**India-Africa Trade Diversification: Analyzing the Shift from Traditional to Non-Traditional Partners (2013-2017)**

**Abstract**

This study investigates the shifting trade dynamics between India and Africa from 2013 to 2017, with a specific focus on the impact of traditional versus non-traditional trade partners on trade diversification. India, which has long maintained robust trade relationships with South Africa, its traditional partner, has increasingly sought to expand its trade with non-traditional African countries such as Angola, Gabon, Madagascar, and Malawi. Also, it is worthwhile to look at her trade with certain economies who have not been major partners where trade is concerned. Furthermore, the recent shifts towards these non-traditional partners have become central to its trade strategy. Using advanced econometric techniques, including Fixed Effects (FE) and Difference-in-Differences (DiD) models, the study evaluates the changing patterns of India's exports and imports over this period, while accounting for time-related factors and partner type. The findings reveal a notable decline in exports to South Africa post-2015, suggesting a shift in India’s export strategies, while imports from South Africa have remained relatively stable, indicating continued reliance on key commodities from this partner. In contrast, trade with non-traditional partners has not shown substantial growth, highlighting the challenges faced by India in diversifying its trade relationships beyond established markets. Despite the limited expansion with these non-traditional partners, the study underscores the importance of diversifying trade as part of India’s broader economic strategy in Africa. By examining the implications of these trends, the paper contributes valuable insights for policymakers aiming to foster stronger and more diversified India-Africa trade relations through targeted policies, capacity-building efforts, and regional economic integration.

Keywords: Trade Relations, Trade Diversification, Traditional and Non-Traditional Partners, Trade Shift.

1. Introduction

International trade plays a central role in shaping the economic landscape of nations. It plays a crucial role in the global economy by facilitating access to resources, technologies, and products that may not be available within a particular country. The importance of international trade has grown exponentially in recent decades due to globalization, technological advancements, and the reduction of trade barriers such as tariffs and quotas. International trade fosters economic growth, improves the standard of living, and increases interdependence among nations.

India's trade with Africa has seen significant growth over the past few decades, emerging as a key component of India's foreign economic relations. Africa, with its rich natural resources, rapidly growing economies, and large consumer markets, presents ample opportunities for India to strengthen its economic ties. India’s trade with Africa is mutually beneficial, with significant potential for further growth. It is increasingly becoming a focal point of India's broader strategy to enhance its global trade footprint and strengthen South-South cooperation. As countries seek to enhance their global economic standing, trade diversification has emerged as a critical strategy. Trade diversification refers to the practice of expanding trade relationships to include a wider array of partners, reducing the risks associated with relying on a single or a few trading nations. The concept of trade diversification has been widely explored in the literature, with scholars emphasizing its importance for reducing economic dependency on a limited set of trade partners (Hummels, 2001; Nixson & Walters, 2007). The diversification strategy not only minimizes economic risks but also positions countries to capitalize on emerging markets (Sachs & Warner, 2001). The shift towards non-traditional partners, particularly within Africa, highlights a growing recognition of new opportunities outside traditional trading zones (Sahu, 2017). This is particularly significant in the context of India, which, over the last few decades, has sought to diversify its trade portfolio, particularly with Africa. Economic diplomacy and trade agreements have been central to expanding India-Africa trade relations (Sridharan & Sushil, 2018).

Traditionally, India’s trade relations have been centred on Western nations and developed economies like the United States and the European Union (EU) (Chandra & Singh, 2017; Bharadwaj & Wadhwa, 2019). However, it is important to compare India’s trade with its non- traditional partners of Africa as it is worthwhile to look at her trade with certain economies who have not been major partners where trade is concerned. A **non-traditional partner country** refers to a nation with which a country has not historically had significant trade relations or economic ties, but with whom trade relations are growing or being newly established. India’s trade with Africa between 2013 and 2017 has exhibited significant patterns of change. Exports to traditional partners have declined, especially in the post-2015 period; whereas imports from these partners have remained relatively stable (Gupta & Sharma, 2015). On the other hand, India’s trade with the non-traditional African partners has been growing, albeit at a slower pace compared to trade with the traditional partner country (Sankaran, 2016). Ghani et al. (2012) argue that countries often seek to diversify their trade relationships as a strategy to enhance economic resilience by accessing a broader range of markets, which is becoming increasingly relevant for emerging economies like India (Kumar & Das, 2020).

The main purpose of the paper is to examine the changes in trade dynamics between India and Africa, concentrating on the effect of partner type (traditional vs. non-traditional) on trade volumes (exports and imports) from 2013 to 2017. The selected traditional partner country of India is South Africa, while the non-traditional trading partners include Angola, Gabon, Madagascar and Malawi. Specifically, this paper focuses on how India’s trade with Africa has evolved over time and how partner type plays a role in these shifts. The primary research questions are: (i) what is the impact of partner type on India’s export and import patterns with the selected countries of Africa? (ii) How have time-related factors (such as changing global economic conditions) influenced trade dynamics with these partners?

Furthermore, this study aims to offer a nuanced understanding of the trade dynamics between India and the selected countries of Africa. By investigating the impact of partner type and time on trade values, the study will provide useful insights for policymakers in both India and African nations to formulate trade strategies that address regional imbalances and foster stronger economic ties. Understanding the effects of partner diversification will also assist in assessing the potential for future growth in India-Africa trade relations (Sanghvi & Shukla, 2014).The FE panel data model which is chosen due to its ability to control for unobserved country-specific characteristics that do not vary over time may influence trade outcomes. The FE model is particularly suitable for this study because it accounts for country-specific factors that could potentially bias the results in a Random Effects (RE) model (Achen, 2005; Wooldridge, 2010). By using FE model, this study isolates the within-country variation over time, providing a clearer understanding of how time and partner type affect trade volume.

In this paper, the first section starts with the brief profile of India and the selected African countries. In this section, the various key economic indicators of India and the selected African countries are discussed. A comparative analysis of merchandise trade as a percentage of GDP and the trade performance of India with its traditional and non-traditional partner countries of Africa from 2013 to 2017 is also discussed. The second section will cover the review of literature. Then, the next section will cover research gap of the study. The fourth section of this paper discusses the research methodology and the data collection sources. The selected econometric models used in the study are discussed in this section. The fifth section of this paper analyses and discusses the results. The sixth section of the paper studies the limitations of the study conducted. The next section will cover the policy implications and the last section will conclude the whole study.

**1.1 Basic Profile of India and the Traditional and Non-Traditional Countries of Africa**

A note on the brief profile of India and all the selected African countries is important as it gives a clear understanding of all the economies to be studied in this paper. This section comprises the various key economic indicators of India and the selected African countries. Next, we discuss a comparative analysis of merchandise trade as a percentage of GDP. At last, a brief note on the trade performance of India and the traditional and non-traditional countries of Africa is discussed with the help of a table.

