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RESEARCH ARTICLE

Pakistan's trade relations with BRICS countries: trends, export-import intensity, and comparative advantage

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ABSTRACT

This research examines Pakistan's 2003–2021 trade with BRICS nations. The International Trade Center, World Integrated Trade Solutions, and UN COMTRADE provide data for the study. We used the Balassa index (RCA) and Comparative Advantage framework to analyze Pakistan's trading strengths. We also utilized the Export and Import Intensity Indexes to evaluate trade linkages. These methods supported our findings and accurately represented Pakistan-BRICS trade changes. This analysis compares Pakistan's exports and imports from BRICS nations throughout time. Pakistan's exports to South Africa, Brazil, Russia, India, and China varied in 2005; by 2021, they had changed. Exports to Brazil and Russia rose from $0.011 billion to $0.099 billion and $0.175 billion. Exports to India fell from $0.337 billion to nearly nothing. South African exports rose from $0.221 billion to $0.223 billion, while Chinese exports rose from $0.435 billion to $3.042 billion. These developments show Pakistan's evolving BRICS trade relations. Pakistan's trade with BRICS countries shows remarkable trends. Pakistan trades more to China, a major commercial partner. Exports to India have dropped, indicating strained ties. Export fluctuation to other BRICS nations emphasizes the need for stable trade policy and market diversification. The report emphasizes improving business conditions, investing in R&D, and diplomatically strengthening commercial links with BRICS nations. Pakistan has a comparative advantage over Russia and China in some items, which might help policymakers and entrepreneurs explore export opportunities. The export intensity index shows Pakistan's dependence on China, while the import intensity index shows BRICS nations' vulnerability to external shocks. This research analyzes commodity export value and percentage fluctuations. The commodities market is dynamic and affects trade values, as seen by commodity growth patterns. The thorough review of Pakistan's trade connection with BRICS nations provides policymakers and companies with useful information to increase trade competitiveness and promote sustainable economic development.

Keywords: Trade, Export; Import; RCA; Commodity; Policy

1. Introduction

In the last 20 years, there has been a notable change in the global economic scenario, as emerging economies have become increasingly influential in international trade [1]. International trades are seen as a significant driver to economic development. Among the group of growing economies, the BRICS countries

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have established themselves as significant actors, exerting substantial influence on the global arena [2]. Pakistan, a geographically advantageous country situated at the crossroads of South Asia, Central Asia, and the Middle East, needs to harness the potential of these emerging markets to enhance its trade opportunities and foster economic collaboration [3]. The trade relations between Pakistan and the BRICS countries have attracted significant attention due to the shared acknowledgment of the potential for economic expansion and progress [4]. The era spanning from 2003 to 2021 has played a pivotal role in creating these ties, witnessing substantial transformations in trade patterns, export-import dynamics, and the establishment of comparative advantages across different industries [5].

In the past fifty years, there have been substantial transformations in the global economy, and it is anticipated that the next fifty years will be equally remarkable [6-15]. Following the 2007 global financial crisis, the BRICS nations have accounted for 50% of the overall expansion of the global economy [16]. By 2030, all BRICS members, apart from Germany, are expected to rank among the top seven economies in the world in terms of buying power parity [17]. The BRICS countries collectively possess 50% of the global hard currency reserves, with China contributing 78.18% of this portion.

Pakistan's exports to BRICS countries in the years 2005 and 2021 are shown in Table 1. It presents data regarding Pakistan's exports to each BRICS nation, the partner country's imports from the rest of the world, Pakistan's overall exports to the rest of the world, and the proportion of Pakistan's exports to the partner country as a percentage of its total exports. The data pertaining to each BRICS country exhibits intriguing patterns. Pakistan's exports to Brazil in 2005 amounted to $0.011 billion, or 0.1% of Pakistan's overall exports. Nevertheless, Pakistan experienced a growth in its exports to Brazil in 2021, reaching a value of 0.099 billion US$, which accounted for 0.3% of its overall exports. This signifies an increase in commerce between the two countries.

Table 1. Pakistan's exports to BRICS concerning BRICS imports from the world (in billion US$).

	2005				2021			
Country	**Pak exp to the partner country**	**Partner country imp from the world**	**Pak exp to world**	**Share in value in Pak exports, % in 2005**	**Pak exp to the partner country**	**Partner country imp from the world**	**Pak exp to world**	**Share in value in Pak exports, % in 2021**
Brazil	0.011	78.702	16.050	0.1	0.099	219.408	28.880	0.3
Russia	0.048	98.707	16.050	0.3	0.175	293.501	28.880	0.6
India	0.337	140.861	16.050	2.1	0.000	570.402	28.880	0
China	0.435	659.952	16.050	2.7	3.042	2675.680	28.880	10.5
South Africa	0.221	55.032	16.050	1.4	0.223	93.614	28.880	0.8

Source: *International Trade Center (ITC)*

In 2005, Pakistan's exports to Russia were worth 0.048 billion US$, making up about 0.3% of its overall exports. Pakistan's exports to Russia experienced a surge in 2021, reaching a value of 0.175 billion US$, which accounted for 0.6% of its overall exports. This indicates a positive trajectory in the commercial relationship between the two nations. Conversely, Pakistan's exports to India have experienced a gradual decrease over time. In 2005, Pakistan's exports to India reached a value of 0.337 billion US$, representing 2.1% of Pakistan's overall exports. Nevertheless, Pakistan's exports to India had dwindled to insignificant levels by 2021, although India's imports from the rest of the world experienced a substantial surge. This signifies a notable change in the trade relations between the two countries.

The data additionally emphasizes the burgeoning trade link between Pakistan and China. Pakistan's exports to China in 2005 reached a value of $0.435 billion, accounting for 2.7% of its overall exports. In 2021, Pakistan experienced a substantial rise in its exports to China, reaching a value of 3.042 billion US$, which accounted for 10.5% of its overall exports. This exemplifies a significant surge in trade between the two nations. Pakistan's exports to South Africa have maintained a consistent level over the years. In 2005, the value of exports to South Africa amounted to $0.221 billion, or 1.4% of Pakistan's overall exports. In 2021, the value of exports rose somewhat to 0.223 billion US$, representing 0.8% of Pakistan's overall exports. In summary, the information presented in Table 1 emphasizes the ever-changing character of Pakistan's exports to BRICS nations and their proportion in its overall exports. The data uncovers variations in export values and the evolving importance of trade links between Pakistan and several BRICS members over time.

Examining trade patterns with BRICS countries is essential for Pakistan's economic environment, as it offers prospects to broaden trade cooperations outside conventional markets, mitigate economic uncertainties, and access some of the globe's most extensive and most rapidly expanding economies. Enhancing trade relations with BRICS nations may facilitate Pakistan's export growth, namely in textiles, agriculture, and services while promoting strategic alliances in line with programs such as the China-Pakistan Economic Corridor (CPEC). These countries have opportunities for investment inflows, the transfer of technology, and innovation, which may modernize Pakistan's industry and enhance productivity. Furthermore, comprehending these trade dynamics enables Pakistan to effectively navigate a multipolar global economy, wherein BRICS nations exert growing influence. This empowers the country to take advantage of alternative trade and financial systems while making well-informed choices regarding trade policies that promote long-term growth.

Pakistan's trade connections with BRICS countries present both promising opportunities and formidable obstacles. The economic and trade collaboration between China and Pakistan is advancing seamlessly, as the establishment of the China-Pakistan economic corridor enhances its strategic role as a link between areas [18]. Nevertheless, financial and trade cooperation between the two countries faces hurdles due to domestic security issues, energy constraints, and imbalances in bilateral trade and investment [19]. However, previous studies do not specifically highlight Pakistan's commercial links with other BRICS countries. Hence, the precise potential advantages and difficulties for Pakistan's commercial relations with these nations remain ambiguous. Additional research is required to investigate the commercial interaction between Pakistan and BRICS.

