

NIGERIA-INDIA BILATERAL TRADE RELATIONS: AN ANALYSIS OF TRADE COMPLEMENTARITY INDEX (TCI)



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ABSTRACT

Article History

Received: 1 June 2016

Revised: 25 June 2016

Accepted: 8 August 2016

Published: 21 September 2016

Keywords

Bilateral relations

Export supply

Import demand

Trade

Trade composition

Trade complementarity index

(TCI)

Nigeria

India.

JEL Classification:

This study used simple descriptive analysis and trade complementarity index to examine Nigeria-India bilateral trade relations for the period 2000–2014. Evidence from the trade composition result shows that Nigeria's imports from India are more diversified than its exports. All the major products imported from India by Nigeria accounts for a very much significant share in its total imports while for the exports only mineral fuels seem to contribute much to the Nigeria's exports to India. Throughout the whole period, there exist a partial match between Nigeria's exports supply and the India's imports demand as the trade complementarity indices lies between 31.98 and 45.21. Despite the existence of partial export and import match between Nigeria and India the trade complementarity index has been steadily increasing from 2000–2014, implying that Nigeria and India trade profiles are becoming more compatible. Thus, the study also recommends that the Nigerian government, export promotion agencies, ministries, exporters and other stakeholders should focus attention on identify realistic export opportunities in Indian markets in order to boost and diversified Nigeria's export through the use of more scientific, realistic and empirical approach.

Contribution/ Originality: This study contributes to the existing literature in the area of international economics more specifically Nigeria-India bilateral trade relations and established the extent to which Nigeria's export supply match with India's import demand. The study shows that there exists a partial match between Nigeria's export supply and India's import demand.

1. INTRODUCTION

Nigeria has nowadays emerged as India's largest trading partner in the whole African continent. This has also placed India to be Nigeria's largest trading partner in the whole world. According to the Nigerian National Bureau of Statistics, India is now Nigeria's largest market for exportable goods overtaken US which has remained Nigeria's largest export destination since 1964. Over the last one and half decade trade between Nigeria and India is becoming strategically important as a result of the rise of Nigeria's export supply to India and India's imports demand from Nigeria. In 2014 Nigeria's export to India hits \$14.98 billion, which represents 33 percent of its total exports while import from India stood at \$2.77 billion representing 12.4 percent of its total imports. The total trade value recorded between Nigeria and India from 2000–2013 stood at \$88,036.96 million. Out of this trade value

\$71,795.00 million represents Nigeria's exports to India and \$16,241.96 million represents Nigeria's imports from India, which implies that the balance of trade in absolute term if not in real term is in favor of Nigeria (Kabiru and Dilfraz, 2014). Just recently 2014-2015 Nigeria-India bilateral trade hits \$16.36 billion, which was 2 percent less than the previous year 2013-2014 figure of \$16.98 billion (Indian High Commission in Nigeria, 2016). Being the most populous country in Africa, Nigeria is the largest market for Indian exports, especially of pharmaceutical products, vehicles electrical machinery and equipment. Being a country that is at edge of energy security and crude oil demand, India also served as the destination of Nigeria's crude oil export as 8 to 12 percent of India's crude oil requirements is supplied by Nigeria. In these days, India is the largest importer of Nigeria's crude oil. Out of \$13.68 billion worth of goods imported, \$13.53 billion worth of crude oil was imported in 2014-2015 representing 98 percent of the total imports from Nigeria. As a result of this fact, both countries need to be sensitive to promoting trade among them. In the recent wake of world globalization the growing and booming trade between Nigeria and India, which on average recorded a growth of 188.0 percent from 2000-2013 can offer an opportunity for the countries to increase trade, investment and technical co-operation.. Nigeria has remained one of the most important trading partners of India despite the huge trade deficit with which India recorded over the last one and half decade, which amounts to \$55,553.04 million and represents 63 percent of Nigeria-India total trade value for the period.

Nowadays Nigeria-India trade is dominated by commodity trade. Nigeria exports mineral fuels, cotton, edible fruit, ore slag and ash, aluminum, iron and steel, coffee tea and spices, lac gum resins and other vegetable wood and articles of wood, raw hides and skins among other things to India, which constitutes the major products exported and accounts for 99.48 percent of the total export to India and 78 percent of Nigeria's total exports. While India's exports to Nigeria are made up of pharmaceuticals products, nuclear reactors boilers and machinery, articles of iron or steel, vehicles, iron and steel, rubber and articles thereof, electrical machinery and equipment, iron and steel among other things which constitutes the top products exported and accounts for 67.28 percent of the total India's export to Nigeria over the period 2000-2013 (Kabiru and Dilfraz, 2014).