**Table 1: Key economic indicators of India and the selected African Countries (2017, 2023)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Select Variable** | **Year**  | **India** | **South Africa** | **Angola** | **Gabon** | **Madagascar** | **Malawi** |
| **Population, total** | 2017 | 1359657400 | 57635162 | 30234839 | 2156900.00 | 26788375 | 18039715 |
|  | 2023 | 1438069596.0 | 63212384.0 | 36749906 | 2484789.0 | 31195932.0 | 21104482.0 |
| **Surface area (sq. km)** | 2017 | 3287260 | 1219090 | 1246700 | 267670.00 | 587295 | 118480 |
|  | 2023 | - | - | - | - | - | - |
| **GDP (current US$)** | 2017 | 2651474262755.5 | 381448814653.5 | 73700000000 | 14929487485.2 | 13176313594 | 8943543794 |
|  | 2023 | 3567551674623.0 | 380699271814.5 | 84824654482 | 19388402541.7 | 15790113246.7 | 12712150082.1 |
| **GDP growth (annual %)** | 2017 | 6.8 | 1.2 | -0.1 | 0.5 | 3.9 | 4.0 |
|  | 2023 | 8.2 | 0.7 | 1.0 | 2.4 | 3.8 | 1.9 |
| **GDP per capita growth (annual %)** | 2017 | 5.6 | 0.5 | -3.6 | -2.2 | 1.3 | 1.2 |
|  | 2023 | 7.2 | -0.6 | -2.1 | 0.2 | 1.3 | -0.7 |
| **Inflation, GDP deflator (annual %)** | 2017 | 4.0 | 5.47 | 22.6 | 3.8 | 5.0 | 10.6 |
|  | 2023 | 1.3 | 4.8 | 17.6 | -10.0 | 8.7 | 22.8 |
| **Agriculture, forestry, and fishing, value added (% of GDP)** | 2017 | 16.6 | 2.5 | 10.0 | 5.3 | 24.6 | 22.9 |
|  | 2023 | 16.0 | 2.6 | 14.9 | 6.5 | 22.6 | 30.4 |
| **Industry (including construction), value added (% of GDP)** | 2017 | 26.5 | 23.6 | 42.2 | 45.5 | 20.1 | 17.7 |
|  | 2023 | 25.0 | 24.6 | 45.3 | 53.5 | 22.4 | 15.3 |
| **Services, value added (% of GDP)** | 2017 | 47.7 | 64.3 | 46.8 | 42.7 | 51.0 | 53.1 |
|  | 2023 | 49.6 | 62.6 | 39.8 | 38.2 | 44.7 | 47.5 |
| **Exports of goods and services (% of GDP)** | 2017 | 18.8 | 27.3 | 29.0 | 50.2 | 30.9 | - |
|  | 2023 | 21.8 | 32.8 | 40.9 | 63.7 | 26.9 | - |
| **Imports of goods and services (% of GDP)** | 2017 | 22.0 | 26.2 | 23.3 | 24.8 | 34.4 | - |
|  | 2023 | 24.1 | 32.4 | 26.2 | 27.8 | 33.9 | - |
| **Unemployment, total (% of total labor force) (modeled ILO estimate)** | 2017 | 7.6 | 27.0 | 16.6 | 20.3 | 2.1 | 5.0 |
|  | 2023 | 4.2 | 32.1 | 14.5 | 20.3 | 3.1 | 5.0 |

Source: World Development Indicators database, Last Updated: 01/28/2025.

Note: (-) sign shows that data are not available for the given year.

**For the years 2017 and 2023, Table 1 shows some of the most important economic indicators for India, South Africa, Angola, Gabon, Madagascar, and Malawi. These indicators include population, GDP growth rates, inflation rates, and unemployment rates, providing a comparative overview of economic performance across these nations.** The macroeconomic indicators, like population, GDP, GDP growth and GDP per capita of **India, were the highest as compared to the selected African countries.** In 2017, Angola had the highest inflation rate, followed by Malawi. However, in 2023, Malawi has the highest inflation rate, followed by Angola and Madagascar. Furthermore, **Angola and Gabon, heavily dependent on resource exports, boast large industrial sectors, accounting for 42.2% and 45.5% of their respective GDPs in 2017 and 45.3% and 53.5% in 2023.** In 2017, both Angola and Gabon struggle with low growth rates: -0.1% and 0.5%, respectively. But in 2023, SA and Angola, followed by Malawi, struggle with the lowest growth rates. **Madagascar and Malawi are the economies that depend on agriculture. It's true that 22.6% and 30.4% of their GDP come from agriculture in 2023, which indicates that they are less industrialized.** The exports **as a percentage of GDP of Gabon are the highest as compared to all other countries, whereas imports as a percentage of GDP of Madagascar are the highest.** India, despite its large economy, has **relatively low trade openness,** signifying a focus on domestic markets. Moreover, regarding services, South Africa has the highest rank. **Also, South Africa has the highest unemployment rate (27% in 2017 and 32% in 2023), followed by Gabon (20% in 2017 and 2023), and then Angola (16.6% in 2017 and 14.5% in 2023). Madagascar, on the other hand, has the lowest unemployment rate, at about 3% in 2023.**

**Table 2: Trends in Merchandise Trade of India and the selected African Countries from 2013-2023 (as percentage of GDP)**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Country** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** |
| **India** | 42.02 | 38.53 | 31.47 | 27.29 | 28.25 | 31.05 | 28.58 | 24.29 | 30.58 | 35.00 | 30.94 |
| **South Africa** | 55.50 | 56.40 | 53.55 | 51.89 | 49.95 | 51.31 | 50.74 | 50.27 | 56.44 | 63.68 | 63.46 |
| **Angola** | 71.47 | 64.54 | 59.53 | 77.00 | 66.60 | 71.18 | 69.67 | 64.89 | 68.94 | 66.17 | 64.09 |
| **Gabon** | 111.25 | 128.97 | 116.63 | 111.77 | 64.41 | 71.60 | 68.67 | 70.58 | 60.05 | 69.51 | 71.18 |
| **Madagascar** | 41.72 | 43.30 | 42.77 | 44.06 | 49.47 | 52.11 | 47.06 | 40.20 | 49.02 | 60.65 | 50.43 |
| **Malawi** | 50.25 | 47.39 | 36.25 | 41.42 | 37.90 | 35.67 | 34.30 | 29.31 | 32.98 | 20.00 | 32.31 |

Source: World Development Indicators database. Last Updated: 04/08/2022

The above table shows how India's and some African countries' trade in goods changed as a percentage of their GDP from 2013 to 2023. India's merchandise trade fell from 42.02% of its GDP in 2013 to 30.94% of its GDP in 2023. The decrease was due to either a shift toward a more domestically focused economy or slower growth in trade with other countries. In contrast, African countries like South Africa, Angola, and Gabon had either stable or changing trends. South Africa saw a slight rise (from 56% in 2013 to 63% in 2023), while Angola and Gabon saw a drop (from 71% and 111% in 2017 to 64% and 71% in 2023, respectively). However, their merchandise trade ratios (as a percentage of GDP) stayed high, which shows that trade is still an important part of their economies. Madagascar and Malawi had different trends. Madagascar's kept going up until 2022; Malawi's dropped sharply in 2022. The merchandise trade of **Madagascar reached 50% in 2023, up from 42% in 2013, while Malawi’s trade showed a highly volatile trend, reaching 50% in 2013 and then declining sharply to 32% in 2023.** This diminution was probably because of global disruptions, such as the COVID-19 pandemic. The decline may indicate economic instability or changes in trade agreements.

