

Progress Under Pressure: India's Mobile Phone Industry Navigating Barriers and Geopolitical Tensions

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Received:
30/09/2025
Revised:
07/10/2025
Accepted:
22/10/2025
Published:
26/10/2025

ABSTRACT

This paper highlights how global smartphone manufacturing has been reshaped between 2022 and 2025 by geopolitical tensions, new trade policies, and industrial strategies. Using production statistics, tariff data, and factory relocation trends, this research highlights China's declining exports (24% fall from \$126.4B to \$89.4B) and India's development as a key exporter with \$18.2B in shipments. Apple's iPhone production in India rose by 144%, while Foxconn achieved \$1.2 billion in annual labor savings, and Indian exporters expanded their cost edge from 22–27% due to tariff differences. This paper also evolves the model of Polycentric Supply Chains, presenting how mid-sized economies like India gain from international competition by adapting strategies and institutions swiftly.

Keywords: Geopolitical risk, PLI scheme, Tariff arbitrage, Semiconductor sovereignty.



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INTRODUCTION

The global smartphone market, valued at \$612 billion in 2025 (IDC), has become a significant space of competition amongst emerging markets. Recent years have been shaped by three key disruptions.

First, the U.S.–China trade war has transformed the international trade flows. Tariffs under Section 301 placed a 25% duty on Chinese smartphones, increasing U.S. retail prices by \$120–150 per unit. This reduced profit margins for phone-making firms and pushed companies to diversify supply chains.

Second, geopolitical tensions have interrupted the supply chains further. For example, Russia's restrictions on Neon gas in 2024, covering nearly half of worldwide supply, slowed China's semiconductor fabrication and delayed SMIC's 3nm chip production.

Third, industrial policies—specifically India's Production-Linked Incentive (PLI) scheme—boost up its manufacturing role. This scheme attracted about \$14.2 billion in foreign investment between 2023 and 2025, accomplishing a 1:9.4 subsidy-to-investment ratio and establishing India as an inevitable nation in global supply chains.

This paper targets to address two gaps: (a) how

smartphone production has shifted at the brand level, with Apple moving to India and Xiaomi to Europe, and (b) how tariff differences, such as the U.S. charging 25% on Chinese smartphones but 0% on Indian exports under trade agreements, have rationalized the competitiveness. By examining the smartphone brands strategies and global trade policies, this paper highlights how smartphone supply chains are becoming more diversified, risk-balanced, and policy-driven.

LITERATURE REVIEW

Study on the global smartphone business often highlights three themes: supply chain restructuring, trade policies, and institutional strategic responses.

Early work by Gereffi et al. (2005) established global value chain theory, showing how electronics production is fragmented across countries. More recent studies stress geopolitical risks. For example, Kim and Shin (2022) describe the rise of “polycentric” supply chains, where companies spread production across multiple nations to decrease dependence on any single country, especially China. Trade policy is another key factor. Bown (2019) found that U.S. tariffs on Chinese goods upraised costs for American consumers and forced companies to swift production. Similarly, Xing (2021) indicated that firms increasingly use “tariff engineering,” amending where they assemble products

How to cite: Karthick Shanmugam and R. Arivazhagan. Progress Under Pressure: India's Mobile Phone Industry Navigating Barriers and Geopolitical Tensions. *Advances in Consumer Research*. 2025;2(5):325–332.

Labor costs is another crucial matter. World Bank (2023) data displays that India's manufacturing wages are less than half of China's. Lee et al. (2024) claim that this wage gap helps explain increasing foreign investment in India's electronics sector. Institutional policies play a critical role as well. Aggarwal and Evenett (2023) studied India's PLI scheme and found that targeted grants brought in global companies like Foxconn and Pegatron. Chen and Ma (2022) suggest that this type of "institutional agility" aids developing economies like India attract investment. UNCTAD (2024) also highlights a sharp surge in India's mobile phone exports since PLI policies were introduced.

At the same time, challenges continue. Zhang (2022) and OECD (2023) argue out that inadequate data on small firms can make it difficult to measure supply chain changes. Kuznetsov and Singh (2023) also argue that regulatory differences within BRICS nations limit deep integration despite political cooperation. Overall, the literature explains the extensive trends of shifting production, tariffs, and policy reforms. Nevertheless, few studies deliver brand-specific analysis or measure how tariff differences intensify supply chain changes. This paper contributes by relating production data, trade statistics, and policy analysis to better understand how corporates and governments are reforming the smartphone industry.

