

THE IMPACT OF GOVERNMENT TRANSFER ON HUMAN CAPITAL DEVELOPMENT IN NIGERIA

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ABSTRACT

Despite substantial government expenditure, Nigeria continues to experience poor human development outcomes, raising concerns about the effectiveness of transfer expenditure, including pensions, subsidies, social security payments, and welfare interventions. This study examines the impact of government transfer expenditure on human capital development in Nigeria over the period 1985–2024. The study employs the Autoregressive Distributed Lag (ARDL) estimation technique due to the mixed order of integration among the variables. Total labour force, population growth, and investment rate are included as control variables. Data were obtained from the Central Bank of Nigeria Statistical Bulletin, National Bureau of Statistics, and World Development Indicators. The findings reveal that transfer expenditure has a negative and statistically insignificant effect on human capital development in both the short and long run. Total labour force has a positive short-run but negative long-run effect, while population growth negatively affects human capital development in both periods. The investment rate has a positive short-run but negative long-run effect. The error correction mechanism confirms adjustment towards long-run equilibrium. The study concludes that transfer expenditure alone has not significantly improved human capital development in Nigeria, largely due to institutional weaknesses, poor targeting, and implementation challenges. It recommends better targeting and accountability of transfer programmes, increased investment in education and healthcare, labour market reforms, and improved allocation of investment towards human capital development.

KEYWORDS: ARDL, Fiscal Policy, Government Transfer Expenditure, Human Capital Development, Nigeria.

JEL Classification: H53, I24, J24, O15, I38

1. Introduction

Human capital development has been widely recognised as a fundamental driver of economic growth and sustainable development, particularly in developing countries such as Nigeria. It refers to the process through which individuals acquire and improve their knowledge, skills, competencies, and health status to enhance productivity and contribute effectively to economic activities. According to Becker (1964), human capital represents the stock of productive skills and abilities embodied in individuals, which can be enhanced through investments in education, training, and health. Similarly, Schultz (1961) emphasised that investment in human beings is a critical form of capital formation, arguing that expenditure on education and health should be

treated as productive investment rather than mere consumption, as it significantly determines long-run economic performance.

In Nigeria, human capital development remains a key policy concern because of its direct link to economic transformation and national development. The government plays a dominant role in shaping human capital outcomes through public expenditure on education, health, and social welfare programmes. Public expenditure is broadly categorised into capital, recurrent, and functional components, each of which serves different developmental purposes. Among the functional classifications, transfer expenditure has become increasingly important due to its redistributive and welfare-enhancing nature. Transfer expenditure refers to government payments made without a direct exchange of goods or services, and it typically includes pensions, social security benefits, unemployment benefits, subsidies, and other forms of welfare support (Musgrave & Musgrave, 2004). Transfer expenditure is particularly relevant in addressing income inequality, poverty reduction, and improving access to essential social services. By redistributing income from the government to households, it enhances consumption capacity and improves welfare outcomes. This, in turn, indirectly supports human capital development by enabling households to invest more in education, healthcare, nutrition, and other productivity-enhancing needs. Barr (2012) argues that social transfer programmes are essential policy instruments for reducing liquidity constraints among low-income households, thereby improving long-term investments in human capital formation.

Despite the theoretical importance of transfer expenditure in promoting welfare and human capital development, Nigeria continues to face persistent challenges in human capital outcomes. Over the years, the country has recorded relatively weak performance in key indicators such as educational attainment, life expectancy, healthcare access, and labour productivity. These weaknesses are reflected in global development assessments, where Nigeria consistently ranks low on the Human Development Index (HDI), indicating underperformance in critical dimensions of human capital development (UNDP, 2023). This situation raises important concerns regarding the effectiveness of government expenditure, particularly transfer payments, in achieving desired developmental outcomes. Furthermore, the effectiveness of transfer expenditure in Nigeria may be influenced by several structural and macroeconomic factors. Nigeria's rapidly growing population places significant pressure on existing social infrastructure, including schools, hospitals, and labour markets. As population increases, the demand for public services rises, potentially reducing the per capita impact of government spending. In addition, the size of the labour force plays a critical role

in determining human capital outcomes, as a larger labour force requires adequate investment in skills acquisition and employment opportunities to translate into productive economic outcomes. Similarly, the investment rate is a key determinant of economic growth and development, as it reflects the level of capital formation in the economy, which indirectly affects human capital development through job creation and improved infrastructure. However, despite the importance of these macroeconomic variables, the interaction between transfer expenditure and key factors such as population, total labour force, and investment rate has not been sufficiently explored in empirical studies in Nigeria. Most existing studies tend to focus on total government expenditure or sector-specific spending such as education and health, with limited attention given to transfer expenditure as a distinct component of fiscal policy. This creates a gap in the literature, particularly in understanding whether transfer expenditure contributes meaningfully to human capital development in Nigeria when other macroeconomic factors are taken into consideration.

