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Global value chain approach and its multiple effect on horticultural product marketing in India

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Abstract
The agricultural global value chain (AGVC) has increased rapidly and transformed the nature of horticultural production around the world. Multiple actors, including traders, producers, retailers, consumers, functionaries, and service providers, shape and promote the activities in the global value chain. Participation in GVC changes the GDP and employment share of the horticultural sector. This paper measures AGVCs through the gross export decomposition method. Both GDP share and employment share in the horticultural sector are positively associated with the increase in AGVC participation. This study contributes to the literature on conceptual frameworks as well as structural transformation.

Keywords: AGVCs, Horticultural marketing, GDP

Introduction
Agriculture being the primary source of livelihood in most of the advancing nations has been intensified by agrarian cooperatives. Irrespective of communal farmers' many challenges and deprivation in establishing proper infrastructure, countable growth is listed. Cooperatives need to take the basic required steps to enhance the country's economy. This major shift is only possible through government acknowledgement, essential knowledge of market communication, health, and adept and security-based distribution of commodities. Improving productivity in Global Value Chains (GVC) and a rapid expansion in the economy of developing and impoverished countries. The main focus here is on agricultural flourishing and broadening ideologies and flexibilities. Agriculture is the most fundamental necessity of living in developing nations the highlighted means here to overpower this sector through various technical, social, and innovative improvements is specified. This is mainly accomplished by secured and progressive regulations. After globalization, the horticultural industry is one of the leading industries in the international market. It has promising effectiveness in the economic growth of the nations engaged in horticultural products supplying and exporting. About 80% of TOP farmers depend on informal sources of credit from money lenders, friends, and relatives attracting monthly interest rates of (2-5) %. Besides formal sources of credit through commercial banks, cooperative banks, etc., there are government schemes, subsidies, price support, and interest subvention schemes for farmers (NABARD).

Indian fruits and vegetables supply business has made remarkable growth in terms of production and marketing. Food security and quality maintenance are the two basic areas addressed by the Indian fruit and vegetable production industry. This business has introduced the Indian farm economy with a financially high graph of profit. Through value chain analysis, it is seen that the smallholder producers associated with the cultivation process are earning a flexible income. Opportunities for rural development will be raised by empowering India's fruit and vegetable production industry. Adequate financial and technical support may help the industry for its entire improvement.

India is predominantly an agrarian country. In Allahabad district of Uttar Pradesh, a large horticultural industry has been formed. Marketing plays the most crucial role in the case of horticultural production. Fresh tomatoes, cauliflower, and cabbage grown in Allahabad have high competitive advantages. Production and marketing of these vegetables depend on marketing supply chain management.

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To identify the market hindrances, an effective marketing system has to be built up for developing the vegetable industry of Allahabad district, Uttar Pradesh.

Horticulture is one of the leading industries in India. It has a large contribution to the local and national farm economy. The state of Karnataka is famous for its horticultural production which influences the horticultural industries of other states in India. Export and import quality of horticultural products depend on a few indicators including marketing management, supply chain, quality and security maintenance, and others. The demand for horticultural products is increasing day by day in the international market. It leads to economic growth and transactions among various countries through exporting and importing of those products.

Background of the research

India and other developing or impoverished countries have an advantage due to their high population to boost their economies. Women are the primary producers of floricultural and horticultural crops. Indian rural tribal women work in the floricultural sector and contribute to the local economy. Participation of socially and economically downtrodden village women in floricultural crop production activities brings women employment, changing the previous gender roles in Indian rural patriarchal society. Women's economic stability not only helps to promote women's empowerment but also helps to develop the condition of the household along with children's health and education. Utilizing village women's work potential, the Indian floricultural industry can witness heavy improvement, raising employment opportunities for women.

As per Provisional Estimates of Annual of National Income, released by the National Statistical Office (NSO), Ministry of Statistics and Programme Implementation on 31st May 2021, the share of Agriculture and Allied Sectors in Gross Value Added (GVA) of the country during the last three years at current prices is given below.

Year	Percentage Share of GVA of Agriculture and Allied sector to Total Economy (in percentage)
2018-19	17.6
2019-2020	18.4
2020-2021	20.2

Source: National Statistical Office (NSO), M/o Statistics & PI

The global Value Chain perspective has smoothened the agricultural global trading. This article illustrates how the cultivation of horticultural products brings several business challenges in the global export market through schematic analysis. Various factors including technical assistance in upgrading, sanction for the governance of production and manufacturing, power effectiveness, poverty reduction impact on supply, and concentrations in the value chain are explored through the GVC perspective. Local and small producers and entrepreneurs have the scope to enhance their income through the Bottom of Pyramid (BOP) approach combined with the Global Value Chain (GVC) approach. This article shows how the BOP approach enlarges the opportunities for value creation at the small local market level and improves the value chain. Interactions of private and public actors are exemplified with the assistance of global value addition and both local and global inter-firm relationships. Studying various service chains including banking and microfinance, the ICT sector, tourism and electricity, low-tech industries including packaging industries and textiles, and software industries, the strategies of business in the global market are understood. Maintaining food safety is equally important along with looking after the facts of fruits and vegetables production, farming, harvesting, processing, and other activities to keep a position in the international market of developed countries. This article addresses the subjects that which food and vegetables should be marketed, what safety measures have been taken, how the food quality can be remained intact to meet the market demands, competing with others, and how food quality and safety can be reduced the foodborne health complexities.