Problem Statement

The global smartphone manufacturing system is experiencing one of its most important changes in recent years. Rising geopolitical conflicts, tariff disputes, and government-led industrial strategies are breaking down long-lasting supply chain structures. China, which once ruled smartphone exports, has seen a deep decline in competitiveness due to U.S. tariffs and shortages of key inputs. This has enforced the global smartphone firms to reexamine their production strategies.

Despite the significance of these shifts, prevailing research has not entirely described how relocation choices by firms, government incentives, and tariff differences interact in practice. Numerous studies provide just a high-level summary but miss the brand-level details and the speed at which shifts are going to taking place. There is also limited attention on how India, as a fast-developing country, has positioned itself as an alternative hub while balancing geopolitical risks. This paper also speaks to address these gaps by examining how trade disputes, corporate relocation, and industrial policy between 2022 and 2025 have restructured the topography of smartphone industry. It displays how these forces are changing not only competitive benefit but also the structure of over-all supply chains in high-tech sector.

Geopolitical crises and tensions

The recent revolution in mobile phone industry has been closely tied to several major geopolitical events. These crises disrupted the overall supply chains, transformed

trade flows, and made companies to relocate their factories away from China.:

4.1 US-China Trade War

The trade battle began in 2018 when the United States enforced tariffs on a wide range of Chinese goods, comprising smartphones and components. China strike back with its own tariffs. For smartphone makers, this has raised the costs significantly and reduced the profit margins. To manage risks, many brands adopted the "China+1" approach, extending their production into India, Vietnam, and other markets. Global Contract manufacturing giants such as Foxconn and Pegatron invested heavily in India, while Samsung closed its last Chinese plant and expanded operations in Noida.

4.2 US Technology Sanctions on China

The U.S. also enforced restrictions on advanced semiconductors and related technologies, targeting companies like Huawei and SMIC. These sanctions created chip shortages for Chinese companies and slowed their innovation. To reduce exposure, international brands has started moving their assembly to India and Southeast Asia. Indian companies like Dixon and Tata Electronics benefited by attracting new contracts, while some companies also relocated research and development activities to safer regions.

4.3 COVID-19 Pandemic

The epidemic triggered large-scale disruptions to manufacturing and logistics. Lockdowns in China's industrial hubs delayed product launches and caused serious supply bottlenecks. This highlighted the risks of China dependent. In response, many firms fast-tracked their diversification into India and Vietnam. India reinforced this shift by intensifying its PLI scheme to grasp more foreign investment.

4.4 China's Domestic Policy Shifts

China's strict "Zero-COVID" policy and regulatory clampdowns created additional ambiguity. Companies feared abrupt plant closures and increasing compliance costs. As a result, brands like Apple and Samsung shifted investment away from China and toward India, where they could manage the long-term stability.

4.5 India-China Border Tensions

The 2020 border clashes in Ladakh amplified anti-China sentiment in India. Guidelines on Chinese companies became stringent, slowing approvals and audits. To sustain their presence, brands like Xiaomi and Vivo expanded local partnerships with Indian firms such as Dixon and DBG, both to fulfill with Govt rules and to recover their public image.

4.6 Russia-Ukraine War

This war disrupted shipping routes, upraised energy costs, and amplified uncertainty in Europe. Smartphone companies countered by prioritizing "friend-shoring" and "near-shoring," repositioning their production cautiously to stable countries. India enlarged their new export opportunities as Western buyers sought

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alternative suppliers.

4.7 US-Europe-China Tech Rivalry

Worries over data security and 5G directed to stringent protocols in the U.S. and EU. Some governments

initiated policy changes requiring local manufacturing for phones sold in their markets. This hard-pressed the global brands to set up regional supply chains, with India attractive a significant node for Asia and the Middle East.

4.8 Taiwan Strait Tensions

Tensions between China and Taiwan increased supply chain risks for the global semiconductor industry, given Taiwan’s supremacy in chip making. Fears of disruption stimulated companies to diversify chip sourcing and invest in facilities in India, Singapore, and the U.S. India’s new semiconductor policies made it a potential long-term alternative. 4.9 Donald Trump 2.0 and its Tariff Disparities

A revival of Trump-era tariff policies increased pressure on Chinese exports. Chinese smartphones faced 25% U.S. tariffs, whereas Indian sellers often go into duty-free under trade agreements. This gave Indian exporters a pricing advantage of 7–22%, further inspiring companies to move production there.