The trade history of India with its traditional and non-traditional African partners shows that trade between India and Africa is becoming more diverse. From 2013 to 2024, Table 3 shows how India's trade with its traditional and non-traditional African partners changed. India and South Africa have maintained a steady trade relationship, with total trade averaging around $19 billion recently. India's exports to South Africa are reaching a high of 8266.54 (US$ million) in 2024, while its imports are also reaching a high of 11350.31 (US$ million) in 2023. Conversely, India’s trade with non-traditional partners like Angola, Gabon, Madagascar, and Malawi depicts a more variable performance. India's exports to Angola were the highest, reaching 633.43 (US$ million) in 2023. Nonetheless, India has a significant trade deficit due to its heavy imports from Angola, which peaked in 2013 at 6798.30 (US$ million) and subsequently fell to 4703 (US$ million) in 2024. Gabon has seen a decline in total trade from 982.33 (US$ million) in 2013 to 418.29 (US$ million) in 2024, with exports and imports both following a downward trend. Madagascar’s trade with India has remained comparatively steady, with exports peaking at 518.37 (US$ million) in 2022, but the overall trade remains at 678 (US$ million). It is Malawi that has seen the biggest drop in trade, from 274.18 (US$ million) in 2013 to 177.64 (US$ million) in 2024. Exports also went down to 101.79 million US dollars in 2024. In general, India's trade with traditional partners, like South Africa, stays strong. However, India's trade with non-traditional partners is more volatile and less substantial. This fluctuation highlights the need for India to diversify its trading relationships and strengthen economic ties with emerging markets. Focusing on making strong connections with both traditional and non-traditional partners will be important for keeping the economy stable and growing as global trade changes. The next section will cover the review of literature.

**Table3: Trade performance of India with its traditional and non- traditional African partners (2013-2024)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Traditional trading partner** | **Select Variable** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** |
| **South Africa** | Export | 5742.47 | 5722.40 | 3814.37 | 3243.17 | 4073.94 | 4027.82 | 3982.93 | 3498.29 | 5989.46 | 8265.80 | 8018.92 | 8266.54 |
| Import | 7351.76 | 5993.81 | 6275.84 | 5092.34 | 6881.08 | 6615.40 | 6634.52 | 6673.14 | 11070.73 | 11166.49 | 11350.31 | 10335.21 |
|  | Total trade | 13094.2 | 11716.2 | 10090.2 | 8335.51 | 10955 | 10643.22 | 10617.45 | 10171.42 | 17060.19 | 19432.29 | 19369.22 | 18601.75 |
| **Non-traditional trading partner** | **Select Variable** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** |
| **Angola** | Export | 559.67 | 610.37 | 271.63 | 139.80 | 233.86 | 270.76 | 288.81 | 241.13 | 408.73 | 622.55 | 633.43 | 583.97 |
| Import | 6798.30 | 5641.67 | 3169.60 | 2001.94 | 4121.54 | 4352.09 | 3799.56 | 2022.43 | 2315.95 | 3772.43 | 3905.64 | 4703.20 |
|  | Total trade | 7357.97 | 6252.04 | 3441.23 | 2141.74 | 4355.4 | 4622.85 | 4088.38 | 2263.57 | 2724.68 | 0.00 | 0.00 | 0.00 |
| **Gabon** | Export | 63.38 | 40.61 | 37.83 | 42.49 | 44.48 | 51.69 | 49.65 | 52.33 | 56.15 | 74.48 | 72.82 | 92.46 |
| Import | 918.95 | 784.45 | 116.30 | 64.46 | 263.89 | 577.33 | 150.66 | 317.13 | 994.25 | 527.20 | 437.68 | 325.83 |
|  | Total trade | 982.33 | 825.06 | 154.13 | 106.95 | 308.37 | 629.02 | 200.31 | 369.46 | 1050.40 | 601.68 | 510.49 | 418.29 |
| **Madagascar** | Export | 240.84 | 196.86 | 167.77 | 147.57 | 266.02 | 216.81 | 301.59 | 312.24 | 296.05 | 518.37 | 310.94 | 245.66 |
| Import | 50.98 | 71.09 | 128.77 | 127.01 | 139.88 | 147.70 | 272.45 | 109.26 | 112.25 | 160.10 | 153.39 | 220.61 |
|  | Total trade | 291.82 | 267.95 | 296.54 | 274.58 | 405.9 | 364.51 | 574.04 | 421.50 | 408.30 | 678.47 | 464.34 | 466.27 |
| **Malawi** | Export | 227.39 | 243.18 | 177.75 | 173.17 | 223.81 | 179.99 | 191.97 | 151.81 | 155.74 | 120.65 | 90.01 | 101.79 |
| Import | 19.79 | 31.74 | 67.55 | 42.00 | 18.95 | 20.07 | 36.45 | 4.54 | 100.69 | 47.80 | 58.61 | 75.86 |
|  | Total trade | 247.18 | 274.92 | 245.3 | 215.17 | 242.76 | 200.05 | 228.42 | 156.36 | 256.43 | 168.45 | 148.62 | 177.64 |

Sources: 1. World Development Indicators database (Last Updated- 06/28/2018).

1. ITC calculations based on [UN COMTRADE statistics until January 2015.](http://comtrade.un.org/)
2. ITC calculations based on [UN COMTRADE statistics since January, 2019 and until January, 2023.](http://comtrade.un.org/)
3. [ITC calculations based on Directorate General of Commercial Intelligence & Statistics statistics since January, 2015 and until January, 2019.](http://dgciskol.gov.in/)
4. [ITC calculations based on Directorate General of Commercial Intelligence & Statistics statistics since January, 2023.](http://dgciskol.gov.in/)

Note: Export refer to India’s merchandise exports to the concerned economy and Import refer to India’s merchandise imports to the concerned economy (in US$ millions).

1. **Review of Literature**

The trade relations between India and Africa have undergone a profound transformation, especially since the early 2000s. This shift has not only been driven by mutual economic interests but also by the broader context of south-south cooperation, which has become central to the emerging global trade dynamics. India, once primarily a politically to African nations, has evolved into a key economic partner, engaging in trade, investments, and development cooperation. The main purpose of this review is to look at how both traditional and non-traditional partners affected trade between India and Africa from 2013 to 2017.

6.1 A Shift in Growth in India’s Foreign Trade Relations

India's foreign trade has been growing steadily (with a few exceptions), but not as quickly as the country's total trade. India’s foreign trade relations seem to be stronger in Anglo-America rather than in Western Europe. Additionally, trade with Southern Asia, the Soviet Union, and Eastern Europe seems to be growing. But in Africa, Southwest Asia, and Latin America, this growth is less pronounced. However, given the regional nature of trade, India has the potential to expand its trade area with Southeast Asia due to its closer proximity to the country (Dayal, 1968). According to Das et al. (2013), India had negative growth from 2009 to 2010 if you take out the plantations, agriculture, engineering, and electronics sectors. However, in 2010-11, India had positive export growth in almost all sectors. They also highlighted that the European Union (EU) and the US are the chief exporters of India, accounting for about 30% of the total exports, even though the share of the US diminishes over the period. These countries, like Australia, Brazil, Western Asia, and the Association of Southeast Asian Nations (ASEAN), are more likely to be able to accept India's goods, which would make India less reliant on the US and EU. Mukhopadhyay et al. (2012), on the other hand, looked at how changes in trade in 2020 would affect the economies of India, Latin America and the Caribbean (LAC), and the EU. A Global Trade Analysis Project (GTAP) database and a Computable General Equilibrium (CGE) model were used in the study. It found that lowering tariffs between Latin America and India led to more trade in the long run, which made it possible for countries in the South to work together.

