Impact of Global Value Chain on Multidimensional Poverty in Nigeria

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ABSTRACT

The purpose of this research was to examine the impact of the global value chain on multidimensional poverty in Nigeria. An empirical evaluation of the study was conducted spanning a duration of thirty-three years, specifically from 1990 to 2022. The backward GVC participation index, the forward GVC participation index, and the total GVC participation index served as surrogates for the global value chain, whereas the multidimensional poverty index was utilized as a proxy for multidimensional poverty. The research employed annual time series data primarily obtained from the World Bank's World Development Indicators (WDI) and the National Bureau of Statistics (NBS). The employed methods for data analysis consist of the Augmented Dickey Fuller (ADF) statistic, the Bounds Cointegration test, the Correlation Matrix, and the ARDL approach. The findings from the unit root test indicated that the variables exhibited mixed stationarity. Specifically, I(0) and I(1). The results of the bounds cointegration test indicated that the multidimensional poverty index, the backward GVC participation index, the forward GVC participation index, and the total GVC participation index are all related in the long term. Last but not least, the backward GVC participation index, forward GVC participation index, and total GVC participation index have a negative and statistically significant short-term and long-term impact on the multidimensional poverty index in Nigeria, according to the ARDL results. The study's conclusions, derived from its findings, indicate that the global value chain significantly contributes to the mitigation of multidimensional poverty in Nigeria. It was suggested, among other things, that in order to alleviate poverty, the government should intensify policy measures to further strengthen the business and regulatory environment so that domestic firms and globally successful transnational corporations would be enticed to invest in GVC.

INTRODUCTION

As a result of enhanced communication routes, decreased transportation costs, and the liberalization of trade policies, economic globalization has increased in recent decades and substantially altered international trade. A significant transformation that has occurred is the fragmentation of production on an international level, which has led to the emergence of global value chains (GVCs) (Antràs, 2020). Porter initially coined the phrase 'Value Chain' (VC) in 1986 to delineate the spectrum of operations that organizations undertake, commencing with the conceptualization of a product and culminating in its ultimate consumption by customers. According to Ogunleye (2014), the value chain is a sequential procedure that links buyers, sellers, producers, processors, and purchasers. The objective is to optimize the worth of products or services during their progression from one market participant to another, with the ultimate aim of reaching the final consumer on local, regional, and international scales. Upstream and downstream positions of technical, financial, business, and other service providers comprise the value-added operations chain. As value chains have grown in scope and scope, their global presence has also expanded (OECD, 2013).

The concept of a global value chain (GVC) refers to the comprehensive series of activities that companies engage in, both domestically and internationally, to facilitate the distribution of a product from its conception to its ultimate use. The notion of global value chains involves the dispersion of manufacturing processes throughout numerous nations, thereby enabling the emergence of goods produced in diverse geographical areas. Offshoring, a practice that has witnessed a surge in popularity since the 1970s, entails the relocation of services, components, or parts to third-party organizations that possess more cost-effective manufacturing facilities (Sílvia, Pedro, Oscar & Elena, 2023; Gereffi and Fernandez-Stark 2011). The assessment of a nation's level of engagement in the global value chain is conducted through the utilization of the global value chain index. This index is subdivided into two distinct categories: forward global value chain participation index and backward global value chain participation index. The forward global value chain involvement index, also known as the upstream participation index, quantifies the extent to which intermediate commodities exported by a nation are utilized in the production of exports to other countries. On the other hand, the downstream participation index, which is different from the backward global value chain involvement index, quantifies the degree to which a nation relies on imported intermediate goods in order to produce exports. Hummels, Ishii, and Yi (2001) posit that in general, the value addition resulting from the backward global value chain involvement index is more substantial than that of the forward global value chain participation. The worldwide value chain trade sector witnessed substantial expansion preceding the global financial crisis of 2008. Notwithstanding certain periods of inertia, more than fifty percent of contemporary international trade remains linked to global value chains (GVC) (World Bank, 2020). Global value chain trade continues to account for half of all trade despite the 2008 financial crisis, the COVID-19 pandemic, and the recent Ukraine-Russia War, which have all contributed to its diminished significance. This commerce encompasses all nations, albeit with variations in the degree of their participation and specialization at various points along the manufacturing process.

Subsequently, worldwide value chains have gained significant prominence within the international economy over the past few decades. Global value chains involve the delegation of industrial processes across numerous countries, which facilitates specialization and enhances operational effectiveness. The concept of global value chains has become increasingly significant in the realm of international trade, as nations participate in various phases of the value chain in order to capitalize on their unique competitive advantages (UNCTAD, 2021a). Additionally, participation in global value chains may generate employment opportunities. Global value chains have the potential to create employment opportunities, both directly and indirectly, by means of international corporations, local businesses, and ancillary industries. Furthermore, it is worth noting that global value chains possess the capacity to foster the transmission of technology and the development of expertise, consequently enhancing the local workforce's competitiveness. Consequently, this may lead to enhanced employment prospects and a decline in poverty levels (UNCTAD, 2021b; World Bank, 2020). According to Lee, Gereffi, and Barrientos (2022), global value chains exert a substantial influence on the improvement of production, the creation of job prospects, and the elevation of living standards. As a consequence of adopting global value chains, nations experience enhanced economic expansion, heightened reliance on imported advanced technologies and skilled labor, and a profusion of employment prospects; these factors collectively contribute to a decline in poverty levels. By transitioning to more advanced duties with greater value-added and integrating advanced technology and expertise into their manufacturing, service, and agricultural sectors, nations can attain economic growth via GVC-driven development. As a consequence, there is an economic expansion accompanied by a decline in destitution. Additionally, according to the World Trade Organization (2013), global value chains (GVCs) often generate employment opportunities, particularly for companies that rely heavily on manual labor. This may provide individuals with restricted education and talents with an opportunity to escape poverty. Moreover, through active engagement in different stages of the value chain, employees are afforded the chance to gain substantial knowledge and practical knowledge, thereby potentially enhancing their employment prospects and augmenting their earnings potential (Doherty & Tranchant, 2018). Furthermore, participation in the