Component	China Tariff	India Tariff
Smartphones	25%	0% (FTA)
Semiconductors	15%	5%
Net Impact: Indian exporters enjoy 7–22% pricing advantage in Western markets.		

5. Key Strategy & Policy by China and India:

Global supply chains in the smartphone segment have been molded not only by corporate strategic decisions but also by government policies both in China and India. Both nations have revised their policies and strategies to safeguard their industries and appeal investment.

5.1 China’s Countermeasures

5.1.1 \$220 Billion Semiconductor Fund

In 2024, China announced their third phase of its National Integrated Circuit Industry Investment Fund, often called the “Big Fund III,” with funds of about \$220 billion. The Key objective is to attain self-sufficiency in chips at 28nm and above by 2030. These chips are largely used in consumer electronics, including smartphones. This fund helps the local fabs, software, and equipment, while reducing reliance on U.S., Japanese, and European suppliers. By 2023, domestic chip output came across 19% of China’s demand, grew from 13% in 2019, and the government targets to boost this to 45% by 2030.

5.1.2 Neon Gas Stockpiling

China also pursued to protect its semiconductor industry from supply shocks. Since neon gas is critical for chip making and largely supplied by Russia and Ukraine, hence China built up a half years’ strategic reserve and expanded local production by about 40% between 2022 and 2024. This step helps China Semiconductor industry to avoid disruptions similar to those caused by the Russia–Ukraine war.

5.2 India’s Growth Levers

5.2.1 PLI 2.0 (Production Linked Incentive)

India announced the second phase of its PLI scheme for electronics in 2023. It increased the grants up to 6% of incremental sales for firms crossing \$1 billion in annual exports. This policy aided for smartphone exports to grew more than \$15 billion in FY 2023–24, with Apple single-handedly shipping over \$7 billion worth of iPhones. The scheme has generated about 150,000 direct jobs and upraised domestic value addition in phones from 17% in 2019 to 25% in 2024.

5.2.2 Skill India 2.0

To upskill the key talents in high-tech assembly, the Indian government developed its vocational training programs. Between 2023 and 2025, merely about 220,000 personnel were trained in surface-mount technology (SMT), PCB assembly, and quality control. As a result, yield rates in Indian factories touched over 98%, beating international benchmarks.

5.2.3 India’s Regulatory & Trade Measures

- BIS Mandate: Since 2022, India has mandate for all electronics products sold domestically or exported to comply with Bureau of Indian Standards (BIS) rules. This gain the global trust in Indian products and contained the

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inflow of substandard imports.

- Anti-Dumping Duties: India executed Anti-dumping duties of 10–30% on Chinese imports such as printed wiring boards and magnetic cores. This boost the local production, attracting \$2 billion in investment in related industries. Local sourcing of components raised from 28% in 2021 to more than 40% in 2024.

5.2.4. India Semiconductor Policy & Incentives

Recognizing the strategic significance of chips in electronics products, India launched the Semicon India Program in 2021 with a \$10 billion budget. It offers grants of up to 50% for fabs, display plants, and compound semiconductors. By 2023, Micron announced a \$2.75 billion investment for semiconductor factory in Gujarat with government support, while Tata and Vedanta planned large-scale fabs. Along with, the Design Linked Incentive scheme boosts native chip design by offering up to 50% reimbursement of costs.

5.2.5 Rare Earth Elements (REE) Policy

India also moved to minimize dependency on China for rare earths, which are key for screens, magnets, and batteries. In 2024, it launched the National Rare Earth Mission to grow domestic resources and made partnerships with Japan, Australia, and the U.S. The aim is to meet 30% of domestic need by 2030 and protect the long-term supply chains.

India's Growth Levers (2024–2030)

Policy/Initiative	Key Features & Impact
PLI 2.0	6% grant, >\$1B export threshold, \$15B+ in mobile exports, 150,000+ new jobs
Skill India 2.0	220,000 trained in SMT/PCB, improved quality and yields, global quality standards
Semiconductor Policy	\$10B incentives, 50% capital subsidy, DLI for design, major FDI inflows (Micron, Tata, Vedanta, etc.)
BIS Mandate	Mandatory criteria for exports/imports, boosts international market access
Anti-Dumping Duties	10–30% ADD on plastics, PWBs, magnets; 40%+ local sourcing of components
Rare Earth Mission	30% domestic REE supply by 2030, global JVs, de-risked supply chains

6. Brand Strategy and Manufacturing Shift:

All smartphone brands have adapted their strategies in response to these geopolitical and policy changes, with India becoming a key focus of new investment.

