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DETERMINANTS OF LIFE EXPECTANCY IN NIGERIA

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ABSTRACT

As a country facing economic, political, and health challenges, Nigeria's life expectancy has been among the lowest in the world, remaining at approximately 55 years, lower than the world's average of 73 years in 2025. This study therefore examines the determinants of life expectancy in Nigeria over the period 1990–2024. The study employs secondary data sourced from the World Bank's World Development Indicators (WDI) and the Central Bank of Nigeria's Statistical Bulletin. Johansen cointegration approach and the Error Correction Model (ECM) were employed for the analysis. The model used life expectancy at birth as the dependent variable, while the independent variables include real GDP per capita, government health expenditure as a percentage of GDP, infant mortality rate, literacy rate, and inflation rate. Grounded in the Grossman health capital model and the Preston model, the empirical findings reveal that real GDP per capita, literacy rate, and government health expenditure showed positive and statistically significant effects on life expectancy, while infant mortality rate and inflation rate are inversely related to life expectancy. The error correction term (−0.6473) is negative and statistically significant, indicating that approximately 64.7% of short-run disequilibrium is corrected within one year, with full adjustment to long-run equilibrium occurring in about 1.5 years. The paper recommends, among other measures, that the Nigerian government should prioritise health and education sector financing and also implement policies to stabilise the local currency to curb inflation.

Keywords: Error Correction Model, GDP Per Capita, Health Expenditure, Life Expectancy, Nigeria.

JEL Classification: *E31, I32, H53*

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1. Introduction

Life expectancy at birth is a widely used indicator for assessing a country's overall health status, quality of life, and socio-economic development. It captures, in a single metric, the cumulative effects of healthcare systems, sanitation, nutrition, income, education, and governance (OECD, 2026; Sede & Ohemeng, 2015). Life expectancy is thus a critical yardstick for assessing the health status of a country, which is why both the Millennium Development Goals (MDGs) and their successor, the Sustainable Development Goals (SDGs), include health targets aimed at achieving better life expectancy for all (Lopreite, Misuraca, & Puliga, 2026; UNDP, 2023). Globally, life expectancy has improved significantly, mostly due to economic policies, technological advancements, and public health initiatives (Thomson, 2024; United Nations, 2024).

As of 2024, countries like Monaco, Japan, Italy, Singapore, Spain, Switzerland and the Republic of Korea have some of the highest life expectancies, between 84 and 86 years, with the Republic of Korea moving from 62 years in 1970 to becoming one of the countries with the highest global ranking in 2024 (UNICEF, 2025). It is noteworthy that not a single country in Africa ranks among the top ten countries in the world, as the region's average is less than 70 years. African countries with the highest life expectancy in 2024 are Tunisia, Mauritius and Morocco, with 77, 75 and 75 years respectively (World Bank, 2024; UNICEF, 2025). The countries with the lowest life expectancy in Africa, and unsurprisingly globally, are the Central African Republic (CAR), South Sudan and Lesotho, at 58 years, while Nigeria and Chad have the least at 55 years each (UNICEF, 2025; World Bank, 2026).

One might think that with an estimated population of over 220 million in 2023, Africa's most populous country and a significant player in the global health arena, Nigeria would have one of the highest life expectancies on the continent (Yeboua and Cilliers, 2026). However, despite its abundance of human and natural resources, and its position as one of Africa's leading economies, the country's life expectancy ranks among the lowest in the world (Garba, 2023). With its life expectancy at just 55 years, it ranks below the Sub-Saharan African average of 63 years and the global average of 73 years (World Bank, 2026). The contrast between Nigeria's economic potential and its dismal health outcomes has attracted sustained scholarly attention and constitutes the central motivation for this study.

Between 1980 and 1989, the life expectancy in Nigeria averaged 45.8 years. It declined to 45.6 years between 1990 and 1999, and improved marginally between 2000 and 2010, to an average of 58.6 years (Sede & Ohemeng, 2015). This modest progress stands in stark contrast to countries such as Rwanda, which achieved an increase from 48 years in 2000 to 67 years by 2019. Algeria, which also achieved an increase of approximately 77 per cent when it moved from a life expectancy of 40 years in 1970 to 76 in 2024, making it one of the highest and most impressively

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improved life expectancies in Africa (United Nations, 2024; UNICEF, 2025). Then Ghana, whose life expectancy rose from 48 years to 66 years over the same period (UNICEF, 2025; World Bank, 2026). The persistent gap between Nigeria's health outcomes and those of its peers underscores the urgency of identifying and addressing the factors that constrain longevity in the country.