Some facts include competitiveness, sustainability, inclusiveness, scalability, access to finance, and several others to understand the limitations and opportunities in the field of Indian agricultural trading. The total income from this sector is proportionate to the financial profit of the value chain participants, especially the farmers and the smallholders. The article also suggests some gravest policy recommendations that can improve the structural faults and Indian value chains.

To reduce the entry obstacles of women for promoting value chain development, policies have to be brought so that social strategies along with a gender-biased agricultural trading environment would be changed. The article, in a nutshell, depicts how economic equality can be attained by the women connected to global agro-industries through effective policy implementation and law legislation, reducing gender barriers, and promoting a work-friendly environment for them. Various tenets of marketplace practices including retail codes, transaction types, producer-wholesaler, and other relationships are found with clarity of understanding. Through case studies such as domestic supermarket chains, the article attempts to analyze the key determinants of the high-quality horticultural industry.

Many advanced schemes and projects such as the GVCs, OECD, and others have been launched to enhance growth in agricultural fields. The main motive here is the socio-economic empowerment of nations through agricultural expansion. The floriculture market has shown multifarious development in distinct areas. This article lighted part mainly focuses on enhancing the floriculture market and its competency. As the market reach increases the struggle is heightened. Those efficient firms promoting in the mass market seem to gain technical excellence rather than profitable outcomes. Small firms if accepting the objectives of large-scale efficient firms tend to generate maximum revenue with advanced technical connectivity. The flowers on which these deeds have been performed are economically influenced. The rates of growth of this kind of planting flowers are enhanced by the act of wild primates, places, and climate. The widespread shifts and economic acknowledgement of these researches have been provided with conclusions. Focusing on how to encourage this primate and floristry development in the economy leads to the importance and rise of certain inquiries.

Objectives of the study
1. Determining the comparative advantage or disadvantage of exporting fresh mango using the GVC Method.
2. To analyze the factors affecting the supply of fresh

mango.

B. Data and Methodology

Data that are used in this study are secondary data collected from different websites, examples are the International Trade Centre (ITC), NHB, DGCIS Annual Report, National Statistical Office (NSO), M/o Statistics & PI, and SI3 WTO STATS. Using the secondary data to capture the Indian export promotion aspect, we use different indexes. Such indexes are briefly discussed below.

The paper uses the measure of the Revealed Comparative Approach (RCA) index as introduced by Balassa (1965) [28]. To check the global export performance, we use RCA expressed as

$$RCA_{ij} = \frac{x_{ij}/x_{wj}}{X_i \, X_w}$$

Where

"RCA_{ij} = Revealed comparative advantage of the ith country', j^{th} industry",

x_{ij} = Exports of the jth industry by the ith country,

X_i = Total amount exports of the ith country,

x_{wj} = World merchandise exports of the jth industry,

X_w = Total merchandise world exports.

When a country has a revealed comparative advantage for a given product (RCA >1), it is indicated to be a competitive grower and exporter of that product relative to a country producing and exporting that good at or lower the world average. When the RCA index is greater than this also implies that the commodity has relatively good competitive power, when it becomes less than one, then the commodity has no competitive power.

Index Specialized Trade (IST)

This index is used to find out whether or not a product has the potential either to be exported or not. ST Index also provides the growth or the trend of the particular commodity. The value of the ST index lies between 0 to 1 which means the product has strong competitive power for export, conversely when gets a negative value then the product has low competitive value for exports. The index can be written as.

$$IST = X_{ij} - M_{ij} / X_{ij} + M_{ij}$$

"X_{ij}= Export value of commodity i by country j".

M_{ij} = Import value of commodity i by country j.

Intra Industry trade (IIT)

'An IIT constitutes a trade where an export value by a country for an industry is exactly equalized by another country for the same industry'. An IIT index positive value shows trade is suitable for that country along with a perfect competition market, and if the index value is exactly zero that implies trade happens in an imperfect competition market. For calculating the IIT index of a country (Grubel - Lloyd 1975) follows.

$$IIT = 1 - X_{ij} - M_{ij} / X_{ij} + M_{ij}$$

IIT= Intra Industrial Trade
X_{ij}= Export value of commodity i by country j.
M_{ij} = Import value of commodity i by country j.

