

EFFECT OF FORMAL EDUCATION ON POVERTY REDUCTION IN NIGERIA

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ABSTRACT: This study analyzes the impact of formal education on poverty reduction in Nigeria by studying the relationship between government expenditure on education, school enrolment, and labour force participation. It uses 30 years of annual time series data and employs various statistical methods, such as OLS regression, ADF test, Philip Peron unit root test, F-tests, and t-tests. Labour force participation serves as a proxy to understand how these macroeconomic variables affect poverty. The findings reveal that both school enrolment and government expenditure on education significantly affect labour force participation. Specifically, enrolment in secondary and tertiary education positively correlates with increased labour force participation. To enhance poverty reduction in Nigeria, the study proposes improving the effectiveness of government expenditure, enhancing access to quality secondary and tertiary education, fostering collaboration between education and businesses, and emphasizing vocational and technical education aligned with the labour market's needs.

KEY WORDS: School Enrolment, Government Expenditure, Poverty, Labour Force Participation and ADF Model

1. INTRODUCTION

The importance of investing in human capital for sustainable economic development is emphasized (Omoniyi, 2013a). Education plays a crucial role in enhancing individuals' understanding of themselves and the world, improving their quality of life, and bringing broad social benefits to society. It raises people's productivity and creativity, promoting entrepreneurship and technological advances. Moreover, education plays a vital role in securing economic and social progress and improving income distribution (Ilhan, 2008). It is a gradual process that brings about positive changes in human life and behaviour, enabling individuals to achieve their goals and articulate their thoughts and emotions effectively through various means (Zubair, 2018). The introduction of formal education in Nigeria can be attributed to the colonial period, during which the indigenous people were trained to understand the English language by Christian missionaries. The trained individuals became the first indigenous employees of the colonial government, working as interpreters, clerks, and teachers (Ilori, 2020; Garba, 2012).

The literature recognizes the significant role of human capital formation in economic development. Human beings are the active agents who accumulate capital, exploit natural resources, and build social, economic, and political organizations, thus driving national development (God'stime, Uchechi, 2014). Numerous theoretical and empirical studies have shown a positive correlation between human capital development and economic growth (Awoyemi et al., 2016; God'stime, Uchechi, 2014; Obi P., Obi K., 2014; Nwadiani, 2018).

Despite Nigeria's strong economic growth, poverty rates have continued to rise, with a significant proportion of the population living below the poverty line (Daniel cited in Omoniyi, 2018). The percentage of Nigerians living in absolute poverty increased from 54.7% in 2004 to 69.9% in 2010 (National Bureau of Statistics [NBS], 2011; Omoniyi cited in Omoniyi, 2018). This indicates a widening gap between the rich and the poor, and poverty is projected to worsen despite economic growth (Kale, 2012).

Poverty in Nigeria is a persistent issue affecting both the rural and urban population. According to the National Bureau of Statistics (NBS, 2022), 62.9% of Nigerians live in extreme poverty, with approximately 133 million people surviving on less than \$1.90 per day in rural and urban regions.

Various Nigerian administrations have implemented measures to reduce poverty, focusing on job creation, basic needs satisfaction, and integrated rural and community development. However, these programs have often failed to achieve the desired results due to the assumption that the poor are a homogeneous group and can be uniformly treated in poverty reduction efforts.

This paper addresses the persistent problem of poverty in Nigeria by examining its causes and exploring potential solutions. Despite improvements in the adult literacy rate, poverty levels in the country remain high. Unemployment, particularly among graduates, has emerged as a significant contributor to the poverty crisis. Efforts to enhance educational access have not effectively alleviated poverty, highlighting the need for a deeper understanding of how formal education translates into economic returns and poverty reduction within the economic context. Specifically, it is crucial to evaluate whether formal education leads to an increase in the quality and quantity of available jobs.