Despite growing importance of Nigeria and India trade there have been few empirical researches in the area. Most of the empirical studies conducted on Nigeria and India trade were concentrated on what determine the actual bilateral trade flows between Nigeria and India. The only exception is Kabiru (2015) who focused on trade complementarity and similarity between Nigeria and India. However he used reveal comparative advantage index proposed by Balassa (1965) and established complementarity and similarities of their trade. The methodology used in his study was found to be inappropriate as it is mainly concerned with revealing comparative advantage of trading partners with little emphasis on revealing the sectors with complementarity and similarity. The weakness of the methodology is that it is not a good measure of the extent of complementarity and the actual match or mismatch of sectorial composition. To this end, the rationale of this study would be to analyze the composition of Nigeria and India trade, and to apply the appropriate methodology of Trade Complementarity Index (TCI) in order to see as to whether Nigeria and India are natural trading partners and also establish the extent of sectorial match and mismatch of Nigeria and India trade.

2. LITERATURE REVIEW

Much work has not been done on Nigeria and India trade, despite lack of existing literatures, this section deals with the review of some related literatures relevant to this study, written by authors on bilateral trade relations more specifically Indo-Nigerian bilateral trade relations as a means of laying background upon which this study will be based. Rano (2013) conducted a study in order to assess the impact of income, exchange rate, and index of openness on bilateral flow between Nigeria and India using gravity model. The results of the study show that all the variables were drivers of bilateral flows for India to the exclusion of Nigeria in both models. Jan (2011) established a model of energy requirements and situations that lead to bilateral trade relations between India and Nigeria using social constructivism and resource scarce model, the result shows that Nigeria plays a vital role in

meeting energy requirements of India. [Sabyasachi and Nuno \(2013\)](#) in a study conducted using gravity model to examine the impact of economic size, common border, cultural proximity and political globalization on India's bilateral trade with its major trading partners including Nigeria, the result shows that both factors are positively and significantly influencing bilateral trade flow of India with its partners. [Rupa et al. \(2010\)](#) conducted a study to analyze trade potential of India, China and five African countries including Nigeria, the pair wise result of India and Nigeria revealed that India has reached the highest trade potential with Nigeria in commodity trade and there is little trade prospect as shown by gravity model. [Rakesh et al. \(2012\)](#) conducted a study to determine the changes in India's bilateral trade with African countries including Nigeria using constant market share analysis model, the result shows that there is rising trade opportunities in pharmaceuticals and in automobile there is rising exports trade potential except with Nigeria. [Sulaiman \(2009\)](#) conducted a study using historical approach and found that Indo-Nigeria trade balance has been in favor of Nigeria because of high oil imports by India. [Kabiru \(2015\)](#) established trade complementarity and similarities between Nigeria and India using RCA index and found possibility of increasing Nigeria-India trade in commodities such as mineral fuels, organic chemicals, nuclear reactors, fish, coffee residues and waste. Coffee, tea and spices, rubber, foot wears, man-made staple fibers, edible fruits, ores, slag ash, cereals. [Kabiru and Dilfraz \(2014\)](#) analyzed India's trade intensity with Nigeria for the periods 2000-2013, and found evidenced of high trade intensity in the whole periods.

From the literatures most of the studies conducted of Nigeria and India bilateral trade are centered on determining actual bilateral trade flows between Nigeria and India. There have been few studies which focused on Nigeria's trade complementarity with India, and it is on the basis of this upon which the background of this study would be based.

3. METHODOLOGY

Nigeria and India trade data are obtained from UNCOMTRADE at HS 2 digit level for the periods 2000-2014. The sample data used in this study covers ten major products categories of Nigeria's export and import to and from India. The tools for analysis used in this paper are simple descriptive analysis and the use of Trade Complementarity Index (TCI). Trade complementarity index would serve as an important indicator of Nigeria's trade potential with India. Trade complementarity index shows the degree to which two countries are natural trading partners in such a way that one of the country's' exports match with other country's imports.