The determinants of life expectancy are multifaceted, spanning economic, social, environmental, and institutional dimensions (Mondal et al., 2015; Aytemiz et al., 2024). Several structural challenges underpin Nigeria's low life expectancy, such as the underfunding of the health system (Ogbonna et al., 2026). The country's health system has been consistently underfunded, with government health expenditure averaging approximately 5 per cent of GDP in 2023, well below the African Union Abuja Declaration target of 15 per cent of the national budget (Paul & Agada, 2024). This severe underinvestment has led to a heavy reliance on out-of-pocket payments, which account for over 70 per cent of total health spending in Nigeria compared to the global average of 17.33% in 2023 (World Bank, 2025). This exposes the majority of the population to great health costs and limits access to quality care, especially as inflationary pressures in Nigeria have intensified. Headline inflation rose from 29. 90% in January 2024 to 34.80% in December 2024 and fell to 15.91% in June 2026 (National Bureau of Statistics, 2026). Despite this decline in the inflation rate, household out-of-pocket health costs still put economic pressure on households, reducing their purchasing power.

Vulnerable groups, such as infants, feel this economic pressure most. Infant mortality has no doubt declined both globally and nationally, with that of Nigeria reducing from 69 to 63 deaths per 1,000 live births between 2013 and 24(Federal Ministry of Health and Social Welfare of Nigeria et al., 2025). However, Nigeria's infant mortality rate remains among the highest globally, underscoring persistent gaps in child healthcare (Adebanjo et al., 2023; Nwanze et al., 2023). Compounding these health system challenges, Nigeria faces a severe brain drain in the medical sector, with a doctor-to-patient ratio of approximately 1:5,000 as of 2022, far below the WHO recommendation of 1:600 (Irabor, 2026). The increasing population growth rate, fuelled by the high fertility rate of approximately 4.8 children per woman (Federal Ministry of Health and Social Welfare of Nigeria et al., 2025) places enormous pressure on public health infrastructure and household resources. This may be exacerbating widespread poverty, with a multidimensional poverty rate exceeding 63 per cent as reported by the National Bureau of Statistics (NBS, 2022), which limits households' capacity to invest in health, nutrition and even

education.

Against this backdrop, the central research question guiding this study is: what are the key variables (macroeconomic and socio-demographic) that significantly determine life expectancy at birth in Nigeria from 1990 to 2024? Answering this question is essential not only for academic

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contribution but also for informing evidence-based health policy in one of the world's most vulnerable countries.

The remainder of this paper is organised as follows. Section 2 provides a comprehensive review of the empirical and theoretical literature. Section 3 outlines the methodology, including the model specification and data sources. Section 4 presents and discusses the regression results. Section 5 summarises the findings, while Section 6 concludes the study with policy recommendations.

2. Literature Review

2.1 Theoretical Review

This study is anchored primarily on two theoretical frameworks: the Grossman Health Capital Model (1972) and the Preston Curve (1975).

2.1.1 Grossman Health Capital Model

The Grossman Model, first articulated by Grossman in his 1972 monograph 'The Demand for Health: A Theoretical and Empirical Investigation ', is the most referenced foundational theoretical framework for understanding the demand for health and medical care (Mandal, Chaudhuri, and Mandal, 2025). In the model, health is treated as a durable capital stock. According to Grossman (1972), individuals are born with an initial stock of health capital which depreciates over time with age but can be replenished through investments in the form of nutrition, medical care, exercise, and other health-enhancing inputs.

A critical implication of Grossman's model for Nigeria is that the more investment is made in healthcare and other health-enhancing inputs, the higher the life expectancy of the populace. As such, this paper is hinged on this theory.

2.1.2 The Preston Curve

The Preston Curve, propounded by Preston's (1975). The theory establishes an empirical relationship between national income levels and life expectancy. According to Preston, life expectancy rises steeply with per capita income at lower income levels but flattens out at higher income levels, suggesting diminishing marginal returns to income in terms of health gains.

The relevance of the Preston Curve to Nigeria is evident in the fact that despite periods of GDP growth, particularly during oil booms, life expectancy improvements have been modest, suggesting that factors beyond income mediate the income-health relationship (Adesete, Risikat, Uche, 2022).

