

Trends and Trade Dynamics of India's Floriculture Exports with Comparative Analysis of Top Destination Markets (2019–2020 to 2023–2024)

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Abstract

The floriculture industry makes up one of the rapidly growing components of the Indian horticulture industry, with commercial and export significance attached to it. The research aims at examining the export performance of India's flower exports to the important destination countries, including the USA, Netherlands, Germany, UK, and UAE, in the period between 2019 and 2024. This research is conducted from a trade analysis perspective in which the export performance and supply chain of the international floriculture industry will be analyzed. The aim is to study the trade flows, export value, and quantity dynamics using secondary data sources from APEDA (Agricultural and Processed Food Products Export Development Authority). Tools like Compound Annual Growth Rate (CAGR) and Year-on-Year (Y-o-Y) growth analysis have been used in the process. The result shows that there is an increasing trend in export value from ₹1265.08 crore to ₹1722.77 crore with a CAGR of 8.03% and in export quantity, from 31,745.50 MT to 34,131.80 MT with a CAGR of 1.83%. This is due to a fundamental change in the way of exporting, which is value-oriented. On a market-wise basis, there is an excellent development in the UAE, steady performance in the Netherlands, and a declining trend in Germany and the UK. This report concludes with an emphasis on the importance of logistics efficiency, constraints in the supply chain, and market diversification in export performance.

Keywords: Floriculture Exports, India's Agricultural Trade, Export Performance Analysis, Global Horticulture Market, Trade Competitiveness, Export Competitiveness.

Introduction

Agriculture continues to form the bedrock of the economy of India, providing the livelihood base to almost 50% of the population of the country (Bijapure et al., 2026). Though historically food grain production has been the center of discussion in the field of agriculture, in recent times, the attention has shifted towards high-value horticultural crops such as floriculture. Horticulture refers to that part of agriculture which involves fruit, vegetable, flower, and ornamental plant cultivation (Jagadeesh et al., 2024). Of these, floriculture which is concerned with the study and art of growing flowering and ornamental plants is a lucrative business in India. This activity not only caters to aesthetic needs but also commercial demands. India has various agro-climatic regions which facilitate the round-the-year cultivation of floriculture products. However, the export of such products in the world's flower market is poorly developed and uneven, thus indicating potential for export as well as inefficiency in the system (Anumala & Kumar, 2021). The current research is based on the analysis of trade using data-based approach, focusing on the analysis of export performance and dynamics in the international floriculture chains (Titisari, 2025).

The exports of Indian floriculture have gained importance in developing India's agricultural economy by earning foreign exchange, creating rural employment, and benefiting small and medium scale farmers (Kale et al., 2026). The export performance of Indian floriculture depends on efficient logistics management, the perishable nature of products, quality issues, and changing demands in the international market (Shahaniya et al., 2025). Keeping in view the above discussion, this research paper endeavors to do an analysis of the export performance of Indian floriculture to different destination countries including USA, Netherlands, Germany, UK, and UAE, for the period 2019-20 to 2023-24 (Saxena et al., 2024). The analysis would be done in terms of patterns and trends in trade flow as well as quantitative variables including export value and quantity. The purpose of this paper is to understand the export performance of Indian floriculture in international horticultural trade.

Statement of the Problem

Although India is endowed with favourable agro-climatic factors, which facilitate its floriculture industry, its percentage of foreign trade is quite insignificant and unstable. Export performance in the major destinations varies greatly due to various reasons such as the economic state of affairs as well as other limitations. However, there is no empirical study of a contemporary nature related to the analysis of tendencies and highlighting the need to investigate the export performance post-COVID-19 period.

Objectives of the Study

1. To examine the export performance of floriculture from India to the top five countries over 2019-2024.
2. To analyze the trend and growth rate of floriculture exports in quantitative and value terms.
3. To determine fluctuations and influencing factors of export performance.
4. To provide recommendations to improve India's competitiveness of floriculture exports in the world.

This document is made up of eight parts. Section I deals with the introduction, background, and purpose of the study. Section II deals with the literature review and research gap. Section III provides information about the methodology of the study, data, and tools used for analysis. Section IV deals with the results of export performance analysis. Section V deals with trend and growth analysis. Section VI deals with the fluctuations and factors affecting the same. Section VII deals with the findings and policy recommendations of the study. Section VIII concludes the study.

Review of Literature

India's floriculture industry has become a major player in agricultural exports because of the growing demand from other countries for cut flowers and ornamental plants. There have been studies showing that there is good potential in export-oriented development of the floriculture industry due to good production capabilities and agroclimatic suitability in India, despite the existing problems in logistics and market linkage (Anumala & Kumar, 2021). The demand for floriculture in India is growing consistently due to the increasing domestic demand as well as the value placed on ornamental horticulture products from other countries (Vahoniya et al., 2018). Moreover, ornamental horticulture has become a diversified agribusiness venture because of its association with landscaping and commercial agriculture (Sumalatha et al., 2024).

The recent literature highlights changing trends and market dynamics for the Indian floriculture industry. The export dynamics analysis reveals changing dynamics in trade patterns based on importer demand and competitiveness issues (Nair, 2025). Regionally, the cut flower industry of Kerala provides evidence of considerable export potential in the

context of local production clusters and integrated supply chains (Shahaniya et al., 2025). Empirical evidence related to horticultural exports also points out that the performance of India's sector is determined by factors of production efficiency and policy measures, among others Singh & Kumar, (2025). The assessment of international competitiveness for cross-country comparisons shows that while India experiences medium competition internationally, the country enjoys some comparative advantage in certain horticultural products (Venkateshamurthy et al., 2023). Additionally, product mapping and seasonality-based studies confirm that export advantages are highly dependent on temporal production cycles and market alignment (Saxena et al., 2024).