Moreover, this study aims to shed light on the implications of increased educational spending in Nigeria, which has resulted in a significant rise in tertiary institution enrolment. However, this surge in enrolment has also had unintended consequences, including higher rates of unemployment and poverty, posing a threat to the national economy. To address these pressing issues, this research focuses on investigating selected macroeconomic variables that have influenced poverty in Nigeria over a 30-year period spanning from 1990 to 2020. The findings of this study will contribute to the existing literature by identifying key macroeconomic factors that influence poverty and providing valuable guidance for policymakers in formulating effective poverty reduction policies. By filling these knowledge gaps, this paper aims to contribute to the on-going efforts to combat poverty in Nigeria and its implications for poverty reduction

This paper aims to investigate the effect of government expenditure on education and its relationship with labour force participation, serving as a proxy for poverty in Nigeria. Additionally, it explores the influence of secondary school enrolment and tertiary education enrolment on labour force participation as indicators of poverty levels.

2. LITERATURE REVIEW

2.1. Conceptual Framework

Education in Nigeria is viewed as a public enterprise with government intervention and participation aimed at achieving national development goals. It is seen as a purposeful process that contributes to the development of individuals and society, leading to happiness and prosperity (Kumar, Ahmad, 2008).

Formal education refers to the institutionalized and structured education system, spanning schools and universities, while non-formal education is organized outside the formal system, providing specific types of learning to particular subgroups of the population (Coombs, Ahmed, 1974). Non-formal education focuses on vocational training and skill development, which can improve individuals' capabilities and self-dependence, ultimately leading to improved living standards and poverty reduction.

Education is seen as a key factor in increasing the value and productivity of the labour force, thereby reducing poverty levels (Omoniyi, 2013b). It enhances the efficiency and intellectual abilities of a country's workforce, ensuring competitiveness in a changing and technological world (Lucas as cited in Omoniyi, 2013b). Investing in education and human capital is crucial for economic development, and the lack of education can hinder per capita income growth and increase poverty levels (Pelinescu, 2015).

Education is associated with higher wages, better employment prospects, and increased economic productivity (UNESCO, 2012). It has both private and public benefits, serving as an investment with potential rewards and positive externalities (Jaiyeoba, 2009). Educational improvement is linked to local development, economic growth, social capital, trust, and social participation (Echeverría, 1998; Helliwell, Putnam, 1999). Education contributes directly to a nation's income growth and development through improved skills and productive labour (Psacharopoulos, Woodhall, 1993).

Access to education is a critical issue, particularly in rural areas of developing countries, and ensuring education for all is crucial for poverty eradication and development (Abdulahi, 2008). Measuring the components of education accurately, including quantity, quality, and student effort, can be challenging. Years of schooling are commonly used as a measure, but it may not capture differences in educational quality or type (Gordon, 1995).

Labour force participation refers to the proportion of the working-age population that is employed or actively seeking employment, serving as an indicator of economic activity and human resource utilization (Khan, Rashid, 2019). Nigeria's rapid population growth, especially among young people, presents both opportunities and challenges for labour force participation. Gender disparities in labour force participation, influenced by limited access to education and discriminatory practices, have implications for poverty reduction and inclusive economic growth (OECD, 2018).

The informal sector plays a significant role in Nigeria's economy, employing a large portion of the population. However, it is characterized by low wages, lack of social security, and limited productivity. Encouraging formalization and improving the quality of jobs in the informal sector can contribute to higher labour force participation rates and overall economic growth (NBS, 2020).

Youth unemployment rates pose social and economic challenges, necessitating investments in education, skills development, and entrepreneurship, along with creating an enabling environment for job creation (ILO, 2016). The rural-urban divide in labour force participation exacerbates underemployment and seasonal unemployment in rural areas, leading to rural-urban migration. Policies promoting rural development, agricultural productivity, and rural employment opportunities can help bridge this divide.

Labour force participation serves as a proxy for measuring poverty levels, as it reflects income generation and economic well-being. Higher participation rates indicate better access to income-earning opportunities, contributing to poverty reduction (Appiah, 2017; World Bank, 2020). Low labour force participation rates indicate higher vulnerability to poverty, limiting access to resources and income (Khan, Rashid, 2019).

Unemployment and underemployment contribute to poverty, as individuals face inadequate income levels. Addressing these issues requires policies promoting inclusive growth, job creation, and skills development (ILO, 2020). Lack of access to employment can create poverty traps, perpetuating poverty across generations. Breaking these traps requires policies that encourage labour force participation and economic mobility (World Bank, 2019).

This study adopts labour force participation as a proxy for poverty reduction, considering its direct link to income generation and economic well-being. Examining labour force participation rates provides insights into poverty prevalence and its potential impact on individuals and households' economic security (World Bank, 2020; Khan, Rashid, 2019).

