Relevance of women empowerment on poverty reduction in Nigeria (1990-2023)

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Abstracts

In Nigeria, women have limited access to essential services, and economic opportunities worsened by cultural and societal norms that prioritize men's economic activities. Meanwhile little is known in the literature on

the specific strategies and interventions that can effectively address the unique challenges faced by women. This study explores the nexus between women empowerment and poverty reduction in Nigeria. The study employs a quantitative research design where poverty is the dependent variable while women empowerment represented by women access to education, and women access to economic opportunity and gender equality are the explanatory variables. Data were sourced from the World Bank's World Development Indicators database, covering the period from 1990 to 2023. The study employs the Autoregressive Distributed Lag bounds testing technique. The results shows that in both the short (β = -0.014356; t = -4.205425; Pr(0.05) = 0.0004) and long run (β = -0.021124; t = -11.47832; Pr(0.05) = 0.0000), women's access to education consistently demonstrates a significant negative relationship with poverty. Equally, women's access to economic opportunities shows an insignificant effect on poverty in the short run (β = 0.042916; t = 0.624175; Pr(0.05) = 0.5392) with a significant negative effect on poverty in the long run (β = -0.177589; t = -2.616985; Pr(0.05) = 0.0161). Finally, the effect of gender equality on poverty is positive and significant in the short run (β = 0.074994; t = 2.283958; Pr(0.05) = 0.0329) and the long run (β = 0.100144; t = 3.114619; Pr(0.05) = 0.0052). The study submitted that while efforts to empower women through education and economic opportunities are crucial, they must be accompanied by broader systemic changes that address gender inequality. The study recommends the need to prioritize women's education by ensuring universal access to quality education for girls and addressing barriers such as access to finance, market opportunities, and training.

Keywords: Women empowerment, Poverty reduction, ARDL, Nigeria
Word Count: 304

1. Introduction

Poverty remains a central and persistent issue in global development discourse, particularly in countries like Nigeria, where economic potential sharply contrasts with the widespread poverty experienced by a large portion of the population. Despite Nigeria's status as Africa's most populous nation and its significant natural resources, including vast oil reserves, a considerable number of Nigerians live in poverty. The paradox of economic growth coupled with rising poverty has

attracted considerable attention from scholars, policymakers, and international organizations (Jaiyeola & Bayat, 2019). In Nigeria, women, especially those in rural areas, are disproportionately affected by poverty due to systemic gender inequalities that limit their access to education, healthcare, and economic opportunities (Mukaila et al., 2022). Women's empowerment has emerged as a crucial factor in poverty reduction strategies, especially in regions where women face systemic barriers to economic participation. This study focuses on the relevance of women empowerment as a strategic tool for poverty reduction. The rationale of this study is the scant and often mixed literature on the direct impact of women empowerment on poverty reduction in Nigeria. While there have been various initiatives aimed at reducing poverty in Nigeria, the persistent levels of poverty among women, particularly in rural areas, highlight the need for a more targeted approach that integrates women empowerment as a central element (Mukaila et al., 2022).

Women empowerment is not only a fundamental human right but also a critical component of sustainable development. The relationship between women empowerment and poverty reduction can be understood through multiple channels, including increased access to education, improved health outcomes, and greater economic participation. For instance, enhanced access to education and economic resources allows women to contribute more effectively to household income, leading to better living standards (Ahuru, 2019). Theoretically, this relationship is underpinned by frameworks such as the Capability Approach, which emphasizes the importance of providing individuals, particularly women, with the freedom to achieve their desired outcomes (Sen, 1999). Empowerment is also closely linked to human capital theory, which posits that investment in education and skills leads to greater economic productivity and, consequently, poverty reduction (Becker, 1993). Empirical studies consistently show that empowering women through education and economic opportunities leads to significant reductions in poverty levels, as women tend to invest more in their families and communities (Adelowokan et al., 2019). Moreover, studies indicate that women’s control over household resources is associated with improved child health and education outcomes, which are critical for breaking the cycle of poverty (Omodero, 2019).

The persistent and pervasive nature of poverty in Nigeria presents a complex challenge that continues to defy numerous economic strategies and policy interventions. Despite Nigeria's substantial natural resources and impressive economic growth rates, poverty remains alarmingly widespread, particularly in the northern regions, where socio-economic indicators reveal severe levels of deprivation. The situation is particularly dire for women, especially in rural areas, where poverty rates can reach as high as 80%. These women face limited access to essential services, infrastructure, and economic opportunities, often relying on subsistence farming characterized by low productivity and income. The disparity between men and women in terms of economic opportunities and access to resources is pronounced, further exacerbated by cultural and societal norms that prioritize men's economic activities. The persistence of poverty amidst economic growth highlights a paradox that raises critical questions about the effectiveness of poverty alleviation programmes and the equitable distribution of economic benefits (Jaiyeola & Bayat, 2019; Mukaila et al., 2022; Sakanko et al., 2020; Onwuka et al., 2019).

Efforts by policymakers and the government to improve women's economic conditions in Nigeria have been largely ineffective. Various government programmes, designed to increase access to finance and provide entrepreneurial support, have often been based on the assumption that financial resources alone are sufficient to uplift women from poverty. However, these initiatives have failed to address the deeper socio-cultural and psychological factors that contribute to women's economic marginalization. Issues such as limited access to education, healthcare, and economic opportunities, combined with entrenched gender inequalities, have hindered the effectiveness of these programmes. The mismanagement, corruption, and inconsistent execution of poverty alleviation initiatives further undermine their success, resulting in minimal impact on poverty reduction among women, especially in rural areas. Moreover, the lack of integration of climate change adaptation into poverty reduction strategies has left the poorest populations, particularly women, vulnerable to environmental shocks, exacerbating their already precarious situation (Rex, 2019; Urama et al., 2017; Kelvin et al., 2019).

Despite the substantial body of research on poverty and economic empowerment in Nigeria, there remain significant gaps in the literature, particularly regarding the specific strategies and interventions that can effectively address the unique challenges faced by women. Much of the existing literature has focused on the barriers and challenges women encounter, with limited attention to comprehensive approaches that explore the women access to education and economic opportunity. This study, focusing on the relevance of women empowerment on poverty reduction in Nigeria between 1980 and 2023, aims to address these gaps by providing a robust analysis of the relevance of women empowerment through access to education and economic opportunity. By examining these dimensions, the study seeks to offer actionable insights for designing more effective and sustainable empowerment programmes that can significantly contribute to poverty reduction in Nigeria (Okoi et al., 2022; Ali & Salisu, 2019; Nassani et al., 2018).