The objective of this study is to examine Pakistan's trade relations with the BRICS countries within the stated time frame, analyzing patterns, the intensity of exports and imports, and changes in comparative advantage. This research intends to offer significant insights into the changing commercial relations between Pakistan and the BRICS nations by conducting a comprehensive analysis of trade statistics and major cooperation sectors. The goals encompass analyzing past trade patterns, evaluating the magnitude of both exports and imports and pinpointing industries in which Pakistan possesses a competitive advantage. In addition, the study investigates the obstacles and constraints that affect trade dynamics, providing suggestions for enhancing policies and fostering greater economic cooperation.

It is crucial to comprehend Pakistan's commercial connections with the dynamic BRICS nations as the global economic focus moves towards them. This research aims to guide policymakers, corporations, and stakeholders in developing strategies to improve trade and investment opportunities between Pakistan and the prominent BRICS bloc in the future. It contributes to the academic discussion on international trade and regional economic cooperation.

The remainder of the study adheres to a systematic and organized approach. Section 2 provides a concise overview of stylized data pertaining to Pakistan's export performance. Section 3 provides a comprehensive

explanation of the methodology and data sources employed in this study. In Section 4, we present and discuss the results of our analysis. Section 5 presents the conclusion and policy recommendations.

2. Dynamics of Trade between Pakistan and BRICS

Trade is a crucial factor in defining a country's economic environment, promoting collaboration, and establishing solid relationships between nations [20]. Pakistan recognizes the importance of comprehending the trade dynamics with its main partners, as it can have substantial ramifications for the country's economic growth and strategic alliances [21]. Within this group of partners, the BRICS countries are characterized by solid economies, varied industrial capabilities, and extensive consumer markets [22]. This study examines the intricacies of trade relations between Pakistan and the BRICS countries, with the goal of investigating the fundamental patterns and trade composition that influence these interactions.

The China-Pakistan Economic Corridor (CPEC) and the China-Pakistan Free Trade Agreement (CPFTA) have played a crucial role in the substantial evolution of trade relations between Pakistan and China. These advancements have contributed to the establishment of a strategic alliance that strengthens economic collaboration and commerce. The China-Pakistan Economic Corridor (CPEC) is a prominent initiative of China's Belt and Road Initiative. Its primary objective is to establish direct connections between China's western regions and Pakistan's Gwadar Port, so enabling trade and investment [23,24]. China has emerged as a prominent trading partner for Pakistan, making substantial investments in infrastructure and energy initiatives [25]. The Comprehensive Free Trade Agreement (CPFTA) has played a crucial role in augmenting the level of trade, as well as resulting in a trade deficit for Pakistan, namely in the agricultural industry [24]. Despite a significant increase in imports, Pakistan's exports of textiles, agricultural products, and seafood to China have risen, leading to concerns over trade imbalances [25]. "Development Path of Bilateral Economic Relations between Pakistan and China: Current International Situation" (2023) highlights the significance of policy enhancements and decreased trade barriers in the ongoing efforts of both countries to strengthen their trade relations, despite geopolitical obstacles [23]. Despite the significant economic advantages resulting from the partnership, it is crucial to tackle persistent problems such as trade deficits and reliance on Chinese imports to achieve sustainable growth.

The commercial interactions between Pakistan and BRICS countries, especially the dynamics with India, are complex and rapidly evolving. Commerce between Pakistan and BRICS countries, including India, Brazil, Russia, and China, has promising prospects. Nevertheless, it is often eclipsed by geopolitical tensions and economic rivalry. The export situation of Pakistan is directly affected by the significant influence exerted by China, India, and other BRICS countries on global trade. As per Nakhoda [26], the exports from these countries, particularly in the textile and labor-intensive industries, have the capacity to either supplement or replace Pakistan's international exports. Setting aside historical rivalries, there is an increasing focus on strengthening economic relations. Evidence from research indicates that regional cooperation and economic agreements have the capacity to enhance trade relations [27,28]. The prevailing trade volume between Pakistan and BRICS countries is now below its economic capacity primarily due to political tensions, particularly with India [29]. Advocacy for policy changes aimed at enhancing trade relations suggests that Pakistan has the capacity to boost exports and promote economic cooperation by capitalising on its position within the BRICS framework [30]. However, despite the potential for trade, the existing geopolitical obstacles may hinder the practical realization of these opportunities. Thus, this emphasizes the need of diplomatic engagement alongside economic strategies.

The BRICS nations, namely Brazil, Russia, India, China, and South Africa, have implemented a range of trade strategies that are tailored to their individual economic strengths. These strategies provide valuable

insights that Pakistan can learn from. India prioritizes regional integration through initiatives such as SAARC and BIMSTEC, with a particular emphasis on digital trade and services. These efforts could serve as a valuable example for Pakistan in strengthening its regional trade relationships. Brazil prioritizes safeguarding its domestic industries while simultaneously focusing on expanding agricultural exports within the BRICS framework. This approach presents a potential strategy that Pakistan could consider to fully capitalize on its agricultural trade opportunities [31]. Russia utilizes energy diplomacy by forming regional alliances such as the Eurasian Economic Union in order to uphold its dominant position in energy exports. Pakistan can consider regional energy trade agreements as a means to expand its energy portfolio, as suggested by Kovalev [32]. China employs the Belt and Road Initiative to expand its trade influence on a global scale, a strategy that Pakistan can leverage through the China-Pakistan Economic Corridor (CPEC). South Africa, in contrast, expands its trade beyond Western markets through a strategic emphasis on mineral exports. Pakistan could adopt a similar approach by diversifying its trading partners and exploring untapped markets [31]. Other countries, like Vietnam, have effectively joined global value chains by prioritizing manufacturing and exports, particularly in the electronics sector. Pakistan has the potential to enhance its industrial growth by implementing a comparable strategy [33]. South Korea has successfully integrated foreign direct investment (FDI) with trade policies in BRICS countries, with a specific focus on high-tech industries. This suggests that Pakistan could potentially strengthen its trade strategy by incorporating FDI as well [33]. Finally, Mexico employs a strategy of combining protectionism and openness by implementing both tariff and non-tariff measures. This approach could be beneficial for Pakistan as it seeks to protect its growing industries while also allowing certain sectors to engage in global trade [31].

Table 2 displays Pakistan's trading connections with the BRICS nations from 2003 to 2021. It shows the proportion of Pakistan's exports to BRICS countries as a portion of its overall exports, as well as the proportion of Pakistan's imports from BRICS countries in its total imports during the given timeframe. In 2003, Pakistan's exports to the BRICS countries were a relatively small portion of 0.479% of its overall exports, while the BRICS countries imported commodities valued at 628.817 units from around the globe. Pakistan's aggregate exports amounted to 11.930 units, while imports from the BRICS countries totaled 1.367 units. Pakistan's exports to the BRICS countries experienced a modest increase over the years, reaching a level of 1.226% in 2006. By 2011, Pakistan's exports to BRICS countries constituted 2.516% of its overall exports, demonstrating a burgeoning commercial partnership during that time.

However, in 2014, there was a change in the situation when Pakistan's exports to BRICS countries decreased to 3.199% of its total exports, while the proportion of Pakistan's purchases from BRICS countries in its total imports climbed to 26%. During that period, there was a greater reliance on BRICS countries for imports than for exports. The data demonstrates oscillations in Pakistan's commerce with BRICS nations throughout the years, with diverse proportions in overall exports and imports. In 2021, Pakistan's exports to BRICS constituted 3.541% of its overall exports, but the proportion of Pakistan's purchases from BRICS in its total imports reached 34%. This data offers a perceptive synopsis of Pakistan's commercial association with BRICS nations, demonstrating evolving patterns in exports and imports and their corresponding contributions to Pakistan's overall trade.

Table 2. Pakistan's exports to BRICS are a percentage share of total exports.

