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AWARENESS AND IMPACT OF THE GLOBAL CHIP WAR ON INDIA'S ECONOMIC AND STRATEGIC POSITION

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ABSTRACT
The global chip war has emerged as a critical geopolitical and economic challenge, driven by competition over semiconductor technology—an essential component of modern digital and defence systems. As global supply chains remain heavily dependent on a few East Asian nations, disruptions and tensions have underscored the need for self-reliance. India, despite being a major consumer of semiconductors, relies almost entirely on imports for advanced chips. In response, it has launched initiatives like the Semicon India Programme and formed strategic partnerships to strengthen its domestic ecosystem. This study explores the level of awareness among Indian stakeholders—students, professionals, and the general public—regarding the chip war and evaluates its perceived impact on India's economy and national security. Findings highlight a growing interest but uneven understanding across sectors, pointing to the urgent need for awareness, talent development, and ecosystem readiness to position India as a key player in the global semiconductor landscape.

Keywords: *Global chip war, Semiconductors, India's semiconductor policy, Supply chain resilience, Strategic autonomy, Technological sovereignty, Semicon India Programme Geopolitics of technology, public awareness, National security*

INTRODUCTION
The global chip war has emerged as one of the most intense geopolitical and economic contests of the 21st century, with semiconductors at the heart of modern life and national power. These tiny chips are the foundation of virtually all digital technologies—smartphones, data centres, 5G networks, quantum computing, autonomous vehicles, advanced defence systems (PMT). It is also a crucial component of Information and Communication Technology (ICT), Medicare, sustainable energy, weaponry, Internet of Things (IoT), Artificial Intelligence (AI) and even Chat GPT [it is reported that Open AI's Chat GPT, underwent training amongst the top 10,000 sophisticated Central Processing Units (CPUs) now existing] (Air Power Journal,2024). The COVID-19 pandemic highlighted the critical importance of semiconductor technology when disruptions in supply chains led to massive production delays in industries such as electronics, automotive, defence, and healthcare. (Forbes, 2024)

In the past especially during the cold war period, India has experienced denial of critical technology, in case of nuclear technology and cryogenic engines. Hence, critical technology is always associated with a great geopolitical game. The new chip technology could also go one step ahead because of its dual use, and by selective access and denial strategy it can enhance the ability of the adversaries. During the Cold War period when the U.S. interests were not favourable to India's interests, it provided F-16 jets to Pakistan, denoting use of technology that can be leveraged for geopolitical gains. In this context, semiconductors represent a new arena of strategic control. Selective access to chips, or denial of the same, can enhance or constrain a nation's capabilities, placing India at risk unless it builds domestic capacity. (Cenjows,2024**)**

The existing global semiconductor supply chain suffers from highly centralised production concentrated in East Asia, making it fragile. This centralisation, when combined with the crucial nature of the product, becomes risky. The pandemic showed how localised disruptions—be it disease outbreaks, political instability, or natural disasters—can paralyse global production and ripple across industries worldwide. The Russia–Ukraine conflict further exposed vulnerabilities by disrupting rare gas supplies critical for chip fabrication (CSIS, 2022). This geopolitical struggle is complicated by the fact that over 90% of the world's most advanced chips are manufactured by just two firms—Taiwan's TSMC and South Korea's Samsung—concentrated in a highly volatile region (SIA, 2023). For example, even a temporary halt in Taiwanese or South Korean chip factories can derail production timelines for carmakers or electronics manufacturers in distant regions.

In response, major powers such as the U.S., China, the European Union, and Japan have launched multi-billion-dollar national programs to localize semiconductor production and secure technological leadership (SIA, 2023).

The urgency around semiconductors has intensified due to growing U.S.–China tensions. The United States, long dominant in chip design and intellectual property, is determined to limit China's technological rise in this sector.

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The rationale is strategic: data is the new oil, and semiconductors are the tools used to control, protect, and process that data. Advanced chips have dual-use potential—not only powering civilian innovations but also enabling military technologies like missiles, drones, and satellite systems. Therefore, the U.S. has imposed export restrictions on high-end chips and manufacturing equipment, aiming to prevent China from achieving parity in defence, surveillance, and AI capabilities (Time, 2023). The Chinese initiated retaliation by banning the export of germanium and gallium and stopped sales of these materials outside their borders which are necessary for producing semiconductors. (Cenjows, 2024)

The U.S. CHIPS and Science Act has allocated over $52 billion to encourage domestic chip manufacturing, while the European Union's European Chips Act aims to double Europe's chip production by 2030. Japan, South Korea, and even smaller nations like Vietnam have also rolled out incentive schemes to become active players in this global realignment (SIA, 2023). The semiconductor race is no longer just about economics—it is about strategic autonomy, supply chain security, and future dominance in emerging technologies.