* 1. Growth in India-Africa Trade and the Role of South-South Cooperation

India’s engagement with Africa has significantly expanded, with the India-Africa trade volume surging from $7.2 billion in 2001 to $59.9 billion by 2017 (Tripathy, 2009). This dramatic rise is attributed to both diplomatic initiatives and commercial interests, including the Focus Africa Programme launched by India in 2002, which aimed to bolster economic relations by improving trade and investment (Wani et al., 2016). Central to this growth is the concept of South-South cooperation, a model that emphasizes mutual benefit between developing economies. India’s strategy has been to present itself as a development partner to Africa, offering technical assistance, capacity building, and financing schemes such as Lines of Credit (LOCs) (Lucey, Schoeman, & Makokera, 2015).

Africa’s shifting trade alliances and growing integration into global value chains have also played a role in this diversification (Mullen & Arora, 2016)​​. This diversification has allowed both India and Africa to mitigate the risks posed by global market volatility, with trade between the two regions increasingly covering a broader range of goods beyond traditional exports like crude oil and minerals (Wani et al., 2016).

* 1. India-Africa Trade Relations: A Focus on Commodities and Diversification

While India has traditionally been a major importer of primary commodities from Africa, recent trends suggest a shift towards more diversified trade relations. This shift is particularly evident in sectors such as pharmaceuticals, machinery, and technology services, where Indian exports to Africa have increased significantly (Haq et al., 2016). Indian exports are increasingly moving up the value chain, from basic goods to manufactured products like automobiles, electrical machinery, and pharmaceuticals, indicating a growing diversification in trade patterns (Mullen & Arora, 2016).

However, the resource-driven trade still dominates. African exports to India remain largely concentrated in primary commodities like crude oil, gold, and minerals, reflecting Africa's continued reliance on commodity exports (Lucey et al., 2015). Despite efforts to diversify trade, oil and gas exports continue to form the backbone of India’s imports from Africa, with countries like Nigeria, South Africa, and Angola remaining top suppliers (Mullen & Arora, 2016).

The expansion of the Pan-African e-Network project, aimed at providing tele-education and telemedicine services, has been a critical element of India’s diversified engagement with Africa. This project represents India’s commitment to not just trade, but also capacity-building across the continent (Mullen & Arora, 2016). The success of such initiatives underscores India’s role as a partner that fosters long-term development, which is key to maintaining the diversification of trade relations between the two regions (Lucey et al., 2015).

1. **Research Gap**

Based on the existing literature on India-Africa trade relations, a significant research gap exists in understanding the impact of India's non-traditional partners on trade diversification between India and Africa. While much of the literature has focused on the increasing trade between India and resource-rich African nation such as South Africa, but little attention has been given to Angola, Gabon, Madagascar and Malawi and how they contribute to the diversification of trade (Wani et al., 2016). Furthermore, despite the increasing volume of studies on south-south cooperation, the long-term sustainability of India-Africa trade relations remains an underexplored area (Sidiropoulos, 2011). While existing literature outlines the rise in trade volumes and the shift towards manufacturing and services, there is a lack of studies focusing on the socio-economic impacts of these changing trade dynamics, especially on local industries in both regions (Lucey et al., 2015).

**Research Methodology**

The methodology of this study is designed to analyze the impact of partner type (traditional vs. non-traditional) and time (years from 2013 to 2017) on trade values (exports and imports) using econometric models. The study employs panel data analysis, as the dataset consists of multiple countries over multiple years. The objective is to identify how trade dynamics change over time and how the nature of trading partner influences these dynamics. The use of Stata and R in tandem leverages the strengths of both platforms, providing a comprehensive and effective approach to data analysis and visualization.

This study aims to analyze the shifting trade dynamics between India and Africa from 2013 to 2017, with a focus on how trade diversification, specifically, the role of traditional versus non-traditional trade partners, has impacted India’s exports and imports. The methodology is designed to capture the complexities of trade relations by accounting for the unique country-specific factors that may influence trade, while also assessing the temporal effects that shape the evolution of these dynamics.

**Why These Models?**

The choice of the **Fixed Effects model** ensures that the analysis accounts for unobserved country-specific factors that could bias the results in a Random Effects or OLS regression. This is essential for studies of trade dynamics, where domestic economic characteristics can have a strong influence on trade flows.

The **Difference-in-Differences model** allows for the assessment of temporal shifts and provides a clean comparison between the impact of time (2013–2017) on India’s trade relations with its traditional versus non-traditional partners. The DiD methodology is particularly useful for isolating the effect of external changes, such as economic policy shifts or global commodity price fluctuations, on trade patterns.

Together, these models offer a comprehensive analysis of the changing nature of India-Africa trade relations and provide insights into how time and partner type have influenced trade volumes over the 2013-2017 period.

**4.1Econometric Modelling in Stata:** Stata is chosen for its ability to handle panel data models, conduct advanced regression diagnostics, and estimate the effects of time and partner type on trade dynamics. The platform is specifically optimized for econometric work and is ideal for dealing with large datasets and running models such as FE and DiD.

**4.2Visualization and Interpretation in R**: R complements Stata by providing high-quality visualizations that aid in the interpretation and presentation of the statistical results. Using R for plotting allows the study to highlight key patterns in the data (e.g., time trends, export-import dynamics, and partner-type effects) and effectively communicate those findings.

4.3 **Data Collection and Description**

The dataset consists of annual trade data from 2013 to 2017, collected for a set of countries. The sources used for the study are World Development Indicators (WDI) database and the International Trade centre (ITC) database. The key variables include:

* Country: The country involved in trade.
* Year: The year of the trade data.
* Trade type: A categorical variable indicating whether the trade is exports or imports.
* Trade value: The trade value, measured in USD.
* Partner type: A binary variable indicating whether the partner is traditional (1) or non-traditional (0).

The data is structured as panel data, with cross-sectional dimensions (countries) and time-series dimensions (years).

**Rationale for Focusing on the 2013-2017 Period**

The present study included only the pre-pandemic period. The study deliberately focuses on the period from 2013 to 2017, a timeframe that represents a relatively stable pre-crisis economic environment, preceding the significant global disruptions caused by the COVID-19 pandemic and the Russia-Ukraine conflict. This selection serves both an analytical and methodological purpose. By isolating the pre-pandemic period, the study aims to establish a foundational understanding of India-Africa trade dynamics in a context unclouded by the extraordinary volatility that characterized global trade in the years that followed. This approach allows for a cleaner analysis of structural trends in trade diversification, particularly the shift from traditional to non-traditional partners, without the interference of external macroeconomic shocks. By concentrating on this particular time period, the study can evaluate the impact of both traditional and non-traditional trading partners of Africa on India's trade landscape without being affected by recent global shifts. However, this temporal scope also constitutes a limitation of the research. The exclusion of post-2017 data, including the pandemic and geopolitical crises, means that the study does not capture the full evolution of India-Africa trade dynamics in recent years. Recognizing this, the current research should be viewed as the first phase in a broader longitudinal analysis. Future studies will expand the scope to include post-pandemic data and explore comparative shifts in trade behaviour between the pre- and post-crisis periods. Such an extension will not only validate the trends identified here but also provide a more comprehensive understanding of how global shocks have reshaped India's trade strategy with African partners.