Market structure and government policy-related factors greatly determine the performance of floriculture exports (Bhoi et al., 2025). Trends and developments in the marketing of ornamental horticulture indicate that consumers prefer quality, brand names, and sustainability in their sources (Gabellini & Scaramuzzi, 2024). Extension systems provide vital linkages in the adoption of floricultural innovations (Singh et al., 2024). Research in the domain of sustainability stresses the need for environmental balance in horticulture through changes in policy and efficiency in practices Mysore, (2025). Government policies, such as the National Horticulture Mission, have been very helpful in boosting production and trade activities in the horticulture sector (Kaur & Goyal, 2025). However, there are problems in export dynamics, such as price instability and inefficiency of products like chili, leading to weaknesses in the agriculture export industry (Kale et al., 2026). In addition, the agriculture export industry is faced with problems, such as inadequate infrastructure, policy constraints, and market instability, and honey can be used to demonstrate a new market in the agribusiness field (Bijapure et al., 2026; Powrel et al., 2025).

Competitiveness studies help to understand the export performance and international business position. Competitiveness issues related to the export of roses from Mexico to Canada have been found through the comparative analysis of supply chain management, quality management, and trade agreements (Pérez-Ramírez et al., 2024). Likewise, research on the export of coffee from India has established that the global market position for the commodity depends on value addition, brand building, and export efficiency management (Jagadeesh et al., 2024). Agricultural sustainability assessment research, which includes livestock systems, has shown that export competitiveness is sustainable only if resources are used sustainably Borisagar et al., (2024).

Research Gap

Although several studies have examined India's floriculture export performance, most existing research remains limited to descriptive trend analysis or country-level trade statistics. There is a lack of integrated frameworks that combine quantitative trade data with qualitative dimensions such as logistics efficiency, quality compliance, and market access barriers. The number of research studies dealing with country-specific competitive advantages or examining the role of international trade policies, environmental regulation, and post-harvest facilities in export performance is extremely small. The influence of such recent issues as digital marketing, online auctions, sustainability certification, and climate change adaptation measures on export outcomes has not been thoroughly assessed either.

Research Methodology

In fig. 1 the theoretical framework for the export performance of India's floriculture industry (2019-2024). The framework incorporates various factors that determine the export performance of the industry. The framework includes production factors, efficiency in the supply chain and logistics, demand conditions in the market, policy intervention, and the external environment. All these factors combined affect export performance parameters such as export value, export volumes, growth rate, and competitiveness.

The theoretical framework also shows that external environmental factors such as global economic trends, trade barriers, and the COVID-19 pandemic interact with policy and institutional mechanisms such as export promotion and quality certification. Efficiency in the supply chain is another factor that affects export performance, especially in terms of cold chain logistics and post-harvest processes. The dynamics in the market, such as consumer tastes and prices, affect export performance. Therefore, the theoretical framework forms a feedback relationship between performance results and policy intervention.