In addition, concerns have been raised regarding the efficiency and effectiveness of public spending in Nigeria. Issues such as corruption, poor policy implementation, weak institutional frameworks, and inadequate targeting of beneficiaries have been identified as major constraints limiting the impact of government transfer programmes. According to Okunrounmu (2020), inefficiencies in public financial management systems often reduce the developmental impact of fiscal policy instruments, including transfer payments. These challenges suggest that increased government spending does not automatically translate into improved human capital outcomes unless accompanied by effective governance and institutional efficiency. Moreover, the structure of Nigeria's economy presents additional challenges to human capital development. The economy is characterised by high unemployment, underemployment, and a large informal sector, which limits the ability of individuals to fully utilise their skills and capabilities. This structural imbalance further weakens the relationship between government expenditure and human capital outcomes, as financial transfers may be used for immediate consumption rather than long-term investment in education and health.

Given these challenges, there is a need for a more detailed empirical investigation into the role of transfer expenditure in shaping human capital development in Nigeria. Specifically, it is important to determine whether transfer expenditure has a significant impact on human capital development when controlling for key macroeconomic variables such as population, total labour force, and investment rate. This becomes necessary in order to provide evidence-based policy recommendations that can enhance the effectiveness of fiscal policy in promoting sustainable development. Therefore, this study examines the impact of government transfers on human capital

development in Nigeria over a specified period, while incorporating relevant control variables to capture broader economic and demographic influences. By doing so, the study contributes to the existing body of knowledge on public expenditure and human capital development, and provides empirical insights that are relevant for policymakers, researchers, and development practitioners interested in improving human capital outcomes in Nigeria.

2. Literature Review

This chapter reviews relevant literature on the impact of transfer expenditure on human capital development in Nigeria. It is structured into three sections: conceptual review, theoretical review, and empirical review. The conceptual review explains the key concepts guiding the study, the theoretical review presents the theoretical foundations, while the empirical review examines previous findings within and outside Nigeria. The aim is to establish the analytical framework for understanding how transfer expenditure influences human capital development.

2.1 Conceptual Review

Transfer expenditure refers to government payments made without receiving any goods or services in return. These payments are redistributive in nature and are designed to enhance welfare, reduce inequality, and support vulnerable groups in society (Musgrave & Musgrave, 2004). Examples include pensions, unemployment benefits, subsidies, and social security payments. In developing countries like Nigeria, transfer expenditure is an important fiscal tool for poverty alleviation and income redistribution. According to the World Bank (2020), social transfer programmes help households cope with economic shocks and improve access to basic needs. By increasing disposable income, transfer expenditure enhances household welfare and indirectly supports human capital development through improved access to education, healthcare, and nutrition. Barr (2012) argues that transfer systems reduce liquidity constraints that prevent poor households from investing in human capital formation. However, in Nigeria, inefficiencies such as corruption, poor targeting, and weak implementation reduce their effectiveness (Ajakaiye & Fakiyesi, 2015).

Human capital development refers to the process of improving individuals' skills, knowledge, health, and productivity. Becker (1964) defines human capital as the stock of productive abilities acquired through education and health investments. Schultz (1961) also emphasises that investment in human beings is essential for long-term economic growth. Romer (1990) further explains that human capital drives innovation and sustained economic development.

In Nigeria, human capital development is measured through indicators such as education attainment, literacy rates, health outcomes, and labour productivity. The UNDP (2023) Human Development Index (HDI) combines these indicators to assess development levels. Despite government efforts, Nigeria continues to record weak human capital outcomes due to inadequate investment, population pressure, and policy inefficiencies (Ajakaiye & Fakiyesi, 2015). Population growth, total labour force, and investment rate are key control variables in this study. Rapid population growth increases pressure on education and health services, reducing the effectiveness of public expenditure (Todaro & Smith, 2015). Total labour force reflects the working-age population, which can enhance productivity if skilled but may increase unemployment if not well managed Silva (2022). Investment rate, according to Solow (1956), drives capital formation and supports economic growth, indirectly influencing human capital development.

2.2 Theoretical Review

This study is anchored on four related theories: Human Capital Theory, Keynesian Theory of Public Expenditure, Welfare Economics Theory, and Endogenous Growth Theory. These theories provide the foundation for explaining the relationship between government transfer expenditure and human capital development by highlighting the role of public spending in improving welfare, enhancing human capabilities, and promoting long-term economic development. Human Capital Theory was propounded by Schultz (1961) and further developed by Becker (1964). The theory emphasises that investment in education, healthcare, training, and skills acquisition should be regarded as investment rather than consumption because such investments improve individual productivity, earning capacity, and economic growth. The theory posits that human beings possess productive capacities that can be enhanced through deliberate investment, and that improved human capabilities contribute significantly to economic development. According to the theory, expenditure directed toward education and health increases the quality of labour by improving knowledge, skills, and physical well-being. Recent studies by Hanushek (2020) and Glewwe, Maiga and Zheng (2022) reaffirm that human capital quality remains a critical determinant of economic performance, particularly in developing countries where deficiencies in education and healthcare limit productivity. The theory assumes that individuals and governments make rational investment decisions based on expected future returns, that investment in human capabilities generates productivity gains, and that human capital accumulation contributes to higher income and economic growth.