C. Results and Discussion

It is divided into two parts. The first part is about trends in agricultural production along with the export of horticultural products, second part is focused on the comparative advantage of the fresh mango market.

Trends in agricultural product export

India's Total Merchandise Trade as well as Agricultural Export. All products from India as an exporter country partner (products cluster at 4 digits and values in US dollars). The main countries are Bangladesh, China, USA, UAE, Singapore, UK, Netherlands, Germany and Nepal. India exports through these countries. Table 1 clearly shows that the export value of horticultural products increased from 2019 to 2021. The highest value of exports was achieved from UAE and USA respectively through horticultural in 2021. The lowest value of export is from Germany in 2021. So, it is clearly reflected from the table that developed countries also have more demand for fresh fruits and vegetables.

Table 1: The volume of total export with respect to horticultural products export

| Country's name	Product level	Value in 2019 (US$)	Value in 2020 (US$)	Value in 2021 (US$)
Bangladesh	All products	8,242,923	7,912,821	14,092,748
	Horticultural products	66,334	92,929	141,820
China	All products	51,234,586	58,798,825	87,535,136
	Horticultural products	32,574	61,972	45,268
United States of America	All products	41,564,714	49,320,596	71,510,497
	Horticultural products	68.257	71,939	78,487
United Arab Emirates	All products	29,539,358	17,953,335	25,446,639
	Horticultural products	61,839	80,956	1000152
Singapore	All products	10,738,689	8,295,020	10,650,087
	Horticultural products	10,682	11,265	13,854
United Kingdom	All products	5,245,964	7,767,620	10,374,395
	Horticultural products	31,412	36,506	41,289
Netherlands	All products	4529321	6,261,190	10,284,461
	Horticultural products	374	635	984
Germany	All products	4,431,764	7,656,985	9,513,606
	Horticultural products	107	128	348
Nepal	All products	7,108,863	5,854,597	9,189,859
	Horticultural products	16,561	19,247	41,402

Source: International Trade Centre (ITC)
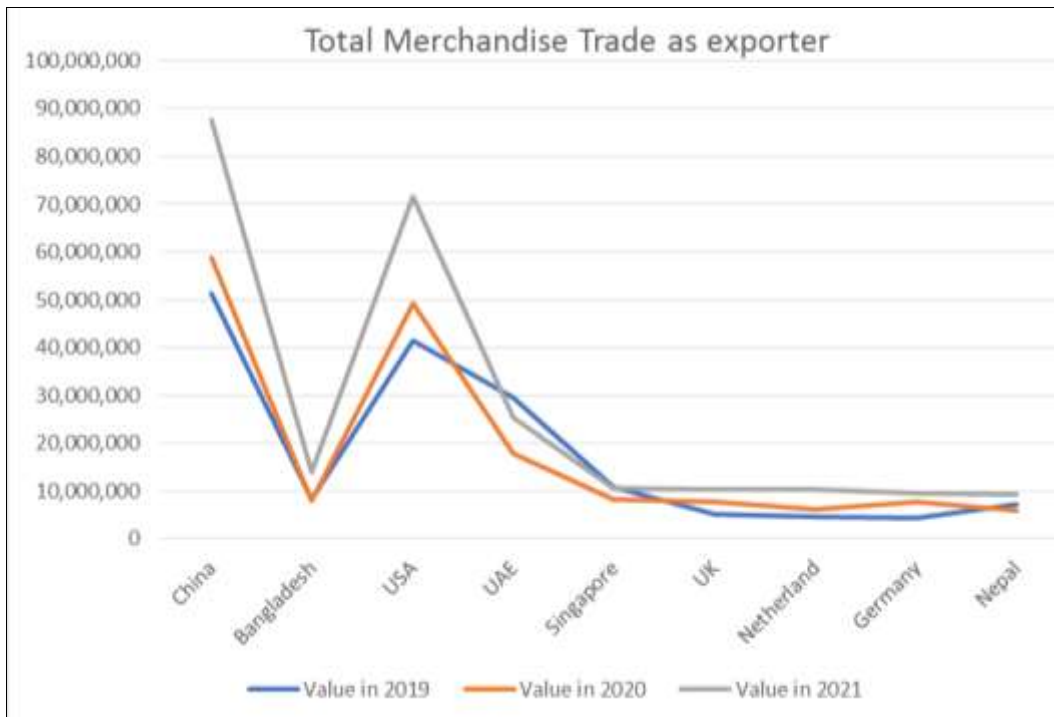
Source: International Trade Centre (ITC)