Year	Pak exp to BRICS	BRICS imp from world	Pak total exp	Pak imp from BRICS	Pak total imp	Pak exp to BRICS share in Pak exp%	Pak import from BRICS share in Pak imp%
2003	0.479	628.817	11.930	1.367	13.048	4	11
2004	0.528	850.841	12.585	1.780	15.420	4	12
2005	1.054	1033.256	16.050	3.776	25.096	7	15
2006	1.226	1272.987	16.932	4.801	29.825	7	16.1
2007	1.318	1582.469	17.838	6.174	32.593	7	19
2008	1.568	1986.839	20.279	7.745	42.326	8	18
2009	1.549	1641.927	17.554	5.611	31.583	9	18
2010	2.179	2251.226	21.413	7.723	37.537	10	21
2011	2.516	2853.388	25.343	8.804	43.578	10	20
2012	3.508	2962.953	24.613	9.015	43.813	14	21
2013	3.636	3086.573	25.120	9.216	43.775	15	21
2014	3.199	3045.810	24.722	12.523	47.544	13	26
2015	2.687	2506.966	22.089	13.601	43.989	12	31
2016	2.283	2340.322	20.533	16.539	46.998	11	35
2017	2.195	2745.819	21.911	19.072	57.518	10	33.2
2018	2.611	3157.666	23.778	18.663	60.391	11	31
2019	2.504	3054.735	23.818	15.338	50.134	11	31
2020	2.261	2884.160	22.245	15.227	45.841	10	33
2021	3.541	3852.606	28.880	24.851	73.106	12	34

Source: International Trade Center (ITC) and Trade Map.

Figure 1 displays the monetary worth of Pakistan's exports, measured in billions of US$, to five significant nations from 2003 to 2021. The export trends to Brazil and Russia have exhibited constant increases throughout the years, while Pakistan's commercial relations with both countries have consistently expanded. In contrast, exports to India have exhibited instability, with substantial growth observed until 2012, followed by significant reductions in subsequent years, resulting in essentially insignificant exports reported in 2019 and 2020. China has been the primary commercial partner for Pakistan among the nations mentioned, with exports increasing significantly from $259.637 billion in 2003 to an astonishing $3042.838 billion in 2021. The significant expansion underscores the strengthening economic relationship between Pakistan and China, possibly driven by China's growing appetite for products and joint initiatives like the China-Pakistan Economic Corridor (CPEC). Moreover, there has been a consistent upward trajectory in exports to South Africa, demonstrating a very steady economic relationship with rare variations over time. In 2021, the value of exports reached $223.079 billion.

Moreover, the data uncovers diverse trends in the expansion of exports and oscillations in Pakistan's commercial connections with BRICS. Although Brazil, Russia, and South Africa have seen consistent growth, exports to India have been more volatile. Nevertheless, the most notable trend is the impressive increase in exports to China, which further establishes China as Pakistan's leading economic partner.

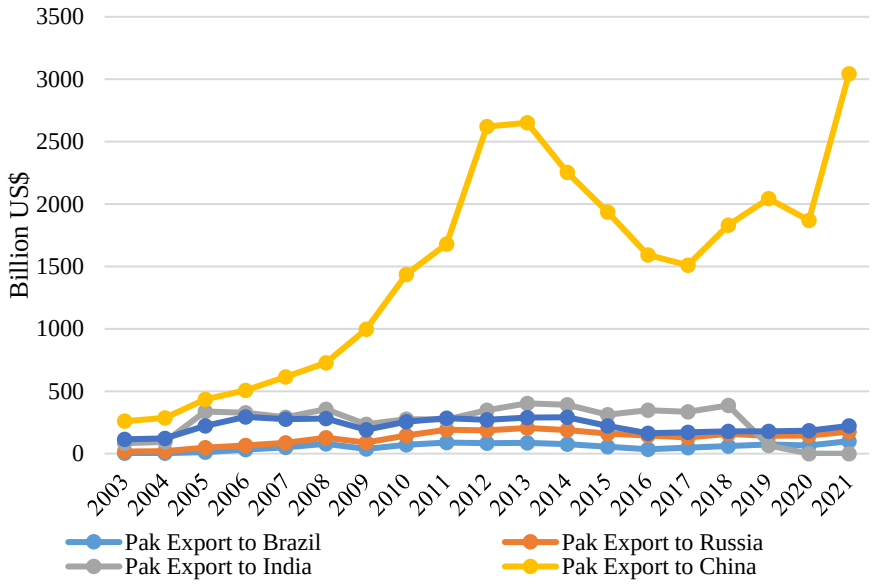

Figure 1. Pakistan's exports to BRICS countries.

Figure 2 provides a detailed summary of Pakistan's commercial relations with the BRICS nations spanning from 2003 to 2021. The data indicates a significant increase in Pakistan's exports to the BRICS group, with export values rising from 479.288 billion US$ in 2003 to 3541.383 billion US$ in 2021. The continuous and regular rise in numbers suggests that trade links between Pakistan and the BRICS markets are getting more robust, and Pakistani goods and services are gaining more market share in these countries. The data demonstrates the concurrent increase in economic influence of the BRICS nations, as their combined imports from the rest of the world grew from 628,817.469 billion US$ in 2003 to 3,852,606.042 billion US$ in 2021. This indicates the increasing consumption and demand in the BRICS economies and their substantial impact on the global trade scenario.

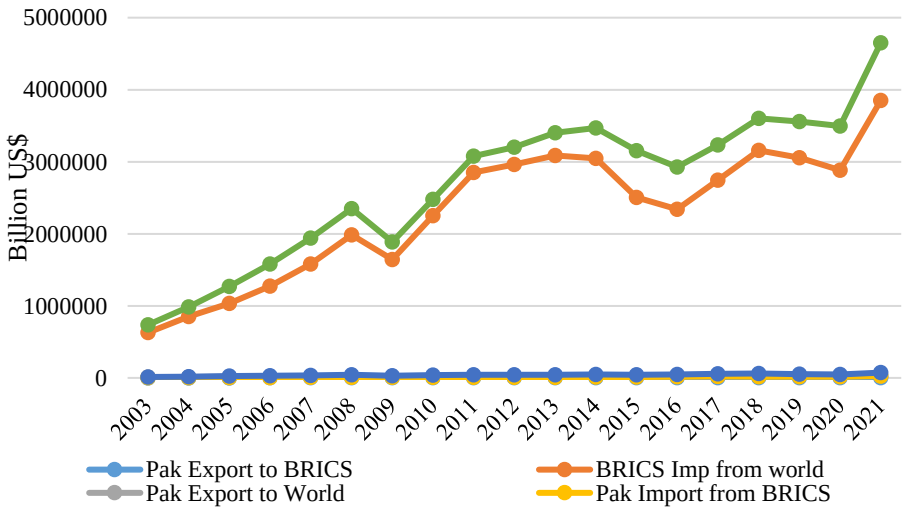

Figure 2. Pakistan and BRICS global exports and imports.

Alongside Pakistan's expanding export sector, the data also indicates a consistent rise in the country's purchases from the BRICS nations. Pakistan's imports from BRICS countries increased from 1367.546 billion US$ in 2003 to 24851.778 billion US$ in 2021, indicating the nation's growing dependence on commodities and services from these nations. In addition, the data illustrates Pakistan's comprehensive import patterns from

other countries, showing an increase in imports from 13048.609 billion US$ in 2003 to 73106.624 billion US$ in 2021. The steady increase in imports indicates Pakistan's economic reliance on different regions. It highlights the importance of prudent trade policies and diversifying import sources to maintain a stable and sustainable trade balance.

3. Methodology and Data

3.1. Source of Data

For this research project, secondary data was used to analyze trade trends and the current situation in Pakistan and the BRICS regions from 2003 to 2021. Data from multiple sources, including the International Trade Center (ITC), World Integrated Trade Solutions (WITS), and UN COMTRADE, provided insights from both a local and global perspective.