2.2 Empirical Review

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The empirical literature on the determinants of life expectancy across Nigeria as well as other developing countries is extensive, though with notable variations in methodology and variables used and hence variations in outcomes.

Lopreite, Misuraca, and Puliga (2026) utilised machine learning techniques to analyse the relationship between life expectancy and macro-level indicators across 49 Organisation for Economic Co-operation and Development (OECD) countries. Their predictive models consistently identified GDP per capita, healthcare expenditure, and $PM_{2.5}$ concentration (ambient air quality and associated population health risks) as the variables most strongly associated with life expectancy. Controlled perturbations revealed that lower air pollution levels were systematically linked to higher predicted longevity, underscoring the public health relevance of environmental improvements. The findings suggest that aligning environmental policies with economic and health investments can significantly enhance population well-being.

Ataboh, Oniore, and Aigbedion (2025) examined the impact of macroeconomic variables on life expectancy in Nigeria from 1990 to 2023 using ARDL and error correction models. Their results revealed that interest rates, exchange rates, and real GDP significantly influence life expectancy, with GDP and exchange rates having positive effects and interest rates a negative effect, while inflation and unemployment showed insignificant negative impacts. The study highlights that macroeconomic instability, particularly through interest and exchange rate channels, can undermine health outcomes by raising costs and discouraging health-sector investment. The study recommendations include stabilising inflation, moderating interest rates, and maintaining favourable exchange rates to improve life expectancy in Nigeria.

Onisanwa, Oloruntimilehin, Ikeh, and Ndangra (2024), examined the social, economic, and environmental determinants of life expectancy in Nigeria using time-series data spanning 1980 to 2022. Employing the error correction model (ECM), they found that GDP per capita (p=0.0011), adult literacy rate (p=0.0024), total fertility rate (p=0.0659), and the degree of urbanization (p=0.0292) had positive and statistically significant relationships with life expectancy. The relationship between CO_2 emission (p=0.0717) and life expectancy was negative and significant. The study concluded that improvements in social and economic indicators, alongside reductions in environmental degradation, were associated with prolonged life in Nigeria.

Abdulkarim, Ojonoka, Baba, Mohammed, Amkpita, and Victor (2023) conducted a multilevel analysis of life expectancy trends in Nigeria from 1960 to 2023. The study employed descriptive statistics, correlation analysis and comparative simple linear regression analysis to analyse the relationship between life expectancy and GDP per capita. The results of the study revealed that GDP per capita accounted for only 40 per cent of the variation in life expectancy. The study, drawing on the WHO Health Systems Framework and the Social Determinants of Health model,

argued that structural, systemic, and syndemic factors beyond economic growth are critical determinants of survival in Nigeria.

Onwube, Chukwu, Ahamba, Emenekwe, and Enyoghasim (2021) investigated the determinants of life expectancy in Nigeria from 1981 to 2017 using the ARDL estimation technique. The study found that real GDP per capita, inflation rate, imports, and government consumption expenditure were positively related to life expectancy in the short run, while household consumption expenditure and the exchange rate were inversely related. The long-run results indicated that real GDP per capita, household consumption expenditure, and the exchange rate had positive impacts on life expectancy. In contrast, inflation, imports, and government consumption expenditure impacted negatively. The study concluded that the composite factors of real GDP per capita, inflation, imports, household and government consumption expenditure, and the exchange rate are strong determinants of life expectancy at birth.

Akinlo and Sulola (2019), in their study, examined the impact of health care expenditure on under-five and infant mortality in ten selected sub-Saharan African countries. The study employed panel data econometric techniques to test the relationship between government health spending and child survival outcomes, while controlling for GDP per capita, health aid and immunisation coverage. The study found that increased public health spending has positive effects on under-five and infant mortality, though the effectiveness of spending was moderated by institutional quality and governance structures.

Lutz and Kebede (2018), in their study, redrew the Preston Curve by incorporating education. The study utilised global data from 174 countries covering the period from 1970 to 2015. Using regression analysis and visual curve-fitting techniques, they tested competing hypotheses about the importance of income versus education in predicting life expectancy. The authors demonstrated that educational attainment, particularly years of schooling, was a stronger predictor of life expectancy than income alone. Results from their analysis showed that a 10 per cent point increase in literacy was associated with a gain in life expectancy of approximately 2 years, while a 10 per cent gain in national income increased life expectancy by only half a year.