2.2. Empirical Reviews

The perspectives of other researchers on the topic we are examining are critically analyzed in this part. This stage is important to investigate the arguments put forth by academics on the subject and to lay the foundation for our current study.

Oguoma and Azeez (2020) find that while increased government spending on education may reduce youth unemployment rates, it does not necessarily lead to higher labour force participation rates among the youth. The study emphasizes the importance of aligning education policies with labour market needs to enhance youth labour force participation.

Olaleye and Oyekola (2020) reveal a positive relationship between education and labour force participation in Nigeria. Higher levels of education are associated with increased rates of labour force participation, highlighting the role of education in equipping individuals with skills and qualifications for the job market.

Oluwatayo et al. (2020) demonstrate a positive association between tertiary education and both employment and labour force participation in Nigeria. Individuals with tertiary education have higher employment rates and are more actively engaged in the labour market, underscoring the importance of tertiary education for economic development and individual career prospects.

Aminu et al. (2019) find a positive relationship between tertiary education and labour force participation, indicating that individuals with tertiary education are more likely to be active in the labour force.

Obioma et al. (2019) observe that despite increased government spending on education, there is no substantial improvement in labour force participation rates in Nigeria. The authors attribute this lack of impact to factors such as misallocation and inefficient distribution of education funds, inadequate infrastructure, and a mismatch between the skills acquired through education and the demands of the labour market.

Nwadiani (2018) reveals that individuals with secondary education in Nigeria are more likely to pursue tertiary education, leading to greater opportunities for skilled employment. Higher education offers specialized knowledge and advanced skills that are in demand in the labour market, enabling access to higher-paying jobs.

Appiah (2017) investigates the impact of education expenditure on per capita GDP in developing countries, including Sub-Saharan Africa (SSA). The study finds no significant difference in the impact of education spending on per capita GDP between developing countries and SSA. However, SSA countries lack the necessary human capital to add value to their produce despite higher annual export growth, suggesting a need to improve human capital development for a substantial impact on per capita GDP.

2.3. Theoretical Framework

This paper is hinged on the Human Capital Theory. Human Capital Theory emphasizes that human capital, which includes knowledge, skills, attitudes, and other acquired traits, is crucial for economic production (Goode, 1959). It is viewed as the resources embodied in individuals that contribute to economic activity (Becker, 1994). Education and quality health are key factors in acquiring human capital (Becker, 1994). Different approaches have been used to measure human capital, including the Cost-Based Approach (CBA), Income-Based Approach (IBA), and Education-Based Approach (EBA).

The CBA estimates human capital based on the costs of child-rearing, while the IBA values human capital as the total income individuals can generate over their lifetimes. The EBA measures human capital using education indicators such as literacy rates, enrolment rates, and average years of schooling (De Foville, 1905; Eisner, 1989).

Education is considered a privileged investment with both private and social returns, aligning with the goals of economic growth and poverty reduction (Jones, 2006). Human capital theory remains the fundamental paradigm for economic development and poverty reduction. It is believed that education provides access to higher-paying jobs, contributing to the correlation between education and income (Gylfason, Zoega, 2003).

In Nigeria, education is often seen as the pathway to escape poverty and rural farm life. Parents view their children's education as insurance for their future and a source of support in their old age. The income generated by the educated class also contributes to tax revenue that can be allocated to pro-poor growth initiatives and programs.

3. METHODOLOGY

The paper employed secondary data sourced from CBN annual statistical bulletin (2019) and National Bureau of Statistics publication as well as data from World Bank (World Development Index, WDI), the National Bureau of Statistics (NBS) and, the FATFISH for the period of 1990-2020. This study used Ordinary Least Square (OLS) method. These analyses were facilitated by the use of econometric e-view software. The time series properties of the variables were examined with Augmented Dickey-Fuller (ADF) and Philip Peron unit root tests. *F*-test for overall significance of estimated regression line and *t*-test for testing the individual significance of estimated partial regression coefficient were used to test the hypotheses. The first step was to test the stationarity of the series to avoid spurious regression results. Estimation was conducted using the econometric computer software package, E-Views 10.