3.2. Comparative Advantage

Many academics have attempted to calculate comparative advantage in bilateral trade, and Balassa's [34] RCA index is widely recognized as a comprehensive and widely accepted measure in the field. Following Balassa's influential research, other subsequent studies have expanded upon and enhanced the RCA index, including works by Memedovic [35], Donges and Riedel [36], Bowen [37], and Vollrath [38]. The Balassa's RCA index offers a reliable framework for assessing the competitiveness of different sectors by examining the relative performance of exports. According to Balassa [34], the relative export structure is inherently linked to the underlying factor conditions, which together determine a country's comparative advantage. The expression for the RCA Balassa index is as follows:

$$RCA\ (Balassa\ index) = \frac{Y_{ij}/Y_{it}}{Y_{wj}/Y_{wt}} \quad (1)$$

This index provides academics with significant insights into the assessment of comparative advantage and the dynamics of trade interactions between nations. Y_{ij} represents the export of commodity j from nation I, and t is the set of total commodities exported by country i. Y_{wj} represents the world's export for commodity j, and Y_{wt} is the set of total commodities that the world exports. The RCA index, sometimes referred to as the Balassa index, is a metric utilized to evaluate the comparative advantage of a particular product in a country's exports to a specific destination. If the RCA value is greater than 1, it indicates that the government has a revealed comparative advantage in exporting that product to the destination. On the other hand, if the RCA value is less than 1, it means that there is a weak comparative advantage. This suggests that other countries are in a better position to export that product to the same destination. The index offers valuable insights into the competitiveness of a nation's trade and aids policymakers and economists in comprehending the relative strengths of various items in certain trade partnerships.

A systematic technique was used to undertake a Revealed Comparative Advantage (RCA) study, which aimed to highlight Pakistan's competitive advantage in exporting various items to BRICS nations. Initially, trade data was gathered, with a specific emphasis on Pakistan's exports to BRICS countries and the corresponding worldwide export statistics for the same product categories. The investigation focused on computing the RCA index using the conventional methodology, which relates Pakistan's export share for a particular product in BRICS countries to its overall exports, and then compares this with the worldwide share of that product in BRICS markets. A product's RCA value over 1 indicates that Pakistan has a comparative advantage in exporting that commodity. This implies that the nation is more specialized or efficient in manufacturing and exporting that product compared to the world average. The last phase entails the identification of Pakistan's competitive advantages via the analysis of items with high RCA values, hence

indicating areas in which Pakistan is excelling in BRICS markets. By categorizing these RCA findings based on sectors, the research also revealed the industries, such as textiles or agriculture, that exhibited notable competitiveness. The segmentation of sectors provides a more comprehensive knowledge of Pakistan's advantages in the BRICS markets. The RCA study not only uncovered competitive advantages but also enabled a comparison with worldwide export patterns, enabling the identification of Pakistan's alignment with global needs and possible untapped prospects in BRICS nations. The findings obtained from this research have significant policy implications, as goods that exhibit high RCA values might potentially reap advantages from further assistance, such as enhanced market entry or focused trade deals with BRICS states. The RCA analysis is essential for developing strategies to improve Pakistan's export performance in these important markets.

In order improve credibility and promote openness, it is crucial to recognize the constraints and possible biases inherent in the Revealed Comparative Advantage (RCA) technique. RCA is dependent on trade statistics, which may not comprehensively account for variables such as non-tariff barriers or trade policy that impact comparative advantage. In addition, RCA offers a fixed representation, which hinders the ability to include dynamic shifts in trading patterns. Data anomalies, such as transient surges in exports, may potentially distort outcomes. Compiling trade statistics might overly simplify conclusions, concealing differences between product groups. The study's acknowledgment of these limitations contributes to a more equitable and dependable appraisal of Pakistan's export performance.

3.3. Trade Intensity

Kojima [28] proposed the trade intensity index (TII) as a valuable instrument for evaluating the level of bilateral trade between two different countries. The trade intensity index (TII) provides valuable insights into the magnitude of commercial activity between the nations and helps determine the scope of their trade connections. The concept consists of two fundamental elements: the export intensity index (XII) and the import intensity index (MII).

3.3.1. The Export Intensity Index

The export intensity index (XII) is a metric utilized to evaluate the importance of a particular product's exports from a specific country to a specified destination. A more considerable XII value signifies that the product has a greater significance in the country's export portfolio to that destination, taking into account the overall import dynamics in effect. The XII provides valuable information on the export intensity of a product in a specific trade relationship. This allows analysts to assess its importance in the overall economic exchanges between the country of origin and the destination.

$$XII_i = \frac{\frac{X_{ij}}{X_{iw}}}{\frac{M_{jw}}{(M_w - M_{iw})}} \quad (2)$$

By utilizing these calculations, researchers may accurately measure the level of trading activity across countries and acquire a more profound comprehension of their economic connections. The location of the export value of product i from country j to a specific destination w is denoted as X_{iw}, which represents the entire value of exports of product i from country j to all destinations. The aggregate imports of all commodities from country j to destination w are denoted as M_w—the aggregate imports of all products to destination w. M_{iw} is the aggregate imports of product i to destination w.

3.3.2. The Import Intensity Index

The import intensity index (MII) is a quantitative measure utilized to evaluate the importance of a particular product's imports into a specific country from a specified source. A higher MII value signifies that the product has a more considerable significance in the country's overall import portfolio from a particular origin. This takes into consideration the export dynamics between the origin and other destinations. This index offers valuable insights into the relative level of import dependence of a product in a particular trade relationship, enabling policymakers and analysts to assess its importance in the country's trade dynamics with the specific origin being considered.

$$MII_i = \frac{\frac{M_{ij}}{M_{iw}}}{\frac{X_{jw}}{(X_w - X_{iw})}} \quad (3)$$

The value of imports of the product (i) into the country (j) from a specific origin (w) is represented by M_{ij}. The expression X_{jw} represents a complex number in the form of X multiplied by the imaginary unit j and the frequency w. The variable X_w is the aggregate value of exports of all commodities from origin w to all destinations. The variable X_{iw} is represented for the aggregate value of product (i) exports from regions other than (w) to all destinations.

4. Results and Discussion

Table 3 provides a thorough examination of Pakistan's RCA compared to BRICS countries for the top eight products over multiple years spanning from 2003 to 2021. The RCA is a crucial trade metric that is employed to evaluate a country's competitive edge in exporting items compared to its trading counterparts. Within this framework, if the RCA value exceeds 1, it indicates that a nation has a competitive advantage in exporting a specific commodity to the associated BRICS country. The data demonstrates a fluid and developing trend in Pakistan's trade competitiveness. For example, Pakistan consistently shows a lack of comparative advantage (RCA values below 1) in items like 8 (undisclosed), 55 (chemical products), and 55 (miscellaneous edible preparations) when compared to all BRICS countries during the whole period. Nevertheless, Pakistan's trading environment demonstrates clear examples of comparative advantage, especially in products like cotton, where it consistently maintained favorable trade positions with Russia for several years and with China for several other years.

The analysis also emphasizes the specific areas where Pakistan has successfully utilized its competitive advantage. Pakistan consistently showed a comparative advantage over Russia in the production of pharmaceutical items in both 2003 and 2004, indicating a potential specialization in this industry. In addition, the data shows that there were occasional periods of comparative advantage in product 42 (leather products) with Russia, particularly in 2008, 2013, 2014, and 2015. This suggests that there may be prospects for focused trade expansion. Furthermore, in 2009 and 2016, product 61 (knitted or crocheted fabrics) had a significant comparative advantage over Russia, providing additional evidence for the existence of specific strengths in this product category. Although the RCA values may vary over time, these insights offer significant information for policymakers and businesses aiming to identify prospective export prospects and prioritize trade strategies in Pakistan's connections with BRICS countries. It is crucial to emphasize that this research relies solely on RCA values and should be taken into account alongside other economic considerations when developing comprehensive trade policies and plans to improve Pakistan's international trade competitiveness.

Table 3. Pakistan's RCA over BRICS countries' top eight products.