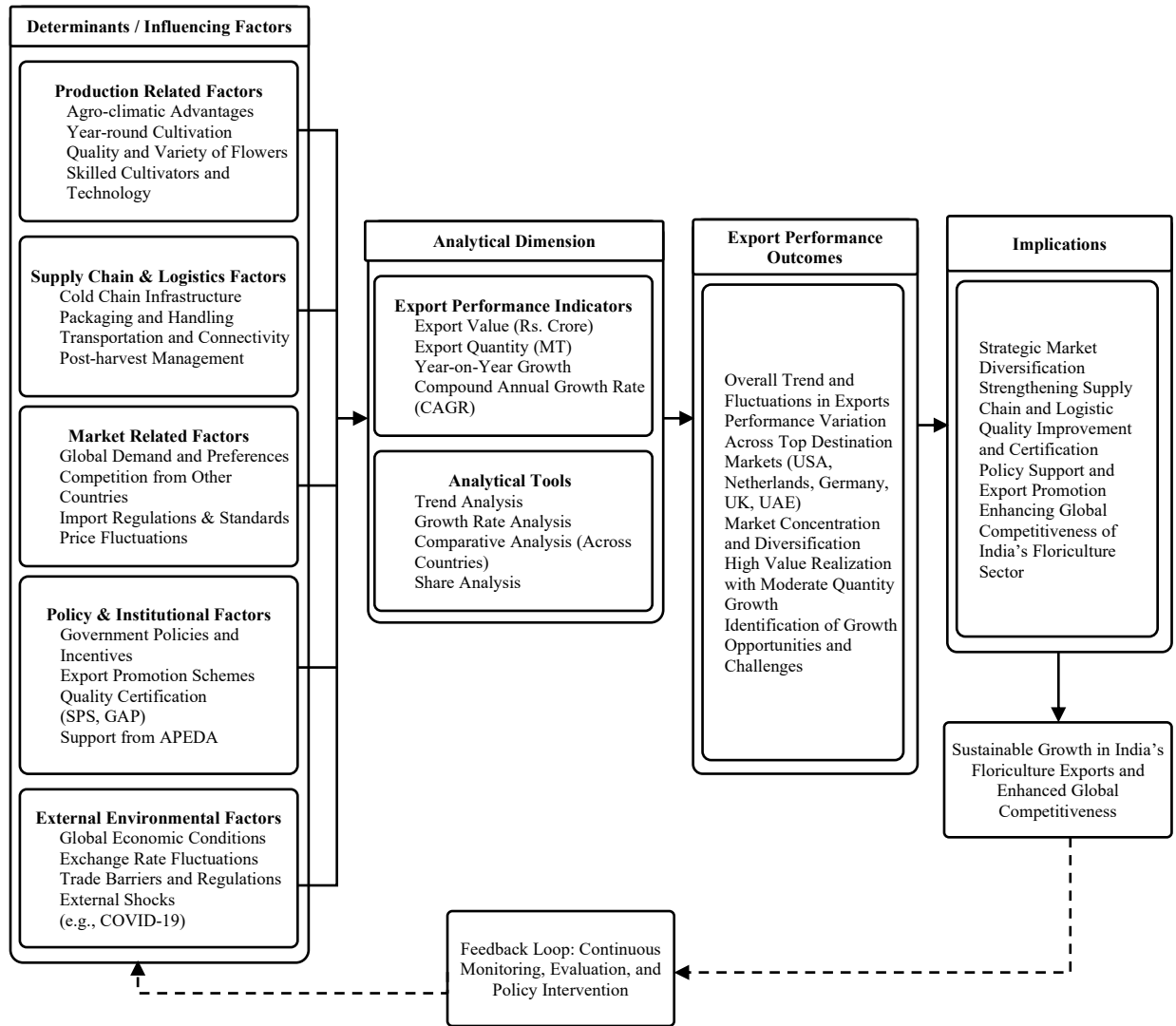


Fig. 1: Conceptual Framework of India's Floriculture Export Performance (2019–2024)

These analytical methods include the use of descriptive statistics, trend analysis, and CAGR. The use of descriptive statistics was very important in the evaluation of the central tendencies and dispersion of exports. This will make it easier for us to understand the stability of the exports in different countries.

Table 1: Export Value (in Rs. Crore) of Floriculture from India to Top 5 Destination Markets and Total (2019-2024)

Country	Value (Rs. Crore) 2019-20	Value (Rs. Crore) 2020-21	Value (Rs. Crore) 2021-22	Value (Rs. Crore) 2022-23	Value (Rs. Crore) 2023-24
Total	1265.08	1384.35	1522.12	1534.98	1722.77
USA	257.92	299.70	343.04	334.38	330.64
Netherlands	226.91	248.06	269.69	264.07	290.31
United Arab Emirates	41.32	82.61	68.79	81.23	87.01
United Kingdom	46.85	39.73	48.73	40.98	50.19
Germany	44.67	36.46	58.83	37.01	31.23

Source: Agricultural and Processed Food Products Export Development Authority (APEDA) Reports

Chart Export Value (in Rs. Crore) of Floriculture from India to Top 5 Destination Markets

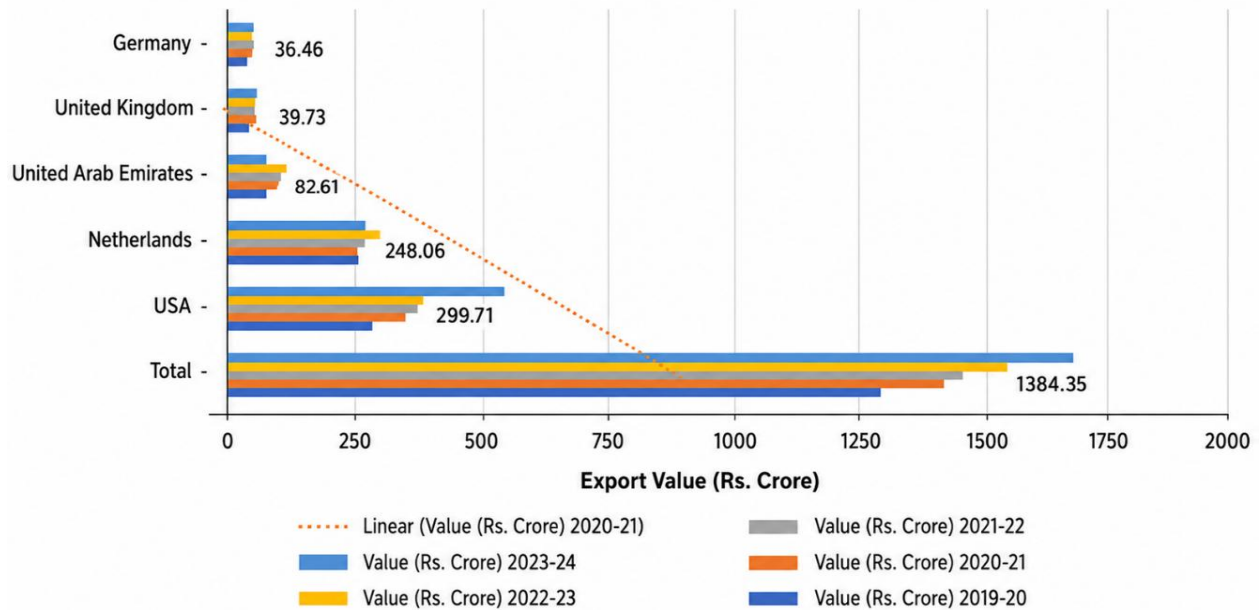


Fig. 2: Export Value of Floriculture from India to Top 5 Destination Markets (2019–20 to 2023–24)

In table 1 and fig. 2 show the export value of Indian floriculture during the period of 2019-20 to 2023-24, where there is a steady increase from ₹1265.08 crore to ₹1722.77 crore. The graph accurately depicts a trend that has moderate variation in between, while in 2020-21, the growth contribution was ₹1384.35 crore. The trend depicted in the graph is in tandem with the calculated CAGR of 8.03%.

Table 2: Export Quantity (in MT) of Floriculture from India to Top 5 Destination Markets and Total (2019-2024)

Country	Qty (MT) 2019-20	Qty (MT) 2020-21	Qty (MT) 2021-22	Qty (MT) 2022-23	Qty (MT) 2023-24
Total	31745.5	32872.6	35147.1	34630.2	34131.8
USA	3947.87	4006.72	3849.39	3125.51	2913.26
Netherlands	1579.04	1769.66	2368.33	1727.84	1610.99
United Arab Emirates	1985.11	4254.23	5001.1	5487.88	5649.49
United Kingdom	1239.23	865.55	921.51	637.71	800.87
Germany	1154.15	1092.86	1369.28	762.59	664.37

Source: Agricultural and Processed Food Products Export Development Authority (APEDA) Reports

Export Quantity performance for Indian Floriculture 2019-20 to 2023-24, shown in table 2 and fig. 3 below, shows an increase from 31,745.50 MT to 34,131.80 MT. The above figure clearly shows that there is a constant increase in the quantity being exported by India and slight changes every year, particularly in the later parts where there are no increases in quantities exported anymore. This graph has been revised for uniformity in labeling and legends of trend lines.