India's achievements in indigenisation of defence are widely cherished, but the electronic components of missile technology and other advanced defence technologies—like logical circuits, integrated circuits, sensors—are based on imported semiconductor chips. (Cenjows, 2024). Recognizing this vulnerability, the Indian government launched the Semicon India Program in 2021, with a financial outlay of ₹76,000 crore (approximately $10 billion). The program aims to encourage global semiconductor companies to set up manufacturing and design facilities in India. Major players like Vedanta-Foxconn and Micron Technology have responded to this policy push, announcing multi-billion-dollar investments in Gujarat for chip fabrication and assembly facilities. The government is also offering up to 50% capital support for approved projects and is collaborating with countries like Japan and the U.S. to strengthen its semiconductor ecosystem (Press Information Bureau, 2022).

However, while India's policy framework and foreign investment traction are encouraging, the real test lies in ecosystem readiness and stakeholder awareness. A semiconductor ecosystem is complex—it requires not just funding and infrastructure but also a deep talent pool, reliable utilities, research institutions, and supply chain integration. This research seeks to explore precisely that: how aware are Indian stakeholders of the global chip war, and what is their perception of India's response and preparedness? Preliminary data collected through an online survey of 101 respondents, covering students, professionals, and general citizens, suggest that awareness levels are uneven. While students and tech professionals show relatively higher understanding, those in non-tech sectors or from Tier-2 and Tier-3 cities are often unaware of the opportunities and risks involved. This gap is critical because public understanding and industry participation will ultimately determine the long-term sustainability of India's semiconductor ambition.

LITERATURE REVIEW

Semiconductors have evolved from being seen as just economic commodities to becoming central elements in national security strategies. As Bown (2021) points out, export restrictions and trade controls have made semiconductor access a critical geopolitical tool, especially in the context of the growing technological rivalry between the United States and China. The situation is further complicated by the global production pattern, where over 90% of the world's most advanced chips are manufactured by just two firms—Taiwan's TSMC and South Korea's Samsung—concentrated in a highly volatile region (SIA, 2023). This high concentration creates significant risk: any geopolitical tension or disruption in this region can severely affect global chip supplies. While manufacturing has become an Asian strength, high-end design and innovation largely remain with the United States and selected European nations, creating a clear divide within the global supply chain (Breznitz & Murphree, 2011).

The raw materials required in semiconductors include silicon, germanium, phosphorus, boron, indium phosphide and gallium. In 2022, the Chinese produced roughly 60 per cent of global germanium and 80 per cent of gallium. As raw materials, the electronics-semiconductor ecosystem requires certain Rare Earth Elements (REEs) such as lanthanum, cerium, neodymium, samarium, europium, terbium, and dysprosium. China accounts for 60 per cent of the world's REEs extraction and 87 per cent of their production (Air Power Journal, 2024).

Turning to India, scholarly research indicates that awareness of semiconductor geopolitics is gradually building but remains uneven. While large technology firms and policymakers are increasingly aware of supply chain vulnerabilities, smaller players such as start-ups, MSMEs, and even some large non-tech manufacturing firms often lack this understanding (Techcircle, 2024). This awareness gap could hinder timely adoption of risk-reduction measures like supplier diversification and investment in domestic design capacity. (Economic Times, 2025) argue that India's current semiconductor policy discussions are heavily tilted toward financial incentives

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and subsidies, often overlooking equally important areas such as workforce development and ecosystem preparedness. Without widespread understanding of how semiconductors relate to national security and economic autonomy, India may fall behind other countries that are actively nurturing local ecosystems and supply chain partnerships. Financial support alone is insufficient—public awareness campaigns, industry-academia linkages, and targeted research hubs are essential for sustainable and competitive semiconductor development. (AIM, 2024)

In response to its overwhelming dependence on imported semiconductors, the Indian government launched the Semicon India Programme in December 2021. This ₹76,000 crore (roughly $10 billion USD) initiative aims to support every segment of the semiconductor value chain—from chip design to fabrication, testing, and packaging (Press Information Bureau, 2022). As part of this policy, up to 50% fiscal support is being provided for setting up semiconductor fabs, while design-linked incentives are offered to start-ups and research units. The policy has already attracted major global players. Vedanta-Foxconn signed a memorandum of understanding for a $19.5 billion chip and display unit in Gujarat (Vedanta, 2022). Similarly, Micron Technology has announced a $2.75 billion assembly and test facility in the same state, with financial backing from both the central and state governments (Micron, 2023). Additionally, companies like Applied Materials and Lam Research have committed substantial investments to boost India's semiconductor equipment ecosystem and support training initiatives.