Country	HS/Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Russia	8	0.000	0.001	0.004	0.005	0.004	0.006	0.018	0.014	0.014	0.019	0.021	0.029	0.047	0.052	0.029	0.032	0.032	0.054	0.026
	10	0.000	0.000	0.005	0.009	0.002	0.002	0.010	0.014	0.009	0.004	0.006	0.007	0.018	0.014	0.011	0.013	0.007	0.000	0.004
	30	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000
	42	0.002	0.002	0.004	0.002	0.001	0.003	0.002	0.003	0.004	0.004	0.005	0.003	0.004	0.012	0.012	0.010	0.011	0.012	0.020
	52	0.003	0.006	0.016	0.017	0.054	0.017	0.026	0.030	0.026	0.039	0.032	0.029	0.015	0.022	0.019	0.013	0.012	0.023	0.013
	55	0.000	0.000	0.000	0.008	0.010	0.009	0.008	0.012	0.017	0.014	0.014	0.012	0.004	0.005	0.006	0.006	0.004	0.005	0.006
	61	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.001	0.003	0.010	0.016	0.015	0.012	0.012	0.017	0.023	0.015
	63	0.004	0.004	0.003	0.003	0.004	0.005	0.005	0.004	0.003	0.002	0.002	0.001	0.008	0.010	0.006	0.003	0.003	0.010	0.006
China	8	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.002	0.003	0.003	0.004	0.002	0.001	0.000	0.001	0.007
	10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.034	0.017	0.017	0.021	0.031	0.013	0.021	0.037	0.037	0.040
	30	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	42	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000
	52	0.066	0.063	0.078	0.087	0.082	0.080	0.170	0.150	0.153	0.243	0.230	0.192	0.161	0.138	0.120	0.113	0.110	0.092	0.087
	55	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.000	0.001	0.001	0.000	0.000	0.001	0.001	0.000	0.000
	61	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.003	0.004	0.005	0.006	0.006
	63	0.000	0.000	0.000	0.000	0.000	0.002	0.002	0.002	0.004	0.003	0.003	0.004	0.003	0.004	0.004	0.003	0.002	0.002	0.001
India	8	0.063	0.047	0.063	0.062	0.062	0.060	0.074	0.053	0.041	0.063	0.058	0.060	0.075	0.105	0.094	0.092	0.015	0.000	0.000
	10	0.000	0.000	0.002	0.002	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	30	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	42	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
	52	0.022	0.022	0.083	0.109	0.102	0.087	0.073	0.045	0.026	0.076	0.033	0.056	0.054	0.034	0.012	0.015	0.010	0.000	0.000
	55	0.000	0.000	0.001	0.007	0.003	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000
	61	0.000	0.000	0.002	0.001	0.000	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.002	0.001	0.002	0.000	0.000	0.000
	63	0.001	0.001	0.005	0.004	0.004	0.007	0.005	0.008	0.004	0.008	0.005	0.003	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Brazil	8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	30	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	42	0.001	0.001	0.001	0.002	0.002	0.004	0.003	0.003	0.004	0.006	0.006	0.004	0.005	0.003	0.002	0.002	0.003	0.003	0.004
	52	0.001	0.001	0.003	0.021	0.032	0.050	0.017	0.026	0.026	0.024	0.024	0.023	0.011	0.006	0.013	0.011	0.015	0.018	0.027
	55	0.000	0.000	0.000	0.001	0.002	0.001	0.002	0.001	0.003	0.000	0.001	0.003	0.001	0.000	0.001	0.001	0.000	0.001	0.002
	61	0.000	0.001	0.002	0.002	0.001	0.002	0.002	0.005	0.005	0.008	0.008	0.012	0.014	0.009	0.009	0.012	0.020	0.021	0.015
	63	0.000	0.000	0.001	0.006	0.017	0.026	0.006	0.016	0.012	0.010	0.016	0.018	0.019	0.003	0.004	0.012	0.011	0.015	0.023
South Africa	8	0.001	0.000	0.001	0.002	0.002	0.001	0.002	0.001	0.001	0.001	0.001	0.002	0.001	0.002	0.002	0.002	0.002	0.004	0.002
	10	0.025	0.018	0.157	0.142	0.061	0.288	0.122	0.171	0.070	0.012	0.013	0.016	0.018	0.026	0.011	0.013	0.032	0.039	0.027
	30	0.000	0.001	0.002	0.006	0.007	0.003	0.001	0.000	0.000	0.001	0.002	0.005	0.001	0.000	0.001	0.000	0.005	0.022	0.020
	42	0.051	0.083	0.213	0.455	0.337	0.174	0.119	0.050	0.036	0.041	0.037	0.034	0.032	0.030	0.028	0.025	0.024	0.025	0.020
	52	0.199	0.183	0.273	0.294	0.204	0.218	0.191	0.152	0.181	0.173	0.173	0.147	0.154	0.157	0.150	0.153	0.155	0.138	0.124
	55	0.003	0.004	0.010	0.049	0.112	0.062	0.080	0.078	0.075	0.091	0.100	0.107	0.097	0.072	0.063	0.078	0.079	0.087	0.059
	61	0.005	0.005	0.018	0.011	0.009	0.013	0.014	0.010	0.009	0.010	0.015	0.014	0.022	0.023	0.023	0.028	0.035	0.038	0.029
	63	0.096	0.085	0.121	0.144	0.198	0.215	0.282	0.164	0.121	0.112	0.101	0.095	0.115	0.111	0.086	0.087	0.106	0.114	0.094

Table 4 and **Figure 3** displays the export intensity index for Pakistan and BRICS countries from 2003 to 2021. It illustrates the proportion of Pakistan's exports to each of these countries compared to its overall exports. Pakistan's export intensity to Russia has exhibited a very stable trend over the years, with values fluctuating between 0.188 in 2003 and 0.458 in 2021. This suggests a consistent, if not particularly significant, commercial relationship between the two countries. China has become a major trade partner for Pakistan, as indicated by the steady increase in its export intensity index from 0.359 in 2004 to 0.777 in 2021. This demonstrates China's growing significance in Pakistan's export market. In contrast, India exhibited a divergent pattern, as Pakistan's export intensity experienced fluctuations and eventually declined to 0.000 in both 2020 and 2021. This indicates substantial obstacles or a cessation of exports to India during those years. Brazil's part of Pakistan's exports was relatively small, as indicated by its export intensity index, which varied from 0.054 in 2004 to 0.348 in 2021. South Africa had changing export intensity values, reaching a peak of 3.099 in 2006 and a low of 1.667 in 2017. This indicates that South Africa is an essential but unstable market for Pakistan's exports.

Figure 3 highlights China's prominent role as a crucial export market for Pakistan, with the level of exports steadily rising over time. Nevertheless, the decreasing level of exports to India indicates a substantial obstacle in the trade partnership between the two adjacent nations. However, Pakistan's exports to Brazil and Russia have been limited in comparison to other destinations. South Africa has exhibited variations in the degree of export intensity, which has brought forth both favorable prospects and difficulties as a trade ally. Examining the export intensity index offers valuable insights for policymakers and businesses in Pakistan, allowing them to pinpoint potential areas of export growth, concentrate on enhancing relationships with crucial trading partners such as China, and devise strategies to overcome obstacles and expand export markets for long-term economic development.

Table 4. Export intensity between Pakistan and BRICS countries 2003-2021

year	Russia	China	India	Brazil	South Africa
2003	0.188430227	0.385079712	0.739036193	0.056184052	2.14673574
2004	0.198566034	0.359186096	0.70962576	0.05454748	1.897624008
2005	0.32182048	0.409869567	1.563726176	0.097538707	2.65275885
2006	0.348240497	0.434242901	1.309983561	0.23276496	3.099960168
2007	0.34077553	0.474507198	1.041310182	0.309304265	2.723928102
2008	0.379242449	0.483111076	0.890993127	0.341222114	2.580109402
2009	0.370711751	0.660283831	0.624949841	0.193770629	2.154433916
2010	0.445017478	0.669907367	0.550014442	0.256623569	2.182954685
2011	0.446037958	0.631932572	0.417041453	0.266232878	1.995643657
2012	0.435621888	0.978053886	0.521487559	0.263165493	1.948702846
2013	0.481943137	0.916031224	0.633067888	0.255253103	2.090973928
2014	0.49371261	0.789506453	0.638020346	0.239302391	2.215546247
2015	0.673664969	0.775592484	0.585347604	0.244422391	1.939273625
2016	0.614909677	0.706600565	0.747212603	0.202808709	1.694929866
2017	0.463077902	0.597331418	0.598106693	0.250088635	1.667763063
2018	0.542488223	0.631987837	0.609950013	0.269150495	1.569862487
2019	0.459935262	0.707002971	0.10857205	0.334464665	1.621419979
2020	0.490782635	0.639475654	0.000356198	0.325297074	2.116271558
2021	0.458663078	0.777410934	0.00031963	0.348594603	1.842058646