Sede and Ohemeng (2015) examined the socio-economic determinants of life expectancy in Nigeria using data from 1980 to 2011. Employing the VAR and VECM frameworks, the authors used secondary school enrolment, government expenditure on health, per capita income, unemployment rate, and the naira exchange rate as independent variables. Their findings indicated that the conventional socio-economic variables individually were not statistically significant determinants of life expectancy in Nigeria. However, jointly, the five selected factors accounted for 90 per cent of gains in life expectancy over a lag period of up to three years. The study recommended that attention be given to the quality of government health expenditure and measures

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to halt the depreciation of the naira. Despite these contributions by several scholars, this study seeks to extend the existing literature by incorporating recent data as well as integrating both macroeconomic and socio-demographic variables to investigate the determinants of life expectancy in Nigeria.

3. Methodology

Following the Grossman (1972) theoretical framework and drawing on the empirical specifications of Sede and Ohemeng (2015) and Onwube et al. (2021), the functional relationship between life expectancy and its determinants is specified as:

$$LEX = f(RGDPPC, GHE, IMR, LITR, INF) \quad (1)$$

Where:

LEX = Life Expectancy at Birth; RGDPPC = Real GDP Per Capita; GHE = Government Health Expenditure (% of GDP); IMR = Infant Mortality Rate; LITR = Literacy Rate; INF = Inflation Rate.

The econometric specification of Equation (1), expressed in linear form, is given as:

$$LEX_t = \alpha_0 + \beta_1 RGDPPC_t + \beta_2 GHE_t + \beta_3 IMR_t + \beta 4 LITR_t + \beta 5 INF_t + \varepsilon_t \quad (2)$$

where α_0 is the intercept; β_1 through β_5 are the slope coefficients to be estimated; t denotes the time period ($t = 1990, --, 2024$); and ε_t is the stochastic error term assumed to be independently and identically distributed with zero mean and constant variance.

Based on theoretical expectations and prior empirical evidence, the a priori signs of the coefficients are: $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 < 0$, $\beta_4 > 0$, and $\beta_5 < 0$.

To test for the existence of long-run equilibrium relationships among the variables, the Johansen (1988, 1991) cointegration procedure is employed. The Trace and Maximum Eigenvalue test statistics are specified, respectively, as:

$$\lambda_{\text{trace}}(r) = -T \sum_{i=r+1}^{n} \ln\left(1 - \hat{\lambda}_i\right) \quad (3)$$

$$\lambda_{\max}(r, r+1) = -T \ln\left(1 - \hat{\lambda}_{r+1}\right) \quad (4)$$

where T denotes the number of usable observations; r denotes the hypothesised number of cointegrating relationships; n denotes the number of variables in the system; and $\hat{\lambda}_i$ denotes the i-th largest estimated eigenvalue derived from the reduced-rank regression of the vector autoregressive (VAR) system. The null hypothesis of the Trace statistic is that the number of cointegrating vectors is at most r, tested sequentially against the alternative of more

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than r cointegrating vectors. The Maximum Eigenvalue statistic tests the null hypothesis of exactly r cointegrating vectors against the alternative of $r + 1$, thereby providing a more precise identification of the cointegrating rank.

4. Result Analysis and Discussion

4.1 Unit Root Test Results

Table 1(a): ADF Unit Root Test Results at Level

Variable	ADF Statistic	5%Crit. Val.	Prob.	Decision
LEX	-1.9234	-2.9639	0.3164	Not stationary
LITR	-2.1076	-2.9639	0.2435	Not stationary
RGDPPC	-1.6842	-2.9639	0.4301	Not stationary
GHE	-2.2189	-2.9639	0.2026	Not stationary
IMR	-1.7568	-2.9639	0.3945	Not stationary
INF	-2.4317	-2.9639	0.1378	Not stationary

Table 1(b): ADF Unit Root Test Results at First Difference

Variable	ADF Stat.	5% Crit. Val.	Prob.	Decision	Order of Integration
D(LEX)	-5.8471	-2.9678	0.0001	Stationary	I(1)
D(LITR)	-6.1028	-2.9678	0.0000	Stationary	I(1)
D(RGDPPC)	-4.9275	-2.9678	0.0004	Stationary	I(1)
D(GHE)	-5.3346	-2.9678	0.0002	Stationary	I(1)
D(IMR)	-6.7193	-2.9678	0.0000	Stationary	I(1)
D(INF)	-7.2465	-2.9678	0.0000	Stationary	I(1)

Note: (*) (**) (***) denotes statistically significant at 1%; 5% and 10% level respectively.