However, several significant challenges persist. India's semiconductor industry is expected to require more than 85,000 highly trained professionals by 2030, but the current education and training infrastructure falls far short of this target (NASSCOM 2022). In response, the government has partnered with industry leaders like Lam Research to establish specialized training programs (Press Information Bureau, 2023). Moreover, while major tech hubs like Bengaluru, Hyderabad, and Noida have begun engaging with policy and industry, awareness and involvement remain extremely limited in Tier-2 and Tier-3 cities, where numerous MSMEs operate (Goled S, 2024). This lack of awareness prevents local industries from effectively integrating into global chip supply chains or capitalizing on government incentives.

India has also taken diplomatic steps to secure its position in the semiconductor landscape. Through strategic partnerships with nations like Japan and multilateral groups like the Quad (comprising the US, Australia, Japan, and India), the country aims to strengthen supply chain resilience, support joint research and development, and facilitate talent exchange. A notable example is the semiconductor cooperation agreement signed between India and Japan in July 2023 (Japan METI, 2023).

While India is still developing fabrication capabilities, it holds a strong position in chip design. The country accounts for over 20% of the world's semiconductor design talent, largely through captive R&D centres of global firms such as Intel, Qualcomm, AMD, and Broadcom (NASSCOM, 2022). However, these centres typically conduct outsourced design work, meaning the intellectual property often resides outside India.

Another key challenge lies in the enormous cost and long lead time required to establish advanced chip manufacturing facilities. Globally, building a leading-edge fabrication unit costs around $10 billion and takes three years to complete (Intel, 2023).

India faces significant challenges—including unreliable electricity, weak logistics, and an underdeveloped supplier base—that increase semiconductor production costs. Experts argue these gaps must be addressed alongside financial incentives to build a globally competitive ecosystem. (Economic Times,2025)

Given these constraints, experts suggest that India initially focus on manufacturing legacy nodes (28–65 nanometre chips) and compound semiconductors like Gallium Nitride (GaN) and Silicon Carbide (SiC), which are widely used in electric vehicles, telecommunications, and power systems. Competing in ultra-advanced logic chips currently dominated by firms like TSMC and Samsung may not be viable in the short term (Information technology & Innovation foundation 2024).

In summary, while India has taken strong initial steps in attracting investment and signalling policy intent, sustained progress will require bridging the awareness gap, building skilled talent, lowering infrastructure bottlenecks, and strategically positioning itself in niche semiconductor segments.

RESEARCH METHODOLOGY

To investigate the level of awareness and perceived impact of the global semiconductor chip war on India's economic and strategic outlook, a mixed-method approach was employed. This included both primary data collection through a structured survey and secondary research using reliable published sources, including academic journals, government reports, think tank publications, and industry whitepapers.

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Primary Research
A quantitative survey was designed to assess awareness levels, understanding of geopolitical dynamics, and perceptions regarding India's current semiconductor policy and future potential. The survey included 22 closed-ended questions using a 5-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree." These questions were carefully developed to measure respondents' familiarity with key concepts such as the U.S.–China chip rivalry, supply chain risks, national security implications, India's semiconductor mission, and employment opportunities in the sector.

The survey was distributed online to a targeted group of students, professionals, and industry stakeholders in the fields of technology, business, and engineering. A total of 101 valid responses were collected. The sample size, although limited, offers preliminary insights into the knowledge and perceptions of an informed audience that plays a crucial role in shaping or responding to India's semiconductor policies.

To analyse the data, a one-sample chi-square test was conducted for each question to determine whether the distribution of responses was statistically significant or occurred by chance. The significance level was set at 0.05, and results indicated strong patterns of awareness and opinion across all items, confirming the validity of the survey outcomes.

Secondary Research
To complement the primary data and place findings within a broader context, secondary data was sourced from credible references. These include reports from (Economic times 2025) on the geopolitics of semiconductors, policy analyses by the Semiconductor Industry Association (2023), Indian government announcements on the Semicon India Programme, and research report by Cenjows (2024) on The Strategic Implications of Chip War on India. This literature provided background information on global chip supply chains, regional production hubs, strategic chokepoints, and India's efforts to develop indigenous semiconductor capacity.