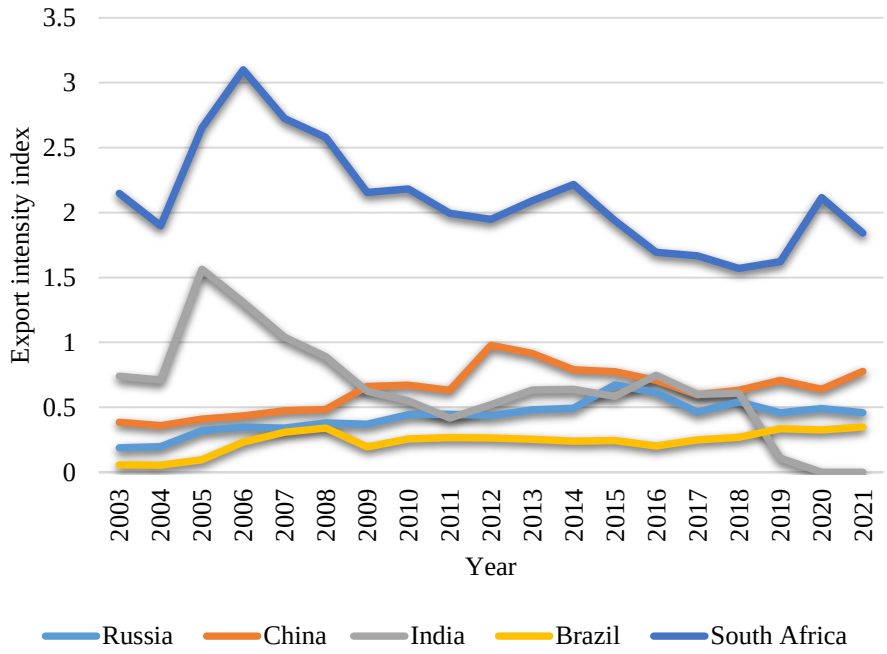

Figure 3. The export intensity index between Pakistan and BRICS countries.

Table 5 and **Figure 4** display the import intensity index for the BRICS nations spanning from 2003 to 2021. This index represents the proportion of total imports to GDP, providing insights into their reliance on imported commodities. The import intensity index of Russia exhibited temporal fluctuations, reaching its peak value in 2006 (1.141) and experiencing a significant rise in 2020 (1.009), indicating an increasing dependence on imports throughout that timeframe. China continually maintained a high import intensity index above 1 over the years, with its highest value recorded in 2016 (2.184). This signifies China's substantial reliance on imports in relation to its GDP. India's import intensity index has consistently been above 1 over the years, indicating a high level of import dependency. However, there was a significant decrease in 2020 (0.336), suggesting a potential reduction in import reliance during that year. Brazil exhibited a consistently low import intensity index, below 1, for most of the years. However, in recent years, it experienced substantial growth, with the index reaching 1.577 in 2021. South Africa regularly had an import intensity index above 1, signifying its comparatively strong dependence on imports, reaching a peak value of 3.559 in 2017.

The import intensity index provides significant economic insights into the long-term dynamics of these countries' dependence on imports. China and South Africa regularly show substantial levels of dependence on imports, whereas India and Brazil showed different levels of reliance, with Brazil experiencing a noticeable rise in recent years. Conversely, Russia had fluctuations in its import dependence, with a significant increase observed in 2020. Comprehending the import intensity index is essential for policymakers and analysts to evaluate the susceptibility of these economies to external disturbances, variations in global trade patterns, and the possible requirement for economic diversification to ensure long-term growth. Moreover, fluctuations in the import intensity index can provide valuable insights into how the economic strategies and policies of these countries impact their import patterns and general economic well-being.

Table 5. Import intensity between Pakistan and BRICS countries 2003-2021

Year	Russia	China	India	Brazil	South Africa
2003	0.751786274	1.253379801	2.186758068	0.198357229	1.517435314
2004	1.035648706	1.133445055	2.934935223	0.205576544	1.425936
2005	1.486874073	1.270926353	2.368725183	1.12116392	1.510904
2006	1.141234019	1.206566786	3.689664468	0.615994878	1.28173753
2007	0.624425401	1.444251702	3.672414273	0.426377396	1.903975965
2008	0.825786878	1.250886452	3.513102186	0.843095383	1.506365366
2009	0.737374691	1.231682051	2.393315787	0.422924712	1.932617264
2010	0.275281264	1.335978706	2.842796171	0.740089373	1.896607546
2011	0.224902532	1.416955379	2.216354983	0.299447231	1.456876153
2012	0.326977872	1.368998473	2.277713432	0.340494331	1.332578841
2013	0.393095489	1.290568182	2.395304066	0.258958253	1.303192384
2014	0.310894525	1.621919522	2.626215608	0.296236923	1.883038048
2015	0.357873255	1.799740983	2.357573824	0.506154809	2.20247954
2016	0.478991908	2.18448589	2.132107181	0.825074374	2.231801435
2017	0.418321783	2.067676232	1.750526671	0.859202843	3.559137261
2018	0.505309596	1.871051153	1.909788585	0.678819042	4.172957331
2019	0.342039354	1.857552745	1.167092674	0.844952696	4.8526472
2020	1.009755629	1.840670456	0.336123046	1.718504712	4.103767922
2021	0.554809563	1.860484824	0.302325025	1.577264898	4.262105301

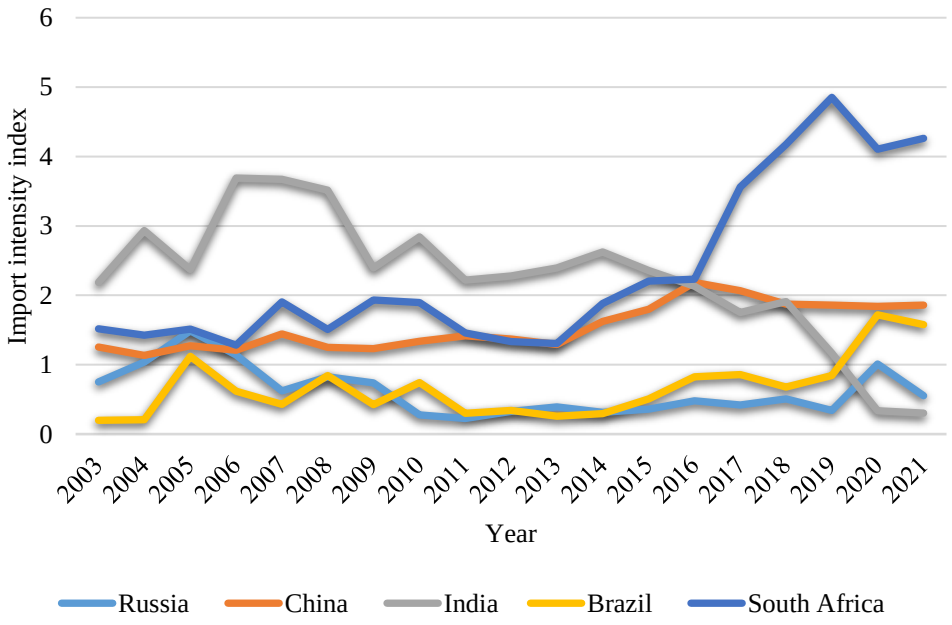

Figure 4. Import intensity index between Pakistan and BRICS countries.