global value chain (GVC) can bolster exports and generate foreign exchange earnings, thereby fostering economic growth and potentially alleviating poverty. Engagement in global value chains (GVCs) can provide local businesses and individuals with opportunities to learn about cutting-edge technologies and optimal methodologies, potentially resulting in increased profitability and productivity (Kaplinsky & Kaplinsky, 2015). Drawing upon prior research, the objective of this study is to examine the ramifications of the global value chain on poverty and economic development in Nigeria.

Statement of the Problem

Nigeria is endowed with a profusion of essential resources and commodities that frequently function as the foundation for global value chains. A variety of agricultural products, including cocoa, groundnuts, palm produce, cotton, tomatoes, cassava, rice, and maize, are abundant in the nation. In addition to a robust cattle and fishing industry, the region possesses valuable natural resources such as petroleum oil, natural gas, and precious stones like gold and gems. Untapped potential exists for the majority of these commodities to contribute significantly to global value chains and value chain processes. In contrast to other African nations that are positioned within the top 30 countries on global value chains, Nigeria's progress in this domain is still nascent. Regarding both backward and forward global value chain integration, the nation ranks among the continent's lowest. Nigeria encounters a substantial impediment in its integration into global value chains due to its limited ability to augment value, excessive reliance on primary production, and unskilled labor force. This obstructs the growth of more sophisticated and well-compensated employment prospects and hinders the expansion of economic diversity (UNCTAD, 2021a). As a result, despite the fact that Global Value Chains (GVCs) have aided in Nigeria's economic development and growth, their impact on per capita GDP and poverty reduction has been a subject of contention due to the complex nature of their positive and negative effects on poverty. Global value chains (GVCs) have the potential to exacerbate wealth inequality within and between nations due to the fact that the benefits accrue primarily to individuals with superior connections and skills, while the most indigent are left in their wake. Furthermore, an excessive reliance on Global Value Chains (GVCs) may render Nigeria vulnerable to global supply chain disruptions, thereby compromising the economic stability of vulnerable communities and jeopardizing job security. As a result, Nigeria remains beset by pervasive poverty, wherein a considerable proportion of the population endures conditions below the poverty threshold of $1 USD daily. However, additional studies have investigated the effects of global value chains (GVCs) on a variety of macroeconomic indicators across the globe, Nigeria being one of them. To the best of scholars' knowledge, the majority of research has focused on analyzing the effects of global value chains on employment and economic growth; however, no study has explicitly explored the ramifications of such chains on multidimensional poverty. Based on the researcher's knowledge, the majority of these empirical studies originate from foreign sources, and the potential applicability of their findings to the Nigerian context may be limited by environmental variations. These factors stimulated the interest of the researchers, who consequently undertook an empirical investigation into the ramifications of the global value chain on multidimensional poverty in Nigeria.

Aim and Objectives of the Study

The aim of this study is to determine the impact of global value chain on multidimensional poverty in Nigeria. Specifically, the study seeks to:

1. Examine the effect of backward global value chain (GVC) participation index on Multidimensional poverty in Nigeria.
2. Determine the effect of forward global value chain (GVC) participation index on Multidimensional poverty in Nigeria.
3. Examine the effect of total global value chain (GVC) participation index on Multidimensional poverty in Nigeria.

LITERATURE REVIEW

Theoretical Framework

- **Comparative Advantage Theory**

The notion of Comparative Advantage was formulated by David Ricardo in 1817. According to the theory, when each country focuses on producing a certain commodity in the area where they have a comparative advantage, it results in the achievement of trade benefits (Salvatore, 2007). According to the comparative advantage model, the efficient utilization of an economy's resources is achieved by engaging in trade and importing commodities and services that would have been more expensive to create domestically. Developing countries provide the most suitable example for this, as they face significant expenses in importing capital and intermediate commodities required for local economic development. This model centered on trade as the artery for the development of static efficiency in production and international competitiveness that result in economic growth. Gains from trade are either static or dynamic. The static gains from trade arise from the fact that nations possess different factor endowments, resulting in varying opportunity costs of production between nations. Conversely, the dynamic benefits of trade arise from the greater utilization of resources in the manufacturing process (Duru, Bartholomew, Okafor, Adikwu& Njoku, 2020).