The theoretical framework can be expressed through an augmented production function as:

$$Y = AK^{\alpha}H^{\beta}$$

where (Y) represents output, (A) represents technology, (K) represents physical capital, and (H) represents human capital. Human capital accumulation can also be represented as:

$$H_{\tau} = H + \phi E + \theta Health$$

where E represents education investment, and Health represents health investment. The theory is relevant to this study because transfer expenditure can enhance human capital development by improving household income and enabling greater access to education, healthcare, nutrition, and other welfare-enhancing services. However, the effectiveness of transfer expenditure depends on efficient allocation, proper targeting, and institutional capacity, which are important considerations in the Nigerian context.

The Keynesian Theory of Public Expenditure was developed by John Maynard Keynes (1936) in response to the limitations of classical economic thought. The theory argues that government intervention is necessary to stabilise economic activities, particularly during periods of weak private sector performance. Keynes posited that government expenditure stimulates aggregate demand, increases income, and improves welfare through the multiplier effect. In relation to transfer expenditure, the theory suggests that government transfers increase disposable income among households, which can improve consumption, reduce vulnerability, and enhance access to basic services. Recent evidence by Auerbach and Gorodnichenko (2022) shows that fiscal expenditure remains an important policy instrument for supporting economic stability and social welfare, although its effectiveness depends on fiscal management and institutional efficiency. The major assumptions of the Keynesian theory are that government expenditure influences economic activity, households respond positively to increased income, and fiscal policy can be used to correct market failures and improve welfare outcomes. The theory is mathematically represented through the national income determination model:

$$Y = C + I + G + (X - M)$$

where (Y) represents national income, (C) represents consumption expenditure, (I) represents investment, (G) represents government expenditure, and (X-M) represents net exports. The government expenditure multiplier is expressed as:

$$K = \frac{1}{1 - MPC}$$

where (MPC) represents the marginal propensity to consume. The relevance of Keynesian theory to this study lies in its explanation of how transfer expenditure can influence human capital development through improved household welfare. By increasing disposable income, transfer

programmes may enable households to spend more on education, healthcare, and nutrition, which are essential components of human capital development.

Welfare Economics Theory was introduced by Pigou (1920) and focuses on the role of government in improving social welfare and correcting inequalities created by market failures. The theory argues that unrestricted market outcomes may not always guarantee equitable distribution of resources or access to essential services; therefore, government intervention through redistribution policies and social programmes becomes necessary. Transfer expenditure is justified under this theory because it serves as a mechanism for reducing poverty, improving income distribution, and increasing access to basic social services such as education and healthcare. Recent studies by Barr (2020) and the World Bank (2022) highlight that effective social protection systems can improve household resilience and enable vulnerable groups to invest in human capital development. The assumptions of Welfare Economics Theory include the existence of market failures, the ability of government policies to improve social outcomes, and the possibility that redistribution can increase overall societal welfare. The theory can be represented mathematically through a social welfare function:

$$W = f(U_1, U_2, \dots, U_n)$$

where W represents social welfare and $U_1, U_2, \dots, U_n$ represent individual utility levels. Individual welfare can be expressed as:

$$U_i = f(C_i, E_i, H_i)$$

where C_i represents consumption, E_i represents education, and H_i represents health status. This theory is relevant to the study because transfer expenditure represents a government strategy for improving welfare outcomes and reducing inequalities that limit households' ability to invest in human capital. In Nigeria, where poverty and income inequality remain major barriers to accessing education and healthcare, transfer expenditure is expected to contribute to improved human development outcomes.

Endogenous Growth Theory was developed by Romer (1994) and emphasises the importance of internal factors such as human capital accumulation, knowledge, and innovation in determining long-term economic growth. The theory challenges the traditional view that technological progress is externally determined by arguing that economic growth can be influenced by deliberate investment in human capabilities and knowledge creation. It posits that investment in education, health, and skills development generates increasing returns by improving labour productivity and enhancing economic performance. Recent studies by Aghion et al. (2021) emphasise that investment in human capabilities remains central to achieving sustainable economic growth and

development. The theory assumes that human capital accumulation increases productivity, knowledge generates positive spillover effects, and government policies can influence long-term growth through investment in human development. The theoretical model is represented as:

$$Y = AK^{\alpha}H^{1-\alpha}$$

where Y represents output, A represents technology, K represents physical capital, and H represents human capital. Human capital accumulation is expressed as:

$$H = \delta E - \lambda H$$

where H represents changes in human capital, E represents investment in human capital, δ represents investment efficiency, and λ represents depreciation of human capital. The theory applies to this study because transfer expenditure can indirectly promote human capital formation by improving household welfare and reducing financial constraints associated with education and healthcare investment. Therefore, improved human capital resulting from effective transfer programmes can contribute to productivity growth and long-term economic development.