Table 6 displays the monetary value of specific goods that were exchanged in billions of US$ during different periods. Commodity 8 has shown consistent development throughout the years, with its trade value rising from 0.017 billion US$ during 2003-2006 to 0.181 billion US$ during 2015-2018. However, there was

a little decline to 0.126 billion US$ for 2019-2021. Similarly, the value of Commodity 10 increased modestly from 0.017 billion US$ from 2003 to 2006 to 0.065 billion US$ from 2015 to 2018. However, it then sharply declined to 0.013 billion US$ from 2019 to 2021. Commodity 30 exhibited a sustained and consistently low trade value, never exceeding 0.004 billion US$ from 2011 to 2014. Commodity 42 experienced robust growth, with its value reaching 0.052 billion US$ between 2019 and 2021. This growth was mainly driven by a substantial increase between 2011 and 2014, followed by another significant surge between 2015 and 2018. Commodity 52 had a considerable trade value of 0.242 billion US$ from 2011 to 2014. However, this value declined significantly to 0.053 billion US$ from 2019 to 2021. Commodity 55 exhibited a comparable trend, reaching its highest point at 0.111 billion US$ from 2011 to 2014 and, after that, decreasing to 0.017 billion US$ in the years 2019-2021. Commodity 61 exhibited significant expansion, beginning at 0.001 billion US$ from 2003 to 2006 and reaching a peak of 0.064 billion US$ from 2019 to 2021. The value of Commodity 63 saw fluctuations over the years, reaching its peak at 0.029 billion US$ between 2015 and 2018, followed by a modest decline to 0.020 billion US$ between 2019 and 2021. In general, the aggregate value of all chosen commodities showed a consistent increase until 2011-2014, reaching 0.638 billion US$. However, it subsequently slightly decreased to 0.485 billion US$ in 2015-2018 and further dropped to 0.348 billion US$ in 2019-2021.

Table 6. Value of selected commodities trade over the time intervals.

	2003-2006	**2007-2010**	**2011-2014**	**2015-2018**	**2019-2021**
Commodity	**Value of trade in US$ billion**				
8	0.017	0.054	0.156	0.181	0.126
10	0.017	0.037	0.048	0.065	0.013
30	0.002	0.001	0.004	0.001	0.000
42	0.010	0.012	0.030	0.043	0.052
52	0.047	0.172	0.242	0.077	0.053
55	0.010	0.054	0.111	0.023	0.017
61	0.001	0.002	0.027	0.063	0.064
63	0.013	0.024	0.016	0.029	0.020
All	0.121	0.359	0.638	0.485	0.348

Table 7 displays a thorough examination of the percentage fluctuations in the actual worth of exports for specific goods throughout five distinct periods. Commodity 8 and Commodity 10 saw significant growth between 2007 and 2010, with percentage increases of 213.998% and 119.106%, respectively. Nevertheless, both commodities had substantial decreases in subsequent years, with Commodity 8 declining by -30.369% and Commodity 10 plunging by -78.966% between 2019 and 2021. Commodity 30 exhibited significant volatility, with a substantial surge of 182.412% between 2011 and 2014, followed by a sharp decline of -81.643% from 2019 to 2021. Commodity 42 exhibited consistent and continuous growth, reaching a maximum percentage change of 152.684% over the years 2011 and 2014. Commodity 52 displayed significant volatility, with a notable increase of 259.486% between 2007 and 2010, followed by steep decreases of -68.175% between 2015 and 2018 and -30.858% between 2019 and 2021. Commodity 55 experienced remarkable expansion from 2007 to 2010, with a growth rate of 409.299%. However, it encountered substantial declines from 2015 to 2018, with a decrease of 78.453%, and from 2019 to 2021, with a reduction of 25.605%. Commodity 61 exhibited a remarkable growth rate of 1145.462% from 2011 to 2014, but Commodity 63

displayed fluctuating values, reaching its peak growth of 74.028% from 2015 to 2018 but, after that, declining by -30.081% from 2019 to 2021.

Table 7. Changes in the nominal value of exports over time and across commodities.

Commodity	2003-2006	2007-2010	2011-2014	2015-2018	2019-2021
			Percent change		
8	---	213.998	184.378	16.052	-30.369
10	---	119.106	30.653	32.859	-78.966
30	---	-46.599	182.412	-52.684	-81.643
42	---	19.630	152.684	41.822	19.027
52	---	259.486	40.774	-68.175	-30.858
55	---	409.299	105.236	-78.453	-25.605
61	---	13.340	1145.462	127.395	2.030
63	---	76.852	-30.633	74.028	-30.081
All	---	194.603	77.804	-23.932	-28.249
		Percent change over commodities			
8	14.344	15.289	24.453	37.307	36.204
10	14.033	10.437	7.669	13.395	3.926
30	2.279	0.413	0.656	0.408	0.104
42	8.390	3.407	4.842	9.027	14.975
52	39.274	47.923	37.943	15.874	15.297
55	8.740	15.110	17.441	4.940	5.122
61	1.610	0.619	4.341	12.978	18.454
63	11.325	6.798	2.652	6.068	5.913

Commodity 52 experienced the highest growth rate of 39.274% in exports during the time frame of 2007-2010, suggesting a significant increase in its market share. From 2011 to 2014, Commodity 61 had the highest influence on the overall rise, with a percentage change of 4.341% compared to other commodities. Between 2015 and 2018, Commodity 8 experienced the most significant growth rate of 37.307%, while Commodity 42 closely followed with a growth rate of 9.027%. During the last period from 2019 to 2021, Commodity 8 maintained its position as the frontrunner, with the highest growth rate of 36.204%. Following closely after, Commodity 42 saw a growth rate of 14.975%, which was the second highest among all commodities. The table provides significant insights into the unique growth patterns and trends in the export values of chosen commodities over time. It illustrates the problems and opportunities that each commodity encountered in the international trade market.

There have been substantial fluctuations in the trade value of several commodities throughout time. Commodity 8 and Commodity 10 exhibited contrasting patterns, with the former showing a consistent increase in value while the latter experienced a decline. Commodity 30 maintained a continuously low level over the years, but Commodity 42 and Commodity 52 exhibited significant increases but saw swings in their trade values. Commodity 55 and Commodity 63 exhibited a combination of upward and downward trends, with peak values occurring at specific periods and declines occurring at other times. In contrast, Commodity 61 had consistent and impressive development during the entire duration. The aggregate trade value of the chosen commodities exhibited a consistent upward trend until 2011-2014, after which it saw a decline in the following

seasons. This data offers significant insights into the dynamics of the commodities market, showcasing the individual performances of different commodities and their overall influence on the trade environment.

The study's findings provide vital perspectives on Pakistan's trade connections with BRICS nations, fulfilling the study's aim of assessing current patterns and investigating potential prospects. The analysis of export performance across several product categories reveals notable trends in trade dynamics with the BRICS grouping. Pakistan's proficiency in exporting cotton and leather exemplifies sectors where it has cultivated a competitive edge, particularly with significant BRICS nations such as China and Russia. In contrast, the report highlights vulnerabilities in industries such as chemicals and various culinary preparations, emphasizing the difficulties that Pakistan encounters in these sectors. These findings improve our comprehension of Pakistan's trading situation and demonstrate the theoretical anticipation that trade performance is affected by the competitiveness of different sectors and the demand in the market. Moreover, the findings of the research provide significant insight into comprehending the broader trade connections between BRICS nations. The fluctuations in export intensity, such as the consistent rise with China and the irregular changes with other BRICS members, demonstrate the influence of geopolitical and economic considerations on trade patterns. The results enhance current understanding by demonstrating how external factors, such as regional trade agreements and diplomatic ties, impact trade patterns. This enhanced comprehension aids in identifying strategic opportunities for Pakistan to enhance its trade relations with BRICS countries in accordance with theoretical expectations regarding the influence of external factors on trade performance. It also provides practical insights for future policy and strategic planning.

