.0	3.0	7.0
	High	Count	20	1	21
		Expected Count	12.0	9.0	21.0
Total		Count	20	15	35
		Expected Count	20.0	15.0	35.0

Table 2: Chi-Square Analysis

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.111 <sup>a</sup>	2	.000
Likelihood Ratio	39.763	2	.000
Linear-by-Linear Association	25.500	1	.000
N of Valid Cases	35		

A 4 cells (66.7%) have expected count less than 5. The minimum expected count is 4.19.

The Chi-square test in Table 2 confirms a statistically significant association between unemployment rates and GDP growth ( $\chi^2 = 31.111$ ,  $df = 2$ ,  $p < 0.001$ ). This p-value indicates that the observed association between unemployment and GDP growth is unlikely due to chance. The result implies that high unemployment rates are significantly associated with negative GDP growth, highlighting the detrimental impact that rising unemployment can have on Nigeria's economic performance.

Other test metrics such as the Likelihood Ratio and Linear-by-Linear Association (both with  $p < 0.001$ ) reinforce the strength of this association. However, with four cells showing expected counts below five, caution is necessary in fully generalizing these findings, as some statistical limitations may arise from the distribution of the data.

Table 3: Symmetric Measures

Symmetric Measures					
		Value	Asymptotic Standard Error <sup>a</sup>	Approximate T <sup>b</sup>	Approximate Significance
Nominal by Nominal	Phi	.943			.000
	Cramer's V	.943			.000
	Contingency Coefficient	.686			.000
Interval by Interval	Pearson's R	-.866	.051	-9.950	.000 <sup>c</sup>
Ordinal by Ordinal	Spearman Correlation	-.913	.052	-12.845	.000 <sup>c</sup>
N of Valid Cases		35			

a. Not assuming the null hypothesis; b. Using the asymptotic standard error assuming the null hypothesis; c. Based on normal approximation.

In Table 3, the symmetric measures (Phi, Cramer's V, and the Contingency Coefficient) all reflect a strong association between the two categorical variables. Cramer's V and Phi values are both 0.943, suggesting an extremely strong association between unemployment rate categories and GDP growth categories. Contingency Coefficient value of 0.686 supports this strong association, though not as high as Phi and Cramer's V, indicating a notable but slightly moderated association strength. The correlation measures (Pearson's R and Spearman Correlation) show strong inverse relationships (-0.866 and -0.913, respectively), indicating that as unemployment rates increase,



GDP growth rates tend to decrease. Both correlations are statistically significant ( $p < 0.001$ ), suggesting a substantial inverse linear association between these variables.

Table 4: Summary Test for the Kruskal–Wallis.

Independent–Samples Kruskal–Wallis Test Summary	
Total N	35
Test Statistic	26.133 <sup>a</sup>
Degree of Freedom	2
Asymptotic Sig. (2–sided test)	.000

Table 4 presents the summary statistics for the Kruskal–Wallis test, which was used to examine the association between different levels of unemployment rates (categorized as high, moderate, and low) and GDP growth rate. The test statistic (H) is 26.133, with 2 degrees of freedom. The asymptotic significance level (p–value) for the test is 0.000, which is below the 0.05 threshold, indicating statistical significance. This result suggests that there is a significant difference in the distribution of GDP growth rates across the categories of unemployment rates. Consequently, we reject the null hypothesis, which posits that GDP growth rates are distributed similarly across all levels of unemployment. The outcome of this test implies that the unemployment rate level has a significant impact on GDP growth. The significance level is 0.050.

Table 5: Hypothesis Test

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Gross Domestic Product is the same across categories of Unemployment rate.	Independent–Samples Kruskal–Wallis Test	0.000	Reject the null hypothesis.

H<sub>0</sub>: There is no effect of unemployment rate on economic growth in Nigerian.