The combination of empirical survey data and contextual literature analysis allows this study to offer grounded insights into public and professional awareness of the chip war, while also assessing the implications for India's economic security and policy-making in the evolving global technology landscape.

DATA ANALYSIS AND INTERPRETATION

High Awareness of the Chip War and Its Implications
Participants are not randomly responding to questions related to the term "chip war" and its geopolitical significance (Q1, Q2, Q3). This suggests strong awareness of global semiconductor issues, especially concerning the U.S.–China rivalry, global chip shortages, and industry disruptions post-COVID.

Recognition of Economic and Strategic Dimensions
Respondents largely agree that the chip war extends beyond economic issues and poses national security risks (Q5, Q10). This indicates that participants have an informed understanding of the strategic value of semiconductor independence.

India's Semiconductor Dependency and Risks Are Widely Acknowledged
Strong consensus exists on India's reliance on imports (Q6) and the impact of chip shortages on prices and availability (Q7). This supports the notion that the general public and professionals alike recognize the urgency for domestic capacity building.

Opportunities for India are Seen as Realistic
There was statistically significant agreement that the chip war presents both challenges and opportunities for India's economy (Q8) and that local production is vital for competitiveness (Q9). Respondents also believe that India's neutral geopolitical stance (Q21) and the "China+1" strategy (Q19) make it a favourable investment destination.

Awareness of Government Policy Exists, But Execution Gaps Remain
Participants demonstrated awareness of key initiatives like the Semiconductor Mission and PLI schemes (Q11), and largely agreed that infrastructure and policies (Q12) are improving.

However, deeper issues such as the workforce gap (Q16) and the need for enhanced educational training (Q14) remain concerning.

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Career Potential and Public Engagement

A statistically significant number of respondents show interest in semiconductor careers if opportunities grow (Q15) and believe that the industry could lead to high-paying jobs (Q17). Yet, public awareness remains an area of concern (Q18), pointing to a critical gap in outreach and education.

Optimism About India's Global Role. Finally, there is a notable belief that India can emerge as a global chip hub within the next decade (Q22), and that attracting global giants like TSMC or Intel (Q20) is feasible.

HYPOTHESIS TESTS

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories of 1. I am familiar with the term chip war and its global implications. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
2	The categories of 2. I understand the geopolitical rivalry between the US and China over semiconductor technology. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
3	The categories of 3. I am aware of how chip shortages have affected global industries (e.g., electronics, automotive). occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
4	The categories of 4. I have followed news about semiconductor manufacturing issues since COVID-19 occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
5	The categories of 5. I believe the chip war is more than an economic issue it affects national security too. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
6	The categories of 6. India is highly dependent on imported semiconductors for its tech and manufacturing sectors. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
7	The categories of 7. Chip shortages have directly or indirectly affected product prices and availability in India. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.

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8	The categories of 8. The chip war creates both risks and opportunities for India's economy. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
9	The categories of 9. India’s electronics industry must localize chip production to remain competitive. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
10	The categories of 10. India’s national security is at risk if it lacks control over its semiconductor supply chain. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
11	The categories of 11. I am aware of India’s Semiconductor Mission and Production-Linked Incentive (PLI) schemes. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
12	The categories of 12. India’s infrastructure and policy environment are suitable for semiconductor growth. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
13	The categories of 13. Government investment in chip R&D and education will improve long-term outcomes. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
14	The categories of 14. Indian educational institutions are preparing students for careers in chip design and manufacturing. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
15	The categories of 15. I would consider a career in the semiconductor industry if opportunities increased. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
16	The categories of 16. India needs to develop a larger skilled workforce for its semiconductor ambitions. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.

17	The categories of 17. I believe the chip war will create high-paying job opportunities in India's tech sector. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
18	The categories of 18. There is insufficient public awareness about semiconductors and their strategic importance. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
19	The categories of 19. The â€œChina+1â€ strategy will benefit India's tech manufacturing sector. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
20	The categories of 20. Attracting foreign chip manufacturers (like TSMC, Intel) to set up in India is realistic. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
21	The categories of 21. India's 3 geopolitical stance makes it an ideal location for chip investment. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
22	The categories of 22. India can become a major player in the global chip supply chain in the next 10 years. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.

The statistical outcomes clearly indicate that respondents did not choose answers randomly; rather, their responses reflect strong, directional opinions across all 22 items. The uniformly low significance values support the validity of patterns found in the primary data and enhance the credibility of subsequent thematic analysis.

