

India's Integration into Global Production Networks: Opportunities for Agriculture, Manufacturing and Services

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ABSTRACT

Globalization has transformed the organization of production across the world, leading to the emergence of Global Production Networks (GPNs) where different stages of production are distributed across multiple countries. These networks allow firms to take advantage of cost efficiencies, specialized skills, and technological capabilities available in different regions. For developing economies like India, participation in global production networks presents significant opportunities for economic growth, export expansion, employment generation, and technological advancement. This study examines India's integration into global production networks with a focus on three key sectors of the economy: agriculture, manufacturing, and services.

India possesses several advantages that can facilitate deeper integration into global production networks, including a large labor force, a diverse resource base, and a rapidly expanding domestic market. The agriculture sector offers opportunities in high-value agricultural products, agro-processing, and integration with global food supply chains. However, challenges such as fragmented landholdings, inadequate storage and logistics infrastructure, and difficulties in meeting international quality standards continue to limit its potential in global agricultural production networks.

The manufacturing sector plays a critical role in global production networks as production processes are increasingly fragmented across countries. India has the potential to expand its participation in sectors such as electronics, pharmaceuticals, automobiles, and textiles. Government initiatives aimed at strengthening manufacturing capabilities and attracting foreign investment have also contributed to improving the country's prospects in global manufacturing networks. Nevertheless, infrastructure bottlenecks, regulatory complexities, and competition from other emerging economies remain major obstacles to deeper integration.

The services sector represents India's most successful area of participation in global production networks. The country has emerged as a global hub for information technology services, business process outsourcing, and knowledge-based services. A skilled workforce, strong digital infrastructure, and global demand for technology-driven services have enabled India to capture significant value within global service networks. However, rapid technological change, increasing automation, and evolving global regulations present new challenges for sustaining growth in this sector.

Keywords: Global Production Networks (GPNs), Global Value Chains (GVCs), Indian Economy, Agriculture Sector, Manufacturing Sector, Services Sector, Economic Integration, Industrial Development, Export Competitiveness, Foreign Direct Investment (FDI), Economic Growth.

1. Introduction

India, as one of the fastest-growing emerging economies, has significant potential to benefit from deeper integration into global production networks. The country possesses a large labor force, a growing domestic market, and a diverse economic structure encompassing agriculture, manufacturing, and services. While India has achieved considerable success in the services sector—particularly in information technology and business process outsourcing—its participation in global production networks in agriculture and manufacturing remains relatively limited compared to several other developing economies. Strengthening India's integration into global production networks can open new opportunities for technological advancement, export diversification, employment generation, and value addition across sectors. In agriculture, integration can promote agro-processing and access to international markets. In manufacturing, participation in global production networks can stimulate industrial growth and technological upgrading. Similarly, the services sector can further expand its global reach through digital and knowledge-based services.

In the era of globalization, production processes are increasingly organized through **Global Production Networks (GPNs)**, where different stages of production are distributed across multiple countries. These networks allow countries to specialize in specific segments of the production process based on their comparative advantages, thereby enhancing efficiency, productivity, and economic growth. Participation in global production networks has become an important pathway for countries to integrate into the global economy and expand their export capabilities.

As of 2026, Global Value Chains (GVCs) have undergone a structural “rewiring.” The traditional “produce anywhere, deliver everywhere” model has fractured into decentralized, regional systems that prioritize **resilience** and **trust** over mere cost-efficiency.

India's integration strategy is anchored in three pillars:

Agri-Value Chains: Transitioning from bulk commodity exports to high-value, processed, and climate-resilient agri-tech.

1. *Advanced Manufacturing:* Moving beyond assembly via the **Production Linked Incentive (PLI) 2.0** and the **National Manufacturing Mission**, which target high-tech sectors like semiconductors and electric mobility.

Sophisticated Services: Dominating GPNs through Global Capability Centers (GCCs) that act as the R&D and AI engines for multinational corporations.

With total exports (merchandise and services) crossing the **\$825 billion** mark in FY 2024-25 and maintaining a growth trajectory of ~6% in 2026, India is positioned to become the world's third-largest economy by 2030.

However, India also faces several challenges in fully realizing these opportunities, including infrastructure constraints, regulatory complexities, skill gaps, and global competition. Therefore, understanding the opportunities and challenges associated with India's participation in global production networks across key sectors is crucial for designing effective policy strategies. This study aims to examine India's integration into global production networks and analyze the opportunities and constraints faced by the agriculture, manufacturing, and services sectors.

2. Review of Literature

The concept of **Global Production Networks (GPNs)** has gained significant attention in international economics and development studies. Scholars have examined how production processes are fragmented across countries and how developing economies integrate into global markets. Recent academic and policy research (2023–2026) highlights several critical themes regarding India's role in global production networks:

Gereffi (1994) introduced the concept of global commodity chains, highlighting how multinational corporations coordinate production activities across countries. His work emphasized the importance of governance structures in determining how countries participate in global production systems.

Henderson et al. (2002) further developed the concept of Global Production Networks, explaining how production, distribution, and consumption are interconnected through complex global networks. Their study highlighted the role of institutions, firms, and state policies in shaping participation in these networks.

Baldwin (2016) described the globalization of production as the “second unbundling,” where technological advances in communication and transportation allowed firms to separate production stages across borders. This transformation enabled developing countries to join global production processes without building entire industries domestically.