This time frame captures the impact of India’s evolving trade strategy, particularly after 2015, when India began focusing on diversifying its trade partners beyond traditional markets like South Africa (Chandra & Singh, 2017). Additionally, global economic conditions, including fluctuations in commodity prices and the recovery from the 2008 financial crisis, influenced trade patterns during this period (Haq, Rehman, &Kukreja, 2016). The availability of reliable and consistent data for these years ensures the robustness of the analysis (World Bank, 2025). Moreover, this period reflects India’s active engagement in South-South cooperation and its strategic efforts to expand trade ties with emerging African economies (Sridharan & Sushil, 2018).

**Table 4: Studies highlighting the source methodologies related to this study**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Study Title** | **Authors** | **Year** | **Methodology** | **Key Highlights** |
| **Does time difference between countries reduce bilateral trade?** | Suryadipta Roy | 2017 | Correlated Random Effects (CRE) and Fixed Effects | Examines how time difference between countries affects bilateral trade, finding a negative impact on exports due to time differences. |
| **Comparative Study of Within-Group and First Difference Fixed Effects Models** | T. Nwakuya, M. Biu | 2019 | Fixed Effects (Within-Group and First Difference models) | Compares fixed effect models (within-group vs. first difference) for analyzing trade, with trade showing a significant contribution to GDP in within-group models. |
| **The formulation and estimation of random effects panel data models of trade** | L. Mátyás, C. Hornok, D. Pus | 2012 | Random Effects and Fixed Effects | Focuses on differences between fixed and random effects models applied to trade data of EU countries, highlighting the importance of accounting for fixed effects in trade models. |
| **Intraindustry Trade between Malaysia and Other ASEAN Countries** | Nur Syakina Anuar, M. Ismail | 2017 | Fixed Effects Model | Analyzesintraindustry trade (IIT) between Malaysia and ASEAN countries, finding that GDP, FDI, and capital are significant determinants. |
| **Multiple Fixed Effects in Nonlinear Panel Data Models** | Karyne B. Charbonneau | 2012 | Nonlinear Fixed Effects | Explores the use of multiple fixed effects in nonlinear models for trade, particularly in the gravity model, showing how proper accounting for multiple fixed effects alters results. |
| **Panel Data and Difference-in-Differences Estimation** | B. Baltagi | 2014 | Fixed Effects, Random Effects, DiD | Reviews fixed effects and difference-in-differences (DiD) models, illustrating their application in health economics, but methods are widely used in trade studies too. |
| **Determinants of bilateral trade flows of Vietnam** | Phát Lê Trung Ngọc, HạnhNguyên Kim | 2022 | Panel Fixed Effects | Uses fixed effects to analyze trade flows between Vietnam and 53 countries, highlighting factors like trade agreements, income differences, and transportation costs. |
| **The impact of the GDP and population on trade of COMESA using panel data approach** | L. Hamzalouh, M. Ismail, R. A. Rahman | 2016 | Fixed Effects and Random Effects | Examines how GDP and population influence trade in COMESA, finding significant effects of GDP on imports and exports. |

Source: Compiled by Authors

**4.5 Econometric Models**

To analyze the effect of partner type and year on trade value, two key econometric models are used in this study. These models help examine both the temporal trends in trade as well as the effect of different partner types on trade dynamics.

**4.5.1 Panel Data Regression Model, the FE Model**

The FE model is preferred because it accounts for unobserved country-specific characteristics that may influence the trade values and are likely correlated with the independent variables (e.g., year and partner type). The FE model will help isolate the within-country variations over time. The p-value of the hausman test is significant; it indicates that FE is preferred over Random Effects, (RE). The test suggests that the country-specific effects are correlated with the explanatory variables, which violates the assumption of random effects, leading to biased estimates.

$$Trade value\_{it}=α\_{i}+β\_{1}year\_{t}+β\_{2}partnertype\_{i}+β\_{3}\left(year\_{t}×partnertype\_{i}\right)+u\_{i}+ϵ\_{it}$$

where:

*i* = country, *t* = year

Trade value*it* = exports or imports for country *i* in year *t*.

α*i*= country-specific fixed effects

year*t* = year variable (2013–2017)

partner type*i* = binary variable for partner type (1 = traditional, 0 = non-traditional)

(year*t*×partnertype*i*)​ = interaction term for year and partner type

u*i* = country-specific unobserved effects

ϵ*it*= error term

**4.5.2 The DiD Model:**

To analyze the effect of time and how it interacts with partner type, we used the DiD approach. The key focus here is to assess how trade values changed post-2015, when a noticeable shift in trade occurred, especially with the traditional partner.

The DiD model is:

$$Trade value\_{it}=α+β\_{1}post2015\_{t}+β\_{2}partner type\_{i}+β\_{3}\left(post2015\_{t}×partner type\_{i}\right)+u\_{i}+ϵ\_{it}$$

where:

post2015*t* = dummy variable equal to 1 if year*t*≥2015year*t*, 0 otherwise

β3 ​measures the interaction effect of being a traditional partner after 2015.

The other variables are defined as before.

1. **Analysis and Discussion:**

**5.1 Panel Data Analysis:**

Table 5.1: Impact of year, partner type, and their interaction on trade (exports & imports)

|  |  |  |
| --- | --- | --- |
| Dependent variable | Export (trade value exports) | Import (trade value imports) |
| Intercept (constant) | 272.82 (2.35)\*\* | 1947.01 (1.07) |
| Year (2014) | -0.065 (-0.00) | -314.77 (-0.13) |
| Year (2015) | -109.08 (-0.85) | -1076.45 (-0.53) |
| Year (2016) | -147.06 (-1.22) | -1388.15 (-0.73) |
| Year (2017) | -80.78 (-0.63) | -810.94 (-0.38) |
| Traditional Partner | 5469.65 (47.14)\*\*\* | 5404.76 (2.96)\*\* |
| 2014 × Traditional | -20.01 (-0.11) | -1043.18 (-0.44) |
| 2015 × Traditional | -1819.03 (-14.23)\*\*\* | 0.53 (0.00) |
| 2016 × Traditional | -2352.24 (-19.54)\*\*\* | -871.27 (-0.46) |
| 2017 × Traditional | -1587.75 (-12.33)\*\*\* | 340.26 (0.16) |
| R² | 0.9954 | 0.5969 |
| Root MSE | 157.33 | 2242.6 |
| Observations (N) | 25 | 25 |

Source: Compiled by Authors.

Notes: 1. Figures in parentheses show the absolute t-statistics of the estimated coefficients.

2. \*\*\*, \*\* and \* imply estimated coefficient is significant at .01, .05 and .10 level, respectively.

**Interpretation of Results**

The regression results reveal key insights into India’s trade performance with traditional and non-traditional partners over time. The partner type variable is highly significant for both exports and imports, indicating that India trades significantly more with SA as compared to Angola, Gabon, Madagascar and Malawi. Specifically, India’s exports to SA are, on average, $5,469 higher than those to non-traditional partners, while imports from traditional partners are $5,405 higher. However, an interesting pattern emerges when examining trade trends over time. While the effect of time (year) alone is not statistically significant, the interaction between partner type and year reveals a concerning trend for exports. Since 2015, India’s exports to SA have been declining significantly. The interaction coefficients show that exports to SA fell by $1,819 in 2015, by $2,352 in 2016, and by $1,588 in 2017, with each decline being statistically significant at the 1% level. This suggests a structural shift in India's trade patterns, potentially influenced by economic, political, or policy-driven factors.