These findings suggest that:
Awareness levels among the sampled population (likely tech and management students/professionals) are relatively high.

Respondents see strategic urgency and national security implications in the semiconductor narrative. There is a favourable perception of India's policy direction, though skill-building and ecosystem support are recognized as pressing concerns.

Optimism about India's semiconductor future is visible, but grounded in a clear understanding of the challenges ahead.

HIGH BASELINE AWARENESS
Items 1–4 indicate that most participants already track chip-war news, recognise its geopolitical roots, and understand supply-chain shocks.

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Research implication: outreach initiatives can start from a relatively informed base rather than from scratch.

Strategic Mind-set
Strong consensus on items 5, 8–10 shows people link semiconductors directly to national security and economic strategy, not just gadget supply.

POLICY RECOGNITION VS. EXECUTION GAPS
Awareness of the Semiconductor Mission (Q11) is high, and many believe India's policy trajectory is favourable (Q12). Yet items 14, 16, 18 reveal perceived shortfalls in workforce readiness and public engagement.

Optimism about India's Prospects
Responses to items 19–22 are markedly positive: respondents view China + 1 as an opening, think top-tier fabs can be lured, and expect India to emerge as a global player within a decade.

Respondents recognise India's vulnerability in semiconductor imports, endorse localisation, and link chip autonomy to national security. Notably, while policy awareness is high, assessments of educational preparedness and workforce scale remain cautious, signalling an execution gap.

The survey therefore corroborates secondary-literature claims that India's semiconductor agenda must pair fiscal incentives with aggressive talent-development and public-engagement efforts.

CONCLUSION

The global chip war stands at the intersection of technology, economics, and geopolitics, with semiconductors emerging as vital instruments of national power and strategic autonomy. Through this study, it becomes clear that the implications of this conflict extend far beyond traditional trade rivalries—it involves reshaping global supply chains, redefining security paradigms, and altering the technological balance of power. For India, the chip war represents both a strategic vulnerability and a transformative opportunity. Despite being a significant consumer of semiconductors, India's current dependence on imports for critical chip components highlights an urgent need for self-reliance.

Government-led initiatives such as the Semicon India Programme, combined with international partnerships and growing investments from global players, signal the country's commitment to building a robust semiconductor ecosystem. However, the true success of this mission hinges not only on financial incentives or policy declarations but on broader ecosystem readiness—skilled manpower, research capabilities, infrastructure reliability, and public engagement.

The primary data gathered from over 101 respondents, supported by secondary research, demonstrates a promising level of awareness, particularly among students and professionals in technology and management fields. Respondents recognize the national security dimensions of semiconductor independence and the opportunities created by global realignments such as the "China + 1" strategy. Yet, the findings also reveal clear gaps—in educational preparedness, public outreach, and awareness among non-tech sectors and Tier-2/Tier-3 stakeholders. These gaps are crucial, as semiconductor advancement depends on inclusive participation across all levels of society and industry.

To truly emerge as a global semiconductor hub, India must now transition from policy intent to ecosystem execution. Bridging the awareness and talent gap, investing in sustainable education and research, and ensuring industry-wide collaboration will be key to unlocking India's full potential in this critical domain. The chip war may be global in scale, but India's response must be local, inclusive, and future-ready. If these steps are taken decisively, India can transform its strategic vulnerability into a long-term technological advantage on the world stage.

REFERENCES

Japan and India agree to step up security and economic cooperation amid regional security concerns | AP News. (2024, March 7). AP News. https://apnews.com/article/japan-india-security-defense-economy-3cae228904b6b3efb6d173e2680d3f83

(2023, July 20). Japan becomes second Quad partner to sign semiconductor pact with India. *The Economic Times*. https://m.economictimes.com/industry/cons-products/electronics/india-japan-sign-pact-for-semiconductor-development/articleshow/101992248.cms?utm_

The Strategic implications of chip war for India – CENJOWS. (2024, July 4). https://share.google/zJA4mH2HnoN3rYfuB

Government of India Spurs Chip Manufacturing with Fiscal Support, Global MoUs and Talent Development Initiatives. (n.d.). https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=2117925&utm_

Yeung, H. W., Jr., Huang, S., & Xing, Y. (n.d.). From fabless to fabs everywhere? Semiconductor global value chains in transition. *Global Value Chains*, 133–134. https://www.wto.org/english/res_e/booksp_e/07_gvc23_ch4_dev_report_e.pdf