Table 5 provides a summary of the hypothesis test, restating the decision based on the Kruskal–Wallis results. The null hypothesis that GDP growth rate distribution is the same across different unemployment rate categories is tested using the Kruskal–Wallis approach, which confirms that we should reject the null hypothesis due to the low significance value of 0.000. This reiterates the finding from Table 4, affirming that differences in GDP growth rates are statistically significant when comparing high, moderate, and low unemployment categories. The confirmation provided here strengthens the result, showing that unemployment rate levels indeed have a meaningful influence on GDP growth patterns.

Table 6: Pairwise Comparisons of Unemployment rate

Sample 1–Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. <sup>a</sup>
High–Moderate	14.000	4.472	3.130	.002	.005
High–Low	21.000	4.472	4.696	.000	.000
Moderate–Low	7.000	5.477	1.278	.201	.604

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2–sided tests) are displayed. The significance level is .050. Significance values have been adjusted by the Bonferroni correction for multiple tests

Table 6 demonstrate deeper into the Kruskal–Wallis test results by examining pairwise comparisons between different unemployment rate categories: high vs. moderate, high vs. low, and moderate vs. low. The adjusted significance values are provided to account for multiple comparisons. The comparison between high and moderate unemployment levels yields a test statistic of 14.000, with an adjusted significance of 0.005. Since this value is below 0.05, we conclude there is a statistically significant difference in GDP growth rates between high and moderate unemployment levels. Similarly, the comparison between high and low unemployment levels shows a test statistic of 21.000 with an adjusted p–value of 0.000, further indicating a significant difference in GDP growth rates between these levels. However, the pairwise comparison between moderate and low unemployment levels yields a test statistic of 7.000 with an adjusted p–value of 0.604, which is above the 0.05 threshold. Therefore, no significant difference in GDP growth rates is observed between moderate and low unemployment categories.

#### 4. SUMMARY OF RESULT AND CONCLUSION

The analysis examines the association between unemployment rate categories (low, moderate, and high) and Gross Domestic Product (GDP) growth (categorized as either positive or negative growth) using a Chi-square test.

In the cross-tabulation (Table 1), we observe a stark distribution pattern: For years with low and moderate unemployment rates, there is no recorded instance of negative GDP growth; all cases fall under positive GDP growth, with counts of 7 in each category. In contrast, years with high unemployment rates are heavily skewed towards negative GDP growth, with 20 instances of negative growth compared to only 1 instance of positive growth. This pattern suggests a strong association between high unemployment and negative GDP growth, pointing towards an inverse association where high unemployment correlates with a reduction in economic growth.

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Other test metrics such as the Likelihood Ratio and Linear-by-Linear Association (both with  $p < 0.001$ ) reinforce the strength of this association. However, with four cells showing expected counts below five, caution is necessary in fully generalizing these findings, as some statistical limitations may arise from the distribution of the data.

In Table 3, the symmetric measures (Phi, Cramer's V, and the Contingency Coefficient) all reflect a strong association between the two categorical variables. Cramer's V and Phi values are both 0.943, suggesting an extremely strong association between unemployment rate categories and GDP growth categories. Contingency Coefficient value of 0.686 supports this strong association, though not as high as Phi and Cramer's V, indicating a notable but slightly moderated association strength. The correlation measures (Pearson's R and Spearman Correlation) show strong inverse relationships ( $-0.866$  and  $-0.913$ , respectively), indicating that as unemployment rates increase, GDP growth rates tend to decrease. Both correlations are statistically significant ( $p < 0.001$ ), suggesting a substantial inverse linear association between these variables.

The study concludes that unemployment rates significantly affect economic growth in Nigeria. High unemployment is strongly associated with negative GDP growth, while low and moderate unemployment correlate with positive GDP growth. The findings highlight an inverse relationship between unemployment and economic performance, confirming the critical role of employment generation in fostering economic development. Both Chi-square and Kruskal-Wallis tests affirmed that variations in unemployment levels contribute significantly to differences in GDP growth rates. It is evident that addressing unemployment is crucial for reversing the adverse effects on economic growth and achieving sustainable development in Nigeria.

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