On the other hand, imports from SA have remained relatively stable over time, with no significant decline observed. This suggests that while India's reliance on SA for exports is weakening, its dependence on SA for imports remains unchanged. Non-traditional partners, meanwhile, do not show significant changes in trade over time, maintaining a relatively stable but lower level of trade as compared to SA.

These findings raise important questions about India’s evolving trade relationships. The decline in exports to SA could be due to changing trade policies, shifts in global demand, or economic conditions in those countries. Meanwhile, the stability of imports from SA suggests that India continues to depend on SA for key imported goods, even as its export ties weaken. This highlights the need for further investigation into trade policies, economic shifts, and potential diversification strategies for India’s exports in Africa to strengthen India-Africa trade relations in the coming years.

Table 5.1.1 Hausman Test Comparing Fixed Effects and Random Effects Models

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Fixed Effects (FE) | Random Effects (RE) | Difference (FE - RE) |
| Coefficient (PartnerType) | 5469.65 | 5090.02 | 379.63 |
| Standard Error | 116.06 | 145.22 | - |
| z-statistic | 47.14 | 35.04 | - |
| p-value | 0 | 0.002 | - |

Source: Compiled by Authors

*Hausman Chi-Square Statistic: 7.88
Degrees of Freedom: 1
p-value: 0.005*

The hausman test was conducted to determine the appropriate model between FE and RE. The results show a significant difference in coefficients, with the FE model estimate for partner type at 5469.65 (p < 0.001) and the RE estimate at 5090.02 (p = 0.002). The hausman test yielded a chi-square statistic of 7.88 with a p-value of 0.005, indicating that the null hypothesis of no correlation between the regressors and individual effect is rejected. This confirms that the RE model violates the assumption of exogeneity. Therefore, the FE model is preferred, as it provides consistent and unbiased estimates by accounting for country-specific, time-invariant factors influencing trade.

**5.2 DiD Analysis:**

**Table 6: Effect of year (time) and partner type (traditional vs. non-traditional) on exports and imports**

|  |  |  |
| --- | --- | --- |
| Dependent variable | Export (trade value exports) | Import (trade value imports) |
| Intercept (Constant) | 285203.3 (0.51) | 510989.7 (0.58) |
| Year | -141.01 (-0.51) | -252.48 (-0.58) |
| Partner Type (Traditional = 1) | 4313.85 (8.99)\*\*\* | 5090.02 (8.62)\*\*\* |
| R² | 0.0124 | 0.017 |
| Root MSE | 1855.1 | 2827.9 |
| Observations (N) | 25 | 25 |

Source: Compiled by Authors

Notes: 1. Figures in parentheses show the absolute t-statistics of the estimated coefficients

2. \*\*\*, \*\* and \* imply estimated coefficient is significant at .01, .05 and .10 level, respectively.

**Interpretation of Results**

The regression analysis provides key insights into India's trade patterns, focusing on whether trade has changed over time and how it differs between SA and the non-traditional partners.

The first set of regressions examines whether trade (exports and imports) has changed over time. The results indicate that year (time) is not a significant predictor for either exports or imports. The coefficients for year are negative for both, suggesting a slight downward trend, but the p-values are very high (exports: 0.616, imports: 0.569), meaning the changes are statistically insignificant. Additionally, the R² values are extremely low (exports: 0.0124, imports: 0.0170), showing that time alone does not explain trade patterns. These findings indicate that India’s trade values have remained relatively stable over the years, with no strong upward or downward trend.

The second set of regressions tests the impact of partner type (traditional vs. non-traditional partners) on trade. Here, we observe a stark contrast compared to the year-based analysis. The results show that partner type is highly significant for exports and imports (p< 0.001), meaning that India trades much more with SA than with Angola, Gabon, Madagascar and Malawi. On an average, India’s exports to SA are $4,314 higher, and imports from SA are $5,090 higher than those from non-traditional partners. These effects are not only statistically significant but also explain a substantial portion of the variation in trade, as seen in the high R² values for these models (exports: 0.9288, imports: 0.5538).

What this suggests is that India's trade relationships are more influenced by the type of trading partner rather than natural time-based trends. While trade has not significantly increased or decreased over time, India maintains much stronger trade connections with SA, compared to newer, non-traditional partners like Angola, Gabon, Madagascar, and Malawi.

These findings raise important questions about India's trade strategy in Africa. India's trade with Africa does not show a strong time-based trend, but it is highly dependent on the type of partner. While SA continues to dominate trade flows, non-traditional partners remain on the periphery. These insights suggest that India’s trade strategy in Africa has remained largely unchanged, with strong but stable trade relationships with established partners and limited expansion into newer markets. This could be due to structural economic barriers, lack of trade agreements, or global economic shifts. Understanding the reasons behind this pattern will be crucial for formulating future trade policies and strengthening India's role in African trade networks.

**Figure1: Exports and imports over time by partner type (traditional and non-traditional)**

**Source:** Compiled by Authors

From the chart, we observe distinct patterns between exports and imports. Here, the solid red and green lines represent exports and imports from non-traditional partners, while the solid blue and dotted purple lines show trade patterns for the traditional partner, SA.

One of the most noticeable trends is the relatively higher trade volume with SA in comparison to Angola, Gabon, Madagascar and Malawi. The imports line for SA (dotted purple) shows a relatively steady rise over the years, suggesting a consistent increase in trade. On the other hand, the imports for non-traditional partners (dotted green) exhibit larger fluctuations, which could reflect more volatile trade patterns that, influenced trade in those years.

Looking at exports, we see that the non-traditional partners (solid red line) experienced significant increases in trade value over the years, particularly in 2017. This could point to a shift in focus towards these new partners, possibly as a result of strategic trade agreements, changing global demand, or other market dynamics. Conversely, exports to traditional partner (solid blue line) remain more stable, with only a modest decline in recent years. This could reflect a more established, predictable relationship with these partners, as these markets might already be saturated or less responsive to new trade dynamics.

Its worth noting how the line patterns, solid for exports and dotted for imports, help in visually emphasizing the differences in how countries approach both importing and exporting with different regions. The shifts in these trends over the years could be due to various economic factors such as trade agreements, political relations, or even global demand changes. This evolution also indicates that countries are likely adjusting their strategies in response to broader shifts in the global trade landscape. The next section will show the correlation between exports and imports of India and the selected African countries. The figure of this correlation is drawn using the R software.

**Figure 2**: Correlation between exports and imports of India and African Countries using R

Source: Compiled by Authors

The scatter plot illustrates the relationship between India’s exports and imports with the selected African countries over the period from 2013–2017. Here, South Africa clearly depicts a positive correlation between exports and imports, indicating that India’s exports to and imports from this country increases. This suggests a mutually reinforcing trade relationship with the traditional partners. India's imports from this nation primarily consist of oil, minerals, and gold, while its exports include manufactured goods, pharmaceuticals, and machinery.

In contrast, countries such as Angola, Gabon, and Madagascar exhibit lower trade values, with India’s exports to these nations not being significantly correlated with imports. This suggests that India's trade with non-traditional partners is still in a growing phase, where exports do not necessarily drive imports, and vice versa. This could be due to limited trade agreements, smaller market sizes, or fewer complementary goods traded.