In this regards trade complementarity would show how the composition of Nigeria's exports supply match or miss-match with India's imports demand. If Nigeria's export supply match with India's import demand the complementarity exists and there would be opportunities for Nigeria's exports supply to India. If there is mismatch, it implies absence of complementarity and there would be low opportunities of Nigeria's exports to India. The complementarity index between Nigeria and India can be defined as:-

$$TCI_m = 100[1 - \sum (|X_{nk} - M_k|) / 2]$$

Where;- TCI_m is Nigeria's trade complementarity index (TCI) with India, X_{nk} is sector k's share in Nigeria's total exports to the whole world, M_k is sector k's share in India's total imports from the whole world. The index will also serve as a measure of adequacy of Nigeria's exports supply in meeting India's imports demand. If there is a perfect positive correlation the index is 100 and with perfect negative correlation the index is zero.

4. PRESENTATION AND ANALYSIS

4.1. Composition of Nigeria-India Trade

Trade composition is an important tool for analysis in international trade as such it portrays the share of each sector or product category traded between trading partners. What stands between countries in foreign trade are commodities and services traded between them. In this regard it is important to look at a glance the various

commodities traded between Nigeria and India and their share in the total exports and imports to and from India for the periods 2000–2014.

Table-1. Main sectors of Nigeria-India trade 2000-2014.

Main exports sectors to India 2000-2014	Sectorial share in total exports to India 2000-2014	Main imports sectors from India 2000-2014	Sectorial share in total imports from India 2000-2014
Mineral fuels	0.97	Nuclear reactors, boilers & machinery	0.18
Rubber & articles thereof	0.01	Vehicles railway tram & roll-stock	0.14
Raw hides and skins	0.01	Cereals	0.09
Aluminum & articles thereof	0.00	Electrical machinery & sound recorder	0.09
Edible fruit & nuts	0.00	Pharmaceutical products	0.06
Lac; gums, resins & other vegetable	0.00	Plastics and articles thereof	0.05
Plastics and articles thereof	0.00	Iron and steel	0.04
Coffee, tea, and spices	0.00	Articles of iron or steel	0.03
Copper and articles thereof	0.00	Paper & paperboard	0.03
Lead and articles thereof	0.00	Aluminum and articles thereof	0.03

Source: Author's own calculation from UNCOMTRADE Statistics date 26/02/2016.

*Share below 0.01 are omitted by rounding up.

Table 1 shows that mineral fuels remained the main export of Nigeria to India as its share throughout the period constituted the largest with 97 percent share in the total exports to India. Rubber and articles thereof and raw hides and skins on the other hand, all shows their share to stand at 1 percent throughout the period. The share of aluminum and articles thereof, edible fruit and nut, lac; gums, resin and other vegetable, plastics and articles thereof, coffee, tea, and spices, copper and articles thereof, lead and articles thereof remained insignificant as it is almost zero despite the fact that they are the major products exported to India. The main reason for these low shares of major products exported to India (with the exception mineral fuels) is as result of mono-cultural nature of Nigerian economy. This is because the economy has remained dependent on oil sectors over several decades. This lack of diverse role of major products exported to India, would help, hinder the real benefit of trade with which Nigeria may gain by trading with India.

Nuclear reactors, boilers and machinery, vehicles, railway, tram & roll-stock has the highest share in total imports from India as their share on average remained 18 percent and 14 percent from 2000 to 2014. Cereals, electrical machinery and sound recorder accounts for 9 per cent share in the total imports while Plastics and articles thereof, Iron and steel accounts for 5 per cent and 4 per cent share, the remaining major products imported like articles of iron or steel, paper & paperboard, aluminum and articles thereof accounts for 3 per cent share each. Evidenced from the analysis shows that Nigeria's imports from India is more diversified than it exports to India because all the major products imported accounts for a very much significant share while for the export only mineral fuels seem to contributes much to the Nigeria's exports to India.

Over the last one and half decades, despite the mono-cultural nature of Nigerian economy the balance/benefit of trade in monetary terms is in favor of Nigeria as it exports more than it imports from India. Evidence from the trade composition above shows that the benefit of trade in terms of the role of commodities traded accrued more to India than Nigeria. With diversification of export sector of Nigerian economy, Nigeria will stand better a chance to

benefit more from trade than India, because despite the mono-cultural nature of the economy still the trade balance was in favor of Nigeria.