The Comparative Advantage theory offers a robust theoretical basis for comprehending the influence of Global Value Chains (GVCs) on economic growth and their potential in reducing poverty. In other words, While the Comparative Advantage theory is typically associated with international trade, it remains very pertinent in the context of Global Value Chains (GVCs). Global Value Chains (GVCs) enable countries to focus on producing specific components or tasks in which they have a comparative advantage. This specialization leads to enhanced efficiency, productivity, trade, and market access, all of which contribute to economic growth in the globalized economy. Comparative Advantage theory says that countries should specialize in providing goods and services in which they have a comparative advantage (i.e., where they can produce more efficiently relative to other countries). In the context of Global Value Chains (GVCs), this principle remains true. Nations engaged in Global Value Chains (GVCs) frequently concentrate on particular phases of production or assignments that correspond to their comparative advantage. This specialization allows them to contribute efficiently to the overall production process inside the Global Value Chains (GVCs). Countries can enhance their efficiency and productivity by focusing on tasks or phases of production that align with their comparative advantage. Global Value Chains (GVCs) allow countries to concentrate on their comparative advantages and use economies of scale and specialized knowledge in those particular domains. The enhanced efficiency and productivity can result in elevated economic growth and a decrease in poverty by optimizing resource allocation. Global Value Chains (GVCs) can be understood as a type of international trade that is intricate and divided into smaller parts. The theory of Comparative Advantage emphasizes the significance of international trade in stimulating economic growth and reducing poverty. When countries engage in Global Value Chains (GVCs), they partake in substantial international trade of intermediary commodities and services, leading to heightened economic activity and growth, as well as a decrease in poverty.

- **Global Value Chain (GVC) Theory**

The Global Value Chain (GVC) theory is a well-known theoretical framework that offers valuable insights into the structure and dynamics of global value chains and their economic ramifications. The Global Value Chain (GVC) hypothesis, formulated by Gereffi, Humphrey, and Sturgeon in 2005, emphasizes the interdependence of economic activity among various nations and the allocation of value-added tasks throughout the chain. This study examines the specific functions performed by various participants,

including suppliers, manufacturers, and distributors, in generating and acquiring value within global value chains. Global Value Chain (GVC) theory posits that GVCs consist of various manufacturing stages, each executed in different locations or nations, depending on their respective comparative advantages. The stages encompassed in this process are research and development, design, manufacture, assembly, logistics, marketing, and distribution. Global value chains are regulated by many coordination mechanisms and propelled by market forces and business goals. The idea highlights the significance of governance structures, power dynamics, and chances for improvement within global value chains (GVCs).

The Global Value Chain (GVC) theory provides valuable insights into the correlation between global value chains and employment. It acknowledges that engaging in global value chains can generate job prospects through both direct and indirect employment. Direct employment include positions held within international firms and local companies that are engaged in various aspects of the value chain, including production, logistics, distribution, and management. Indirect employment refers to the employment opportunities in ancillary sectors such as transportation, packaging, warehousing, and retail. Global value chains frequently depend on the participation of small and medium-sized firms (SMEs), which can contribute to the generation of local jobs.

Empirical studies utilizing Global Value Chain (GVC) theory have demonstrated the capacity of global value chains to generate jobs. An investigation conducted by Gereffi, Humphrey, and Sturgeon (2005) analyzed the global apparel industry and discovered that the proliferation of global value chains (GVCs) resulted in substantial increases in employment opportunities in developing nations. In a study conducted by Van Biesebroeck and Zhang (2018), the effects of GVC membership on employment in China were examined. The findings revealed that companies involved in GVCs exhibited greater levels of employment and shown a stronger propensity to invest in training and skill enhancement. Applying the Global Value Chain (GVC) theory in Nigeria can provide insights into the employment prospects and obstacles linked to the country's integration into global value chains. Nigeria, being the most sizable economy in Africa, has witnessed a growing assimilation into Global Value Chains (GVCs), namely in industries such as oil and gas, agriculture, manufacturing, and services. The existence of multinational firms and foreign direct investment has facilitated the formation of global value chains in the nation.

Empirical Literature

Sílvia, Pedro, Oscar and Elena (2023) conducted a meta-analysis on the effects of global value chains (GVCs) on employment. The study found that although the average impact is not statistically different from zero, the impact of GVCs on employment differs significantly according to the countries' development level, the degree of workers' qualifications, the types of sectors that are considered, the unit of analysis, and the indicators used to measure global value chains (GVCs)and employment.

Mankiw and Taylor (2023) examined the relationship between economic growth and participation in global value chains (GVCs) and demonstrates that the U-shaped nonlinear pattern of global value chains (GVCs) could be more effective than the simple linear pattern of global value chains (GVCs) in terms of economic growth in high- and middle-income economies. The U-shaped nonlinear pattern expresses that an economy decreases foreign dominated GVCs (increases domestic value chains) for building local value chains and then raises the GVCs participation to benefit at a better position in global value chains (GVCs). This study investigated a panel of sixty-three (63) advanced and emerging economies and obtained significant evidence by using systemic quantitative analysis.

Essotanam (2022) analyzed the effects of global value chains (GVCs) on economic growth in the Economic Community of West African States (ECOWAS) during 1990–2020 by highlighting the complementarity role of the regional trade agreement (RTA). Unlike previous studies at the ECOWAS level, this research focused on the specific aspect of trade in global value chains (GVCs). This study also investigated the

complementary role of RTA and used a continuous index of RTA rather than dummy variables which are often employed. To control for the endogeneity issue, the research applies the instrumental variables approach. The findings indicated the positive effect of global value chains (GVCs) on growth but the effect of forward global value chain (GVC) participation is greater than that of backward global value chains (GVCs). They also show the differentiated effects of agricultural, manufacturing, and services GVCs. Finally, the findings reveal that the effect of global value chains (GVCs) on growth increases with RTA. These findings have important policy implications.

Hermida, Santos and Bittencourt (2022) use a panel autoregressive distributed lag model to explore the long-term relationship between global value chains (GVCs) and economic growth over the period 1995–2011 for 40 advanced and emerging countries. The findings of the study show the positive effect of global value chains (GVCs) on economic growth.