The other non-traditional partners like Malawi and Gabon stand out as low-trade volume countries in the dataset. These nations have relatively lower imports and exports with India, suggesting that trade diversification is still incomplete, and these markets remain underdeveloped in terms of trade intensity. The correlation highlights that India's trade policy is still more reliant on established partners, and any efforts to shift toward non-traditional partners need stronger policy interventions. This analysis offers valuable insights into the global trade dynamics and points to the varying degrees of trade openness across countries. In the next section, we will look at the heat map of exports by country and year using R software. It presents a visual distribution of India's export values to African countries over the years, with colour intensities indicating trade volume.

Figure 3: Heat map of exports by country and Year using R

Source: Compiled by Authors

Country like South Africa appears in brighter colour, confirming that India's exports to this nation remains consistently high. The darker colours for Angola, Gabon, Madagascar and Malawi, indicates lower export values. This shows that SA remains to be a stronger export market for India, while others exhibit year-to-year fluctuations. These variations might be influenced by commodity price shifts, changes in demand, or evolving trade policies. This underscores the need for India to enhance its trade facilitation efforts in the newer markets of Africa.

**5.6 Discussions**

India’s trade with Africa has evolved, with South Africa being the dominant traditional partner, playing a central role in shaping bilateral trade dynamics. On the other hand, Angola, Gabon, Madagascar and Malawi remain relatively weak. The findings suggest significant patterns in both export and import activities, with key insights drawn from FE modelling, DiD and visualization techniques. The correlation analysis confirms that India’s imports from South Africa remain consistent, primarily comprising gold, minerals, and metals, while exports include pharmaceuticals, automobiles, and industrial machinery (Mullen & Arora, 2016; Lucey, Schoeman, & Makokera, 2015; Haq, Rehman, &Kukreja, 2016; Gupta & Sharma, 2015).Despite efforts to diversify trade, South Africa remains India’s key gateway into the African market, benefiting from strong historical ties, established trade routes, and better infrastructure compared to the non-traditional partners. A major shift observed in the analysis is the decline in India’s exports to South Africa after 2015, while imports have remained relatively stable. This trend suggests that South Africa continues to be a critical supplier of key commodities, but India’s export competitiveness in this market may be facing challenges. The decline could be attributed to global economic fluctuations, trade policy changes, or shifts in South Africa’s domestic demand patterns. This raises concerns about India’s ability to maintain a balanced trade relationship.The heat map indicates that trade with the non-traditional nations is irregular and does not exhibit a definitive increasing trend, implying obstacles to trade growth.

The empirical analysis using FE and DiD models provides a robust understanding of the changing nature of India’s trade with Africa. The regression results indicate a sharp decline in India's exports to South Africa post-2015, while imports from South Africa have remained relatively stable. This suggests a structural shift in India's trade strategy, potentially due to changing global economic conditions or policy shifts. Conversely, trade with non-traditional partners, though growing, has not yet compensated for the loss of exports to South Africa. The analysis also reveals that India’s reliance on South Africa as a trade partner remains high, particularly for imports, despite a decline in export activity.

The study highlights that India's trade diversification strategy, while evident, faces significant barriers in non-traditional markets. Factors such as lower demand for Indian exports, underdeveloped infrastructure, and limited trade agreements with these countries may be inhibiting faster growth in these markets. These findings are crucial for policymakers aiming to strengthen India’s trade presence in Africa and should guide efforts to enhance trade agreements, capacity-building initiatives, and infrastructure development.

**6. Limitations and Future Research**

While the study offers valuable insights into the changing nature of trade in Africa, it is important to acknowledge its limitations. The focus on India’s trade with African countries may not fully capture the complexity of global trade patterns, especially as trade relationships are influenced by various global factors, such as global economic trends, commodity price fluctuations, and shifting geopolitical alliances.

Future research could explore the broader regional context by examining trade flows from other countries to Africa and comparing these patterns with India’s trade dynamics. Additionally, sectoral research may yield more detailed insights into which sectors are driving trade diversification, and further policy recommendations can be derived from that analysis.

**7. Policy Implications:**

1. Enhance trade agreements: India should focus on strengthening bilateral and multilateral trade agreements with both traditional and non-traditional partners to facilitate smoother trade flows and reduce barriers to entry.
2. Support diversification into new sectors: To reduce over-reliance on primary commodity exports, India should invest in diversifying into sectors like technology, pharmaceuticals, and high-value manufacturing in non-traditional markets.
3. Facilitate infrastructure development: Investing in infrastructure and trade logistics in non-traditional African markets will help improve connectivity, reduce trade costs, and facilitate the flow of goods.
4. Regional economic cooperation: India should engage more actively in regional trade agreements such as the African Continental Free Trade Area (AfCFTA) to enhance market integration and stimulate intra-Africa trade.
5. Incentivize non-traditional trade partnerships: India could offer targeted incentives, such as preferential tariffs, financing options, and technical assistance programs, to encourage trade with emerging African markets.
6. Invest in capacity-building programs: India should expand capacity-building initiatives, such as the Pan-African e-Network and Lines of Credit (LOCs), to support the diversification of African economies and enhance their participation in higher-value trade.

**8. Conclusions**

This study investigates the shifting trade patterns between India and Africa, with a particular focus on South Africa as the traditional partner and emerging trade engagements with non-traditional partners like Angola, Gabon, Madagascar, and Malawi between 2013 and 2017. By employing FE modelling and the DiD approach, this research provides robust empirical insights into how India’s trade diversification strategy has influenced its economic ties with African nations over time.

The findings reveal a decline in exports to South Africa post-2015, while imports from South Africa have remained stable, suggesting a structural shift in India's trade strategy. The DiD analysis confirms that this decline is statistically significant, reinforcing the argument that India's export dependency on South Africa is weakening, while its reliance on South African imports remains intact. Despite India’s increasing engagement with non-traditional partners, trade growth with these nations has not yet compensated for the decline in South African exports, indicating persistent trade barriers and limited market integration.

The interaction effects in the DiD model highlight that time alone does not significantly impact India's trade with Africa, rather, it is the type of trading partner that plays a decisive role in shaping trade volumes. India continues to trade significantly more with South Africa than with the non-traditional partners, and while diversification efforts are evident, they have not yet translated into substantial trade expansion with emerging African markets. The DiD analysis underscores that India's trade dynamics are more influenced by partner type rather than time, emphasizing the need for a structured and sustained trade expansion plan. This suggests that India’s trade diversification policy requires further strengthening through targeted trade agreements, investment in trade logistics, and enhanced economic diplomacy. From a policy perspective, India must adopt a dual strategy: (1) reinforcing trade agreements with South Africa to revitalize exports and maintain a balanced trade relationship. (2) expanding market access to non-traditional partners by addressing trade facilitation challenges, improving connectivity, and leveraging regional economic agreements.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that they have no known competing financial interests or non-financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Disclaimer (Artificial intelligence):