Sectoral share in total exports to India, 2000-2014

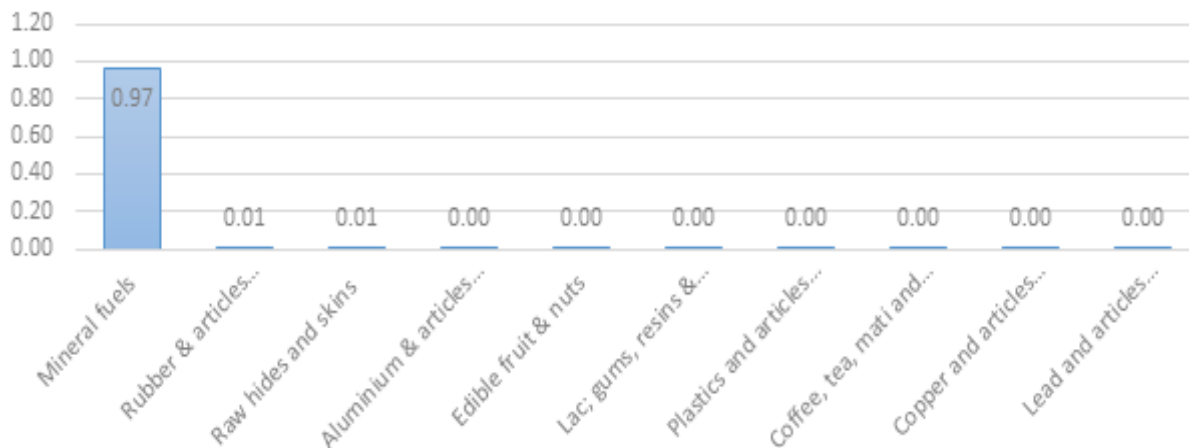


Figure-1. Main exports sectors of Nigeria-India trade, 2000-2014.

Source: Authors' own computation from UNCOMTRADE Statistics dated 26/02/2016.

Figure 1 shows that Nigeria's export to India throughout the study period, mainly encompasses export of mineral fuels, rubber and articles thereof and raw hides and skins which collectively made up around 99 percent of Nigeria's exports to India. Contrary to this the remaining products like aluminum and articles thereof, edible fruit and nut do not feature prominently in Nigeria's export to India, as their share remained insignificant or less than 1 percent. Evidence from above figure mineral fuels has remained Nigeria's only products contributing immensely to its export to India as well as the main source of foreign exchange of the country. Despite the dominance of mineral fuel to the total exports, products like Rubber & articles thereof, raw hides and skins has maintained an average share of 1 percent in the total exports to India.

Sectoral share in total imports from India, 2000-2014

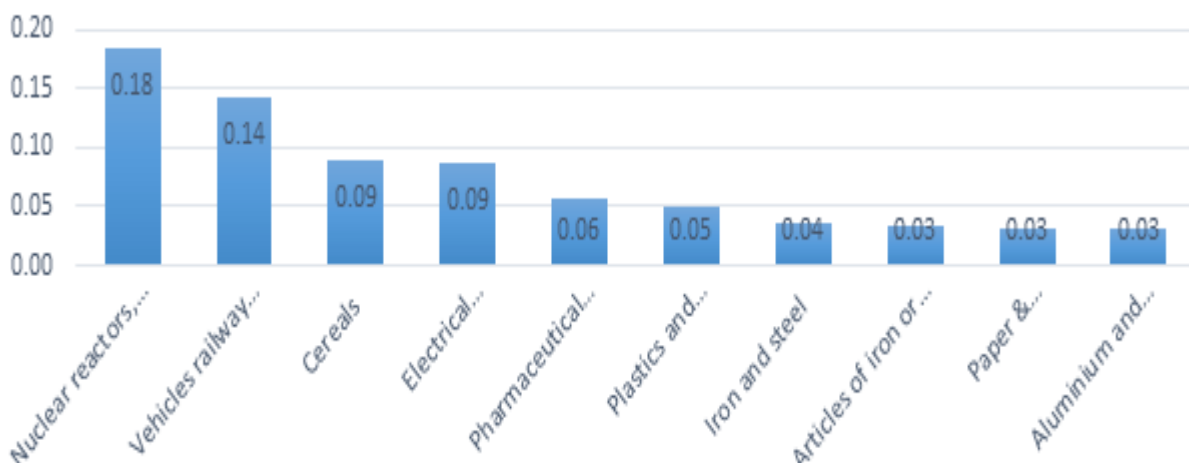


Figure-2. Main imports sectors of Nigeria-India trade, 2000-2014.

Source: Authors' own computation from UNCOMTRADE Statistics dated 26/02/2016.