The review of annual performance reveals that the quantity of floriculture exports of India has become stagnant in later years, with negative YoY growth for the periods of 2022–23 (-1.47%) and 2023–24 (-1.44%). UAE is found to be the leader in terms of the quantity growth rate with a CAGR of 29.88%. It happened due to the rising trend of re-exports of floriculture in the region. In turn, traditional high-cost countries, including the USA, UK, and Germany, demonstrated a continuous decrease in the quantity of floriculture exports, which varies from -7.32% to -12.90%. The Netherlands managed to demonstrate only a marginal CAGR of 0.50%.

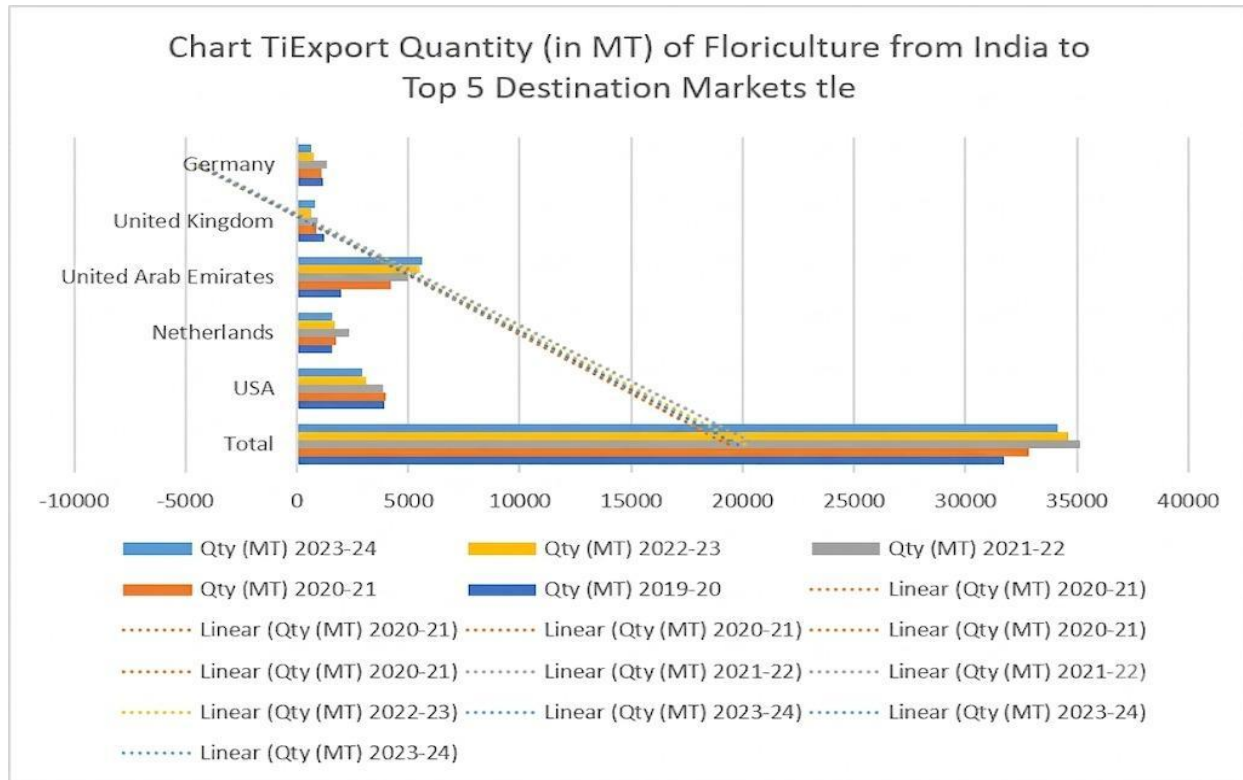


Fig. 3: Export Quantity (MT) of Floriculture from India to the Top Five Destination Markets (2019–20 to 2023–24)

Analysis Techniques: Trend analysis and Compound Annual Growth Rate (CAGR) techniques have been utilized for evaluating performance trends. Descriptive analysis has been employed for identifying any variations year-on-year and country-wise.

Scope of the Study: The scope of the analysis has been confined to the top five countries, such as the USA, the Netherlands, Germany, the UK, and the UAE, which are the biggest markets for Indian floriculture products.

Limitations: The study is completely based on secondary sources of data, which might lack consideration of non-quantitative elements such as policy changes, climate change, and disruptions in business operations due to the pandemic.

Result

There has been an apparent positive performance of Indian floriculture exports from 2019-20 to 2023-24 in terms of value, with some volatility in destination markets. The increase in the total export value is from ₹1265.08 crore in 2019-20 to ₹1722.77 crore in 2023-24, with a Compound Annual Growth Rate (CAGR) of 8.03%, as seen in table 1. The US and the Netherlands were the key destinations that recorded the largest percentage in the value of floriculture exports in the case study period. Out of all the destination countries, the UAE showed the fastest growth rate, meaning higher demand and good trade relations in the Middle East region. However, Germany and the UK exhibited rather poor and inconsistent performance patterns, which means their demand and competitiveness may be volatile. In conclusion, from the results, it can be concluded that the export strategies of Indian floriculture exports are becoming more value-based and diverse.