Model Specification

The models that were used to examine the relationship between formal education and degree of poverty reduction in Nigeria were stated as follow:

This study adapted the model of James (2016) to examine the effect of government education expenditure on education, school enrolment on labour force participation in Nigeria. The model is augmented in terms of variables and objective. The model is stated in implicit form as thus:

$$LFP = f(ESS, SET, GEE) \quad (1)$$

The explicit multiple linear regression is stated as thus:

$$LFP = \alpha_0 + \alpha_1 ESS + \alpha_2 SET + \alpha_3 GEE + \varepsilon \quad (2)$$

Where:

LFP = labour force participation proxy for poverty reduction

ESS = Enrolment in Secondary School

SET = School Enrolment in Tertiary

GEE = Government Expenditure on Education

$\hat{\alpha}_0$ = constant

$\hat{\alpha}_1, \hat{\alpha}_2,$ and $\hat{\alpha}_3$ = Coefficients

ε = error term.

4. RESULTS AND DISCUSSIONS

The variables are tested for order of integration and stationarity to make sure the estimations do not result in erroneous output. The unit root testing is required to ascertain the variables' stationarity property and to avoid spurious regression in view of the previous discussions and the ARDL model specification that contains time series variables. For the purpose of this paper, Augmented Dickey-Fuller (ADF) and Philip Peron unit root tests is employed in order to ensure the reliability of the findings. Hence, the result is presented in Table 1.

The result of Philip Perron unit root tests of the time series data is presented in Table 1. The result showed that labour force participation (LFP) is stationary at their second difference with the order of integration I(2) while some variable such as school enrolment, secondary (ESS), school enrolment tertiary (SET) and government education expenditure on education (GEE) were stationary at first difference with order of integration I(1)

The normality test result presented in Table 2 shows that all the variables were positively skewed and all have the value below zero (0). However, all of the variables have kurtosis value below 3. The Jarque-Bera values are all greater than one. These implied that the variables are not normally distributed and the error term did not follow normal distribution. Thus this statistics provide the insight into the distribution of the data around the mean, the appropriate statistical tests and the analytical methods appropriate for the models.

The result of the estimated regression of the effect of government expenditure education and school enrolment on labour force participation in Nigeria from 1990-2020 is presented in Table 3. The ordinary least square regression result showed the selection criteria that gave the best fit. Two of the variables are significant at 1% level, coefficient of determination, R^2 is 0.9313, the Adj. R^2 is 0.9236, F-stat = 121.9290 and Durbin-Watson stat. is 1.0072.

Table 1. Result of unit root test for variables with intercept and trend

Variables	Philip Perron test			
	Level	1 st Diff	2 nd Diff	Order of Integration
Labour force participation (LFP)	-1.8746	-2.1453	-3.8338	I(2)
Enrolment in secondary school, (ESS)	-2.2817	-6.3637	-	I(1)
School enrolment, tertiary (SET)	-2.3933	-5.6054	-	I(1)
Government expenditure on education (GEE)	-1.6048	-8.1549	-	I(1)

Source: Computed by author with extracted from e-view output, 2022. Note: at level, critical value at 1% = -4.2968, 5% = -3.5684, and 10% = -3.2184; at various difference, critical values at 1% = -4.4407, 5% = -3.6329 and 10% = -3.2547, respectively GEE = Government expenditure on education; ESS= School enrolment, secondary School; SET = School enrolment, Tertiary; LFP= Labour force participation.

Table 2. Result of normality test of variables used in the analysis

	LFP	GEE	ESS	SET
Mean	0.841067	16993.97	35.16700	9.345583
Median	0.801292	8375.868	34.45698	9.930780
Maximum	1.265165	53290.64	56.20540	15.30681
Minimum	0.555979	32.31710	23.55180	4.343314
Std. Dev.	0.260978	17299.26	9.023523	3.451945
Skewness	0.284061	0.726133	0.437261	0.019820
Kurtosis	1.491383	2.074571	1.993896	1.621725
Jarque-Bera	3.356639	3.830429	2.295337	2.455734
Probability	0.186687	0.147310	0.317376	0.292917
Sum	26.07308	526813.1	1090.177	289.7131
Sum Sq. Dev.	2.043279	8.98E+09	2442.719	357.4778
Observations	31	31	31	31

