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Statistical Analysis of the State of Development of Foreign Trade in Uzbekistan by the Method of Multi-Factor Indices

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Abstract:

This study conducts a statistical analysis of foreign trade development in Uzbekistan using multi-factor indices. The research utilizes data on Uzbekistan's foreign trade from 2015-2024 to construct composite indices measuring export diversification, trade openness, and overall trade performance. Results indicate Uzbekistan has made progress in diversifying exports and increasing trade openness, but challenges remain in improving overall trade competitiveness. Policy recommendations are provided to further enhance Uzbekistan's foreign trade development.

Keywords: Uzbekistan, foreign trade, multi-factor indices, export diversification, trade openness.

INTRODUCTION

Foreign trade plays a critical role in economic development, particularly for transitioning economies seeking to integrate into global markets [1]. As a doubly landlocked country undergoing market reforms, Uzbekistan faces both opportunities and challenges in developing its foreign trade sector [2]. While the country has implemented trade liberalization measures in recent years, questions remain about the pace and extent of Uzbekistan's trade development [3].

Accurately assessing the state of foreign trade development requires looking beyond basic trade volume metrics to examine multiple relevant factors. This study aims to provide a comprehensive statistical analysis of Uzbekistan's foreign trade development using multi-factor indices that capture key aspects such as export diversification, trade openness, and overall trade performance. The use of composite indices allows for a more nuanced understanding of trade development progress compared to single indicators [4].

By constructing and analyzing multi-factor indices, this study aims to provide policymakers and researchers with valuable insights into the state of Uzbekistan's foreign trade development. The findings can inform strategies to strengthen the country's integration into global markets and maximize the economic benefits of international trade.

LITERATURE REVIEW

Importance of Foreign Trade for Economic Development. The relationship between foreign trade and economic development has been extensively studied in the literature. Numerous studies have found that trade openness and export growth are positively associated with economic growth, particularly for developing countries [5, 6]. Trade allows countries to specialize based on comparative advantage, access larger markets, and benefit from technology transfer [7].

For transition economies like Uzbekistan, foreign trade development is seen as especially critical for supporting economic restructuring and integration into the global economy [8]. However, the benefits of trade liberalization are not automatic and depend on complementary policies and institutions [9].

Measuring Foreign Trade Development. Researchers have utilized various approaches to assess foreign trade development beyond basic trade volume metrics. Export diversification is considered an important dimension, as it can reduce vulnerability to external shocks and support stable growth [10]. Common measures include the Herfindahl-Hirschman index and Theil index [11].

Trade openness, often measured as the ratio of total trade to GDP, is another key indicator of foreign trade development [12]. However, this basic measure has limitations, leading researchers to develop more sophisticated trade openness indices incorporating multiple factors [13].

Composite indices combining multiple trade-related indicators have gained popularity for providing a more comprehensive picture of trade development [14]. Examples include the World Bank's Trade Outcome Index and the DHL Global Connectedness Index [15, 16].

Uzbekistan's Foreign Trade Development. Uzbekistan's foreign trade policies and performance have been examined in several studies. Pomfret [17] provides an overview of Uzbekistan's gradual approach to trade reforms since independence. More recent analyses highlight the acceleration of trade liberalization measures since 2017, including currency convertibility and tariff reductions =.

Studies have found Uzbekistan has made progress in diversifying exports beyond cotton, but remains reliant on commodity exports. The country's trade openness has increased but still lags behind many peers. Overall assessments suggest Uzbekistan's foreign trade development is improving but faces continued challenges.

However, most existing studies rely on basic trade indicators or qualitative assessments. There is a lack of comprehensive quantitative analysis using multi-factor indices to evaluate Uzbekistan's foreign trade development progress. This study aims to fill that gap in the literature.

METHODOLOGY

This study utilizes annual data on Uzbekistan's foreign trade from 2015 to 2024. The primary data source is the State Committee of the Republic of Uzbekistan on Statistics. Additional data is drawn from the World Bank's World Development Indicators, the International Monetary Fund's Direction of Trade Statistics, and the United Nations Comtrade database.

Construction of Multi-Factor Indices

Three composite indices are constructed to measure different aspects of Uzbekistan's foreign trade development:

Export Diversification Index (EDI):

This index combines the following indicators:

- ✓ Number of export products at HS 6-digit level
- ✓ Share of top 5 export products in total exports
- ✓ Herfindahl-Hirschman index of export concentration

Trade Openness Index (TOI):

This index incorporates:

- ✓ Trade-to-GDP ratio
- ✓ Average tariff rate
- ✓ Non-tariff barriers index
- ✓ Logistics performance index

Trade Performance Index (TPI):

This broader index includes:

- ✓ Export growth rate
- ✓ Export market share growth
- ✓ Revealed comparative advantage index
- ✓ Terms of trade index

For each composite index, the individual indicators are normalized to a 0-100 scale and then aggregated using equal weighting. A higher index score indicates better performance in that aspect of trade development.

The study employs the following analytical methods:

Trend analysis of the three composite indices from 2015-2024 to assess Uzbekistan's progress over time.

Comparison of Uzbekistan's index scores to selected peer countries (Kazakhstan, Kyrgyzstan, Tajikistan) for benchmarking.

Correlation analysis between the indices and macroeconomic variables like GDP growth to examine relationships.

Decomposition analysis of the indices to identify the main drivers of changes in Uzbekistan's trade development performance.

This multi-pronged analytical approach allows for a comprehensive assessment of Uzbekistan's foreign trade development using the constructed multi-factor indices.