Figure 2 shows the position of various products or sectors in terms of import from India. In this case the share of major products imported remained significant in the whole periods 2000-2014 unlike in the case of exports. Nuclear reactors, boilers and machinery, vehicles rail way tram and roll stock, cereals, electrical machinery and

sound recorder has the highest share in the total imports of goods from India over the period 2000-2014. The share of major products imported stood at between 3-18 percent which implies that the least share of major products imported was 3 percent for products such as articles of iron or steel, paper and paperboard aluminum and articles thereof. In figures 1 and 2, the extent of diversification of Nigeria’s export and import trade to and from India can be seen.

4.2. Trade Complementarity between Nigeria and India

Table-2. Nigeria-India trade complementarity index, 2000-2014.

Year	Nigeria's TCI with India
2000	37.35
2001	31.98
2002	34.21
2003	32.21
2004	33.50
2005	35.79
2006	36.36
2007	37.02
2008	43.04
2009	35.61
2010	37.43
2011	38.41
2012	43.02
2013	45.21
2014	43.14

Source: Authors’ own calculation from UNCOMTRADE Statistics dated 26/02/2016.

In the above table there is a partial match between Nigeria’s exports supply and the India’s imports demand as the indices stay between 0 and 100. Throughout the whole periods 2000-2014, the index lies between 31.98 and 45.21, this implies that the complementarity of Nigeria-India trade remained partially match. The higher the value of the index to toward 100 the higher the adequacy of Nigeria’s exports supply in meeting India’s imports demand. The result from trade complementarity index shows that Nigeria can only meet part of what India requires from its available export supply. In 2000 the TCI is 37.35 implying that Nigeria was only capable of meeting 37.35 percent of India’s import demand toward Nigeria. In 2014 the TCI has risen to 43.14 implying that in comparison to 2000 index of 37.35, Nigeria’s export supply is becoming compatible to India’s import demand. This compatibility also indicates changes in Nigeria’s trade profile from a mono-cultural economy toward a more diversified economy.

Nigeria's TCI with India, 2000-2014

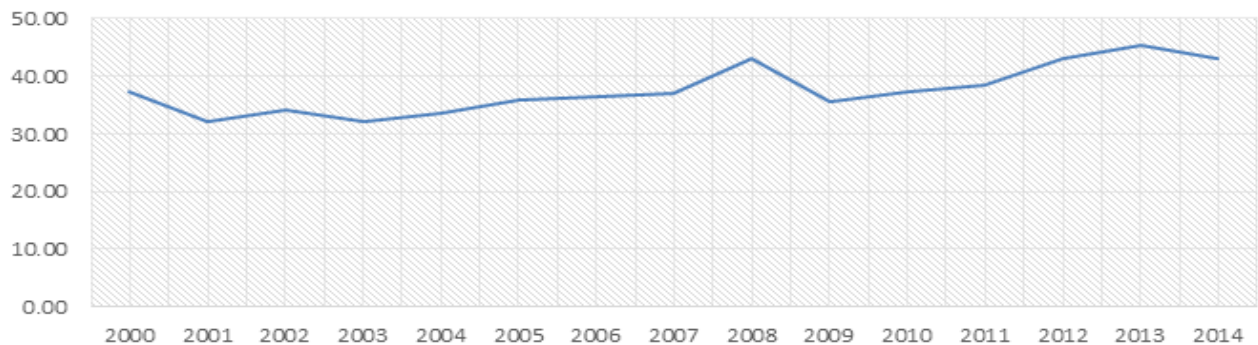


Figure-3. Nigeria-India trade complementarity, 2000-2014

Source: Authors’ own computation from UNCOMTRADE Statistics dated 26/02/2016.

Figure 3 illustrates the trade complementarity index of Nigeria and India, the indices has been steadily increasing from 2000–2014, implying that Nigeria and India trade profiles are becoming more compatible. The main reason for such steady rise is the result of the role of mineral fuels in Nigeria’s exports to India and slight change in Nigeria’s trade profile from one sector export dependent economy toward a more diversified export economy. This and many other things like attitude toward bilateral trade with India has also placed India to be top largest trading partner of Nigeria in the whole world.