Oladapo and Rafiu (2022) examined the impact of global value chain (GVC) participation on employment in Nigeria between 1991Q1 and 2015Q4. Specifically, the study examined the GVC participation employment impacts along different sectors of the economy which include the agricultural sector, industrial sector and services sector. To implement this, the study used Dynamic Ordinary Least Squares. The findings of the study showed that only backward GVC participation contributes positively to total employment. At sectoral levels, industrial sector employment benefited from the total, forward and backward GVC participation while agricultural sector employment only benefits in total and forward GVC participation. However, the study did not find evidence that services sector employment benefits from any GVC participation.

Jithin, Ashraf and Umar (2022) analyzed the effect of global value chains (GVCs) participation on economic growth for sixty-two (62) economies for the period 2000–2018. The results of the study showed that a positive and significant effect of global value chains (GVCs) participation on economic growth in economies with strong economic growth while the opposite sign is obtained in economies with low economic growth.

Gopalan, Reddy, and Sasidharan (2022) empirically examined the importance of digitalization in deepening participation in global value chains (GVCs). The study used firm-level data for 52 countries and testing for different measures of digitalization and GVCs definitions. The obtained results showed that digitalization by firms positively influences their GVCs participation and that the resulting gains are not limited to large firms alone.

Fernandes, Kee, and Winkler (2022) studied the determinants of countries' global value chains (GVCs) participation. The study adopted a country-approach instead of a firm-level approach. The study found that factor endowment, geography, political stability, liberal trade policies, foreign direct investment and domestic industrial capacity are the macroeconomic characteristics highly relevant for determining the global value chains (GVCs) participation, especially in what concerns global value chain (GVC) trade rather than traditional trade.

Jangam and Rath (2021) investigate the relationship between global value chains (GVCs) and economic growth for a sample of 58 economies over the period 2005– 2015. Using the generalized method of moments (GMM), the findings show that trade and in particular trade linked to global value chains (GVCs) stimulate economic growth. Also, the findings reveal differentiated effects of sectoral global value chains (GVCs) on economic growth.

Reddy, Chundakkadan and Sasidharan (2021) study the relationship between innovation and firms' participation in global value chains (GVCs) using a large sample of firm-level data across 90 countries.

Controlling for reverse causality endogeneity, the study found that firm innovation is a significant driver of global value chain (GVCs) participation, these results being robust to alternative measures of innovation and various subsample analyses.

Evaluation of Literature Reviewed

Based on the empirical studies reviewed, it is observationally discovered that some studies have been carried out on the effect of global value chains (GVCs) on different macroeconomic variables across the world, Nigeria inclusive. To the best of researcher's knowledge, most of the studies focused on the effect of global value chains on employment as well as economic growth while none of the studies concentrated on the effect of global value chains on poverty and economic development. To the best of researcher's knowledge also, most of these empirical works are of foreign origin whose findings may not be compatible with the Nigerian situation considering environmental differences. In addition, most of these studies are not current or up-to-date as they failed to make use of most recent data. In order words, none of the related studies made use of 2022 data. In a bid to fill this gap, this study intends to empirically analyze "the effect of global value chain on poverty and economic development in Nigeria". The study will make use of time series data that cover up to 2022. This will make this study to be more current or up-to-date than previous related studies carried out.

METHODOLOGY

Research Design

In this study, the ex-post facto research design was used. This is geared for the purpose of obtaining data to enable the researcher test hypotheses or answer research questions. Furthermore, ex-post facto research design is usually adopted in a study in which investigation starts after the fact has occurred without interference or manipulations from the researcher.

Data Collection Method and Sources

For the purpose of this study, the data gathered were entirely sourced from secondary sources or published materials. Specifically, annual time series data which covered a period of thirty-three years (1990 – 2022) were used in this study. These data were sourced from National Bureau of Statistics (NBS) and World Development Indicators (WDI) of World Bank.

Model Specification

The model of this study was built on the model designed by Oladapo and Rafiu (2022) with slight modification. Specifically, two different models will be developed and specified. The model was stated in four (4) different forms (that is, functional, mathematical, econometric and log linear) as follow:

The functional forms of the models are stated as:

$$MPI_t = f(BGVC, FGVC, TGVC) \quad (1)$$

In econometrics, the equation (1) is not sufficient in specifications due to the absence of the constant and parameters. Therefore, we introduce the constant variables and parameters as follows;

$$MPI_t = \beta_0 + \beta_1 BGVC_t + \beta_2 FGVC_t + \beta_3 TGVC_t \quad (2)$$

Due to the assumed exactness of the relationship among the variables in the above stated equation (2), the econometric version is specified introducing the disturbance term which helps to explain the inexact relationship among the variables.

Therefore, the econometric form of the model is are stated as:

$$MPI_t = \boldsymbol{\beta_0} + \boldsymbol{\beta_1} BGVC_t + \boldsymbol{\beta_2} FGVC_t + \boldsymbol{\beta_3} TGVC_t + \mu_t \quad (3)$$

Lastly, the log linear form of the model is specified as follows

$$MPI_t = \boldsymbol{\beta_0} + \boldsymbol{\beta_1} InBGVC_t + \boldsymbol{\beta_2} InFGVC_t + \boldsymbol{\beta_3} InTGVC_t + \mu_t \quad (4)$$

Where:

MPI = Multidimensional Poverty Index, BGVC = Backward global value chain participation index, FGVC = Forward global value chain participation index, TGVC = Total global value chain participation index, $\boldsymbol{\beta_0}$ = the intercept/constant variable, $\boldsymbol{\beta_1}$ = coefficients of backward global value chain participation index, $\boldsymbol{\beta_2}$ = coefficients of forward global value chain participation index, $\boldsymbol{\beta_3}$ = coefficients of total global value chain participation index, t = time, *In* = log linear, μ_t = disturbance term which is a random (stochastic) variable that has well defined probabilistic properties.