Source: **Computed by author with extracted** from e-view output, 2022GEE = Government expenditure on education; ESS= Enrolment in secondary school; SET = School enrolment in Tertiary; LFP= Labour force participation

Table 3. The effect of government expenditure on education and school enrolment on labour force participation in Nigeria from 1990-2020

Variable	Coefficient	t-Statistic
government expenditure education GEE	-0.005280	-0.499343
enrolment, secondary school ESS	0.020888	10.00722
school enrolment, tertiary SET	0.024349	3.784580
Constant	-0.074937	-1.048050
R-squared	0.931260	
Adjusted R-squared	0.923623	
S.E. of regression	0.072125	
Sum squared resid	0.140454	
Log likelihood	39.66427	
F-statistic	121.9290	
Prob(F-statistic)	0.000000	
Durbin-Watson stat	1.007232	
Wald F-statistic	87.47490	
Prob(Wald F-statistic)	0.000000	

Source: **Author's computation (2022).** The estimation of the model by the author was aided by the use of e-view software. Tableted *t*-value where *a* is prob.=1% significant, *b* is prob.=2.5% sign., *c* is prob.=5% sign., *n.s* = not significant

The coefficient of determination (R^2) is 0.9313 implying that 93.13% variation in labour force participation was explained by government expenditure on education and school enrolment while about 6.87% is explained by the error term (μ). The variables have the expected signs except government expenditure on education.

The coefficient of government expenditure on education is negative and insignificant (-0.0053) in explaining labour force participation. This shows that a unit increase in government expenditure on education will lead to decrease in labour force participation by about 0.0053 units during the period under review. This finding agrees with those of Appiah (2017), Alaz et al. (2011), and Obioma et al. (2019) in finding no significant relationship between government expenditure on education and labour force participation. It is important to consider these findings in the context of the negative influence effect of government expenditure on education on labour force participation in Nigeria.

There are several factors that contribute to this negative influence. One factor is the misallocation and inefficient distribution of education funds, which results in inadequate infrastructure, limited access to quality education, and a lack of resources in schools. These issues impede the development of a skilled workforce. Another factor is the mismatch between the skills acquired through education and the demands of the labour market. The Nigerian education system does not always align with the needs of employers, leading to a gap between graduates' skills and the requirements of the job market.

Furthermore, high unemployment rates, economic constraints, and limited job opportunities in Nigeria further undermine the effectiveness of government spending on education in driving labour force participation. Finally, socio-cultural factors and gender disparities restrict opportunities for women in the labour market, contributing to lower overall labour force participation.

To address these challenges and promote inclusive labour force participation, it is crucial to improve fund management, ensuring efficient allocation of education resources. Additionally, aligning education with the needs of the labour market and implementing comprehensive economic reforms are essential. Promoting gender equality and addressing socio-cultural barriers can also enhance labour force participation and reduce poverty in Nigeria.

The coefficient of enrolment, secondary school is positive and significant (0.0209) at 1% level of probability, in explaining labour force participation. This shows that a unit increase in enrolment, secondary school will lead to increase in labour force participation by about 0.0209 units during the period under review. The research findings align with previous studies conducted by Alaz et al. (2011) and Olaleye and Oyekola (2020) regarding the positive influence of secondary school education on labour force participation in Nigeria. Furthermore, Nwadiani (2018) found that individuals with secondary education were more likely to pursue tertiary education, leading to increased opportunities for skilled employment.

There are several reasons for the positive influence of secondary school enrolment on labour force participation in Nigeria. Firstly, secondary education equips individuals with valuable knowledge and skills that are highly valued in the labour market. By completing secondary education, individuals acquire foundational academic knowledge and vocational skills, enhancing their employability and increasing their chances of securing gainful employment. Secondly, secondary education

improves cognitive abilities, critical thinking skills, and problem-solving capabilities, which are in high demand by employers. This enables secondary school graduates to adapt to the evolving demands of the labour market, increasing their productivity and competitiveness. Additionally, secondary education often serves as a pathway to higher education, enabling individuals to pursue further studies and specialize in specific fields, thereby expanding their career opportunities.

The positive and significant effect of secondary school enrolment on labour force participation underscores the importance of investing in and promoting access to quality secondary education in Nigeria. Enhancing individuals' employability through secondary education not only contributes to their personal development but also plays a crucial role in the country's economic growth and development.