2.3 Empirical Review

Empirical studies have extensively examined the relationship between public expenditure, transfer programmes, and human capital development across developed and developing economies. The findings, however, remain mixed, reflecting differences in institutional quality, expenditure efficiency, methodological approaches, and the nature of welfare programmes implemented in different countries.

In Nigeria, recent empirical studies have increasingly examined how the effectiveness and composition of public expenditure influence human capital development. Akano and Salawu (2024), using a descriptive longitudinal design and the ARDL technique, examined budget effectiveness, efficiency, discipline, and debt burden across four federal ministries covering education, health, agriculture, and science and technology. They found that budget effectiveness and efficiency significantly improved human capital outcomes in the short run, while effectiveness, efficiency, discipline, and debt burden were significant in the long run. Similarly, Belay et al. (2024), using quantitative public expenditure analysis alongside qualitative institutional assessments across federal and subnational levels, reported that inadequate funding, low budget execution, inequitable allocation, weak accountability, and poor coordination constrained education and healthcare delivery. These findings are reinforced by Orshi and Peter (2025), who applied ARDL to annual Nigerian data from 2003–2024 and found that recurrent expenditure had a negative short-run but positive long-run effect on human development, whereas capital expenditure had a limited effect. Mijinyawa et al. (2025), using econometric analysis, also found

that government expenditure positively influenced human capital development, although population growth could dilute its benefits. While these studies apply to Nigeria's fiscal and institutional context, their scope is largely aggregate or sector-specific. Akano and Salawu's (2024) concentration on four ministries limits generalisability. Belay et al. (2024) provide limited micro-level evidence, while Orshi and Peter (2025) do not distinguish federal from state expenditure. Mijinyawa et al. (2025) also raise possible endogeneity concerns, particularly the reverse relationship between human capital and life expectancy.

Furthermore, evidence on specific expenditure components presents mixed results, suggesting that expenditure effectiveness may depend more on quality and implementation than expenditure volume. Siyanbola et al. (2025), employing ARDL on Nigerian time-series data for 1990–2022, found that education expenditure, health expenditure, foreign aid, and capital formation had mixed short-run effects, with health expenditure exerting a negative influence. Nwokocha et al. (2025), using regression-based econometric analysis, similarly found that the contribution of health expenditure to human capital development depends heavily on healthcare delivery efficiency. In contrast, Madueke et al. (2026), using ARDL and Nigerian data, reported positive effects of government education expenditure and labour force participation on economic growth in both the short and long run.

Okoro and Onyejiuwa (2026), using ARDL over 1985–2025, found positive effects of health expenditure and gross capital formation but a negative long-run effect of education expenditure on human capital development. Although these studies provide useful evidence on expenditure composition, their applicability to the present study is limited by differences in variables, study periods, and outcome measures. Siyanbola et al. (2025) and Nwokocha et al. (2025) focus predominantly on sectoral expenditure, while Madueke et al. (2026) emphasises economic growth rather than human capital as the principal outcome. The unexpected negative education effect reported by Okoro and Onyejiuwa (2026) may also reflect measurement issues, omitted variables, or structural changes, while its coverage extends beyond the period considered in the present study. Similarly, recent evidence highlights the role of broader socioeconomic conditions in determining the effectiveness of public expenditure. Abbah et al. (2025), using a VECM and Nigerian time-series data from 1992–2022, found that recurrent education and health expenditure positively influenced economic growth in the long run, but insecurity significantly weakened the benefits of such expenditure.

Mijinyawa et al. (2025) similarly demonstrated that demographic pressure can reduce the gains from government expenditure. These findings are particularly applicable to Nigeria because they demonstrate that expenditure outcomes are influenced by factors beyond budgetary allocations.

However, Abbah et al. (2025) focused on economic growth rather than human capital development directly, while their insecurity measure may involve measurement and aggregation problems. Likewise, Mijinyawa et al. (2025) did not adequately address possible endogeneity between human capital and health-related variables.

Overall, the methodological evidence from the recent literature is dominated by ARDL and other time-series econometric techniques, complemented by institutional and descriptive approaches (Akano & Salawu, 2024; Belay et al., 2024; Siyanbola et al., 2025; Orshi & Peter, 2025; Mijinyawa et al., 2025; Abbah et al., 2025; Nwokocha et al., 2025; Madueke et al., 2026; Okoro & Onyejiuwa, 2026). The studies collectively show that public expenditure can improve human capital outcomes, but the effects are not uniform and depend on expenditure composition, implementation efficiency, institutional quality, demographic conditions, and security. Nevertheless, a major gap remains: most studies examine aggregate public expenditure or specific sectors such as education, health, and capital investment, while transfer expenditure as a distinct functional category receives limited attention. Moreover, differences in study periods, geographical coverage, outcome measures, and econometric specifications limit direct comparability across existing studies. The present study therefore extends the literature by focusing specifically on government transfer expenditure and its effect on human capital development in Nigeria over 1985–2024, while incorporating labour force, population growth, and investment rate as relevant control variables. This provides a more specific assessment of whether transfer expenditure independently contributes to human capital development within Nigeria's fiscal and demographic context.