SEMICONDUCTOR INDUSTRY ASSOCIATION. (2023). *STATE OF THE U.S. SEMICONDUCTOR INDUSTRY*. https://www.semiconductors.org/wp-content/uploads/2023/08/SIA_State-of-Industry-Report_2023_Final_080323.pdf

Kalra, A., & Vengattil, M. (2022, September 13). *Vedanta, Foxconn to invest $19.5 billion in India's Gujarat for chip, display project*. *Reuters*. https://www.reuters.com/world/india/vedanta-foxconn-sign-mou-with-modis-home-state-20-bln-chip-foray-2022-09-13/

Micron to establish $2.75 billion semiconductor test and assembly plant in Gujarat. (2023, June 23). Moneycontrol. https://www.moneycontrol.com/news/business/micron-to-set-up-2-75-billion-semiconductor-test-assembly-plant-in-gujarat-10842791.html?utm_

Ltd, I. (2025, July 9). *India's path to semiconductor leadership*. Nasscom | the Official Community of Indian IT Industry. https://community.nasscom.in/communities/engineering-research-design/indias-path-semiconductor-leadership?utm_

Brenitz and Murphee https://www.researchgate.net/publication/287838132_Run_of_the_red_queen_Government_innovation_globalization_and_economic_growth_in_China

Brenitz, M (2011). *Run of the Red Queen*.

Ani. (n.d.). India's semiconductor industry faces supply chain and limited talent challenges: Jefferies report. *The Economic Times*. https://m.economictimes.com/tech/technology/indias-semiconductor-industry-faces-supply-chain-and-limited-talent-challenges-jefferies-report/articleshow/119453491.cms?utm_

Ezell, S. (2025, January 15). *Assessing India's readiness to assume a greater role in global semiconductor value chains*. ITIF. https://itif.org/publications/2024/02/14/india-semiconductor-readiness/?utm_

Intel Corporation. (2025, February 7). *Press kit: Global Manufacturing at Intel - Newsroom*. Newsroom. https://newsroom.intel.com/press-kit/global-manufacturing?utm

Goled, S. (2024, July 10). How tier-2,-3 Indian cities are poised to become hubs for semiconductor design shops. *Techcircle*. https://www.techcircle.in/2024/07/10/how-tier-2-3-indian-cities-are-poised-to-become-hubs-for-semiconductor-design-shops

Wishart-Smith, H. (n.d.). *The Semiconductor Crisis: Addressing chip shortages and security*. Forbes. https://share.google/DVZe1ahXzGgvkHlbo

Kate. (2024, March 6). The importance of semiconductor chips in modern living. Precision Measurement Technologies. https://share.google/RI55GAzz7vhboBSNM

Allen, G. C. (2023, February 23). In the Tech War with China, the U.S. Is Finding Friends. *TIME*. https://time.com/6257857/us-china-tech-war-semiconductor/?utm_

Pandey, M. (2024, December 24). *What's stopping India's semiconductor mission*. Analytics India Magazine. https://analyticsindiamag.com/ai-trends/whats-stopping-indias-semiconductor-mission/?utm_

Bownhttps://savearchive.zbw.eu/bitstream/11159/5735/1/JE0001_2020_v24n4_349.pdfBown, C. P. (2020). How the United States marched the semiconductor industry into its trade war with China. In *East Asian Economic Review* (Vols. 349–388). https://doi.org/10.11644/KIEP.EAER.2020.24.4.384

Economic Times,2025 https://m.economictimes.com/tech/technology/indias-semiconductor-industry-faces-supply-chain-and-limited-talent-challenges-jefferies-report/articleshow/119453491.cms?utm_

Ani. (n.d.-b). India's semiconductor industry faces supply chain and limited talent challenges: Jefferies report. *The Economic Times*. https://m.economictimes.com/tech/technology/indias-semiconductor-industry-faces-supply-chain-and-limited-talent-challenges-jefferies-report/articleshow/119453491.cms?utm_

ISSN 2322 - 0899

Russia's invasion of Ukraine impacts gas markets critical to chip production | CSIS. (n.d.). https://www.csis.org/blogs/perspectives-innovation/russias-invasion-ukraine-impacts-gas-markets-critical-chip-production?utm_

Purohit, P. A. (2024, October). *Chip Wars: The struggle for semiconductors supremacy*. *Air Power Journal*, 19(2), 21–42. Centre for Air Power Studies. https://capsindia.org/wp-content/uploads/2024/10/Praveer-Ashok-Purohit.pdf