Fig 1: Also shows the graph of total merchandise trade as exporter (Home country India). Considering 2019,2020 and 2021

The figure 2 explains the volume of exports in horticultural products to different major exporting countries. In 2021 India got the highest value of exports from UAE.
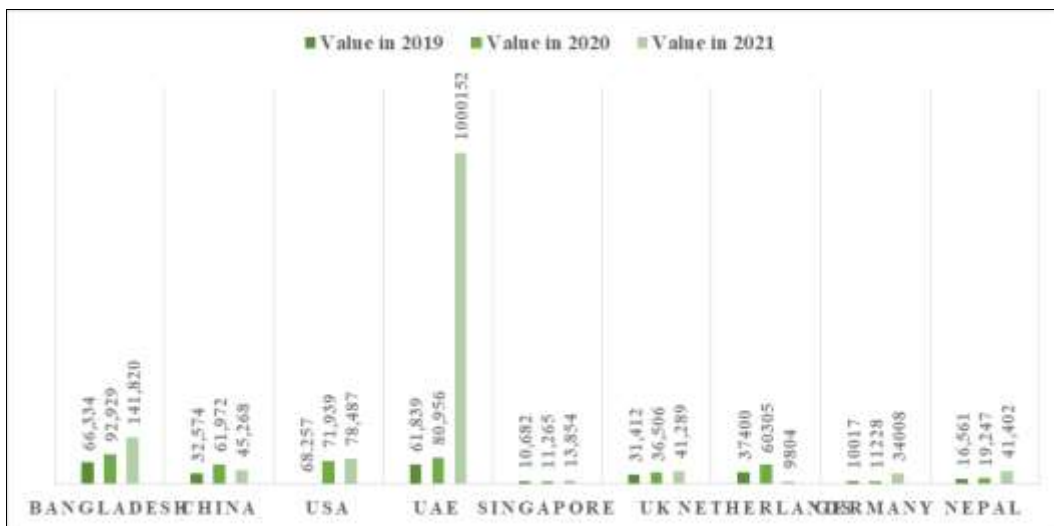
Source: International Trade Centre

Fig 2: Export in Horticultural products.

In Figure 3, there is a positive trend for showing the increased value of exports from 2011 to 2021. So, this is a positively significant effect on GNP.

Fig 3: Value of export

The value of index-specialized trade lies between 0 to 1. It implies that the product has strong competitive power for export, so the export of fresh mango has strong competitive power from 2014 to onwards. The calculated value of the STI index lies between 0 to 1. So, our result is statistically significant. Another important index is IIT. An IIT index positive value shows trade is suitable for that country along with a perfect competition market. The Intra-industry trade index is a more statistically significant result shown in Table 2. Last ten years from 2011 to 2021 the value of the IIT index has all positive so the effect on GNP through fresh mango product export trading in India.

Table 2: Trade competitiveness indicators of fresh mangoes 2011-2022

Year	Export value (US$)	Weight (MT)	RCA	STI	IIT
2011-12	20,974.29	63,441.27	0.003885	-0.2437	1.243697
2012-13	26,471.77	55,584.98	0.004647	-0.23122	1.231218
2013-14	28,542.84	41,280.01	0.004608	-0.24387	1.243867
2014-15	30,253.65	42,998.31	1.00471	0.17284	1.17284
2015-16	32,063.91	36,779.25	1.004193	0.03866	1.038663
2016-17	44,366.03	52,760.99	3.005725	0.145964	0.854036
2017-18	5,92,81,484.00	49,180.48	5.843834	0.998691	0.001309
2018-19	40,649.55	46,510.27	4.003585	0.021646	0.978354
2019-20	40,021.34	49,658.67	0.004205	0.034246	0.965754
2020-21	27,187.83	21,033.58	0.002444	-0.17687	1.176873
2021-22	32,745.12	27,872.77	1.003357	0.21319	1.21319

Conclusion

This paper has attempted to identify the trend in the agricultural sector. Focused on parallel shifts towards horticultural production. To calculate the RCA index important variables are total export value, import value, and total quantity. Values measured in US $ and quantity in terms of MT.

To identify the relevant determinants of comparative advantage in fresh mango export promotion by India, we focused on the last ten years' export pattern. Also, valid statistically significant results were achieved.

The study also attempted to shed light on the economic contribution of GNP through horticultural product marketing. Especially fresh mangoes product market has an opportunity such increase GNP.

There are some future targets to improve the horticultural sector in India. Organic farming demand is very high throughout the world. To match world demand equal to supply we boost up for organic farming. Technology and more skill development programs are needed. Engaged more private sector with the horticultural sector as a result of this food processing industry merged with the grower and will get maximum profit.

More major schemes for horticulture will be introduced by the Govt. of India, and analysing the factors affecting the demand function of the fresh mangoes market.

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