3. Methodology

3.1 Theoretical Framework

This study is anchored on Becker's human capital theory and Keynesian theory of public expenditure. According to Becker, individuals and households treat education and health as investments that yield future economic returns through higher productivity and earnings. Government transfers help poor and vulnerable households facing financial constraints to access education for their children and healthcare. According to Becker, conditional cash transfers from the government also directly influence nutrition, which is essential for the development of good cognitive ability in children. The Keynesian theory, developed by Keynes (1936), emphasises the importance of government expenditure in stimulating economic activities and improving welfare. According to the theory, transfer expenditure increases household disposable income, which enhances consumption and facilitates investment in education, health, and other human capital-

enhancing activities. Similarly, Welfare Economics Theory, as advanced by Pigou (1920), argues that government intervention through redistributive policies is necessary to improve social welfare and reduce inequality. Endogenous Growth Theory also emphasises that government policies that support human capital development can generate sustained economic growth through increased productivity and innovation (Romer, 1990).

3.2 Model Specification

This study adopts and modifies the model used by Akinbobola (2018) and Omodero and Adu (2019) in examining the relationship between public expenditure and human capital development. The functional form of the model is specified as:

$$HCD = f(TRANS, POP, LFT, INVSRT) \dots \dots \dots (1)$$

Where HCD represents Human Capital Development, TRANS denotes Transfer Expenditure, POP represents Population, LFT denotes Labour Force Total, while D.INVSRT represents Investment Rate. The econometric form of the model is expressed as:

$$HCD_t = \beta_0 + \beta_1 TRANS_t + \beta_2 POP_t + \beta_3 LFT_t + \beta_4 D.INVSRT_t + \mu_t \dots (2)$$

Where β_0 is the intercept, β_1 – β_4 are the coefficients of the explanatory variables, and μ represents the stochastic error term.

3.3 Estimation Technique

The study employs the Autoregressive Distributed Lag (ARDL) model as the estimation technique. The ARDL approach is appropriate because it can accommodate variables integrated at both I(0) and I(1) levels and provides estimates of both short-run and long-run relationships. Prior to estimation, descriptive statistics are used to summarise the characteristics of the data, while the Augmented Dickey-Fuller (ADF) unit root test is conducted to determine the stationarity properties of the variables. The optimal lag length is selected using the Akaike Information Criterion (AIC), while the ARDL Bounds Test is employed to establish the existence of a long-run relationship among the variables. In addition, the Error Correction Model (ECM) derived from the ARDL framework is used to examine short-run dynamics and the speed of adjustment toward long-run equilibrium.

The study utilises annual time-series data covering the period 1985–2024. Data were obtained from secondary sources, including the Central Bank of Nigeria (CBN) Statistical Bulletin (2026), the National Bureau of Statistics (NBS, 2026) and the World Development Indicators (WDI, 2026). Human Capital Development (HCD, 2026), the dependent variable, is measured using indicators that capture educational and health outcomes. Transfer Expenditure (TEX) is measured as government spending on pensions, subsidies, social security, and welfare payments. Population (POP) is measured as the total population of Nigeria, while Labour Force Total (LFT) represents the economically active population. Investment Rate (INV) is measured using gross capital formation as a percentage of GDP. These variables were selected because of their relevance in explaining the relationship between transfer expenditure and human capital.

4. Results and Discussion

Table 4.1: Descriptive Statistics

	Mean	Max	Min	Std. Dev.	Observations
HCI	0.001601	0.013	-0.03957	0.008864	39
TRANS	-0.86152	231.33	-453.41	118.9928	39
LFT	7.834789	8.05442	7.645247	0.118909	39
POPG	-0.01924	0.041998	-0.11954	0.043972	39
D.INVSRT	2.75000	4.1800	1.21100	1.08100	39

Note: Max=Maximum, Min= Minimum, Std. Dev= Standard Deviation, HCI=Human capital index; TRANS=Government Transfer; LFT=Labour Force Total; POPG=Population Growth; D.INVSRT=Investment Rate

Source: Authors' Computation, 2026

Table 1 presents the descriptive statistics of the variables employed in the study, including Human Capital Development (HCI), Transfer Expenditure (TRANS), Labour Force Total (LFT), Population Growth (POPG), and difference Investment Rate (D.INVSRT) for the period 1985–2024. The result shows that HCI recorded a mean value of 0.001601, indicating that human capital development experienced a marginal positive growth on average during the study period. The maximum and minimum values of 0.013000 and -0.039570, respectively, reveal fluctuations in human capital development, reflecting periods of improvement and decline. The standard deviation of 0.008864 suggests that the variable exhibited relatively low volatility over the study period. Similarly, LFT recorded a mean value of 7.834789, with a maximum value of 8.054420 and a

minimum value of 7.645247. The relatively low standard deviation of 0.118909 indicates that the labour force grew steadily with minimal fluctuations throughout the period under review. Population growth (POPG) recorded an average value of -0.019240, with a maximum value of 0.041998 and a minimum value of -0.119540, while its standard deviation of 0.043972 indicates moderate variability in population growth rates over time.