Table-3. Nigeria’s major exports versus India’s major imports, 2000, 2007 & 2014

	2000	2007	2014
Nigeria's Major Exports	Mineral fuels (99%)	Mineral fuels (94%)	Mineral fuels (91%)
	Oil seed, oleaginous fruit, seed, fruit etc. (0.10%)	Cocoa and cocoa preparations (1%)	Ships, boats and floating structures (2%)
	Ships, boats and floating structures (0.07%)	Raw hides and skins & leather (1%)	Explosive; pyrotechnic, matches (2%)
India's Major Imports	Mineral fuels (37%)	Mineral fuels (34%)	Mineral fuels (39%)
	Natural/cultured pearls stones & metals, coin etc. (19%)	Natural/cultured pearls stones & metals, coin etc. (13%)	Natural/cultured pearls stones & metals, coin etc. (13%)
	Nuclear reactors, boilers & machinery (8%)	Nuclear reactors, boilers & machinery (10%)	Nuclear reactors, boilers & machinery (7%)

Source: Authors’ own calculation from UNCOMTRADE dated 26/02/2016.

Table 2 shows the partial match of Nigeria’s exports supply and India’s imports demand. Nigeria’s major exports are mineral fuels throughout the period 2000–2014 this is because Nigerian economy is mono-cultural. The above table shows this fact, where in the whole periods mineral fuels remained Nigeria’s major exports, this also matched with India’s major imports of mineral fuels throughout the whole periods. There exists a mismatch in other major product category exported by Nigeria with India’s major imports demand. The main reason for such a mismatch in other products like Natural/cultured pearls stones and metals, coins etc. nuclear reactors, boilers and machinery of India’s imports which didn’t match with Nigeria’s export supply of products like Oil seed, oleaginous fruit, seed, fruit etc., cocoa and cocoa preparations, Ships, boats and floating structures, raw hides and skins & leather, explosive; pyrotechnic, matches over the periods 2000–2014 was a result of instability in Nigeria’s exports of various products. This is because throughout the whole periods Mineral fuels, Natural/cultured pearls stones & metals, coin etc., Nuclear reactors, boilers & machinery has remained India’s major import demand from the world, implying a stable demand which is not in line with Nigeria’s unstable export supply to the world.

5. CONCLUSION AND POLICY RECOMMENDATIONS

This study examines the composition of Nigeria-India trade together with trade complementarity. The result from the analysis reveals that mineral fuels, rubber & articles thereof, raw hides and skins remained the main export of Nigeria to India as their share throughout the period constituted the largest with 99 percent share in the total export to India from 2000–2014. Nuclear reactors, boilers & machinery, vehicles, railway tram & roll-stock, cereals, electrical machinery and sound recorder, pharmaceutical products, plastics and articles thereof, iron and steel, articles of iron or steel, paper & paperboard, aluminum and articles thereof dominates Nigeria’s import from India with a share of 74 percent throughout the periods 2000–2014. Evidenced from the analysis shows that Nigeria’s imports from India is more diversified than it exports to India because all the major products imported accounts for a very much significant share while for the export only mineral fuels seem to contributes much to the Nigeria’s

exports to India. The result from the trade indices shows that there is a partial match between Nigeria's exports supply and the India's imports demand as the trade complementarity indices lies between 31.98 and 45.21 throughout the period. During the periods of the analysis Nigeria's major exports are mineral fuels, ships, boats and floating structures, Explosive; pyrotechnic, matches while India's major imports are Mineral fuels, Natural/cultured pearls stones & metals, coin etc. nuclear reactors, boilers & machinery. Despite the existence of partial match of Nigeria's export supply with India's import demand (low trade complementarity) there is evidence that Nigeria-India trade profiles are becoming more compatible as a result of a steady rise in their trade complementarity index between the years 2000-2014, which is mainly caused by mineral fuels which is the top major export of Nigeria and India's top major import throughout the period.

Based on the results obtained from the analysis, the study recommends that to give a push to bilateral trade between Nigeria and India there is need for Nigerian government substantial intervention into the export promotion activities to oversee the bad manufacturing practices in the exports sectors through the use of stimulation mechanism to increase export to India. Nigerian government, export promotion agencies, ministries, exporters and other stakeholders should focus attention on identify realistic export opportunities for Nigeria in Indian markets in order to boost and diversified Nigeria's export to Indian markets through the use of more scientific, realistic and empirical approach.

5.1. Area of Future Work

The study recommended that future works on Nigeria-India trade should extends the study toward identifying realistic export opportunities for Nigeria in Indian markets in order to boost Nigeria's exports and to reduce over dependence on oil sector. Furthermore, there is also a need to identify the possible constraints with which Nigeria may face in diversifying its export to India.

Funding: This study received no specific financial support.

Competing Interests: The authors declare that they have no competing interests.

Contributors/Acknowledgement: All authors contributed equally to the conception and design of the study.

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