A Priori Expectations

The parameters of backward global value chain (GVC) participation index, forward global value chain (GVC) participation index and total global value chain (GVC) participation index are expected to have negative signs and thus denote negative relationship with multidimensional poverty index. This is mathematically shown as: $\beta_1 < 0$; $\beta_2 < 0$; $\beta_3 < 0$.

Estimation Techniques

In order to commence the analytical process for this research, summary statistics were generated for each series that would subsequently be incorporated into our functional model. The summary statistics furnished data regarding the mean observation for each series, the median value across the entire range of the study, a measure of dispersion including the maximum and minimum values as well as the standard deviation, and details regarding the conditioned variable and predictor variables' skewness and kurtosis. As indicated previously, the study expanded on this by performing pre-estimation tests to ensure that the estimated model is not spurious and that it is possible to estimate a co-integrating regression. In light of the mixed stationarity of all variables (a combination of stationary values at levels and stationary values at first difference), the Autoregressive Distributed Lag (ARDL) method was implemented. In order to accomplish this, data from the World Bank's World Development Indicators (WDI) and the National Bureau of Statistics (NBS) pertaining to the period 1990-2022 were organized in an Excel spreadsheet and subsequently exported to the Econometric Views (E-Views) 12 statistical package to facilitate the necessary analysis. The ARDL model employed in this study is specified as follows:

$$\Delta(MPI_t) = \beta_0 + \sum_{t=1}^{p} \beta_{1i}\Delta(MPI_{t-1}) + \sum_{t=1}^{q} \beta_{2i}\Delta(BGVC_{t-1}) + \sum_{t=1}^{q} \beta_{3i}\Delta(FGVC_{t-1}) + \sum_{t=1}^{P} \beta_{4i}\Delta(TGVC_{t-1}) + \alpha_{1i}\Delta(MPI_{t-1}) + \alpha_{2i}\Delta(BGVC_{t-1}) + \alpha_{3i}\Delta(FGVC_{t-1}) + \alpha_{4i}\Delta(TGVC_{t-1}) + \varepsilon_{1i} \quad (3.8)$$

Where, In = natural log; Δ = the difference operator and indicates the optimum lag;t = time lag; β_0 = constant variable; $\alpha_1 - \alpha_4$ = long-run dynamic coefficients of the model; $\beta_1 - \beta_4$ = short-run dynamic

coefficients of the model; ε_{1i} = serially uncorrelated stochastic term with zero mean and constant variance.

DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

Data Analysis and Results

Descriptive Statistics

Table 1 provides a summary of the descriptive statistics pertaining to the variables under investigation.

Table 1: Descriptive Statistics of Multidimensional Poverty Index (MPI), Backward GVC Participation Index (BGVC), Forward GVC Participation Index (FGVC), Total GVC Participation Index (TGVC)

	MPI	**BGVC**	**FGVC**	**TGVC**
Mean	0.412848	0.715152	0.534848	1.246970
Median	0.433000	0.700000	0.520000	1.240000
Maximum	0.584000	0.880000	0.720000	1.510000
Minimum	0.212000	0.580000	0.470000	1.100000
Std. Dev.	0.093704	0.068562	0.046174	0.086764
Skewness	-0.488390	0.363113	2.008947	0.869439
Kurtosis	2.645335	2.999480	8.989338	4.019613
Jarque-Bera	1.484843	0.725181	71.52150	5.587045
Probability	0.475960	0.695871	0.000000	0.061205
Sum	13.62400	23.60000	17.65000	41.15000
Sum Sq. Dev.	0.280976	0.150424	0.068224	0.240897
Observations	**33**	**33**	**33**	**33**

Source: Authors' Computation, 2024 (EViews, 12.0 Output).

The descriptive statistics, including the backward GVC participation index, forward GVC participation index, and total GVC participation index, are displayed in Table 1 above. The data spans a duration of thirty-three (33) years, from 1990 to 2022. The table illustrates that the multidimensional poverty index (MPI) exhibited a mean value of 0.413 during the specified period, fluctuating between a maximum of 0.584 and a minimum of 0.212 annually. Multidimensional poverty index (MPI) standard deviation is 0.094; this indicates that dispersion or deviation from the mean of the MPI during the study period (1990-2022) was minimal. Furthermore, the backward GVC participation index (BGVC) exhibited a mean value of 0.715 throughout the specified time frame, fluctuating between 0.88 and 0.58 annually. With a standard deviation of 0.069, the backward GVC participation index (BGVC) exhibits minimal dispersion or deviation from the mean throughout the study period.Additionally, the forward GVC participation index (FGVC) exhibited a mean value of 0.535 during the specified time period, fluctuating between a maximum of 0.72 and a minimum of 0.47 annually. Based on its standard deviation of 0.046, the forward GVC participation index (FGVC) exhibits minimal dispersion or deviation from the mean throughout the study period.In conclusion, the annual mean value of the total GVC participation index (TGVC) was 1.247, with a maximum of 1.51 and a minimum of 1.10 during the period. The data for the study period (1990-2022) reveals that the total GVC participation index (TGVC) exhibits minimal dispersion or deviation from the mean, as evidenced by its standard deviation of 0.087.