The result further reveals that transfer expenditure (TRANS) recorded a mean value of -0.861520, suggesting an average decline in transfer expenditure. The maximum value of 231.3300 and minimum value of -453.4100 indicate substantial variations in government transfer expenditure across the years. This is further confirmed by its high standard deviation of 118.9928, which implies that transfer expenditure was the most volatile variable in the model, as a result of the periods of subsidy and subsidy removal. On the other hand, the investment rate (D.INVSRT) recorded a mean value of approximately 2.75000, with a maximum value of 4.1800 and a minimum value of 1.21100. Its standard deviation of 1.08100 indicates a relatively stable pattern throughout the study period. Overall, the descriptive statistics show that while human capital development, labour force total, population growth, and investment rate exhibited relatively stable movements, transfer expenditure experienced significant fluctuations. The observed variability among the explanatory variables provides sufficient basis for investigating their impact on human capital development in Nigeria.

Table 4.2: Pairwise Correlation Matrix

Variables	HCI	TRANS	LFT	POPG	D.INVSR T
HCI	1.000000				
TRANS	-0.056097 (0.7345)	1.000000			
LFT	0.131545 (0.4247)	-0.003702 (0.9822)	1.000000		
POPG	-0.111190 (0.5004)	-0.064976 (0.6943)	-0.323446 (0.0446)	1.000000	
D.INVSRT	-0.214179 (0.1904)	0.019899 (0.9043)	-0.937378 (0.0000)	0.293354 (0.0699)	1.000000

Note: p-value reported in parentheses. HCI=Human capital index; TRANS=Government Transfer; LFT=Labour Force Total; POPG=Population Growth; D.INVSRT=Investment Rate

Source: Authors' Computation, 2026

Table 2: The results show that government transfer expenditure has a negative and weak relationship with human capital development, with a correlation coefficient of **-0.056097** and an insignificant probability value of 0.7345, suggesting that increases in transfer expenditure have not

been strongly associated with improvements in human capital outcomes during the study period. Labour force total exhibits a positive but weak relationship with human capital development (0.131545; $p=0.4247$), indicating that an increase in labour force size alone does not necessarily translate into improved human capital development. Population growth also shows a negative and weak correlation with human capital development (-0.111190; $p=0.5004$), implying that rapid population expansion may exert pressure on human capital-related resources, although the relationship is statistically insignificant. Similarly, investment rate demonstrates a negative but weak relationship with human capital development (-0.214179; $p=0.1904$), suggesting that investment activities during the period may not have been sufficiently directed toward human capital-enhancing sectors.

Table 3: Unit Root Test

Variables	ADF Stat @ Level	ADF Stat @ 1 st Diff	Order of Integration
HCI	-7.108481***	-	I(0)
TRANS	-6.202570***	-	I(0)
LFT	-3.195181	-4.248186**	I(1)
POPG	-6.034625***	-	I(0)
D.INVSRT	-2.359082	-8.064817***	I(1)

Note. A variable is considered stationary when the p-value falls below the 5% significance level. I(0) = stationary at level; I(1) = stationary after first differencing.

Source: Authors' Computation, 2026

To examine the stationarity properties of the variables and avoid the problem of spurious regression, the Augmented Dickey-Fuller (ADF) unit root test was conducted, and the results are presented in Table 2. The findings reveal that Human Capital Development (HCI), Transfer Expenditure (TRANS), and Population Growth (POPG) are stationary at level, with ADF statistics of -7.108481, -6.202570, and -6.034625, respectively, all significant at the 1 percent level, indicating that they are integrated of order zero, I(0). However, Labour Force Total (LOGLFT) and Investment Rate (D.INVSRT) were found to be non-stationary at level but became stationary after first differencing, with ADF statistics of -4.248186 and -8.064817, respectively, implying that both variables are integrated of order one, I(1). The results therefore indicate a mixture of integration orders among the variables, with some integrated of order zero, I(0) and others at I(1), while none is integrated of order two, I(2). This mixed order of integration justifies the adoption of the

Autoregressive Distributed Lag (ARDL) estimation technique, as recommended by Pesaran et al. (2001), who argue that the ARDL model is appropriate when variables are integrated at different orders, provided that none is integrated of order two, $I(2)$. Consequently, the unit root results confirm the suitability of the ARDL approach for examining the impact of transfer expenditure on human capital development in Nigeria over the period 1985–2024

4.2 ARDL Bounds Test for Co-integration

The bounds testing procedure developed by Pesaran et al. (2001) was employed to investigate the existence of a long-run relationship among the variables in the ARDL framework. The null hypothesis of the bounds test is that no long-run relationship exists among the variables.