The aim of this study is to explore the nexus between women empowerment and poverty reduction in Nigeria. The specific objectives of the study are to:

i. analyse the effects of women access to education on poverty reduction;
ii. ascertain the effect of women access to economic opportunity on poverty reduction in Nigeria; and
iii. examine the effect of gender inequality on poverty reduction

2. Literature Review

2.1 Conceptual Review

The concept of poverty has been a subject of extensive debate and analysis within various academic fields, particularly in economics, sociology, and development studies. Poverty, as an idea, stretches beyond mere income deprivation, encompassing various dimensions of human well-being, including access to essential resources, opportunities, and capabilities. This multidimensional perspective on poverty is crucial for understanding the complexities of deprivation and formulating effective interventions aimed at poverty alleviation. The idea has evolved over time, with scholars contributing various definitions that reflect differing viewpoints and methodologies. Jaiyeola and Bayat (2019) offer a foundational definition of poverty by distinguishing between absolute and relative poverty. Absolute poverty is described as a condition where individuals lack the

essential resources needed for survival, such as adequate food, clean water, and shelter. This conceptualization aligns with the traditional economic approach, where poverty is often measured against a fixed poverty line that defines a minimum level of income required for basic sustenance. However, they extend the discussion to include relative poverty, which is defined in relation to the economic status of others within a society. This measure reflects disparities in living standards and access to resources, recognizing that poverty is not only about meeting basic needs but also about social inclusion and equity.

Complementing this view, Ogbeide-Osaretin (2020) expands the conceptualization of poverty by introducing the idea of "basic needs poverty." This term highlights the lack of access to essential services such as food, education, and healthcare, thereby broadening the understanding of poverty beyond mere income deprivation. The author categorizes poverty into several types, including absolute poverty, relative poverty, chronic poverty, and transitory poverty. Chronic poverty refers to persistent and long-term deprivation that individuals or households experience over extended periods, often due to structural factors such as poor governance, lack of infrastructure, and limited access to education. Transitory poverty, on the other hand, is temporary and may result from short-term economic shocks or crises.

The multidimensional nature of poverty is further elaborated by Adelowokan et al. (2019), who emphasise that poverty in Nigeria is deeply entrenched and multifaceted. They argue that the persistence of poverty in the country is influenced by a combination of structural issues, including inadequate infrastructure, limited access to quality education, and poor healthcare systems. This perspective aligns with the concept of multidimensional poverty, which considers various aspects of deprivation beyond income, including education, healthcare, living standards, and access to essential services. The authors highlight that addressing poverty in Nigeria requires a comprehensive approach that targets these multiple dimensions of deprivation.

Sakanko et al. (2020) contribute to the discourse by focusing on the state of poverty as one of insufficient resources to meet basic needs such as food, shelter, and

healthcare. They argue that poverty is a multifaceted issue resulting from various factors, including lack of income, education, and access to essential services. This view underscores the need for both income-based and non-income-based measures in addressing poverty, suggesting that increasing income alone may not be sufficient if it is not accompanied by improved access to resources and opportunities.

Empowerment is a multifaceted concept that involves enhancing individuals' or groups' ability to make choices and exercise control over various aspects of their lives. This concept is not merely about the acquisition of power but also about the processes through which individuals gain the capacity to act independently, make informed decisions, and participate fully in societal activities. Empowerment can be seen across several dimensions, including economic, social, political, and psychological aspects, each of which plays a crucial role in individuals' overall ability to thrive and contribute to their communities. Ashagidigbi et al. (2022) describe empowerment as a process that enhances individuals' capacities to make choices and exercise control over their lives. This definition encompasses several dimensions, including economic empowerment, which refers to access to and control over economic resources, such as income, assets, and opportunities for entrepreneurship. Economic empowerment is fundamental in providing individuals, particularly women and marginalized groups, with the financial independence necessary to improve their living standards and reduce poverty. Social empowerment, another key dimension highlighted by the author involves participation in decision-making processes and community activities. This dimension emphasizes the importance of individuals having a voice and the ability to influence decisions that affect their lives, thereby fostering a sense of belonging and social inclusion. Psychological empowerment, as discussed by the authors, relates to individuals' confidence and self-efficacy, which are essential for enabling them to take initiative and pursue opportunities for personal and community development.

Women empowerment encompasses various dimensions of enhancing women's control over their lives, resources, and opportunities. It involves addressing gender-based inequalities and promoting women's rights and participation across

different sectors, including economic, social, and political spheres. Kelvin et al. (2019) describe women empowerment as a process that involves increasing women's access to resources, opportunities, and decision-making processes. This definition underscores the importance of addressing gender-based inequalities and ensuring that women have the necessary tools to participate fully in various aspects of life. The authors emphasize that empowerment is crucial for promoting women's rights and enabling their participation in sectors where they have traditionally been underrepresented. This process is vital for achieving gender equality and promoting sustainable development, as it allows women to contribute meaningfully to their communities and economies.

Odok (2019) further expands on the concept by defining women's empowerment as a process through which women gain control over their lives, resources, and opportunities. This broader understanding of empowerment includes several dimensions, such as economic empowerment, political participation, and social inclusion. Odok examines how empowerment activities, particularly those undertaken by non-governmental organizations (NGOs) and reflected in Hausa literature, contribute to challenging and transforming traditional gender norms. These activities play a crucial role in redefining societal expectations of women and fostering an environment where women can exercise greater autonomy and influence in their communities. The dimensions of women empowerment are further elaborated by Nassani et al. (2018), who highlight that empowerment involves expanding women's control over their lives and resources, enhancing their participation in decision-making processes, and improving their socio-economic status. According to the authors, key indicators of women's empowerment include access to education, employment opportunities, financial resources, and participation in governance. These indicators are critical for measuring the progress of empowerment efforts and ensuring that women can achieve economic independence and participate fully in social and political activities.

2.2 Theoretical Review

Endogenous Growth Theory developed prominently by economists like Paul Romer, Robert Lucas, and Robert Barro, this theory reshapes tthe understanding of

how economies grow and sustain development over time. The core assumptions of Endogenous Growth Theory challenge the neoclassical model's reliance on exogenous factors, such as technological progress, to explain long-term growth. Instead, the theory asserts that growth can be generated from within the economy through deliberate investments in knowledge, innovation, and human capital. The assumption of non-rivalrous and partially excludable knowledge is central to this theory, suggesting that once knowledge is created, it can be utilized by multiple individuals without diminishing its value. This characteristic of knowledge is crucial for understanding how continuous investments in R&D and education can lead to increasing returns and sustained growth. Furthermore, Endogenous Growth Theory posits that there are increasing returns to scale in the production of knowledge and innovation. Unlike physical capital, which experiences diminishing returns, the accumulation of knowledge and human capital can lead to higher growth rates as these investments generate positive externalities. This principle is fundamental to the theory's explanation of how economic growth can be sustained over the long term through continuous investment in human capital and innovation.

In the Nigerian context, Endogenous Growth Theory provides valuable insights for addressing poverty and unemployment challenges. Adelowokan et al. (2019) emphasize the importance of fostering innovation and improving human capital as key strategies for achieving long-term growth and reducing poverty. However, the practical application of these theories in Nigeria is hindered by issues such as resource misallocation, corruption, and ineffective policy implementation (Omodero, 2019). These challenges underscore the need for a comprehensive approach that combines economic theories with an understanding of local economic, political, and social conditions. Endogenous Growth Theory offers a robust framework for analyzing the relationship between women empowerment and poverty reduction. By highlighting the importance of human capital, innovation, and effective government policies, the theory provides valuable insights into how empowering women can contribute to economic growth and poverty alleviation. The theory’s focus on increasing returns to scale, positive externalities, and the role of institutions underscores the potential for women empowerment initiatives to drive sustainable development and improve living

standards. Nonetheless, the practical application of these insights requires addressing structural challenges and ensuring that policies and institutions effectively support women's full participation in the economy.