Unit Root Test

The results of the Augmented Dickey Fuller (ADF) unit root test are provided in Table 2 below:

Table 2: Augmented Dickey-Fuller (ADF) Test Results

	@ Levels		**At 1st Difference**			
Variables	**ADF Statistic**	**5% Critical Value**	**ADF Statistic**	**5% Critical Value**	**Order of Integration**	**Decision**
	-1.734897	-2.957110	-7.688886	-2.960411	I(1)	Stationary @ 1st Differences
	-1.830592	-2.957110	-5.338687	-2.960411	I(1)	Stationary @ 1st Differences
	-4.581008	-2.957110	–	–	I(0)	Stationary @ Leve
	-2.501805	-2.957110	-6.115864	-2.960411	I(1)	Stationary @ 1st Differences

Source: Authors' Computation, 2024 (EViews, 12.0 Output).

Based on the outcomes of the ADF unit root test, which are displayed in Table 2, it is possible to reject the null hypothesis of unit root for the forward GVC participation index (FGVC) at the given level. This indicates that the forward GVC participation index (FGVC) is integrated of order zero, or [I(0)], and is stationary at level. Conversely, the null hypothesis regarding unit root cannot be rejected at the level of the backward GVC participation index (BGVC), multidimensional poverty index (MPI), and total GVC participation index (TGVC). This indicates that unit roots are contained at the levels of the multidimensional poverty index (MPI), the backward GVC participation index (BGVC), and the total GVC participation index (TGVC). At first difference, however, the null hypothesis of unit root can be rejected for the backward GVC participation index (BGVC), the multidimensional poverty index (MPI), and the total GVC participation index (TGVC). Hence, based on this, the multidimensional poverty index (MPI), backward GVC participation index (BGVC), and total GVC participation index (TGVC) are integrated of order one and are stationary at first difference, denoted as [I(1)]. The outcomes of the unit root test suggest that the dataset is presumed to be devoid of erroneous and deceptive regression estimates. Due to the mixed stationarity of all variables, which is a combination of I(0) and I(1), co-integration analysis is warranted.

Bound Cointegration Test

The result of ARDL bounds cointegration test is presented in Table 5:

Table 3: ARDL Bounds Cointegration Test Result

Null Hypothesis: No Long-Run Relationships Exist				
Critical Value Bounds				
T-statistic	Value	Significance	I(0)	I(1)
F-statistic	5.378457	10%	2.37	3.2
K	3	5%	2.79	3.67

		1%	3.65	4.66

Source: Authors' Computation, 2024 (EViews, 12.0 Output).

The outcome of the ARDL bound cointegration test, as shown in Table 3, indicates that the F-statistic value of 5.378457 is greater than both the upper and lower bound critical values at 5%. This indicates that the null hypothesis is rejected and provides evidence of cointegration among the model's variables. Additionally, the outcome of the Bounds test suggests that the Multidimensional Poverty Index, the Backward GVC Participation Index, the Forward GVC Participation Index, and the Total GVC Participation Index are cointegrated over the long term. This indicates that the backward GVC participation index, the forward GVC participation index, and the total GVC participation index are all strong long-term predictors of the multidimensional poverty index. Following the identification of cointegrating relationships in the model, the Autoregressive Distributed Lag (ARDL) model estimation process was initiated.

Estimation of Autoregressive Distributed Lag (ARDL) Model

Long Run ARDL Model Estimation

Table 4: Long Run Autoregressive Distributive Lag (ARDL) Model (2, 0, 0, 0)

Dependent Variable =				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
	-2.102672	0.504342	-4.169143	0.0002
	-0.795665	0.364611	-2.182228	0.0371
	-0.374399	0.182639	-2.049940	0.0492
C	0.138802	0.483104	0.287314	0.7758

Source: Authors' Computation, 2024 (EViews, 12.0 Output).

The long run ARDL result indicates that the backward GVC participation index (BGVC) has a probability value of 0.0002 and a coefficient value of -2.102672, both of which are less than the 5% significance level. This finding suggests that the backward GVC participation index (BGVC) has a statistically significant and negative long-term impact on the multidimensional poverty index (MPI). Therefore, for each unit increase in the backward GVC participation index (BGVC), the multidimensional poverty index (MPI) will decrease by 2.102672. Conversely, for each unit decrease in the BGVC, the MPI will increase by 2.102672. Furthermore, the long run ARDL result indicates that the forward GVC participation index (FGVC) possesses a negative probability value (0.0371) and coefficient value (-0.795665), both of which are below the predetermined significance level of 5 percent. This finding suggests that, over an extended period of time, the forward GVC participation index (FGVC) has a substantial adverse impact on the multidimensional poverty index (MPI). Therefore, when the forward GVC participation index (FGVC) increases by one unit, the multidimensional poverty index (MPI) will decrease by 0.795665. Conversely, when the FGVC decreases by one unit, the MPI will increase by 0.795665. In conclusion, the long run ARDL result indicates that the total GVC participation index (TGVC) has a probability value of 0.0492 and a negative coefficient value (-0.374399), both of which are below the 5% significance level. This indicates that the multidimensional poverty index (MPI) is significantly and negatively impacted by the total GVC participation index (TGVC) over time. Therefore, for each unit increase in the total GVC participation index (TGVC), the multidimensional poverty index (MPI) will decrease by 0.374399. Conversely, for each unit decrease in the TGVC, the MPI will increase by 0.374399.

Short Run ARDL Model Estimation

Table 5: Short Run Autoregressive Distributive Lag (ARDL) Model (2, 0, 0, 0)

Dependent Variable =				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
$D(BGVC_t)$	-0.648569	0.174948	-3.707213	0.0008
$D(FGVC_t)$	-0.603183	0.195047	-3.092500	0.0046
CointEq(-1)*	-0.374399	0.182639	-2.049940	0.0492
Adjusted R-squared = 0.570181; Durbin-Watson stat = 2.143608				

Source: Authors' Computation, 2024 (EViews, 12.0 Output).