Descriptive Statistical Analysis

Descriptive statistical analysis was undertaken to examine the fundamental characteristics of India's floriculture export performance across selected destination countries. Measures such as mean export value, maximum and minimum values, and standard deviation were computed to assess average performance as well as variability over time. This method can be used in determining more stable markets and volatile markets.

It is evident from the analysis that the United States has the highest mean exports, which is attributed to the consistent demand and price realization of Indian floriculture exports. On the other hand, the Netherlands shows an average mean, which shows consistency since there is relatively low dispersion. Germany and the United Kingdom show relatively higher variability in terms of export values, which implies that volatile since the market is prone to changes in regulatory and demand conditions. Exportation to the United Arab Emirates is relatively low in terms of dispersion, and this shows that the UAE acts as a stable but price-sensitive market.

Table 3: Year-on-Year Growth Rate of Export Value (%)

Country	2019-20/ 2020-21 (%)	2020-21/ 2021-22 (%)	2021-22/ 2022-23 (%)	2022-23/ 2023-24 (%)
Total	9.43	9.95	0.84	12.23
USA	16.20	14.46	-2.52	-1.12
Netherlands	9.32	8.72	-2.08	9.94
United Arab Emirates	99.93	-16.73	18.08	7.12
United Kingdom	-15.20	22.65	-15.90	22.47
Germany	-18.38	61.35	-37.09	-15.62

Source: Agricultural and Processed Food Products Export Development Authority (APEDA) Reports

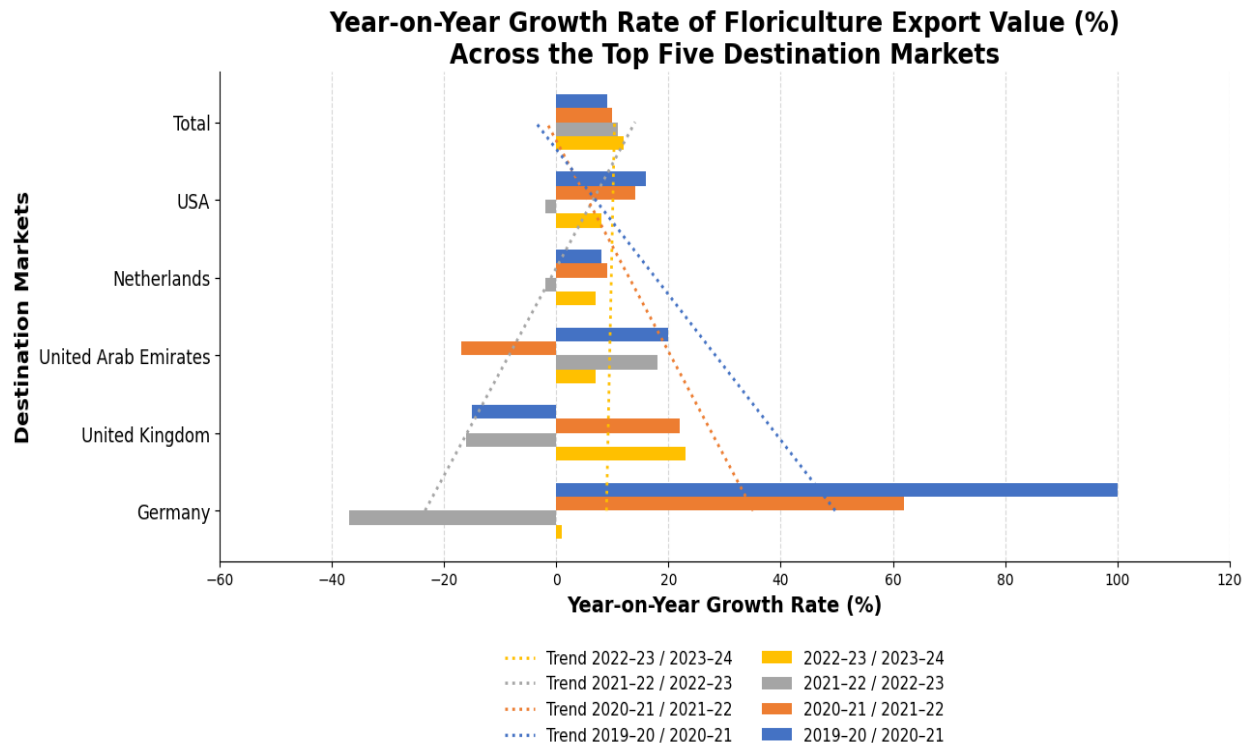


Fig. 4: Year-on-Year Growth Rate of India's Floriculture Export Value (%) Across Major Destination Markets (2019–2024)

The Year-on-Year (Y-o-Y) growth rates for export value (Table 3 and fig. 4) significantly depict the volatility inherent in the entire upward trend. The total export value showed an "inconsistent growth pattern," hitting its peak with a 12.23% growth rate in Y-o-Y in 2023-24 after making a rapid recovery from almost stagnation at a growth rate of just 0.84% in 2022-23, indicating the resiliency of the market post any external shock. On an individual market basis, the UAE showed highly volatile value growth, in particular growing by 99.93% between 2019-20 and 2020-21, thus confirming its position as one of the major drivers of growth. However, on the other hand, the major European markets were quite volatile; Germany saw an increase in its value growth by 61.35% in 2021-22, followed by a sharp drop of -37.09% in 2022-23.