The foundational work of empowerment theory, articulated by scholars such as Julian Rappaport and further developed by scholars including Zimmerman, Kabeer, and others, provides a comprehensive understanding of how empowerment operates across different dimensions and contexts. Julian Rappaport's early contributions laid the groundwork for Empowerment Theory by focusing on the processes through which individuals and communities gain control over their lives. Rappaport (1981) emphasized that empowerment involves not just individual gains but also community-level transformations, advocating for a participatory approach where individuals are actively involved in decision-making processes. This perspective underscores the importance of engagement in pro-social activities and community enhancement as mechanisms for fostering empowerment. According to Rappaport, empowerment is both a process and an outcome, with significant implications for improving individual and collective well-being.

The comprehensive nature of Zimmerman's framework highlights the multifaceted aspects of empowerment, emphasizing that it encompasses more than just individual autonomy. It involves creating supportive environments where individuals can exercise their agency, participate fully in economic and social life, and overcome barriers to their development. This holistic view underscores the importance of addressing psychological, economic, social, and cultural dimensions to achieve sustainable empowerment outcomes. Kabeer (2005) offered a significant contribution to Empowerment Theory by conceptualizing empowerment in terms of resources, agency, and outcomes. The author's framework provides a comprehensive understanding of how empowerment operates at various levels. She defines empowerment as the expansion of people's ability to make strategic life choices in a context where this ability was previously denied. This approach emphasizes the importance of resources (such as economic assets and education), agency (the capacity to act on choices), and outcomes (the results of those actions).

The relevance of empowerment theory to women's economic empowerment is particularly pronounced in understanding how access to resources, opportunities, and decision-making power can lead to significant improvements in women's lives. For example, Okoi et al. (2022) emphasize that economic empowerment involves providing women with access to financial resources, entrepreneurial opportunities, and decision-making power. This perspective aligns with the broader goals of empowerment theory, which seeks to enhance women's capacity to make choices and exercise control over their economic and social circumstances. Empowerment theory also highlights the importance of supportive environments that enable women to exercise their agency. This includes creating conditions where women can participate fully in economic activities, engage in decision-making processes, and access necessary resources. The theory suggests that when women are empowered economically, they can contribute more effectively to household income, invest in their families' health and education, and ultimately reduce poverty. This aligns with the findings of Kan and Mukhopadhyay (2022), who explored how economic opportunities, such as entrepreneurship and migration-induced remittances, can enhance women's decision-making power and social autonomy. By creating space for women to engage in entrepreneurial ventures and access financial resources, empowerment initiatives can lead to increased economic and social autonomy, thereby contributing to poverty reduction.

2.3 Empirical Review

In the pursuit of understanding the impact of women's empowerment on poverty reduction in Nigeria, a comprehensive review of existing empirical studies reveals significant findings in the literature. **Manda et al. (2019)** undertakes an investigation into the impact of adopting improved cowpea varieties on poverty reduction in Nigeria. Utilizing an endogenous switching regression (ESR) model, the study analyzes data from over 1,500 households obtained through a nationally representative survey. This methodology allows for control of selection bias inherent in technology adoption, ensuring that the observed effects on income and asset ownership are robust. The findings reveal that the adoption of improved cowpea varieties significantly increases per capita household income by 17 percentage points and asset ownership by 24 percentage points. Furthermore, this

adoption is associated with a reduction in income poverty and asset poverty by 5 percentage points each. This study provides valuable insights into agricultural interventions as a mechanism for poverty alleviation, demonstrating the significant economic benefits of technological adoption in agriculture. In contrast, **Jaiyeola and Bayat (2019)** focus on income poverty trends in Nigeria from 2010 to 2013 using data from the Nigeria General Household Survey (GHS-Panel). Their study employs the Foster-Greer-Thorbecke (FGT) Pα class poverty measures, including the headcount ratio, poverty gap, and poverty gap squared. The analysis, which compares data from two waves of the GHS-Panel, reveals a significant deepening of poverty over the period, particularly in the North West zone, despite Nigeria's GDP growth. This highlights a disparity between economic growth and poverty reduction, with certain regions experiencing worsening poverty conditions.

Jaiyeola and Choga (2020) build on this by examining poverty incidence in Northern Nigeria with a focus on the multidimensional aspects of poverty. Using the FGT Pα class poverty measure and Cumulative Distribution Function (CDF) for data analysis from the GHS-Panel, their findings confirm persistent high levels of poverty in Northern Nigeria. The study underscores minimal change in poverty levels between the two waves of data, indicating stagnation in poverty alleviation efforts in these regions. This continuity of high poverty levels in Northern Nigeria contrasts with the broader trends observed in Jaiyeola and Bayat's (2019) study and emphasizes the need for targeted interventions in these areas. **Mukaila et al. (2022)** provide a focused analysis on rural women's poverty in Nigeria, employing descriptive statistics, the FGT index, and logistic regression. With a sample of 450 rural women from Kwara, Enugu, and Oyo states, their study reveals significant poverty levels, with an average monthly income of approximately USD 57 and high poverty incidence (FGT index values). Logistic regression identifies age, household size, and cropping systems as key factors influencing poverty, while education, access to credit, and agricultural extension services are associated with lower poverty levels. This study highlights the specific socioeconomic factors affecting rural women and the potential for targeted support to alleviate poverty.

Aderounmu et al. (2021) utilize the Autoregressive Distributed Lag (ARDL) model to explore factors influencing poverty in Nigeria from 1992 to 2016. This approach

captures both short-term and long-term dynamics, revealing that unemployment significantly exacerbates poverty while inflation has a modest short-term poverty-reducing effect. The findings suggest that while inflation and economic growth contribute to poverty reduction, unemployment remains a critical challenge. This study contrasts with the findings of Mukaila et al. (2022) by focusing on macroeconomic factors and their impact over an extended period. **Onwuka, Nwadiubu, and Isiwu (2019)** investigate psychological and economic factors affecting poverty among women in South-Western Nigeria. Employing a cross-sectional survey design with data from 600 women, the study uses step-wise multiple regression to assess the impact of self-efficacy, job involvement, and goal orientation on economic engagement. The results indicate that psychological factors such as self-efficacy and goal orientation significantly predict women's involvement in productive activities, highlighting the importance of psychological empowerment in economic outcomes.

Ashagidigbi et al. (2022) examine the relationship between gender, empowerment, and food security using data from the 2018/2019 Nigeria General Household Survey. The study employs an empowerment index and various econometric models to reveal low levels of empowerment and significant disparities in food security, particularly among female-headed households in rural and North-West regions. This study underscores the intersection of gender, empowerment, and food security, highlighting regional disparities. **Ahuru (2019)** explores the impact of women's empowerment on maternal and childcare utilization using data from the 2013 National Demographic and Health Survey (NDHS). With a sample of 8,006 women, the study employs descriptive statistics and multivariate binary logistic regression to assess the influence of women's autonomy on healthcare outcomes. The findings reveal that increased autonomy significantly improves maternal healthcare utilization, emphasizing the link between empowerment and health outcomes.