6.1 Apple

- Foxconn: Apple's key contract manufacturer expanded its India facilities near Chennai. By 2025, about one-third of Foxconn's iPhone assembly is happening outside China, with India playing a dominant role. This move saves over \$1.2 billion yearly in labor costs and moderates geopolitical risk.
- Tata Electronics: Tata entered Apple's supply chain by purchasing Wistron's Indian plant in 2023. The plant produces casings and is being scaled up for device assembly. Tata is also deepening partnerships with Pegatron, targeting to become a significant iPhone assembler.
- Pegatron: Pegatron expanded the capacity of its TN plant to handle newer iPhone models, strengthening Apple's shift to India as its second-largest manufacturing base.
- Motherson Electronics: This Indian supplier delivers connectors and components, supporting Apple's ambition to localize its supply chain in India.

6.2 Vivo

Vivo invested over \$500 million to enlarge its Greater Noida facility, aiming to upscale the annual production of 120 million smartphones by 2025. It also joined hands with Indian EMS giants like Dixon and BPL to strengthen local assembly and qualify for PLI incentives.

6.3 Motorola

Motorola associated with both Dixon Technologies in Noida for premium models and with Neolync in Telangana for mass-market devices. This approach helps Motorola to supply both domestic and export markets while taking advantage of Indian govt grants.

6.4 Google

Google commenced producing Pixel smartphones in India in 2024 through Foxconn's Chennai facility. This move aids

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Google for both local sales and exports to Europe and the Middle East.

6.5 Xiaomi

Xiaomi partnered with Dixon, DBG and BYD to expand its local manufacturing. Over 95% of its domestic sales now come from locally made devices. Xiaomi also uses its Indian EMS facilities to export to Africa and the Middle East.

6.6 Samsung

Samsung’s Noida plant remains the world’s largest mobile factory, with a capacity of 120 million units. After closing down operations in China, Samsung doubled their production in India and localized more component sourcing, comprising displays and batteries.

6.7 Other Companies & Mobile Ecosystem

Suppliers such as Salcomp (chargers), AT&S (PCBs), and Sunny Optical (camera modules) have invested heavily in India. Local firms like Motherson Sumi and Foxlink are further expanded into connectors and cables, building a stronger component ecosystem.

Impact on Indian Companies

India’s recent policies, especially the Production Linked Incentive (PLI) scheme and import regulations, have not only attracted global brands but also supported local firms. Indian companies are moving beyond basic assembly to become significant suppliers to the global supply chain.

Key Outcomes:

- Expansion of EMS Firms: Companies like Dixon Technologies, Kaynes Technology, Syrma SGS, and VVDN Technologies have grown significantly in recent years, securing contracts with Apple, Samsung, and Motorola. Their increased exports proves India’s ability to compete internationally.
- Component Manufacturing Growth: Firms such as Iljin Electronics and Sahasra Electronics invested in manufacturing PCBs, chargers, and casings. This has contained India’s dependence on imports and amplified domestic value addition.
- Revival of Indian Brands: Domestic brands like Lava and Micromax, once sidelined by international competitors, are making a comeback by using PLI support and concentrating on export markets.
- Semiconductor and R&D Push: Indian firms such as CG Power and numerous design startups have entered chip packaging and design, encouraged by government grants.
- SME and Startup Participation: Hundreds of Indian MSME have entered the supply chain, producing accessories, tooling, Jigs, Fixture, logistics, and testing services.

Strategic Shifts

- Higher Localization: Indian suppliers now afford a larger stake of value-added components rather than just assembling imported parts.
- Export Orientation: Several EMS companies have become exporters in their own right, helping multi-national brands to build their product in India.
- Ecosystem Development: The expansion of these firms has created millions of jobs, encouraged skills training, and established a more resilient local supplier base.

In short, government policies and global supply chain shifts have empowered Indian firms to develop in capability, developing a stronger and more diverse industrial ecosystem.

Results of Production & Export Dynamics (2022–2025)

The collective effect of tariffs, policy reforms, and corporate strategies has been a key reform of smartphone manufacturing and exports worldwide.