The backward GVC participation index (BGVC) has a negative coefficient value (-0.648569) and probability value (0.0008), which are both below the 5% level of significance as determined by the short run ARDL results in Table 7. This finding suggests that, in the near term, the backward GVC participation index (BGVC) has a statistically significant negative impact on the multidimensional poverty index (MPI). Therefore, for each unit increase in the backward GVC participation index (BGVC), the multidimensional poverty index (MPI) will decrease by 0.648569. Conversely, a unit decrease in the backward GVC participation index (BGVC) will result in an increase of 0.648569 for the multidimensional poverty index (MPI), and vice versa. Furthermore, the probability value (0.0046) and negative coefficient value (0.603183) of the forward GVC participation index (FGVC) are both below the 5% level of significance. This finding suggests that in the near term, the forward GVC participation index (FGVC) has a statistically significant and negative impact on the multidimensional poverty index (MPI). Therefore, when the forward GVC participation index (FGVC) increases by one unit, the multidimensional poverty index (MPI) will also decrease by 0.603183. In addition, Table 7 presents the short run ARDL result, which indicates that the anticipated negative sign of CointEq(-1) is statistically significant. This verifies the presence of a long-term correlation between the variables, as evidenced by their distinct significant delays. The coefficient of CointEq(-1) is -0.374399, which signifies that by the subsequent year, the long-term deviation from the multidimensional poverty index has been rectified by 37%. Furthermore, the adjusted R-squared (R2) value of 0.570181 suggests that backward GVC participation index (BGVC), forward GVC participation index (FGVC), and total GVC participation index (TGVC) account for 57 percent of the systematic variation in the multidimensional poverty index in the short run. The remaining 43 percent is accounted for by extraneous variables (factors). Finally, the Durbin Watson statistic of 2.143608 provides evidence that the model does not contain serial correlation.

Post-Estimation Tests

The post estimation tests conducted in this study and its results are presented below:

Table 6: Post-Estimation Tests Results

Test	**F-Statistic**	**P-value**	**Null Hypothesis**	**Decision**
Breusch-Godfrey Serial Correlation LM Test	0.954256	0.3998	**H_0:** No serial correlation	Retain H_0
Heteroskedasticity Test:	0.300909	0.9077	**H_0:** Homoscedasticity	Retain H_0
Ramsey RESET test	0.074273	0.6447	**H_0:** Correctly specified	Retain H_0

Source: Authors' Computation, 2024 (EViews, 12.0 Output).

The outcomes of the post-estimation assessments are presented in Table 8. To examine the residuals' serial correlation, the Breuch Godfrey test or Lagrange Multiplier (LM) was implemented. The purpose of conducting this test was to determine whether or not the residuals exhibit serial independence. In contrast, the null hypothesis that there was no serial correlation was maintained due to the fact that the probability value of 0.3998 exceeded the predetermined significance level of 5 percent. This suggests that serial correlation was not present in our model. Furthermore, the Breusch-Pagan-Godfrey test indicated that our model did not contain any heteroscedasticity. This is the case due to the retention of the null hypothesis of homoscedasticity. Precisely, a probability value of 0.9077 indicated that the errors were independent of the explanatory variables and homoscedastic. Consequently, the model fits the data well and is sufficient for deriving any conclusion.In conclusion, the probability value of 0.6447 exceeding the prescribed level of significance of 5 percent for the Ramsey Regression Equation Specification Error Test (RESET) was a concerning outcome. Consequently, the null hypothesis, which posits that the model was specified accurately, was maintained. Consequently, the model could not have been mistakenly specified, which could have led to the omission of specific variables.