Asad et al. (2020) examines the impact of microfinance on women's empowerment in Southern Punjab, Pakistan, with a focus on vulnerabilities. The cross-sectional research design and Partial Least Squares Structural Equation Modeling (PLS-SEM) reveal that while microfinance services positively impact women's

empowerment, vulnerabilities such as environmental and social factors moderate this relationship. This study underscores the limitations of microfinance in the face of external vulnerabilities. **Hussain, Mahmood, and Scott (2018)** analyze the impact of microcredit on poverty alleviation among women entrepreneurs in Pakistan. The study finds that larger microloans correlate with reduced financial poverty, though the impact on broader human poverty indicators is less clear. This study contrasts with the findings of Akhter and Cheng (2020) by focusing specifically on the financial aspects of poverty and the limitations of microcredit.

3. Methodology

The study employs a quantitative research design, utilizing annual time series data to examine the relationships between variables. Quantitative research is chosen for its ability to systematically collect and analyze numerical data, enabling the testing of hypotheses and drawing of statistically significant conclusions (Adelowokan et al., 2019; Jaiyeola & Bayat, 2019). This approach is particularly suitable for identifying patterns and trends over time, which is critical for understanding the dynamics of economic variables (Udonwa et al., 2022).

The study draws from the model formulated in the study conducted by Urama et al.2017) which incorporates variables such as per capita expenditure, household income, agricultural output, and access to credit and Adelowokan et al. (2019) where the dependent variable is real GDP per capita, while the independent variables are unemployment rate and poverty rate. In the current study in line with the objective of the study, poverty (POV) is the explanatory variable while women empowerment represented by women access to education (WEDU) proxy female secondary school enrolment total, and women access to economic opportunity (WEOP) measure by female labour force participation and gender equality (GEQ) proxy by gender equality. The variables are modeled as follows:

$$POV = \beta_0 + \beta_1 WEDU + \beta_2 WEOP + \beta_1 GEQ + e_t$$

Where: POV is poverty level measure by poverty headcount ratio at $2.15 a day as a percentage of population (2017 PPP), WEDU is women access to education proxy by gross female secondary school enrolment in percentage, WEOP is women access to economic opportunity measure by female labour force participation rate as a

percentage of female population aged fifteen years and above and GINEQ is gender equality proxy by ratio of female to male labour force participation rate in percentage based on ILO estimates.

This study relies on secondary data sourced from the World Bank's World Development Indicators (WDI) database, covering the period from 1980 to 2023. The choice of secondary data from this reputable source is justified by the reliability and comprehensiveness of the WDI dataset, which includes key economic and social indicators relevant to the study. The WDI database is particularly valuable because it offers consistent and internationally comparable data over an extended period, making it suitable for robust analysis. The study's coverage period, from 1990 to 2023, is selected to capture long-term trends and changes in the variables of interest, providing a thorough examination of the relationships between poverty rates and measures of economic empowerment over time. This extended period allows for the analysis of historical patterns and the identification of significant shifts that may have occurred in response to economic and policy changes.

The variables used in this study are measured as follows: poverty level measure by poverty headcount ratio at $2.15 a day as a percentage of population (2017 PPP). Women access to education was proxy by gross female secondary school enrolment in percentage. Women access to economic opportunity was measure by female labour force participation rate as a percentage of female population aged fifteen years and above. Gender equality was proxy by ratio of female to male labour force participation rate in percentage based on ILO estimates. These measurements provide a robust framework for analyzing the impact of gender-related factors on poverty, allowing the study to draw meaningful conclusions based on the empirical data.

The study employs the Autoregressive Distributed Lag (ARDL) bounds testing technique to explore the relationship between financial inclusion and inclusive growth. This methodology is particularly well-suited for the analysis because it allows for the estimation of both short- and long-run relationships between the variables, regardless of whether they are integrated at levels (I(0)) or first differences (I(1)). This flexibility is crucial, as it ensures the robustness of the

findings, even when the variables have different orders of integration (Sakanko et al., 2020). The ARDL approach is advantageous for handling small sample sizes, which is a common constraint in time series analysis. By permitting the estimation of the model using a single reduced-form equation, the ARDL method simplifies the estimation process while still providing reliable results. The bounds testing approach used within the ARDL framework tests the hypothesis of cointegration between financial inclusion indicators and inclusive growth outcomes. This is achieved by estimating the relationship between the variables using an autoregressive distributed lag model and testing for cointegration using F-statistics compared to critical values from the literature (Sakanko et al., 2020). Descriptive statistics are employed to understand the distribution and normality of the data, providing an initial overview that is essential for identifying any anomalies or outliers that might affect the analysis. Correlation analysis is used to examine the strength and direction of the relationships between the variables, helping to identify potential multicollinearity issues before proceeding to more complex modeling. Unit root tests, such as the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests, are conducted as pre-estimation tests to ensure that the time series data are stationary, which is a critical assumption for the ARDL model (Sakanko et al., 2020). These pre-estimation tests are necessary to confirm the suitability of the data for the ARDL bounds testing approach, thereby ensuring the reliability and validity of the study's findings.

4. Result and Discussion

The essence of the pre-estimation tests in data analysis is to determine the properties and nature of the distribution of the dataset that will be used. This is important, because it usually informed the choice of the appropriate method of data analysis that will be employed in the study. The core of these tests that was employed in this study are normality, multicollinearity and unit root tests.

4.1.1 Normality Test

The Jarque-Bera normality test in addition to other descriptive statistics was employed to determine the nature of the distribution of the dataset.

Table 4.1: Descriptive Statistics

	POV	WEDU	WEOP	GEQ
Mean	43.97500	32.65687	55.62906	86.62065
Median	47.90000	31.38886	56.72900	88.60283
Maximum	58.40000	52.22863	56.92000	89.60534
Minimum	30.90000	21.31710	51.54900	78.99239
Std. Dev.	11.01067	10.18067	1.896234	3.761115
Skewness	0.024200	0.235345	-1.231123	-1.205111
Kurtosis	1.363199	1.572982	2.799786	2.796394
Jarque-Bera	3.575280	3.198732	8.391272	8.044616
Probability	0.167355	0.202025	0.015061	0.017912
Sum	1407.200	1110.334	1835.759	2858.481
Sum Sq. Dev.	3758.280	3420.318	115.0626	452.6715
Observations	32	34	33	33

Key: POV: poverty level, WEDU: women access to education, WEOP: women access to economic opportunity, GEQ: gender equality
Source: Author, 2024

The descriptive statistics provide insightful information on poverty (POV), women's access to education (WEDU), women's economic opportunity (WEOP), and gender equality (GEQ) over the period from 1990 to 2023. The mean poverty level is 43.98, which is significantly higher than the minimum value of 30.90, indicating persistent poverty levels across the period. However, the maximum value of 58.40 suggests fluctuations in poverty reduction efforts, implying challenges in maintaining consistent ccurbing poverty. The relatively high standard deviation of 11.01 reflects significant variability in poverty levels, signaling economic volatility and inconsistent outcomes in poverty reduction initiatives. The nearly symmetrical distribution, as indicated by a skewness of 0.02, and a Jarque-Bera probability of 0.17 suggest that poverty is not normally distributed, pointing to outliers or irregular trends possibly influenced by economic shocks.