China’s Decline:

Between 2022 and 2025, prominent Chinese smartphone brands experienced sharp drops in production. Apple’s Chinese output drop by 32%, Xiaomi by 27%, and Oppo/Vivo by 41%. This decline was compelled by U.S. tariffs, higher labor costs, and supply chain disruptions. As a result, China’s export value fallen from \$117.6 billion in 2022 to \$89.4 billion in 2025. Its share of global smartphone production also drops from 68% to 54%.

Brand	2022 Output	2025 Output	Change
Apple	85M units	58M units	-32%
Xiaomi	150M units	110M units	-27%

Brand	2022 Output	2025 Output	Change
Oppo/Vivo	200M units	118M units	-41%

India’s Growth

India experienced significant growth in the same period. Apple’s output in India jet from 6 million to 14.7 million units (+144%), Samsung nearly doubled its production from 45 million to 85 million units (+89%), and Dixon Technologies more than tripled production (+211%).

Brand	2022 Output	2025 Output	Change
Apple (India)	6M units	14.7M units	+144%
Samsung	45M units	85M units	+89%
Dixon Technologies	9M units	28M units	+211%

Export Performance

Export data double confirms this shift. In the first half of 2025:

- China’s exports down by 24% to \$89.4 billion.
- India’s exports grew by 137% to \$18.2 billion.
- Supporting sectors also grew: India’s semiconductor exports reached \$1.8 billion (+200%), and battery exports touched \$3.4 billion (+183%).

Metric	China (2025 H1)	% Change	India (2025 H1)	% Change
Mobile Phones	\$89.4B	-24%	\$18.2B	+137%
Semiconductors	\$16.7B	-28%	\$1.8B	+200%
Batteries	\$5.9B	-30%	\$3.4B	+183%

Integrated Analysis

This statistic displays a clear pattern: as China’s supremacy start declines, India is evolving as a new hub for both assembly and supporting industries. The increase in exports of semiconductors and batteries intends that India’s ecosystem is moving toward greater self-reliance. Together, these trends hint a major restructuring of the global smartphone supply chain, with India setting itself as a long-term competitor to China.

Trend of India Growth Story:

India’s mobile phone industry has expanded briskly over the past five years, supported by government policies & grants, foreign investment, and rising global demand for alternatives to China.

Mobile Manufacturing Output in India (YoY, 2019–2024)

Production in India has more than doubled since 2019. After a short-term dip during COVID-19, output improved strongly, accomplishment over ₹2.85 lakh crore (~\$35 billion) in 2023–24. India is the world’s second-largest smartphone manufacturer by volume today.

Year	Output (Units, Million)	Output (Value, ₹ Crore)	YoY Growth (%)
2018–19	290	₹1,32,000	—
2019–20	330	₹1,65,000	~25%
2020–21	250*	₹1,40,000	-24% (COVID)
2021–22	310	₹1,85,000	+32%
2022–23	340	₹2,25,000	+22%
2023–24	380+	₹2,85,000+	+27%

*COVID-19 caused a significant dip in 2020–21.

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Mobile Phone Exports from India (YoY, 2019–2024)

Exports have developed almost tenfold in just five years of time, from \$1.6 billion in 2018–19 to \$15.6 billion in 2023–24. India is exporting now to more than 70 countries, including Europe, the Middle East, and the U.S.

Year	Export Value (₹ Crore)	Export Value (USD Billion)	YoY Growth (%)
2018–19	₹11,200	\$1.6	—
2019–20	₹27,200	\$3.8	+142%
2020–21	₹24,000	\$3.3	-12%
2021–22	₹45,000	\$6.0	+88%
2022–23	₹90,000	\$11.1	+85%
2023–24	₹1,28,000	\$15.6	+41%

Companies Entered (2019–2024)

About 300 new firms have entered mobile phone and accessories manufacturing. This includes EMS companies like Dixon, Sahasra, and DBG, as well as more than 200 MSMEs in chargers, cables, and PCBs.

FDI Inflow in Mobile Phone Industry (YoY, 2019–2024)

FDI has multiplied since 2019. Annual inflows rose from \$230 million in 2018–19 to \$1.45 billion in 2023–24. Key investors includes Foxconn, Pegatron, Samsung, Salcomp, and Tata.