Table 4: Year-on-Year Growth Rate of Export Quantity (%)

Country	2019-20/ 2020-21 (%)	2020-21/ 2021-22 (%)	2021-22/ 2022-23 (%)	2022-23/ 2023-24 (%)
Total	3.55	6.92	-1.47	-1.44
USA	1.49	-3.93	-18.81	-6.79
Netherlands	12.07	33.83	-27.04	-6.76
United Arab Emirates	114.31	17.56	9.73	2.94
United Kingdom	-30.15	6.47	-30.80	25.59
Germany	-5.31	25.29	-44.31	-12.88

Source: Agricultural and Processed Food Products Export Development Authority (APEDA) Reports

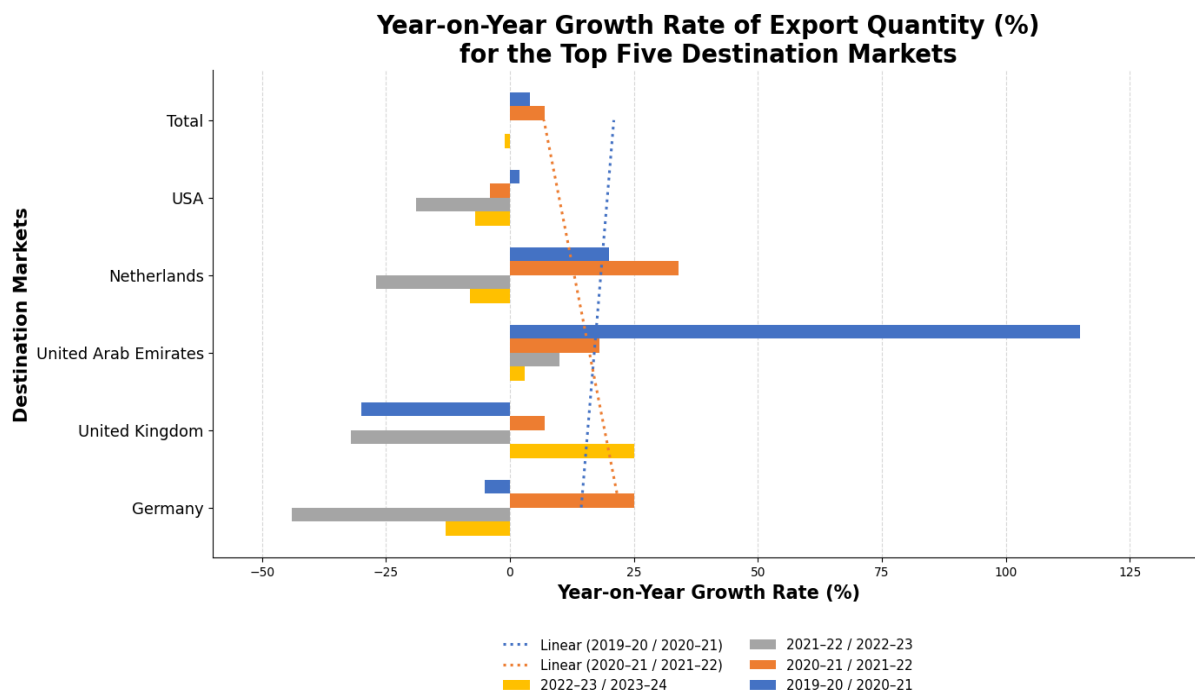


Fig. 5: Year-on-Year Growth Rate of India's Floriculture Export Quantity (%) Across Major Destination Markets (2019–2024)

The Y-o-Y quantity growth rates (Table 4 & fig. 5) offer important insight into value performance, which shows that the growth in total volume has stagnated, having been negative in both 2022-23 (-1.47%) and 2023-24 (-1.44%). The failure to grow volume, in addition to the impressive growth in value, underscores the successful transition to high-value products in the sector. Regionally, the UAE is clearly the leader in volume growth, with an impressive 114.31% Y-o-Y quantity growth rate in 2020-21, highlighting the country's status as the main recipient of volume-based trade. The USA, UK, and Germany have seen significant decreases in their annual quantity growth rates, with the UK experiencing a substantial decline in two consecutive years (-30.15% and -30.80%). The negative volume growth rates in the developed countries of the Western world, alongside stable or growing value, highlight the effectiveness of the strategy of specializing in low-volume and high-value floriculture exports to these markets.

Table 5: Compound Annual Growth Rate (CAGR) (%)

Country	Value CAGR (%) (2019-20 to 2023-24)	Quantity CAGR (%) (2019-20 to 2023-24)
Total	8.03	1.83
USA	6.41	-7.32
Netherlands	6.35	0.50
United Arab Emirates	20.46	29.88
United Kingdom	1.74	-10.34
Germany	-8.56	-12.90

Source: Agricultural and Processed Food Products Export Development Authority (APEDA) Reports