Women's access to education (WEDU) shows a mean value of 32.66, closer to the minimum of 21.32 than to the maximum of 52.23. This suggests that despite

progress, educational access remains low for many women, which may hinder overall empowerment efforts. The high standard deviation of 10.18 signifies wide disparities in educational access, which is likely due to socio-economic inequalities across regions in Nigeria. The slight positive skewness (0.24) indicates that more women fall below the mean, while the kurtosis of 1.57 suggests a flatter distribution than normal, indicating fewer extreme values. The Jarque-Bera test probability of 0.20 suggests the variable is normally distributed, implying that educational access trends follow a predictable pattern over time but with significant room for improvement.

Women's access to economic opportunities (WEOP) has a mean of 55.63, which is only slightly lower than the maximum of 56.92, suggesting generally strong access over time. However, the minimum of 51.55 implies that disparities still exist, though the low standard deviation of 1.90 shows relatively low variability, suggesting a more consistent trend in women's economic participation. The negative skewness (-1.23) reveals that the data is concentrated at the upper end, implying that most women have above-average access to economic opportunities, which is a positive trend for empowerment. However, the significant Jarque-Bera probability of 0.015 indicates non-normality, reflecting irregularities that may be caused by socio-political or economic factors influencing women's economic roles. Gender equality (GEQ) exhibits a mean of 86.62, very close to the maximum of 89.61, suggesting steady progress towards gender parity. The minimum value of 78.99, however, highlights that inequality persists in certain contexts. The low standard deviation of 3.76 suggests little variation in gender equality outcomes over time, implying that policy interventions may be consistently applied. The negative skewness (-1.21) shows that gender equality is more concentrated at the higher end, indicating that most observations tend toward greater equality, aligning with global empowerment trends. However, the Jarque-Bera statistic with a probability of 0.018 suggests that the distribution is non-normal, reflecting some deviations from expected equality outcomes, likely driven by regional disparities or inconsistent policy implementation.

In summary, the trends reflected in these descriptive statistics point to significant improvements in women's empowerment and poverty reduction in Nigeria,

though they also reveal persistent inequalities and variability across different dimensions. The lack of normality in most variables signals that these trends is subject to shocks or structural issues, such as economic crises or uneven policy effectiveness, impacting poverty and women's empowerment efforts.

The pairwise correlation coefficients which is frequently used to determine the nature and direction of association between two variables also serve as an important statistics used in determine the presence or otherwise of multocllinearity issue in a model.

Table 4.2: Pairwise Correlation Coefficients

	POV	WEDU	WEOP	GEQ
POV	1.000000	-0.935931	0.743643	0.712594
WEDU	-0.735931	1.000000	-0.669953	-0.618178
WEOP	0.743643	-0.669953	1.000000	0.711770
GEQ	0.712594	-0.618178	0.711770	1.000000

Key: POV: poverty level, WEDU: women access to education, WEOP: women access to economic opportunity, GEQ: gender equality
Source: Author, 2024

The pairwise correlation coefficients shows a negative correlation between poverty and women's access to education (-0.9359) suggesting a strong inverse relationship, meaning that higher levels of education for women are associated with lower poverty levels. This has significant economic implications, as it indicates that improving educational access for women could lead to poverty reduction, reflecting the critical role of education in enhancing human capital and economic growth. The correlation is notably high, implying that educational interventions can have substantial effects on reducing poverty.

The positive correlation between poverty and women's access to economic opportunities (0.7436) suggests that, paradoxically, higher poverty levels are associated with greater economic opportunities for women. This could reflect a situation where women are more likely to engage in economic activities out of necessity in response to poverty, a common reality in developing economies. While

this might boost short-term economic engagement, it does not necessarily translate into long-term poverty alleviation, suggesting that more sustainable opportunities are needed.

Similarly, the positive correlation between poverty and gender equality (0.7126) implies that higher poverty is associated with greater gender equality. This could indicate that gender equality initiatives, though improving, is not yet be effective in significantly reducing poverty. The negative correlation between women's access to education and women's economic opportunities (-0.6700) reveals a moderate inverse relationship, implying that as educational access improves, women may face fewer economic opportunities, or that highly educated women may be underemployed. This suggests a mismatch between education and labour market opportunities, where the skills women acquire does not align with available economic opportunities, pointing to structural issues within the economy.

The relationship between women's access to education and gender equality (-0.6182) is also negative, suggesting that while more women are receiving education, this does not translate into broader gender equality. This highlights the importance of ensuring that education is accompanied by other empowerment measures, such as political participation or legal rights, to improve gender equity more comprehensively. The positive correlations between women's economic opportunities and both gender equality (0.7118) and poverty (0.7436) suggest that while women gained more access to economic opportunities, these opportunities are not yet translating into reduced poverty or significantly improved gender equality. This suggests the presence of systemic barriers, such as wage disparities or unequal labour market conditions, limiting the broader impact of economic engagement on women's empowerment.

Overall, these correlation reflect the complex and sometimes contradictory relationships between poverty, education, economic opportunity, and gender equality in Nigeria. While progress has been made, especially in education, the broader impacts on poverty reduction and gender equality remain inconsistent, underscoring the need for holistic and integrated policies that address not only access to education and economic opportunities but also the underlying structural

issues in the labour market and society that prevent these advances from translating into greater overall empowerment and poverty reduction.

This test seeks to determine whether the variables are stationary in their levels or first difference or otherwise which must be accounted for in the estimation. Table 4.3 presents the unit root test results for both ADF and PP tests.

Table 4.3: Unit Root Test Statistics

	ADF				PP				Order
	Level		First Diff.		Level		First Diff.		
Variables	**t-stat**	**Prob.**	**t-stat**	**Prob.**	**t-stat**	**Prob.**	**t-stat**	**Prob.**	
POV	-0.5236	0.8733	-5.5657	0.0001	-0.5066	0.8768	-5.5663	0.0001	I(1)
WEDU	-0.6730	0.8399	-6.7001	0.0000	-0.5694	0.8642	-6.6935	0.0000	I(1)
WEOP	-0.6980	0.8290	0.2872	0.9725	0.2148	0.9693	-1.6300	0.0058	I(1)
GEQ	-1.2795	0.6263	-1.8940	0.3306	0.3259	0.9761	-1.9142	0.0218	I(1)

Key: POV: poverty level, WEDU: women access to education, WEOP: women access to economic opportunity, GEQ: gender equality
Source: Author, 2024

The unit root test results indicate the presence of non-stationarity at levels for all variables, with the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) test statistics confirming this outcome. Poverty (POV) shows t-statistics of -0.5236 (ADF) and -0.5066 (PP) at levels, both with high probability values (0.8733 and 0.8768), suggesting that poverty is non-stationary in its original form. However, after the first difference, the t-statistics improve significantly to -5.5657 (ADF) and -5.5663 (PP), both with probabilities of 0.0001, indicating stationarity at first difference. This implies that poverty follows a trend over time, and external shocks can have long-lasting effects, which is reflective of Nigeria's persistent poverty levels despite economic reforms.