Year	FDI Inflow (USD Million)	YoY Growth (%)
2018–19	\$230	—
2019–20	\$410	+78%
2020–21	\$320	-22% (COVID)
2021–22	\$670	+109%
2022–23	\$1,150	+72%
2023–24	\$1,450	+26%

Direct & Indirect Jobs Created (2019–2024)

Employment has also expanded, with more than 10 lakhs (1 million) new direct jobs and indirect jobs generated between 2019 and 2024. These jobs range from assembly and testing to logistics and R&D.

Year	Direct Jobs (Lakh)	Indirect Jobs (Lakh)	Total Jobs (Lakh)	YoY Growth (%)
2018–19	3.0	6.0	9.0	—
2019–20	3.5	7.0	10.5	+16%
2020–21	3.2	6.2	9.4	-10% (COVID)
2021–22	4.0	8.0	12.0	+28%
2022–23	5.2	10.0	15.2	+27%

Year	Direct Jobs (Lakh)	Indirect Jobs (Lakh)	Total Jobs (Lakh)	YoY Growth (%)
2023–24	6.5	13.0	19.5	+28%

Key Takeaways

- India has more than doubled smartphone output since 2019.
- Exports have grown almost 10 times, making India a key global supplier.
- About 300 companies and \$4 billion in FDI have strengthened the ecosystem.
- More than one million jobs have been generated, boost up employment and skills.

CONCLUSION

India's mobile phone industry has progressed into a new growth chapter, formed by both domestic reforms and global trade. In the past five years, the nation has more than doubled its manufacturing output, increased exports almost tenfold, and created over one million jobs.

Government policies such as the PLI scheme, Skill India, and the semiconductor program have played a significant role in attracting investment and building local capacity. At the same time, external shocks—the U.S.–China trade war, COVID-19 disruptions, and ongoing geopolitical tensions—have stimulated global brands to reduce their dependence on China. India's large domestic market, growing domestic infrastructure, and lower labor costs have made it an attractive alternative.

The result is that India is no longer just a market for smartphones but a global key hub for manufacturing and exports. With continuous Govt policy & grant support and investment in technology, India is well positioned to favor this momentum and play a dominant role in the future of global electronics supply chains especially smartphone segment.

REFERENCES

1. Aggarwal, A., & Evenett, S. (2023). Industrial policy and electronics manufacturing in India: The PLI scheme in perspective. *The World Economy*, 46(5), 1287–1303. <https://doi.org/>
2. Bown, C. P. (2019). The 2018 US–China trade conflict after forty years of special protection. Peterson Institute for International Economics Working Paper. Retrieved from <https://www.piie.com/>
3. Chen, L., & Ma, X. (2022). Institutional agility and the new geography of FDI. *Journal of International Business Studies*, 53(9), 2025–2042. <https://doi.org/>
4. Counterpoint Research. (2025). Global smartphone production tracker. Retrieved from <https://www.counterpointresearch.com/>
5. Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). The governance of global value chains. *Review of International Political Economy*, 12(1), 78–104. <https://doi.org/>
6. IDC. (2025). Worldwide smartphone market report. International Data Corporation. Retrieved from <https://www.idc.com/>
7. India Cellular & Electronics Association (ICEA). (2025). Mobile manufacturing annual report. New Delhi: ICEA.
8. Kim, J., & Shin, H. (2022). Polycentric supply chains in an era of geopolitical risk. *Asia Pacific Business Review*, 28(7), 925–944. <https://doi.org/>
9. Kuznetsov, A., & Singh, R. (2023). BRICS technology standards: Aspirations and realities. *BRICS Policy Briefs*. Retrieved from <https://www.brics-info.org/>
10. Lee, Y., Wang, Z., & Patel, A. (2024). Labor costs and FDI in Asian electronics. *Asian Economic Papers*, 23(2), 45–67. <https://doi.org/>
11. Ministry of Electronics and Information Technology (MeitY), Government of India. (2025). PLI progress report. Retrieved from <https://www.meity.gov.in/>
12. OECD. (2023). Global value chains and the electronics industry: Challenges and opportunities. Paris: OECD Publishing. <https://doi.org/>
13. UNCTAD. (2024). World investment report: Investment trends in the digital economy. Geneva: United Nations.
14. U.S. International Trade Commission (USITC). (2025). Tariff policy digest. Washington, DC: USITC.
15. World Bank. (2023). World development indicators: Labor market data. Washington, DC: World Bank Group. Retrieved from <https://data.worldbank.org/>
16. Xing, Y. (2021). Tariff engineering and the relocation of electronics manufacturing. *Journal of Asian Economics*, 74, 101330. <https://doi.org/>