Table 4: Co-integration Test

Test Statistics	Value	I(0) Bound @ 5%	I(1) Bound @5%
F-statistic	6.434144	2.56	3.49
k (No. of regressors)	4		

Note. The F-statistic exceeds the I(1) upper bound at the 5% level, confirming cointegration. Null hypothesis: no long-run levels relationship.

Source: Authors' Computation, 2026

Since the computed F-statistic (6.43) exceeds the upper bound value at the 5% level, we reject the null hypothesis and conclude that there is strong evidence of a long-run co-integrating relationship between HCI and the explanatory variables (POP, LFT and D.INVSRT).

Table 5: Diagnostic Test Results

R-squared	0.777620
Akaike info criterion	-18.50609
Normality Test: Jarque-Bera & Probability	0.216382 (0.897456)
Breusch-Godfrey Serial Correlation LM Test: F-statistic & Probability	1.083118 (0.3653)
Heteroskedasticity Test: Breusch-Pagan-Godfrey: F-statistic & Probability	1.108276 (0.0435)
VIF	4.9

Note. p-values reported in parentheses. A p-value above 0.05 indicates the null hypothesis for the respective test is not rejected.

Source: Authors' Computation, 2026

The diagnostic test results presented in Table 5 indicate that the estimated model is statistically reliable and satisfies most of the required econometric assumptions. The model demonstrates a good explanatory power, with an R-squared value of 0.777620, implying that approximately 77.76% of the variations in human capital development are explained by the explanatory variables included in the model, while the remaining 22.24% is accounted for by other factors outside the model. The Akaike Information Criterion (AIC) value of -18.50609 indicates a good model fit and supports the appropriateness of the selected ARDL specification. The Jarque-Bera normality test result, with a probability value of 0.897456, shows that the residuals are normally distributed since the probability value exceeds the 5% significance level.

The Breusch-Godfrey Serial Correlation LM test produces a probability value of 0.3653, indicating the absence of serial correlation among the residuals. However, the Breusch-Pagan-Godfrey heteroskedasticity test records a probability value of 0.0435, suggesting the presence of heteroskedasticity at the 5% significance level, implying that the variance of the residuals is not constant. Nevertheless, the Variance Inflation Factor (VIF) value of 4.9 indicates that the model does not suffer from serious multicollinearity problems among the explanatory variables, as it remains below the commonly accepted threshold of 10. Overall, the diagnostic results confirm that the ARDL model is generally adequate and suitable for analysing the relationship between transfer expenditure and human capital development in Nigeria.

4.3 Short-run Analysis

The short-run dynamics of the model were estimated using the Error Correction Representation of the ARDL model. The results are presented in Table 6, which shows the short-run coefficients and probability values.

Table 6: Short-run Coefficients of ARDL Model

Variable	Coefficient	Prob.
TRANS	-4.700	0.701
LFT	0.276770	0.0183
POP	-0.203	0.027
D.INVSRT	1.561	0.000
ECM(-1)	-0.753	0.000

Source: Authors' Computation, 2026

Table 6 presents the short-run coefficients of the ARDL model estimated to examine the impact of transfer expenditure on human capital development in Nigeria. The result reveals that Transfer Expenditure (TRANS) has a coefficient of -4.700 with a probability value of 0.701, indicating a negative but statistically insignificant effect on human capital development in the short run. This suggests that changes in transfer expenditure do not significantly influence human capital development within the period under review. Labour Force Total (LFT) recorded a positive coefficient of 0.276770 and is statistically significant at the 5 percent level ($p = 0.0183$), implying that an increase in labour force participation contributes positively to human capital development. Population Growth (POP) has a coefficient of -0.203 with a probability value of 0.027, indicating a negative and significant relationship with human capital development, suggesting that rapid population growth exerts pressure on available educational, health, and social infrastructure. The Investment Rate (D.INVSRT) recorded a positive coefficient of 1.561 and is highly significant at the 1 percent level ($p = 0.000$), indicating that increased investment significantly promotes human capital development through improved infrastructure, employment opportunities, and economic activities.

Furthermore, the Error Correction Term [ECM (-1)] has a coefficient of -0.753 and is statistically significant at the 1 percent level, confirming the existence of a long-run equilibrium relationship among the variables. The coefficient implies that approximately 75.3 percent of any short-run disequilibrium in human capital development is corrected within one year, indicating a relatively high speed of adjustment toward long-run equilibrium following short-run shocks.

4.4 Long-run Analysis

The long-run coefficients obtained from the ARDL model estimation are presented in Table 7. These estimates reveal the direction and magnitude of the long-term relationship between GDP and its explanatory variables.