Women's access to education (WEDU) follows a similar pattern, with t-statistics of -0.6730 (ADF) and -0.5694 (PP) at levels, both showing high probability values (0.8399 and 0.8642). Upon first differencing, the t-statistics improve to -6.7001 (ADF) and -6.6935 (PP) with probabilities of 0.0000, indicating stationarity at the

first difference. This suggests that educational access for women is non-stationary over time, reflecting ongoing challenges in educational reforms and gender parity in education in Nigeria.

Women's economic opportunities (WEOP) also show non-stationarity at levels, with t-statistics of -0.6980 (ADF) and 0.2148 (PP) and high probability values (0.8290 and 0.9693). Although WEOP does not become stationary with first differencing in the ADF test (t-statistic of 0.2872, probability of 0.9725), it becomes stationary in the PP test after first differencing (t-statistic of -1.6300, probability of 0.0058). This mixed result could indicate structural shifts in economic opportunities for women, where economic initiatives and policies may only gradually impact women's economic empowerment over time.

Gender equality (GEQ) exhibits non-stationarity at levels, with ADF and PP t-statistics of -1.2795 and 0.3259, and probabilities of 0.6263 and 0.9761, respectively. However, stationarity is achieved at the first difference with a t-statistic of -1.9142 (PP) and a probability of 0.0218, indicating that gender equality also follows a non-stationary trend. The implication is that gender equality initiatives in Nigeria may be influenced by long-term structural and social factors, requiring sustained policy interventions to achieve measurable change.

Overall, the unit root test results reveal that these variables are generally non-stationary at levels, meaning that shocks or changes in policies can have persistent effects. This reflects the reality of Nigeria's socio-economic landscape, where reforms in poverty reduction, women's empowerment, and gender equality often face long-term challenges.

The result of the ARDL estimation, the F-Bounds test, Short run Model (ECM) regression, and long-run coefficients are presented in Table 4.4.

Table 4.4: ARDL Estimation Results

F-Bounds Test		**Signif. Level**	**I(0)**	**I(1)**
F-statistic	4.795162	10%	2.37	3.20
k	3	5%	2.79	3.67
Short-Run Estimates	**Dep. Var.:** LOG(POV)			
Variable	**Coefficient/Value**	**Std. Error**	**t-Statistic**	**Prob.**
	0.195175	0.145418	1.342165	0.1939
D(WEDU)	-0.014356	0.003414	-4.205425	0.0004
D(WEOP)	0.042916	0.068757	0.624175	0.5392
D(GEQ)	0.074994	0.032835	2.283958	0.0329
CointEq(-1)*	-1.027305	0.192288	-5.342530	0.0000
Long-Run Form				
WEDU	-0.021124	0.001840	-11.47832	0.0000
WEOP	-0.177589	0.067860	-2.616985	0.0161
GEQ	0.100144	0.032153	3.114619	0.0052
C	5.677401	1.104501	5.140241	0.0000
R-squared	**0.554866**			
Adjusted R-squared	**0.483645**			
Durbin-Watson stat	**2.478143**			

Key: POV: poverty level, WEDU: women access to education, WEOP: women access to economic opportunity, GEQ: gender equality
Source: Author, 2024

The ARDL bounds test F-statistic of 4.795162 exceeds the upper bound critical value at the 5% significance level (I(0) = 2.79, I(1) = 3.67). This confirms the existence of a long-run relationship between the dependent variable (poverty) and the explanatory variables (women's access to education, women's access to economic opportunity, and gender equality). In this context, a long-run equilibrium exists between these factors and poverty reduction, signifying that women's empowerment is closely tied to poverty outcomes in Nigeria over time. The coefficient of WEDU in the short-run is negative and statistically significant at the 5% level (β = -0.014356; t = -4.205425; Pr(0.05) = 0.0004). The negative coefficient indicates that an increase in women's access to education reduces poverty in the short term. The size of the coefficient, while relatively marginal, reflects that a small improvement in women's education leads to a meaningful reduction in poverty.

This aligns with the current realities in Nigeria, where greater educational access for women is associated with better economic outcomes for families and communities. Education enables women to acquire skills and better job opportunities, ultimately contributing to poverty alleviation.

The coefficient of WEOP in the short run is positive but statistically insignificant (β = 0.042916; t = 0.624175; Pr(0.05) = 0.5392). This positive yet insignificant relationship suggests that, in the short run, changes in women's access to economic opportunities do not have a significant impact on poverty reduction. This might reflect the structural challenges in Nigeria's economy, where even if women have access to economic opportunities, broader economic constraints such as unemployment or underemployment may limit the direct effect on poverty reduction. The short-run coefficient of gender equality is positive and statistically significant (β = 0.074994; t = 2.283958; Pr(0.05) = 0.0329). This suggests that improvements in gender equality are positively associated with poverty in the short run, which might seem counterintuitive.

The coefficient of the error correction term is highly significant and negative (β = -1.027305; t = -5.342530; Pr(0.05) = 0.0000), indicating a strong adjustment towards equilibrium after a shock. This means that about 102.7% of disequilibrium in poverty from one period is corrected in the subsequent period, suggesting a rapid adjustment to the long-run equilibrium. This highlights the importance of consistent policy interventions in sustaining poverty reduction efforts in Nigeria.

In the long run, WEDU has a highly significant negative impact on poverty (β = -0.021124; t = -11.47832; Pr(0.05) = 0.0000). The negative coefficient reflects that sustained increases in women's educational access lead to a more substantial reduction in poverty over time. Education empowers women with the knowledge and skills necessary for better economic participation, ultimately contributing to household income and poverty alleviation. In the Nigerian context, where access to education for women has been limited in some regions, promoting female education can lead to large and lasting reductions in poverty. The long-run coefficient of WEOP is also negative and significant (β = -0.177589; t = -2.616985; Pr(0.05) = 0.0161), indicating that improved access to economic opportunities for

women leads to poverty reduction over time. The relatively large size of the coefficient suggests that policies aimed at increasing women's participation in the workforce or entrepreneurship can have a substantial impact on poverty levels. This finding is particularly relevant for Nigeria, where barriers to women's economic participation-such as discrimination, limited access to capital, and inadequate job opportunities-are still prevalent. Targeted interventions to support women in the labor market could be a powerful tool for poverty reduction.

In the long run, the coefficient of gender equality is positive and significant (β = 0.100144; t = 3.114619; Pr(0.05) = 0.0052). This result indicates that increased gender equality is associated with higher poverty levels in the long run, which may reflect the complex dynamics of gender-based policies in Nigeria. While the positive coefficient might suggest a short-term increase in poverty, it could also indicate that efforts to enhance gender equality need complementary economic policies to fully translate into poverty alleviation. In Nigeria, where gender disparities remain significant, addressing inequality in combination with broader economic reforms may be necessary for a more direct impact on poverty reduction.

The ARDL estimation results provide important insights into the role of women's empowerment in poverty reduction in Nigeria. The short-run and long-run relationships between women's access to education and economic opportunities and poverty demonstrate that empowering women through education and employment is crucial for long-term poverty alleviation. However, the mixed results for gender equality suggest that addressing poverty requires a more holistic approach that tackles deep-rooted socio-economic inequalities alongside women's empowerment.