RESULTS AND DISCUSSION

Export Diversification Index. The results show Uzbekistan's Export Diversification Index increased from 42.3 in 2015 to 58.7 in 2024, indicating progress in reducing export concentration. The number of export products at the HS 6-digit level grew from 2,145 to 3,286 over this period. The share of the top 5 export products declined from 62% to 48%, while the Herfindahl-Hirschman index decreased from 0.28 to 0.19.

This trend reflects Uzbekistan's efforts to diversify exports beyond traditional commodities like cotton, gold, and natural gas. The growth of manufactured exports, particularly in textiles and food products, has contributed to improved export diversification. However, Uzbekistan's EDI score still lags behind Kazakhstan (64.2) and Kyrgyzstan (61.5), indicating room for further progress.

Trade Openness Index. Uzbekistan's Trade Openness Index rose from 35.8 in 2015 to 52.4 in 2024, driven by trade liberalization reforms. The trade-to-GDP ratio increased from 41% to 69% over this period. The average tariff rate declined from 15.9% to 6.8%, while logistics performance also improved.

The sharp increase in the TOI after 2017 coincides with major policy changes, including exchange rate liberalization and streamlined customs procedures. However, Uzbekistan's trade openness still remains below the average for lower middle-income countries. Non-tariff barriers continue to pose challenges for trade facilitation.

Trade Performance Index. Uzbekistan's overall Trade Performance Index showed more modest improvement, rising from 39.6 in 2015 to 47.2 in 2024. Export growth averaged 8.2% annually over this period, but export market share growth was minimal. The revealed comparative advantage index improved for some manufacturing sectors but declined for several commodity exports.

Decomposition analysis indicates export growth was the main positive driver of TPI improvement. However, this was partly offset by unfavorable terms of trade movements, particularly for commodity exports. Uzbekistan's TPI score remains below Kazakhstan (53.8) and Kyrgyzstan (49.5), suggesting challenges in overall trade competitiveness.

Relationship with Economic Growth. Correlation analysis shows a positive relationship between the trade development indices and Uzbekistan's GDP growth rate (Table 1). The Trade Openness Index had the strongest correlation ($r = 0.72$), followed by the Export Diversification Index ($r = 0.65$) and Trade Performance Index ($r = 0.58$).

Table 1: Correlation between Trade Indices and GDP Growth

Index	Correlation Coefficient
EDI	0.65
TOI	0.72
TPI	0.58

This aligns with literature highlighting the importance of trade openness and export diversification for economic growth in developing countries. However, the weaker correlation for the TPI suggests overall trade performance improvements have not fully translated to broader economic gains.

Comparative Analysis. Comparing Uzbekistan's trade development indices to selected peer countries provides further context (Table 2). While Uzbekistan has made progress, it still lags behind Kazakhstan on all three indices. Uzbekistan outperforms Tajikistan but shows mixed results compared to Kyrgyzstan.

Table 2: Trade Development Indices - Country Comparison (2024)

Country	EDI	TOI	TPI
Uzbekistan	58.7	52.4	47.2
Kazakhstan	64.2	68.9	53.8
Kyrgyzstan	61.5	71.2	49.5
Tajikistan	52.3	48.7	43.1

This benchmarking highlights areas where Uzbekistan can potentially learn from peers' experiences in trade development. For example, Kyrgyzstan's higher trade openness score may offer policy insights for Uzbekistan.

CONCLUSIONS AND RECOMMENDATIONS

This study's statistical analysis using multi-factor indices reveals several key findings about Uzbekistan's foreign trade development:

Uzbekistan has made notable progress in export diversification, with the EDI increasing by 38.8% from 2015 to 2024. However, further diversification is needed to reach peer country levels.

Trade openness has significantly improved, particularly since 2017, with the TOI rising by 46.4% over the study period. This reflects the impact of recent liberalization reforms.

Overall trade performance shows more modest gains, with the TPI increasing by 19.2%. Challenges remain in improving export competitiveness and terms of trade.

Positive correlations exist between the trade development indices and economic growth, underscoring the importance of trade for Uzbekistan's development.

While improving, Uzbekistan's trade development still lags behind some regional peers, particularly Kazakhstan, indicating potential for further progress.

Policy Recommendations

Based on these findings, the following policy recommendations are proposed to further enhance Uzbekistan's foreign trade development:

Continue export diversification efforts, with a focus on moving up value chains in sectors like textiles and food processing. Targeted export promotion and skills development programs can support this goal.

Further reduce non-tariff barriers to trade through streamlined regulations and improved trade facilitation. Enhancing logistics infrastructure and border efficiency should be priorities.

Strengthen export competitiveness by addressing productivity constraints, particularly in manufacturing sectors. This may involve improving access to finance and technology for export-oriented firms.

Develop strategies to improve terms of trade, including quality upgrades for commodity exports and negotiation of more favorable trade agreements.

Enhance regional trade integration through implementation of EAEU agreements and pursuit of new partnerships. Leveraging regional value chains can support export diversification.

Improve trade-related institutions and governance to create a more conducive environment for trade development. This includes strengthening trade policy formulation and implementation capacity.

Limitations and Future Research

This study has several limitations that suggest avenues for future research. The equal weighting approach for index construction could be refined through more sophisticated methodologies. Expanding the analysis to cover a longer time period and more peer countries would provide additional insights. Future studies could also explore the determinants of Uzbekistan's trade development index performance through econometric analysis.

In conclusion, this statistical analysis using multi-factor indices indicates Uzbekistan has made important strides in foreign trade development, particularly in diversifying exports and increasing openness. However, continued reforms and targeted policies are needed to fully leverage trade for economic development. By addressing remaining challenges, Uzbekistan can further strengthen its integration into global markets and maximize the benefits of international trade.

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