The coefficient of school enrolment, tertiary is positive and significant (0.0243) at 1% level of probability, in explaining labour force participation. This shows that a unit increase in school enrolment, tertiary will lead to increase in labour force participation by about 0.0243 units during the period under review. This finding aligns with the research conducted by Muhammad et al. (2009), indicating a positive correlation between female labour force participation and education levels. Additionally, Oluwatayo et al. (2020) discovered that individuals with tertiary education in Nigeria were more likely to participate in the labour force and have higher employment rates, while Aminu et al. (2019) found that individuals with tertiary qualifications had better prospects of securing jobs in professional and managerial positions.

There are several reasons why enrolment in tertiary education in Nigeria positively impacts labour force participation. Firstly, tertiary education equips individuals with specialized knowledge and advanced skills that are highly valued in the job market. By gaining in-depth expertise in specific fields, individuals become better prepared to meet the demands of employers and succeed in their chosen careers. Secondly, tertiary education opens up a wider range of career opportunities, allowing individuals to access higher-paying and more prestigious positions. Tertiary institutions provide specialized training, practical experience, and internships, which prepare students for the complexities of the modern job market, making them attractive candidates for employers. This increased employability and access to higher-skilled jobs contribute to a higher likelihood of labour force participation among individuals who have enrolled in tertiary education.

Test of hypothesis: the test of hypothesis is conducted using Table 3. Critical t value ($\alpha = 0.05; 0.01, df = 30$) = 2.042; 2.750.

Since $t_{cal} (0.4993) < t_{tab} (2.042; 2.750)$ at 5% level of probability, the study fails to reject the null hypothesis (H_0) which stated that government expenditure on education has no significant effect on labour force participation in Nigeria. It therefore, concluded that government expenditure education has no significant effect on labour force participation.

Since $t_{cal} (10.0072) > t_{tab} (2.042; 2.750)$ at 1% level of probability, the study fails to accept the null hypothesis (H_0) which stated that enrolment, secondary school has no significant effect on labour force participation in Nigeria. It therefore, concluded that enrolment, secondary school has significant effect on labour force participation.

Since $t_{cal} (3.7846) > t_{tab} (2.042; 2.750)$ at 1% level of probability, the study fails to accept the null hypothesis (H_0) which stated that school enrolment, tertiary has no significant effect on labour

force participation in Nigeria. It therefore, concluded that school enrolment, tertiary has significant effect on labour force participation.

5. CONCLUSIONS

The study was basically undertaken to examine the effect of formal education on poverty reduction in Nigeria, specifically focusing on government expenditure on education and school enrolment's effect on labour force participation.

The analysis showed that school enrolment and government expenditure on education significantly influenced labour force participation. Both secondary school enrolment and tertiary education enrolment had positive and significant effects on labour force participation. This highlights the crucial role of education in equipping individuals with the necessary skills and knowledge for active workforce engagement, leading to reduced unemployment and poverty rates. The study emphasizes the importance of sustained investment in education and improving the effectiveness of government expenditure in this sector. By addressing educational barriers and enhancing opportunities, policymakers can promote sustainable economic development and alleviate poverty in Nigeria.

Based on the research findings, the study suggests the following policy options to address poverty comprehensively:

- i. Enhance enrolment in secondary and tertiary education: Policymakers should prioritize initiatives that expand access to education, improve educational infrastructure, provide scholarships and financial aid, and align the curriculum with the demands of the job market. Increasing enrolment in these levels positively impacts economic indicators such as labour force participation.
- ii. Foster collaboration between educational institutions and the business sector: Encouraging partnerships, internships, apprenticeships, and industry-academia collaborations can bridge the gap between education and employment. Such collaborations ensure that educational programs meet industry needs, offer practical experience, and facilitate job placement for students.
- iii. Enhance vocational and technical education: Policymakers should invest in vocational and technical training programs that align with labour market requirements. By equipping students with practical skills and increasing their employability, vocational and technical education can contribute to poverty reduction and economic growth.
- iv. Establish robust monitoring and evaluation systems: Policymakers should prioritize the establishment of effective monitoring and evaluation systems to assess the impact of educational policies and programs in reducing poverty. Regular evaluations help identify areas for improvement and ensure efficient allocation of resources, enabling informed policy decisions.

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