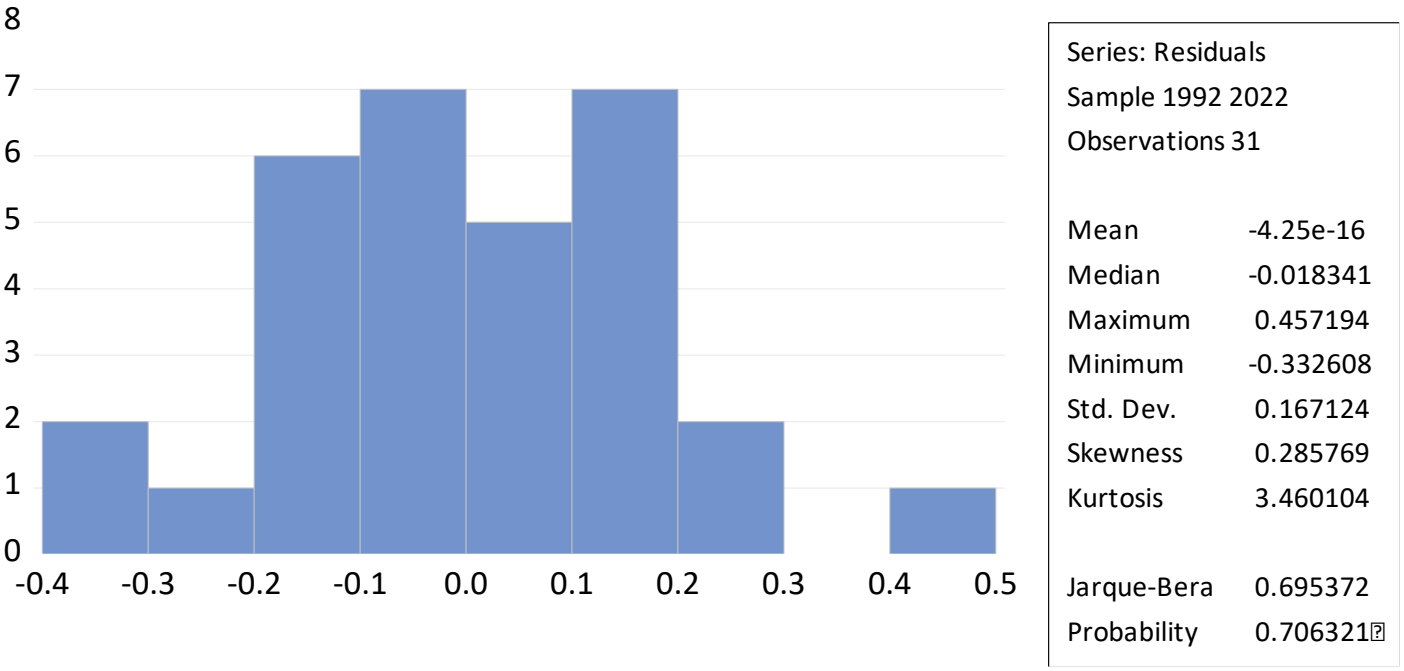

Figure 5: Normality Test

Source: Author's Computation, 2023 (EViews, 12.0 Output).

The result of the normality test in Figure 1 showed that the regression residual is normally distributed since the P-value (0.706321) is greater than 5 percent level of significance. In other words, under the Jarque-Bera normality test, a probability value of 0.706321 was greater than the proposed level of significance and this suggests that the errors were normally distributed due to the upholding of the null hypothesis of normal distribution.

Discussion of Findings

Between 1990 and 2022, the primary objective of this study is to assess the effect of the global value chain on multidimensional poverty in Nigeria. The data utilized in the research were sourced from the World Bank's World Development Indicators (WDI) and the National Bureau of Statistics (NBS). Autoregressive Distributed Lag (ARDL) was utilized to assess the individual and collective impact of the global value chain

proxies (backward GVC participation index, forward GVC participation index, and total GVC participation index) on the multidimensional poverty index. 12th edition of the econometric views (E-views) statistical software facilitated the data analysis. The results of this research demonstrated a statistically significant and negative correlation between the backward GVC participation index and the multidimensional poverty index over both the short and long term in Nigeria. This suggests that a rise in the backward GVC participation index will result in a short-term and long-term decline in the multidimensional poverty index in Nigeria. This discovery is corroborated by the research conducted by Lee, Gereffi, and Barrientos (2022), which indicates that the backward GVC participation index (BGVC) is a critical element of the global value chain and a major contributor to poverty reduction and improved living standards.In addition, the findings of this research demonstrated a statistically significant and negative correlation between the forward GVC participation index and the multidimensional poverty index in Nigeria, both in the immediate and extended periods of time. This suggests that a rise in the forward GVC participation index will result in a simultaneous decrease in the multidimensional poverty index in Nigeria over the course of the short and long term. This result is also consistent with the findings of Pan (2020), which indicate that the forward GVC participation index has a short-term and long-term positive impact on employment creation but a negative impact on multidimensional poverty. In conclusion, the results of this research demonstrated a statistically significant and adverse correlation between the multidimensional poverty index and the total GVC participation index over an extended period of time in Nigeria. This suggests that an increase in the total GVC participation index will ultimately result in a decrease in the multidimensional poverty index in Nigeria. This discovery is consistent with the outcomes reported by Sílvia, Pedro, Oscar, and Elena (2023), which demonstrate that the influence of GVCs on multidimensional poverty varies substantially based on factors such as the level of development in a given country, the qualification level of its workforce, the sectors under consideration, the unit of analysis, and the indicators employed to quantify GVCs and multidimensional poverty.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The global economy has placed considerable emphasis on global value chains in recent decades. These practices entail the dispersion of production processes among various nations, which facilitates specialization and increases in efficiency. Countries that wish to capitalize on their comparative advantages have begun to participate in various phases of global value chains, which have become a defining characteristic of international trade. Engaging in global value chains possesses the capacity to create employment prospects, thereby contributing to the alleviation of poverty. Consistent with the preceding, the impact of the global value chain on multidimensional poverty in Nigeria between 1990 and 2022 was empirically investigated in this study. According to the study, the backward GVC participation index, the forward GVC participation index, and the total GVC participation index all make a statistically significant and negative contribution to the multidimensional poverty index in Nigeria. The study concludes, on the basis of its findings, that the global value chain significantly contributes to the alleviation of multidimensional poverty in Nigeria.

Based on the research findings and the conclusion drawn, the following are recommended:

1. In order to alleviate poverty, the government should intensify policy measures to enhance the business and regulatory climate so that domestic firms and globally successful transnational corporations are more inclined to invest in GVC. The objective of this policy ought to be to encourage engagement in endeavors that stimulate progress along both the forward and reverse value chains.
2. It is imperative that the government and policy makers establish a definitive national policy regarding the development of value chains, which should be seamlessly incorporated with strategies pertaining

to national trade, industrial progress, and competitiveness. This approach will foster increased engagement in GVC initiatives throughout various sectors and industries, capitalizing on the benefits of both retrograde and progressive GVC participation in order to alleviate poverty.

3. To maximize the benefits of GVC participation, the necessary skills required by workers in backward value chain activities and forward value chain activities in various sectors of the economy should also be cultivated and utilized.

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