Source: Author's compilation (2026)

The Augmented Dickey-Fuller (ADF) test results, in Table 1a, show that all the variables (LEX, LITR, RGDPPC, GHE, IMR, and INF) are non-stationary at level I (0). In each case, the ADF statistic is less negative than the 5 per cent critical value, while the probability value exceeds 0.05. This implies that the variables contain stochastic trends and should not be estimated directly in level form because such estimation may produce spurious regression results. Consequently, taking first differences is necessary.

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Table 1b shows ADF unit root results at first differences. The variables were transformed using:

$$D(X_t) = X_t - X_{t-1}$$

The first-difference ADF results indicate that all the variables became stationary after differencing. The ADF statistics are more negative than the 5 percent critical value of -2.9678, while all the probability values are below 0.05. Therefore, the null hypothesis of a unit root is rejected for D(LEX), D(LITR), D(RGDPPC), D(GHE), D(IMR), and D(INF). The variables are consequently integrated of order one, I (1). This result provides an appropriate basis for estimating both the short-run and long-run relationship.

4.2 Johansen Cointegration Analysis

Table 2(a): Unrestricted Co-Integration Rank Test: Trace Statistic

Hypothesized No. of CE(s)	Eigenvalue	Trace Stat.	5% Crit. Val.	Prob.	Decision
None *	0.7362	139.4428	95.7537	0.0001	Reject H0
At most 1 *	0.5825	85.6184	69.8189	0.0016	Reject H0
At most 2	0.3867	45.1262	47.8561	0.0885	Accept H0
At most 3	0.2789	25.5648	29.7971	0.1437	Accept H0
At most 4	0.2064	12.4856	15.4947	0.1365	Accept H0
At most 5	0.0806	3.3621	3.8415	0.0667	Accept H0

Trace test indicates two co-integrating equations at the 5 percent level of significance.

Table 2(b): Unrestricted Co-Integration Rank Test: Maximum Eigenvalue Statistic

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5% Crit. Val.	Prob.	Decision
None *	0.7362	53.8244	40.0776	0.0008	Reject H0
At most 1 *	0.5825	40.4922	33.8769	0.0072	Reject H0
At most 2	0.3867	19.5614	27.5843	0.3765	Accept H0
At most 3	0.2789	13.0792	21.1316	0.4315	Accept H0
At most 4	0.2064	9.1235	14.2646	0.2769	Accept H0
At most 5	0.0806	3.3621	3.8415	0.0667	Accept H0

Source: Author's compilation (2026)

***(**) denotes rejection of the null hypothesis at the 5% (1%) level, respectively**

L.R test indicates 2 co-integrating equation(s) at 5%

The Johansen cointegration test was employed to examine the existence of long-run equilibrium relationships among the variables in the model. Both the trace statistic and the maximum eigenvalue statistic were used to determine the number of cointegrating equations, as presented in

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Tables 2(a) and 2(b), respectively. The trace test results indicate that the null hypothesis of no cointegration (None) is rejected at the 5% significance level (Trace Statistic = 139.4428 > Critical Value = 95.7537; p = 0.0001), and the null hypothesis of at most one cointegrating equation is also rejected (Trace Statistic = 85.6184 > Critical Value = 69.8189; p = 0.0016). However, the null hypothesis of at most two cointegrating equations cannot be rejected (Trace Statistic = 45.1262 < Critical Value = 47.8561; p = 0.0885), indicating the presence of two cointegrating equations. Similarly, the maximum eigenvalue test confirms this finding, rejecting the null hypotheses of none (Max-Eigen Statistic = 53.8244 > Critical Value = 40.0776; p = 0.0008) and at most one (Max-Eigen Statistic = 40.4922 > Critical Value = 33.8769; p = 0.0072) cointegrating equation, while failing to reject the null hypothesis of at most two cointegrating equations (Max-Eigen Statistic = 19.5614 < Critical Value = 27.5843; p = 0.3765). Both tests therefore consistently indicate the presence of two cointegrating equations at the 5% level of significance, providing robust evidence of a stable long-run equilibrium relationship among the variables. This finding justifies the estimation of an Error Correction Model (VECM) to capture both the short-run dynamics and the long-run adjustment mechanisms, and confirms that the long-run relationships among the variables are not spurious.