Table 7: Long-run Coefficients of ARDL Model

Variable	Coefficient	Prob.
TRANS	-1.57	0.706
LFT	-0.067	0.0035
POPG	-0.0678	0.0222
D.INVRT	-7.399	0.0012
C	0.541	0.0033

Source: Authors' Computation, 2026

Table 7 presents the long-run coefficients of the ARDL model examining the impact of transfer expenditure on human capital development in Nigeria from 1985 to 2024. The result indicates that Transfer Expenditure (TRANS) has a coefficient of -1.57 with a p-value of 0.706, implying a negative but statistically insignificant relationship with human capital development in the long run. This suggests that transfer expenditure has not significantly contributed to improving human capital outcomes in Nigeria, possibly due to inefficiencies in policy implementation, poor targeting of beneficiaries, corruption, and weak institutional frameworks. Labour Force Total (LFT) recorded a coefficient of -0.067 and is statistically significant at the 1 percent level ($p = 0.0035$), indicating that increases in labour force size are associated with a decline in human capital development, possibly due to unemployment, underemployment, and inadequate investment in skill acquisition and human development. Similarly, Population Growth (POPG) has a coefficient of -0.0678 with a probability value of 0.0222, showing a negative and significant effect on human capital development, suggesting that rapid population growth exerts pressure on educational, healthcare, and social infrastructure.

The Investment Rate (D. INVSRT) also exhibits a negative and statistically significant relationship with human capital development, with a coefficient of -7.399 and a probability value of 0.0012, implying that investments during the study period may have been concentrated in sectors with limited direct contributions to education, health, and human capital formation. Finally, the constant term (C) has a positive coefficient of 0.541 and is statistically significant at the 1 percent level ($p = 0.0033$), indicating that other factors not explicitly included in the model also contribute positively to human capital development in Nigeria.

4.5 Discussion of Findings

This study examined the impact of transfer expenditure on human capital development in Nigeria over the period 1985–2024 using the ARDL approach, considering both short-run and long-run dynamics while controlling for labour force total, population growth, and investment rate. The key finding is that transfer expenditure has a negative and statistically insignificant effect on human capital development in both the short run and long run, implying that government welfare-related spending such as pensions, subsidies, and social transfers has not significantly improved education, health, and overall human capital outcomes in Nigeria, a result consistent with Omodero and Adu (2019) and Adewale and Olaniyan (2020), who attributed similar outcomes to inefficiencies, poor targeting, and leakages in public expenditure. In contrast, international evidence shows that transfer programmes can significantly enhance human capital when efficiently implemented, as demonstrated by Fiszbein and Schady (2009), González and Paqueo (2016), and Haushofer and

Shapiro (2016), suggesting that institutional quality and implementation effectiveness are key determinants of success. Labour force total was found to have a negative long-run relationship with human capital development but a positive short-run effect, indicating that while labour expansion may initially stimulate economic activity, it eventually constrains human capital outcomes in the absence of adequate skills development and employment opportunities, consistent with Ajakaiye and Fakiyesi (2015). Similarly, population growth negatively affects human capital development in both periods, reflecting the pressure of rapid demographic expansion on education and health infrastructure, in line with Todaro and Smith (2015) and Ajakaiye and Fakiyesi (2015). The investment rate shows a positive short-run effect but a negative long-run relationship, suggesting that while investment initially supports human capital development through economic stimulation, long-term impacts depend on sectoral allocation efficiency, particularly whether investments are directed toward human capital-enhancing sectors, consistent with Akinbobola (2018) and Omodero and Adu (2019). Finally, the significant error correction term confirms a stable long-run relationship among the variables and indicates a relatively fast speed of adjustment toward equilibrium after short-run shocks.

5. Conclusion and Recommendations

Based on the empirical findings, the study concludes that transfer expenditure has not significantly contributed to the improvement of human capital development in Nigeria over the study period. This indicates that despite continuous government spending on welfare-related programmes, improvements in education, health, and productivity outcomes have remained weak and disproportionate. The result suggests that transfer payments alone are insufficient to drive meaningful human capital development without strong institutional frameworks and effective implementation mechanisms. The study further concludes that structural and demographic factors such as population growth, labour force expansion, and investment allocation significantly influence human capital development outcomes in Nigeria. In particular, rapid population growth exerts pressure on existing social infrastructure, while inefficiencies in the labour market limit productivity gains from an expanding labour force, thereby weakening the overall effectiveness of fiscal interventions. Overall, the weak impact of transfer expenditure is largely driven by institutional inefficiencies, poor targeting mechanisms, and inadequate policy implementation, implying that improvements in governance and administrative efficiency are essential for achieving meaningful human capital outcomes.

Based on these findings, the study recommends that the government should improve the targeting and design of transfer expenditure programmes to ensure that resources reach low-income and

vulnerable households who are more likely to invest in education and healthcare. Strengthening institutional frameworks through transparency and anti-corruption measures is also essential to reduce leakages and improve efficiency in public financial management. In addition, transfer expenditure should be complemented with increased direct investment in education and health infrastructure to ensure long-term human capital development. Furthermore, population management policies such as family planning awareness and reproductive health education should be strengthened to reduce demographic pressure on social services. Labour market reforms aimed at improving skills acquisition, vocational training, and job creation are also necessary to enhance the productivity of the labour force, while investment spending should be redirected toward sectors that directly support human capital development such as education, health, technology, and infrastructure.

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