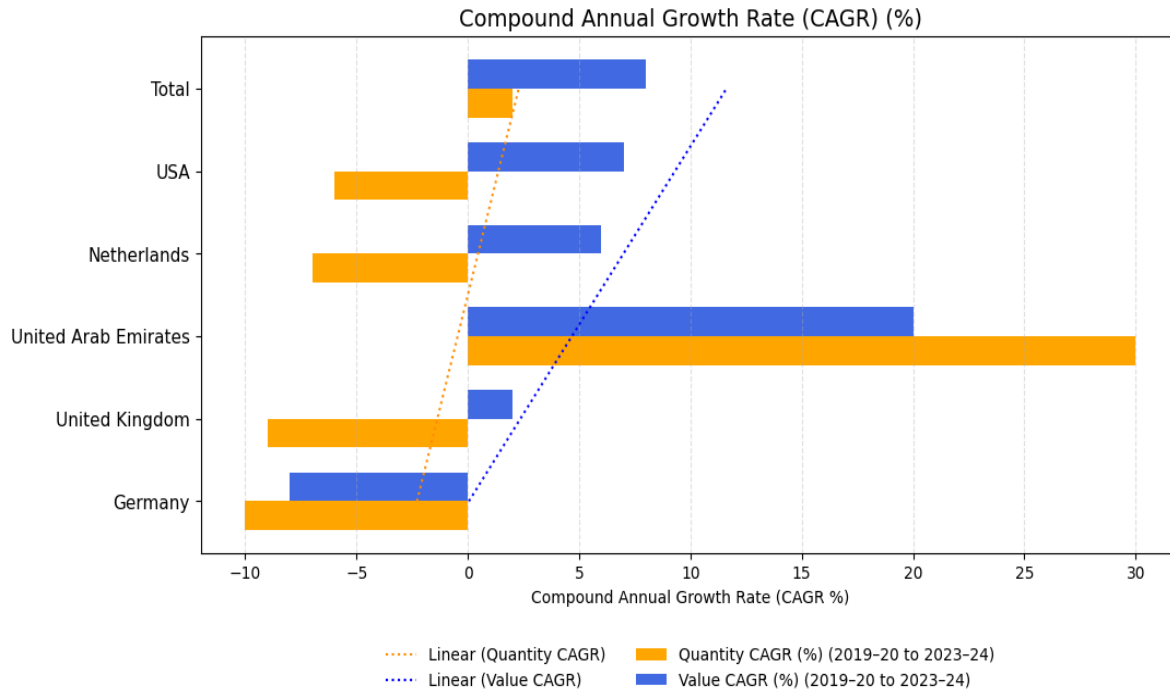


Fig. 6: Compound Annual Growth Rate (CAGR %) of India's Floriculture Export Value and Quantity Across Major Destination Markets (2019–2024)

In table 5 and fig. 6 show the long-term performance results, which clearly reveal the main driving force of the research: Value over volume success story. Total Export's Value CAGR 8.03% was much better than Quantity CAGR 1.83%, proving the accomplishment of higher unit value during the last five years. The market performance is drastically divided according to the CAGR: UAE is the absolute leader, which demonstrates the highest CAGRs not only in terms of value, 20.46%, but also in quantity, 29.88%. It shows the decisive role of the UAE in future growth and diversification strategies. In contrast, the USA demonstrates a rather high Value CAGR of 6.41%, but suffers from a negative Quantity CAGR of -7.32%, while Germany experiences a decrease in its value with a negative CAGR of -8.56% and volume of -12.90%. Thus, it proves that even though the sector successfully pre-immunizes its exports to the West, it faces serious difficulties with market development and competitiveness in markets like Germany.

Trend and Growth Analysis

The second aim of the research is to investigate the trend and growth of exports of floriculture products from India between 2019 and 2024 in value and volume terms. From the findings, there is an evident growing trend in the export value that has grown from ₹1265.08 crore to ₹1722.77 crore on the back of a high Value CAGR of 8.03%, representing consistent growth in foreign earnings. On the other hand, the volume of exports grew very slightly from 31,745.50 MT to 34,131.80 MT on the basis of a low Quantity CAGR of 1.83%, depicting a value-led growth trend. The UAE became the fastest-growing market, and the USA and the Netherlands experienced moderate growth, whereas Germany and the UK witnessed a decline in their imports.

Fluctuations and Influencing Factors

The third goal of the research analyzes the trends in the performance of India's floriculture exports from 2019 to 2024 based on the year-on-year growth rate of value and volume. According to the findings, there was high variability in the export value with high growth in 2020-21 and 2021-22 and then a sudden drop in 2022-23 and recovery in 2023-24 owing to COVID-19 effects, global uncertainties, cost of logistics, and disruptions in the supply chain. European countries, particularly Germany and the UK, had high instability, whereas the UAE had steady and high growth in value and volume. The export volume also decreased during the later years because of regulatory challenges, high shipping costs, and quality issues.

Export to the United States

India's flower exports to the US exhibited a pronounced trend towards premiumization in terms of value but a decline in volume. The value grew from ₹257.92 crore in 2019-20 to ₹330.64 crore in 2023-24 at the impressive rate of Value

CAGR of 6.41%. Nevertheless, the volume plunged sharply from 3,947.87 MT to 2,913.26 MT, bringing about the negative Quantity CAGR of -7.32%. This demonstrates a highly successful premiumization strategy of increasing the price without an equivalent increase in volume. The largest fluctuations were observed in 2022-23 when there was a Y-o-Y decline in value of -2.52% and in volume of -18.81%.

Export to the Netherlands

As a world trade center for floriculture, the Netherlands continues to maintain its consistent significance. The export value increased from ₹226.91 crore in 2019-20 to ₹290.31 crore in 2023-24, reaching a Value CAGR of 6.35%. While the quantity graph had an unpredictable performance trajectory, the values remained consistent with only a marginal increase from 1,579.04 MT to 1,610.99 MT, with a stagnated Quantity CAGR of 0.50%. This performance, coupled with the 9.94% value increase in 2023-24, indicates improved integration of India into the European supply chain, with the Netherlands being a reliable channel.

Export to Germany

A highly unpredictable growth trajectory marked by extremely unstable figures was recorded with respect to Germany. The export value declined from ₹44.67 crore in 2019-20 to ₹31.23 crore in 2023-24, leading to a negative Value CAGR of -8.56%. There was also a decline in the quantity figures, with a Quantity CAGR of -12.90%. The instability was particularly high considering the 61.35% Y-o-Y value increase in 2021-22, followed immediately by an equally devastating -37.09% value decline in 2022-23.

Export to the United Kingdom

The UK market witnessed considerable instability and a sharp quantity contraction. While there was a minor improvement in terms of value (Value CAGR of 1.74%, increasing from ₹46.85 crore in 2019-20 to ₹50.19 crore in 2023-24), there was a sharp contraction in terms of quantity (volume decreased from 1,239.23 MT to 800.87 MT, hence, negative Quantity CAGR of -10.34%) that is strongly correlated with continued uncertainty in trade related to Brexit along with considerable logistical problems that led to Y-o-Y quantity drops above 30% in certain periods. The slight recovery in value in 2023-24 suggests the tendency to export expensive products.