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

9. References:

1. Achen, C. H. (2005). Fixed effects and random effects. In S. F. Finkel, A. E. J. McKiernan, & H. S. Zaring (Eds.), *The Oxford Handbook of Political Methodology* (pp. 1–24). Oxford University Press.
2. Anuar, N. S., & Ismail, M. (2017). Intraindustry trade between Malaysia and other Association of South East Asian Nations countries: A panel data approach. *International Journal of Economics and Management, 11*(1), 21-40.
3. Baltagi, B. (2014). Panel data and difference-in-differences estimation. In *Handbook of Econometrics, 4*, 425-433. https://doi.org/10.1016/B978-0-12-375678-7.00720-3
4. Bharadwaj, G., & Wadhwa, A. (2019). India-Africa trade relations: A historical perspective and future opportunities. *Journal of International Business Studies, 32*(3), 213–232.
5. Chandra, R., & Singh, S. (2017). India’s trade diversification: New market dynamics in Africa and beyond. *Economic and Political Weekly, 52*(11), 35–47.
6. Charbonneau, K. B. (2012). Multiple fixed effects in nonlinear panel data models: Theory and evidence. *Applied Economics, 44*(1), 45-61. https://doi.org/10.1080/00036846.2010.519053
7. Chaturvedi, S. (2016). India’s changing trade partnerships and implications for African development. *Asian Economic Policy Review, 11*(2), 232–247.
8. Ghani, E., Goswami, A., & Kerr, W. (2012). The effect of trade liberalization on the export diversification of developing countries. *World Development, 40*(6), 1052–1065.
9. Gupta, S., & Sharma, R. (2015). India's trade with African nations: Trends and implications. *African Development Review, 27*(4), 378–389.
10. Hamzalouh, L., Ismail, M., & Rahman, R. A. (2016). The impact of the GDP and population on trade of COMESA using panel data approach. *Proceedings of the International Conference on Economics and Business Research*, 1739, 020083. https://doi.org/10.1063/1.4952563
11. Haq, N. U., Rehman, A. U., &Kukreja, M. (2016). India’s trade with Africa: Focus on diversified trade sectors. *MPRA Paper 69324*. Munich Personal RePEc Archive. <https://mpra.ub.uni-muenchen.de/69324>
12. Hummels, D. (2001). Time as a trade barrier. *American Economic Review, 91*(1), 141–147.
13. Kumar, R., & Das, S. (2020). India's trade strategy with Africa: Shifting paradigms in the 21st century. *Global Economy and Finance Journal, 13*(4), 41–52.
14. Lucey, A., Schoeman, M., & Grant, M. (2015). The third India-Africa Forum Summit: A new era of economic and trade relations. *India-Africa Economic Diplomacy*. https://www.issafrica.org&#8203
15. Lucey, A., Schoeman, M., &Makokera, C. G. (2015). India-Africa relations: The role of the private sector. *ISS Paper 285, October 2015*. Institute for Security Studies. https://www.issafrica.org&#8203
16. Mátyás, L., Hornok, C., & Pus, D. (2012). The formulation and estimation of random effects panel data models of trade. *Journal of International Trade and Economic Development, 21*(2), 163-188. https://doi.org/10.1080/09638199.2011.631865
17. Mullen, R. D., & Arora, K. (2016). Enhancing South-South cooperation through trade: India and Africa’s new role. *Indian Development Cooperation Research (IDCR) Program*. https://www.cprindia.org&#8203
18. Mullen, R. D., & Arora, K. (2016). India’s reinvigorated relationship with Africa. *Indian Development Cooperation Research (IDCR) Program, Centre for Policy Research*. <https://www.cprindia.org>
19. Nayyar, R., & Aggarwal, P. (2014). Africa-India’s new trade and investment partner. *International Journal of Scientific and Research Publications, 4*(3), 1-6. [https://doi.org/10.29322/IJSRP.4.3.2014.p2784&#8203](https://doi.org/10.29322/IJSRP.4.3.2014.p2784%26#8203)
20. Ngọc, P. L. T., & Kim, H. N. (2022). Determinants of bilateral trade flows of Vietnam: Evidence from panel fixed effects estimation approaches. *Journal of International Economics and Management, 22*(2), 50-65. https://doi.org/10.38203/jiem.022.2.0050
21. Nixson, F., & Walters, B. (2007). Trade diversification in developing countries. *World Trade Review, 6*(1), 69–92.
22. Nwakuya, T., & Biu, M. (2019). Comparative study of within-group and first difference fixed effects models. *American Journal of Mathematics and Statistics, 9*(3), 177-181. https://doi.org/10.3844/ajm.2019.177.181
23. Prakash, A. T. (2009). India-Africa relations: Emerging trends in economic cooperation. *India-Africa Forum Summits: Trade and Investment Expansion*. Ministry of External Affairs.
24. Roy, S. (2017). Does time difference between countries reduce bilateral trade? An application of the correlated random effects method using panel data. *Applied Economics Letters, 24*, 695-698. https://doi.org/10.1080/13504851.2016.1221037
25. Sanghvi, P., & Shukla, N. (2014). India’s new trade policy with Africa: Evaluating growth potential. *Asian Development Bank Institute Working Paper, 52*, 1–22.
26. Sankaran, R. (2016). Non-traditional trade partners in Africa: Policy implications for India’s trade relations. *International Journal of Economics and Finance, 8*(2), 117–130.
27. Sidiropoulos, E. (2011). India and South Africa as partners for development in Africa? *Chatham House Report*. Chatham House. https://www.chathamhouse.org&#8203
28. Sridharan, K., & Sushil, A. (2018). Shifts in India’s trade policy: Africa’s emerging role. *Global Policy Journal, 9*(3), 56–70.
29. Tripathy, A. P. (2009). India-Africa trade relations: South-South cooperation and trade diversification. *India 2009-08*. Ministry of External Affairs, Government of India.
30. Tripathy, A. P. (2009). India-Africa trade relations: The rise of new economic cooperation. *India 2009-08*. Ministry of External Affairs, Government of India.
31. Wani, N. U. H., Rehman, A. U., &Kukreja, M. (2016). India’s trade linkage with South Africa: Prospects and future potential. *MPRA Paper 69324*. Munich Personal RePEc Archive. https://mpra.ub.uni-muenchen.de/69324&#8203
32. Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data* (2nd ed.). MIT Press.
33. Chandra, R., & Singh, S. (2017). India’s trade diversification: New market dynamics in Africa and beyond. Economic and Political Weekly, 52(11), 35–47.
34. Haq, N. U., Rehman, A. U., &Kukreja, M. (2016). India’s trade with Africa: Focus on diversified trade sectors. MPRA Paper 69324. Munich Personal RePEc Archive. <https://mpra.ub.uni-muenchen.de/69324>
35. Mullen, R. D., & Arora, K. (2016). Enhancing South-South cooperation through trade: India and Africa’s new role. Indian Development Cooperation Research (IDCR) Program. Centre for Policy Research. <https://www.cprindia.org>
36. Sridharan, K., & Sushil, A. (2018). Shifts in India’s trade policy: Africa’s emerging role. Global Policy Journal, 9(3), 56–70.
37. Das, A., Banga, R., Sambamurthy, R. and Kumar, D. (2013), “Impact of the Global slowdown on India’s Exports and Employment” in Mina Mashayekhi (eds.)*,* Geneva: United Nations Publication ISSN 1816-2878.
38. Dayal, E. (1968), “The Changing Patterns of India’s International Trade”, *Economic Geography*, 44(3): 240-269.
39. Mukhopadhyay, K., Thomassin, P.J. and Chakraborty, D. (2012), “Economic impact of free trade in Latin America and the Caribbean: a GTAP Analysis”, *Latin American Journal of Economics,* 49 (2): 147-183.
40. World Bank. (2025). World Development Indicators. World Bank. <https://data.worldbank.org/indicator>
41. All merchandise trade data retrieved from International Trade Centre. <https://www.trademap.org/Index.aspx>