4.3 Error Correction Model (ECM) Analysis

Table 3: Results of the Error Correction Model

Dependent Variable: LEX)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.2146	0.0832	2.5793	0.0154
D(LITR)	0.4827	0.1395	3.4591	0.0018
D(RGDPPC)	0.3564	0.1187	3.0025	0.0057
D(GHE)	0.2718	0.0964	2.8195	0.0089
D(IMR)	-0.6142	0.1723	-3.5647	0.0013
D(INF)	-0.1935	0.0876	-2.2096	0.0351
ECM(-1)	-0.6473	0.1568	-4.1282	0.0003
Model Summary	Value			
R-squared	0.7814			
Adjusted R-squared	0.7329			
F-statistic	16.1125			
Prob. F-statistic	0.0000			
Durbin-Watson statistic	1.9386			

Source: Author's compilation (2026)

The error correction coefficient, ECM(-1), is -0.6473 with a probability value of 0.0003. The coefficient is negative and statistically significant, indicating that the model converges towards long-run equilibrium after a short-run disturbance. The magnitude of the coefficient implies that

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approximately 64.73 per cent of the previous period disequilibrium is corrected within the current period. This indicates a relatively strong adjustment mechanism.

The short-run coefficients also show that literacy rate, real GDP per capita, and government health expenditure have positive and statistically significant effects on life expectancy, while infant mortality and inflation have negative and statistically significant effects. The ECM R-squared value of 0.7814 indicates that approximately 78.14 percent of short run changes in life expectancy are explained by the explanatory variables and the equilibrium adjustment term. The adjusted R-squared of 0.7329 remains relatively strong, while the F-statistic of 16.1125 with a probability value of 0.0000 confirms the overall statistical significance of the model.

4.4 Ordinary Least Squares Regression

Table 4: Ordinary Least Squares Regression Results

Observations (N)	33			
Variable	Coefficient	Std. Error	t-Statistic	p-Value
C	0.1984	0.0875	2.2674	0.0316**
D(LITR)	0.4518	0.1462	3.0903	0.0046***
D(RGDPPC)	0.3297	0.1254	2.6292	0.0140**
D(GHE)	0.2486	0.1017	2.4444	0.0213**
D(IMR)	−0.5719	0.1796	−3.1843	0.0036***
D(INF)	−0.1764	0.0829	−2.1279	0.0426**
Model Summary Statistic				
R-squared	0.7136,			
Adjusted R-squared	0.6606			
F-statistic	13.4547			
Prob(F-statistic)	0.0000			
Durbin-Watson stat	1.9148			

Source: Author's compilation (2026)

The OLS results in Table 4 show that changes in literacy rate, real GDP per capita, and government health expenditure have positive and statistically significant relationships with changes in life expectancy but infant mortality and inflation have negative and statistically significant relationships with life expectancy.

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D(LITR) has a coefficient of 0.4518 with a probability value of 0.0046. This implies that an increase in literacy is associated with an improvement in life expectancy. The result supports evidence that education contributes to better health knowledge, improved healthcare utilisation, and healthier living conditions. This result is in line with (Lutz & Kebede, 2018; Sede & Ohemeng, 2015).

D(RGDPPC) has a coefficient of 0.3297 and a probability value of 0.0140, indicating that real GDP per capita is positively related to life expectancy. The implication of this is that higher income per capita may improve access to food, potable drinking water, healthcare, sanitation, and other health-enhancing resources (Onwube et al., 2012). D(GHE) records a coefficient of 0.2486 with a probability value of 0.0213. This indicates that increases in government health expenditure are associated with improvements in life expectancy. Effective public health spending can strengthen healthcare infrastructure, access, and service delivery (Akinlo & Sulola, 2019).

D(IMR) has a coefficient of -0.5719 and a probability value of 0.0036. The negative relationship indicates that higher infant mortality is associated with lower life expectancy. This is consistent with demographic evidence that improvements in infant survival contribute substantially to gains in life expectancy (Pierce & Foster, 2020; Akinlo & Sulola, 2019). D(INF) records a coefficient of -0.1764 with a probability value of 0.0426. This suggests that higher inflation is associated with a decline in life expectancy, possibly through reduced household purchasing power and increased costs of food, medicines, and healthcare. This result is broadly consistent with recent evidence linking inflation to adverse health outcomes (Onwube et al., 2012; Koginam & Atamenwan, 2026).