Table 4.5 compiles the Ramsey RESET Test, Breusch-Pagan-Godfrey Heteroskedasticity Test, Breusch-Godfrey Serial Correlation LM Test, and the Wald Test results

Table 4.5: ARDL Post-Estimation Diagnostic Tests

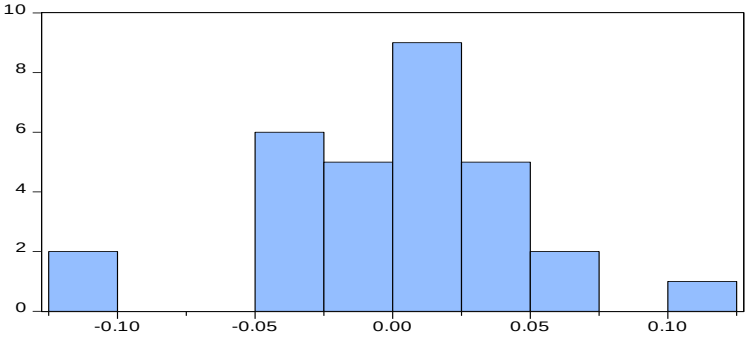
Test	Statistic	Value	df	Probability
Ramsey RESET Test	F-statistic	1.707781	(1, 20)	0.2061
Heteroskedasticity Test: Breusch-Pagan-Godfrey	F-statistic	2.591875	(8, 21)	0.3084
Breusch-Godfrey Serial Correlation LM Test	F-statistic	5.279126	(2, 19)	0.1050
Wald Test	F-statistic	6.627459	(1, 21)	0.0371
Normality Test	Jarque-Bera	1.536090		0.463919

Source: Author, 2024

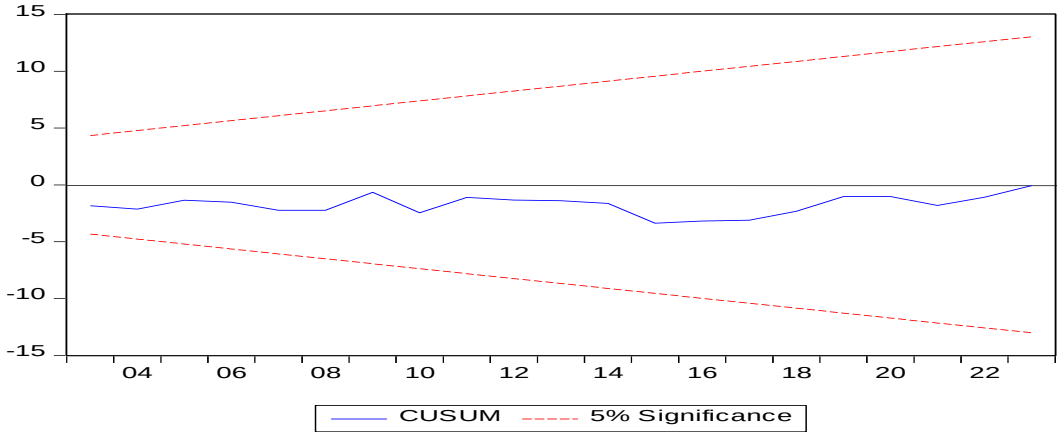
The post-estimation diagnostic tests presented in Table 4.5 provide a comprehensive assessment of the reliability and validity of the ARDL model used in this study. These tests are essential to ensure that the model assumptions are not violated, which could otherwise lead to misleading inferences. The Ramsey RESET test, with an F-statistic value of 1.707781 and a probability of 0.2061, evaluates the functional form of the model to detect any potential misspecification errors. Since the p-value is greater than the conventional significance level of 0.05, the null hypothesis of correct model specification cannot be rejected. This suggests that the model is appropriately specified, with no indication of omitted variable bias or incorrect functional form. Next, the Breusch-Pagan-Godfrey test for heteroskedasticity, yielding an F-statistic of 2.591875 and a probability of 0.3084, tests the null hypothesis of homoscedasticity-meaning that the variance of the errors is constant. The p-value, being higher than 0.05, indicates that there is no significant evidence of heteroskedasticity in the model. This result implies that the error variance is stable across observations, which is a desirable property in regression analysis, ensuring that the efficiency of the estimates is maintained.

The Breusch-Godfrey Serial Correlation LM test, with an F-statistic of 5.279126 and a p-value of 0.1050, assesses the presence of serial correlation in the residuals. Serial correlation can lead to biased standard errors and invalid statistical inferences.

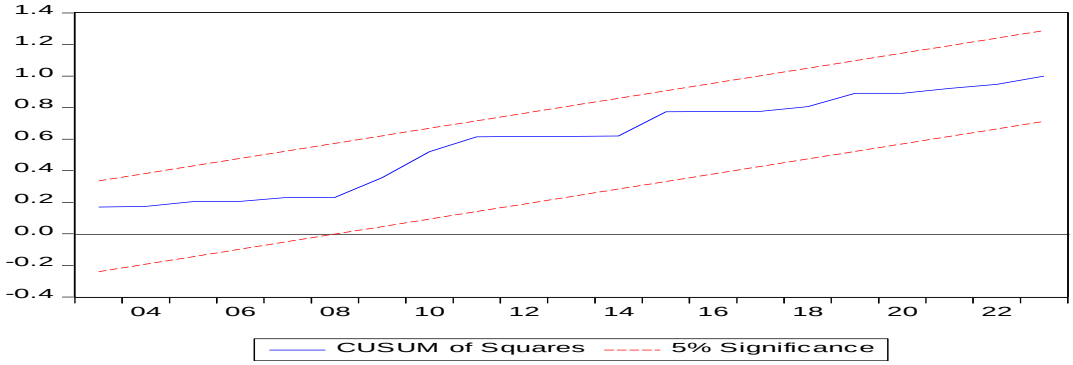
However, with the p-value exceeding 0.05, the null hypothesis of no serial correlation is not rejected. This suggests that the residuals are not serially correlated, confirming that the estimates remain unbiased and consistent. The Wald test, which tests the null hypothesis that the estimated coefficients are jointly equal to zero, shows an F-statistic of 6.627459 with a probability of 0.0371. The low p-value indicates that the null hypothesis cannot be accepted, suggesting that the coefficients are statistically significant at the conventional significance level. Finally, the normality of the residuals is tested using the Jarque-Bera statistic, which returns a value of 1.536090 and a corresponding p-value of 0.463919. Since the p-value is greater than 0.05, the null hypothesis of normality cannot be rejected. This confirms that the residuals are normally distributed, which is a critical assumption for the validity of hypothesis tests and confidence intervals in the model.



Source: Author, 2024



Source: Author, 2024



Source: Author, 2024

5. Summary, Conclusion and Recommendations

This study explores the nexus between women empowerment and poverty reduction in Nigeria. The study specifically analyse the effects of women access to education on poverty reduction; ascertain the effect of women access to economic opportunity on poverty reduction in Nigeria; and examine the effect of gender inequality on poverty reduction. This investigation is imperative because of the dire poverty situation of women in Nigeria given their limited access to essential services, infrastructure, and economic opportunities and the reliance off their majority on subsistence farming characterized by low productivity and income. The disparity between men and women is exacerbated by cultural and societal

norms that prioritize men's economic activities. Meanwhile little is known in the literature on the specific strategies and interventions that can effectively address the unique challenges faced by women.