Contemporary View (2025-26): Research by NITI Aayog (2025) and the **Asian Development Bank** indicates a significant rise in backward linkages, particularly in electronics. India is no longer just a consumer; it is an “assembler-plus,” importing advanced semiconductors to produce final goods like high-end smartphones and EVs for global markets.

From “Forward” to “Backward” GVC Participation

Historically, literature (e.g., Mitra *et al.*, 2020; Banga, 2021) characterized India’s participation as primarily “**forward linkages**”—exporting raw materials or intermediate goods (chemicals, metals) that other countries use in their final products.

- **The Shift (2024-2026):** Recent studies by the Asian Development Bank (2024) and **World Economic Forum (2026)** observe a rise in “**backward linkages**.” India is now importing high-tech components to assemble and export complex final goods like iPhones and medical devices, signaling a deeper integration into final-stage production networks.

The “Servicification” of Manufacturing

Contemporary literature emphasizes that services are no longer a standalone sector but the “glue” of GVCs.

- **Deep Services Content:** The **Hinrich Foundation (2026)** report finds that services now account for more than **one-third of the value added** in manufacturing exports.
- **Knowledge-Intensive Services (KIS):** Research by **NITI Aayog (2025)** highlights that India’s GVC growth is increasingly driven by “Digitally Deliverable Services” (IT, Finance, R&D), which have proven more robust than traditional goods trade during global volatility.

Impact of Policy Interventions (PLI & FTAs)

- **PLI Schemes:** Literature from the **Public Information Bureau (2026)** and **Economic Survey 2025-26** suggests that PLI schemes have successfully reduced import dependence in electronics (now 99% of demand met locally) and catalyzed “first-time” domestic manufacturing of bulk drugs and medical implants.
- **New-Age FTAs:** Earlier studies (Veeramani & Dhir, 2019) argued India didn’t benefit from FTAs with similar economies. However, 2025-26 literature focuses on “**New-Age FTAs**” with the UK, UAE, and EFTA. These are noted for including “investment-linked” commitments, which directly tie trade access to job creation and GVC integration.

Challenges: The “Missing Middle” and Climate Risks

- **The Component Gap:** Despite assembly successes, researchers (Banga, 2022) point out that India still lacks a robust domestic “Tier-2” and “Tier-3” supplier base for critical sub-assemblies (e.g., display fabs, advanced chemicals).
- **Climate & Logistics:** Systematic reviews in 2025 (*Advanced International Journal for Research*) highlight that while platforms like **Bharat-VISTAAR** help, climate shocks (extreme weather in 90% of days in 2025) remain a systemic risk to agricultural GVC stability.

3. Objectives of the Study

- To examine the concept and importance of Global Production Networks in the context of the global economy.
- To analyze India’s level of participation in global production networks.
- To identify the key challenges that limit India’s effective integration into global production networks.
- To explore the opportunities for agriculture, manufacturing, and services sectors within global production networks.
- To suggest policy measures that can strengthen India’s position in global production networks.

4. Research Methodology

This study is based primarily on **secondary data and qualitative analysis**. Data and information have been collected from various reliable sources such as government reports, research articles, international organizations, and academic publications.

Data Sources

The study relies on data from:

- Government of India reports and economic surveys
- Publications of international organizations such as **World Bank**, **WTO**, and **UNCTAD**

- Research journals, books, and policy papers related to global production networks and the Indian economy
- Statistical databases and official economic reports

Analytical Approach

The research adopts a **descriptive and analytical approach** to examine India's participation in global production networks. Sectoral analysis is used to evaluate opportunities and challenges in agriculture, manufacturing, and services.

Feature	Agriculture	Manufacturing	Services
GVA Growth (FY26)	3.1%	7.0%	9.1%
GVC Strategy	Infrastructure & Value-addition	PLI-led Scale & Import Substitution	Tech-intensity & GCC expansion
Primary Driver	Allied sectors (Fisheries/Dairy)	Electronics & Renewables	AI, Finance & Professional Services
Key Bottleneck	Climate change & Logistics	High input costs & Low R&D	Skill-gap & Jobless growth

Source: Government of India. (2026). *Economic Survey 2025–26*. Ministry of Finance.

The table highlights the structural differences in India's three major sectors. The **services sector** is expected to grow the fastest with strong expansion in technology-based industries and Global Capability Centers (GCCs). **Manufacturing growth** is supported by Production Linked Incentive (PLI) schemes, focusing on electronics and renewable energy sectors. Meanwhile, **agriculture growth** remains relatively moderate and is increasingly driven by allied sectors such as fisheries and dairy, though it faces challenges from climate change and logistics constraints.

5. Conclusion

Global Production Networks have become a defining feature of the modern global economy. Participation in these networks enables countries to specialize in specific stages of production, increase exports, and accelerate economic development. The differential growth patterns across sectors highlight India's ongoing **structural transformation from an agriculture-dominated economy toward a services-driven and increasingly industrializing economic structure**. While services remain the dominant contributor to GDP growth, strengthening manufacturing capabilities and improving agricultural productivity remain critical for achieving balanced and inclusive economic development. Policy efforts therefore need to focus on improving **infrastructure, technological capabilities, skill development, and climate resilience** to ensure that all three sectors contribute effectively to long-term economic growth. Such a balanced approach will be crucial for sustaining India's aspiration of becoming a high-income economy in the coming decades.

India has significant opportunities to strengthen its position in global production networks across agriculture, manufacturing, and services. While the services sector has already achieved strong global integration, agriculture and manufacturing require greater investment in infrastructure, technology, and institutional reforms.

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