Export to the United Arab Emirates

Being a regional trade center with proximity to India, the United Arab Emirates was the top-performing market in terms of Indian floriculture exports. The value grew significantly from ₹41.32 crore in 2019-20 to ₹87.01 crore in 2023-24 (Value CAGR of 20.46%). There was explosive growth of the quantity exported – from 1,985.11 MT to 5,649.49 MT (Quantity CAGR of 29.88%). Such performance suggests successful penetration into the market with considerable demand, which makes the UAE the top destination for volume-oriented expansion, while facing competition from East African exporters.

Comparative Analysis

In all five markets, the USA was the market with the highest absolute export value, while the UAE undoubtedly topped the charts with its highest growth rate performance, leading the way not just in value but in volume growth as well (CAGRs of 20.46% and 29.88% respectively). Netherlands maintained stability and strength as a trade volume anchor for Europe. On the other hand, Germany and the UK showed greater volatility and decline in volumes. In general, India's floriculture exports were quite resilient to any kind of external shocks, mainly because of its successful adaptation to a high-value, low-volume strategy in Western markets.

Discussion

Results obtained from the study clearly reveal that there is a structural change occurring in the floriculture export business of India, which is marked by an increase in values as compared to the growth in quantities. There has been a considerable increase in the export value from ₹1265.08 crore to ₹1722.77 crore with a remarkable CAGR of 8.03%, whereas the growth in export quantity was very modest with a CAGR of 1.83%. This clearly shows that there is a premiumization happening in the Indian floriculture exports business because India is exporting more high-value products than volume of products. US and the Netherlands remain the dominant markets for India, with stable demand and a high level of integration into global supply chains, while the UAE remains the fastest-growing market as it acts as a redistribution center for the region.

Further analysis has shown that external shocks, such as COVID-19, disruption of supply chains, and changes in the exchange rate, have greatly affected export performance in terms of destination countries. Whereas developed Western countries present trends of decline and instability in volumes, the UAE presents great and consistent growth in both

value and volume of exports, implying a change in the direction of trade towards the markets of the Middle East region. The lack of growth in quantities along with an increase in export value points to an improvement in pricing per unit, quality, and marketing strategy. However, challenges such as a lack of cold chain facilities, post-harvest losses, and inconsistent quality standards hinder further development of exports on a larger scale.

Findings

India's floriculture exports have been found to be following an erratic but positive growth trend in key destination markets from 2019 to 2024. Overall, the export value increased from ₹1265.08 crore to ₹1722.77 crore, demonstrating an impressive Compound Annual Growth Rate (CAGR) of 8.03%. Although there has been some level of volatility because of changes in global demand and fluctuations in the foreign exchange rate, coupled with the impact of the pandemic, the industry has been resilient in growing steadily. One significant aspect of such growth trends is the decoupling of growth in terms of value and volume. The value of exports has grown, but export volume has remained stagnant at most, thereby showing a CAGR of only 1.83%, which clearly indicates the movement towards value-oriented export products.

The research has brought out several important areas that have contributed to the market-specific volatilities due to logistics, perishability of flowers, and variations in regulations across nations. For instance, the performances and instabilities of European countries like Germany and the UK were found to be declining, while the Netherlands was still stable in spite of its importance in the floriculture trade. Some of the main structural limitations in the sector are a lack of proper cold chain facilities, post-harvest losses, and inconsistent quality requirements, which make exportation impossible in these conditions.

Suggestions and Policy Implications

For sustaining and improving the floriculture exports of India, an appropriate policy framework encompassing technological innovation, market diversification, and institutional support is vital. Efforts should be made towards developing efficient cold chain facilities, quality standardization, and minimizing the post-harvest losses, since low Quantity CAGR indicates that there are some logistical problems. Increasing the certification process and R&D activities aimed at producing resilient varieties would increase the competitiveness of floriculture exports. Market diversification towards the fast-growing regions like the UAE, East Asia, and the Middle East would help in decreasing the dependence on existing markets.

Conclusion

The floriculture industry, which is one of the most dynamic sectors in India's horticultural industry, shows great promise in regard to the expansion of exports through well-structured and data-based trading evaluation approaches that consider the export performance and market dynamics. It can be seen in the present research that the exports of India's floriculture industry display positive growth momentum with respect to the growth in value of these exports from 2019 to 2024. Nonetheless, such growth is inconsistent, mainly due to the dynamics of global demand, logistics issues, and post-pandemic recovery effects. One of the most important findings includes the structural change from volumetric to value-based exports in India's floriculture industry, where the earnings from exports grew much faster compared to the shipments themselves. This suggests better unit realization rates and the beginning of the transformation of the floriculture exports to premium products. The fastest-growing destination in terms of the value and quantity of imports has become the UAE, while the traditional European markets of Germany and the UK show volatile performance patterns.

However, from an extensive analysis point of view, the above findings show that the Indian floriculture export business is currently passing through a transitional stage where modernization and globalization are important for sustainable competitiveness. Some of the difficulties that continue to hinder volume increase include the supply chain fragmentation, lack of efficient cold chain logistics, and inconsistent quality standards. The research concludes that the structural inefficiencies in terms of the supply chain need to be addressed in order to enhance efficiency in export through technological improvements like greenhouse farming, automation in grading systems, and supply chain integration using digital means. Moreover, collaboration between government institutions, research bodies, and private sector players will play a pivotal role in increasing the efficiency in production and accessing foreign markets. In conclusion, India's floriculture exports have laid a good basis in international trade; however, there is a need to improve their supply chain efficiency and quality consistency to exploit new foreign markets in order to sustain competitiveness.

In the future, micro-level research should be done considering the performance of India's floriculture exports along with qualitative aspects. Comparison studies can be done for the USA and UAE countries that will help in identifying shortcomings in the value chain. Digital platforms for trade, electronic auctions, sustainability certification, and post-COVID structural changes should also be taken into account for future research.

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