The results of this research have several practical outcomes for policymakers and enterprises in Pakistan. The findings highlight the need for policymakers to customize trade policies to use Pakistan's advantages and tackle its shortcomings in the export industry. More precisely, the government should prioritize strengthening assistance for sectors that have a decisive edge over others, such as cotton and leather, by offering incentives to encourage innovation and enhance the quality of their products. In addition, implementing focused trade agreements with BRICS nations, particularly with influential participants such as China and India, might effectively ensure improved market entry and diminish trade difficulties. Investments in infrastructure, namely in logistics and transportation, have the potential to significantly enhance export efficiency and decrease expenses, thus enhancing overall trade competitiveness. For companies, the study's findings indicate that organizations should synchronize their plans with the identified areas of advantages and disadvantages. Companies operating in the cotton and leather sectors may consider diversifying their product offerings or undertaking untapped areas inside the BRICS bloc to maximize their current benefits. On the other hand, companies in industries that are facing difficulties in exporting, such as chemicals and assorted culinary preparations, could have to allocate resources towards research and development to enhance the quality of their products and make them more attractive to the market. Forming strategic alliances and collaborative ventures with BRICS rivals might provide critical market intelligence and development prospects. To promote economic development and enhance Pakistan's trade competitiveness, policymakers and companies must prioritize aligning their strategies with the trade dynamics of BRICS countries.

Subsequent investigations should focus on overcoming various barriers to expand upon the findings made in this study. A difficulty lies in the dynamic nature of the international commerce landscape, necessitating the constant adjustment of policies to ensure their continued effectiveness [39- 44]. Furthermore, the precision and comprehensiveness of trade data are of utmost importance, and further research might gain advantages from enhanced data sources or methodologies [45- 52]. An in-depth analysis of non-economic elements, such as geopolitical conflicts and environmental challenges, might provide a more comprehensive comprehension of trade dynamics [53- 61]. Additionally, by concentrating on studies that are relevant to specific sectors, it is

possible to get precise insights and suggestions that might improve strategies for companies that face distinct issues [62- 67]. Focusing on these areas will enhance strategy for enhancing trade competitiveness and promoting economic development.

5. Conclusion and Policy Recommendations

5.1. Conclusion

An examination of Pakistan's commercial ties with BRICS nations between 2003 and 2021 yields a number of specific findings. China has become a prominent trading partner for Pakistan, with its contribution to Pakistan's exports consistently growing over time. This trend demonstrates the importance of China as a critical market for Pakistan's goods, emphasizing the necessity for the government to exploit this robust economic relationship further. Pakistan can maintain and increase its export growth by taking advantage of the increasing demand for its products in the Chinese market and exploring chances in many areas. However, the data reveals a worrisome downward trend in exports to India over the years, ultimately reaching insignificant levels by 2021. The substantial decline indicates a tense relationship between the two nations, potentially resulting in trade restrictions and limited market entry. To tackle this problem, officials must actively participate in diplomatic initiatives aimed at enhancing bilateral relations and examining strategies to eliminate trade obstacles. Reviving trade relations with India has the potential to create a large market for Pakistan's goods and greatly enhance its export revenue.

The variations in exports to other BRICS nations underscore the necessity for stable and coherent trade policies and initiatives. The data indicates that Pakistan's exports to Russia, Brazil, and South Africa have exhibited different patterns throughout time. To fully exploit the opportunities presented by these markets, authorities should prioritize the promotion of industries in which Pakistan possesses a competitive edge and devise strategies to cater to the unique demands of each country. This may entail identifying specialized items that have the potential to develop popularity in specific regions and customizing export strategy accordingly. The data emphasizes the significance of implementing economic reforms and enhancing the business environment in Pakistan in order to improve overall export prospects. An environment that is favorable for business, with efficient rules and enhanced infrastructure, has the potential to attract increased foreign investment and stimulate the growth of domestic enterprises' export capabilities. Furthermore, allocating resources towards research and development, upgrading technology, and improving skills can significantly improve the competitiveness of Pakistani products in the global market.

The data emphasizes the necessity of expanding export markets across the BRICS countries through diversification. Pakistan's heavy reliance on a single market makes its exports vulnerable to risks stemming from fluctuations in that market's characteristics. Policymakers should investigate the potential of several industries and nations within the BRICS group to guarantee a well-rounded and robust export portfolio. Pakistan can promote economic growth and resilience in the face of global difficulties by strategically embracing and cultivating trade relationships with all BRICS states. The trade connection between Pakistan and BRICS countries entails a combination of favorable prospects and challenges. Policymakers should utilize the robust trade connections with China, reinstate trading relationships with India, and investigate the possibilities in other BRICS countries by implementing consistent trade policies, enacting economic reforms, and pursuing market diversification. By adopting this approach, Pakistan can enhance its standing in the global trade arena and promote enduring economic expansion in the future.

Pakistan can learn from the study's focus on BRICS trade strategy. India's concentration on regional integration and digital trade, Brazil's on agricultural exports while protecting domestic sectors, and Russia's energy diplomacy via regional alliances all noteworthy. Strategic diversification and regional relationships are

important for Pakistan due to China's Belt and Road Initiative and South Africa's diversification away from Western markets. Pakistan can learn from Vietnam, South Korea, and Mexico's integration into global value chains, foreign direct investment, and balanced trade policy. Pakistan can improve its trade policy and boost economic growth by stressing export-driven industrialization, regional collaboration, and balancing protectionism and openness. Policymakers and businesses striving to increase Pakistan's economic growth and competitiveness need this research. These tactics can boost Pakistan's worldwide trade, investment, and market diversification.

Pakistan should prioritize regional integration, learning from India's SAARC and BIMSTEC successes, to boost its trade policies with BRICS countries. To boost agricultural export competitiveness, it should create trade policies tailored to Brazil's agriculture sector. Energy diplomacy like Russia's can increase Pakistan's energy trade and infrastructure connections, while CPEC, like China's Belt and Road Initiative, can help Pakistan join global value chains. Pakistan can emulate South Africa and seek untapped markets in Africa and Latin America. Promoting industrialization with South Korean and Vietnamese foreign direct investment (FDI) is crucial for Pakistan's manufacturing and export capacities. Pakistan should balance tariffs and non-tariff measures to preserve growing industries and allow vital sectors to compete globally, like Mexico. These techniques can boost Pakistan's trade efficiency and global competitiveness.

5.2. Policy Recommendations

Pakistan may increase its commercial links with BRICS nations, exploit export potential, and promote long-term economic growth and stability by implementing the following policy proposals:

- To mitigate the risk of overdependence on a single country, Pakistan should prioritize the diversification of its export markets, considering China's significant influence as a major destination for exports. It is crucial to make efforts to investigate and enter new markets in the BRICS countries, particularly in industries where Pakistan has a solid competitive edge.
- Policymakers must identify and rectify trade impediments that are hindering Pakistan's exports to BRICS nations. This may entail negotiating trade agreements, minimizing tariffs, and streamlining customs procedures to facilitate more efficient commercial movements.
- Given India's substantial economic influence in the area, Pakistan must actively seek opportunities to enhance bilateral relations and alleviate trade barriers. Strengthening economic ties with India has the potential to create fresh avenues for Pakistan's export prospects.
- The examination of RCA values for commodities reveals the sectors in which Pakistan possesses a relative edge over other countries. Policymakers ought to endorse and foster these industries to bolster their ability to compete in the international market and augment their exports to BRICS nations.
- Pakistan should seek to diversify its import sources to reduce the dangers associated with a heavy dependence on individual nations. By investigating alternative suppliers from BRICS and other regions, a more robust and equitable import framework can be established.
- Policymakers should prioritize the development of industries that are focused on exporting and offer incentives to enterprises that are geared toward exporting. Implementing this strategy can bolster Pakistan's export competitiveness and strengthen its foothold in BRICS markets.

- Pakistan ought to actively pursue trade diplomacy with BRICS countries in order to cultivate stronger economic relations. Regular trade missions, corporate conferences, and bilateral meetings can enhance trade partnerships and foster collaborations.
- Policymakers should endorse market research and product development initiatives to ascertain high-demand products in BRICS countries. This might assist Pakistani enterprises in customizing their products or services to cater to the precise requirements of these markets.

The government ought to enact export promotion initiatives to bolster and incentivize small and medium-sized firms (SMEs) in their exploration of prospects in BRICS nations. This encompasses financial aid, enhancing capabilities, and facilitating access to markets.

Conflict of interest

The authors declare no conflict of interest.

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