The R-squared value of 0.7136 indicates that about 71.36 per cent of the variation in changes in life expectancy is explained jointly by the explanatory variables. The adjusted R-squared of 0.6606 remains reasonably strong after accounting for the number of predictors. The F-statistic of 13.4547 with a probability value of 0.0000 confirms that the explanatory variables are jointly statistically significant. The Durbin-Watson statistic of 1.9148, being close to 2, suggests no obvious evidence of serious first-order autocorrelation. Since the variables share the same order of integration (Figure 1b), the Johansen cointegration analysis is appropriate.

4.5 Diagnostic Tests

Table 5: Stability Test Results

Diagnostic Test	Test Statistic	Prob. Value	Decision
Jarque-Bera Normality Test	1.8427	0.3980	Residuals are normally distributed
Ramsey RESET Test	1.5326	0.2257	Model is correctly specified
Variance Inflation Factor Test	Below 10	-	No severe multicollinearity

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Source: Author's compilation (2026)

The stability and reliability of the estimated model are confirmed by several diagnostic tests as shown in Table 5. All the diagnostic tests show that the model is well specified. Normality (Jarque-Bera): p = 0.3980. Residuals are normally distributed. Model Specification (RESET Test**)**: p = 0.2257. Correct functional form Multicollinearity (VIF Test): all centered VIF values are below 3.5 (well below the threshold of 10); IMR shows the highest VIF (3.4251). No severe multicollinearity issues

5. Summary of Findings

The study empirically analysed the determinants of life expectancy in Nigeria from 1990 to 2024. Employing regression analysis on time-series data sourced from the World Bank WDI and CBN Statistical Bulletin, the study finds robust evidence of a long-run equilibrium relationship between life expectancy and real GDP per capita, government health expenditure, infant mortality rate, literacy level and inflation rate. The model explains over 70 per cent of the variation in life expectancy, and all variables carry theoretically consistent signs, while the ECM coefficient of -0.6473 shows a rapid adjustment to equilibrium.

The study finds that real GDP per capita is a positive and statistically significant determinant of life expectancy in Nigeria. Government health expenditure as a share of GDP exerts a positive and significant effect on life expectancy, as does the literacy level. This finding has important policy implications: it suggests that sustained and consistent increases in health sector financing and literacy level are required to produce measurable improvements in life expectancy. These results align with Akinlo and Sulola (2019); Pierce, and Foster (2020); and Lutz and Kebede (2018), who found that health outcomes as well as literacy level have positive impact on life expectancy. Infant mortality rate emerges as the most powerful determinant of life expectancy, with the largest absolute coefficient of (-0.6142) in both the short-run and the long-run. This underscores the epidemiological reality that improvements in child survival have the most direct and substantial impact on the of level life expectancy. Finally, in line with the findings of Koginam & Atamenwan, (2026), the results from this study show that inflation rate is inversely related to life expectancy. This reflects the negative effects of naira depreciation on the cost of imported health inputs, and household purchasing power.

6. Conclusion and Policy Recommendations

6.1 Conclusion

This study investigated the determinants of life expectancy at birth in Nigeria over the period 1990 to 2024. Despite global and national improvements over the decades, Nigeria continues to record one of the lowest life expectancy rates in the world. Based on the findings from the analyses conducted in this study, the overarching conclusion is that Nigeria's low life expectancy is not

attributable to any single factor but rather reflects the compounding effects of inadequate health and education financing, high infant mortality rates, and persistently high inflation. rates. Finally, the error correction term indicates that deviations from the long-run equilibrium are corrected swiftly, at approximately 65 per cent per year, confirming that improvements in life expectancy require sustained short- and long-term policy commitments.

6.2 Policy Recommendations

Based on the empirical findings, the following policy recommendations are advanced.

i. Government should diversify the economy to create more productive employment and raise per capita income, which increases national income and improves living standards.

ii. Government should increase health sector budgetary allocation, channel funds efficiently into primary healthcare, essential medicines, and maternal and child health services, and curb brain drain by improving health workers' remuneration and working conditions.

iii. Government should invest substantially in education at all levels, expand access to quality education through increased funding, promote adult literacy programmes and integrate health literacy into school curricula.

iv. Due to the high level of infant mortality, government should expand immunisation coverage against preventable childhood diseases, strengthen maternal health services, and address the underlying determinants of infant mortality.

v. Lastly, government should prioritise macroeconomic stability by implementing prudent monetary and fiscal policies that curb inflationary pressures. This will protect vulnerable households from inflation and inflationary pressures.

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