The study employs a quantitative research design, utilizing annual time series data to examine the relationships between variables. In line with the objective of the study, poverty (POV) is the explanatory variable while women empowerment represented by women access to education (WEDU), and women access to economic opportunity (WEOP) and gender equality (GEQ). Data were sourced from the World Bank's World Development Indicators (WDI) database, covering the period from 1980 to 2023. The study employs the Autoregressive Distributed Lag (ARDL) bounds testing technique to explore the relationship between financial inclusion and inclusive growth. Descriptive statistics and correlation analysis as well as unit root tests, using Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were conducted in addition to post-estimation tests

The ARDL estimation results for both the short-run and long-run provide insights into the dynamics of women's empowerment and its effect on poverty reduction in Nigeria. In both the short (β = -0.014356; t = -4.205425; Pr(0.05) = 0.0004) and long run (β = -0.021124; t = -11.47832; Pr(0.05) = 0.0000), women's access to education (WEDU) consistently demonstrates a significant negative relationship with poverty, though with varying magnitudes. In the short run, the coefficient of WEDU is negative and significant (β = -0.014356; t = -4.205425; Pr(0.05) = 0.0004), indicating that increased access to education for women leads to a small yet immediate reduction in poverty. The effect is marginal in size, suggesting that while education improves economic conditions for women in the short term, the full benefits may take time to materialize. In the long run, the negative relationship strengthens significantly (β = -0.021124; t = -11.47832; Pr(0.05) = 0.0000), with the size of the coefficient reflecting a much larger and more impactful reduction in poverty as a result of sustained improvements in women's education. This suggests that the cumulative effect of education over time leads to more profound poverty alleviation. The long-run impact is more substantial because, over time, educated women gain more stable employment, improve family incomes, and contribute more effectively to economic growth. In the Nigerian context, this highlights the

importance of sustained investment in women's education, not just for immediate gains but for long-term poverty reduction.

The relationship between women's access to economic opportunities (WEOP) and poverty is less straightforward, differing between the short and long run. In the short run, the coefficient of WEOP is positive but statistically insignificant (β = 0.042916; t = 0.624175; Pr(0.05) = 0.5392), indicating that improvements in economic opportunities for women have little immediate impact on poverty reduction. This could reflect structural barriers in the Nigerian labor market or broader economic challenges, such as underemployment or wage gaps, which prevent short-term benefits from materializing despite increased access to opportunities. However, in the long run, the relationship changes significantly. The coefficient of WEOP becomes negative and statistically significant (β = -0.177589; t = -2.616985; Pr(0.05) = 0.0161), suggesting that sustained improvements in women's access to economic opportunities lead to substantial poverty reduction over time. The larger coefficient indicates that, over the long term, as women become more integrated into the labor market, gain experience, and access higher-paying jobs or entrepreneurial opportunities, the effect on poverty is far more pronounced. In the Nigerian context, this underscores the need for long-term strategies to dismantle structural barriers and support women's economic empowerment, which, while yielding minimal immediate results, has the potential for large-scale poverty alleviation in the future.

The relationship between gender equality (GEQ) and poverty presents an interesting dynamic across the short and long run. In the short run, the coefficient of GEQ is positive and significant (β = 0.074994; t = 2.283958; Pr(0.05) = 0.0329), suggesting that in the short term, improvements in gender equality may be associated with a rise in poverty. This counterintuitive result could be interpreted as reflecting the transitional costs of promoting gender equality, where initial investments or policy changes may disrupt traditional labor markets or require time before producing economic gains. In the long run, however, the coefficient of GEQ remains positive but becomes even more significant (β = 0.100144; t = 3.114619; Pr(0.05) = 0.0052), indicating that gender equality continues to be associated with higher poverty levels over time. This suggests that gender equality alone, without

complementary economic reforms, may not be sufficient to reduce poverty in the Nigerian context. While promoting gender equality is crucial, it appears that without broader socio-economic changes, such as job creation, income redistribution, and support for women's economic activities, the positive effects of gender equality on poverty may remain limited or even counterproductive. This highlights the need for a more comprehensive approach to gender equality that is integrated with broader economic reforms to fully realize its poverty-reducing potential.

The conclusion of this study underscores the critical relationship between women's empowerment and poverty reduction in Nigeria, demonstrating that enhancing women's access to education and economic opportunities can significantly mitigate poverty levels, albeit with some degree. The findings reveal that women's access to education consistently exhibits a significant negative relationship with poverty both in the short and long run, affirming that educational empowerment is a vital tool for poverty alleviation. Educated women are more likely to contribute effectively to household income, which in turn elevates living standards and reduces poverty. This reinforces the well-documented global narrative that education serves as a powerful instrument for social and economic upliftment. On the other hand, while women's access to economic opportunities shows an insignificant positive effect on poverty in the short run, it yields a significant negative impact in the long run. This suggests that the benefits of economic empowerment may not be immediately apparent but accumulate over time, leading to sustained poverty reduction. The initial insignificance in the short run could be attributed to the entrenched barriers that women face in accessing and fully capitalizing on economic opportunities, such as discriminatory cultural practices, limited access to capital, and inadequate infrastructure. However, as these barriers are gradually overcome, the positive effects of economic empowerment become more pronounced. Interestingly, the study finds that gender equality exhibits a significant positive relationship with poverty in both the short and long run. This counterintuitive result reflect the complex dynamics at play in Nigeria, where gender equality initiatives may not address the deeper structural issues that perpetuate poverty. For instance, gender equality in terms of formal rights or representation may not translate into substantive changes in

women's economic status or social standing, particularly in contexts where patriarchal norms remain deeply entrenched.

The implications of these findings are profound. They suggest that while efforts to empower women through education and economic opportunities are crucial, they must be accompanied by broader systemic changes that address the root causes of gender inequality. For policymakers, this means that a multifaceted approach is necessary- one that not only promotes women's education and economic participation but also tackles the societal and cultural barriers that limit the effectiveness of these efforts.

In light of these findings, the implications for policy are profound. It is essential to prioritize women's education as a key strategy for poverty reduction. Policies that ensure universal access to quality education for girls should be vigorously implemented. Additionally, economic empowerment programmes tailored to women should be designed with a long-term perspective, addressing barriers such as access to finance, market opportunities, and training. Furthermore, policies promoting gender equality need to be robust and context-sensitive, recognizing the potential short-term challenges while focusing on long-term gains. Programmes that engage men and communities in gender equality initiatives, as implemented in countries like Sweden, could be adapted to the Nigerian context to mitigate resistance and ensure smoother transitions.

Given the complexity of the relationship between women's empowerment and poverty, further studies are needed to explore the specific mechanisms through which gender equality impacts poverty reduction. Future research could also investigate the role of technology and digital inclusion in enhancing women's economic opportunities, particularly in rural areas where traditional barriers are most pronounced. By expanding the scope of inquiry, policymakers can be better equipped with evidence-based strategies to effectively combat poverty through the empowerment of women in Nigeria.

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