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ASSESSING TECHNO-NATIONALISM AND STRATEGIC AUTONOMY IN INDIA'S DEFENCE AND SECURITY POLICY

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Abstract

India's pursuit of security now rests on technology and self-reliance. This paper examines techno nationalism and strategic autonomy in India's defence and security policy. It analyses how the state seeks to reduce external dependence strengthening domestic capability. You see this shift through Atmanirbhar Bharat, defence procurement reforms, and greater support for private firms and startups. The study reviews institutional changes, major defence programs, and platform outcomes such as Tejas, Akash, and Pinaka. It also assesses India's balancing strategy through continued engagement with Russia, deeper cooperation with the United States, and selective partnerships with France. The findings show measurable gains in indigenization, industrial participation, and defence exports. At the same time, critical gaps persist in jet engines, sensors, and advanced electronics. Budget constraints, skill shortages, and slow testing processes limit progress. The paper argues that India has strengthened techno nationalism, but strategic autonomy in defence remains incomplete.

Keywords: Techno, Autonomy, Defence, Indigenization, Strategy.

Introduction

Technology and self-reliance are becoming increasingly important in national security in India, and so the concept of techno-nationalism is a key aspect in the defence and security policy of India (Bagchi, 2019; Capri, 2024). The nation has in the last ten years attempted to replace heavy reliance on imports with the creation of strong domestic competencies (Bera & Sardana, 2023). The trend can be seen in major policy documents such as *Atmanirbhar Bharat* and the Defence Acquisition Procedure 2020, which focus on the level of indigenous content, innovation, and the strategic prioritization of the technological component. The first

step towards domestic defence production was set by the public sector with DRDO and HAL, and the introduction of private companies, startups, and MSMEs opened new avenues of innovation (Chakraborty, 2022). Reform in defence procurement strengthened this change by focusing on local suppliers, enforcing requirements of indigenous content, and introducing import embargo lists as a form of reducing dependence on foreign suppliers (Capri, 2024). These measures were intended to simplify procurement, reduce delays and cost overruns, and provide opportunities for smaller businesses, but issues in control and execution still exist (Kumar, 2025). The design, production, and exports of key defence systems such as Tejas, Akash, and Pinaka are examples of visible advancements in design, manufacture, and export, with platforms recording appreciable indigenous content and defence exports amounting to over USD 2 billion (Chakraborty, 2022; Kumar, 2025). However, there are still some areas of weakness in such important technologies as jet engines, sophisticated sensors, and electronics, indicating that complete technological self-reliance is still limited (Bagchi, 2019; Akıllı, 2025).

India remains strategically positioned between autonomy and selective external relations. This dual strategy can be seen in the reliance on Russia for legacy systems, increased collaboration with the United States under COMCASA and BECA, and cooperation with France on advanced platforms such as Rafale (Kumar, 2025). These partnerships enhance operational readiness and interoperability; they limit full strategic control (Capri, 2024). This paper analyses the interactions between policy, industrial development, and strategic alliances to influence the development of Indian defence capability, providing a holistic evaluation of achievements in indigenization and identifying areas still requiring progress towards full techno-nationalism and strategic autonomy (Beacham, Hafner-Burton, & Schneider, 2024; Kumar, 2025).

Problem Statement

India has always had the problem of the mismatch between its strategic aspiration and defence production capabilities (Chari, 2019; Cohen & Dasgupta, 2021). During decades, India has been one of the biggest arms importers in the world. SIPRI data states that imports have taken over 55 percent of significant defence purchases between the 2010s (Mishra, 2025). Such reliance poses operational risks, costs, and challenges in case of crisis (Chopra, 2008). This is evident in delays associated with spare parts, upgrades, and exposure to sanctions (Dahlman, 2007). As a reaction, the Indian state took up techno-nationalism in policies such as *Atmanirbhar Bharat* and the Defence Acquisition Procedure 2020 (Chari, S. G., 2025). Importation bans, increased domestic content quotas, and subsidies to individual industries were intended to move the manufacturing industry inwards (Mishra, 2025). By 2023, the value of defence exports had surpassed USD 2 billion, and systems such as Akash and Pinaka had reached international markets (Cohen & Dasgupta, 2021). Companies like HAL, BEL, and Tata Advanced Systems increased their functions (Chari, 2019). These facts demonstrate improvement, but they also reveal boundaries (Chopra, 2008).

Technologies that are critical are still dependent on external sources (Dahlman, 2007). Jet engines, high-technology radars, seekers, and microelectronics remain among the products India continues to import (Chari, S. G., 2025). This is depicted in the Tejas program, where reliance on imported engines continues despite decades of efforts (Kumar, 2025). Delays, cost overruns, and lack of consistency in quality control decrease confidence in domestic systems (Chari, 2019). Financial restrictions limit long-term research and development, skill deficits impact high-tech production (Dahlman, 2007). On the strategic level, India desires independence but still maintains strong defence ties with Russia, the United States, and France (Cohen & Dasgupta, 2021). Agreements such as COMCASA and BECA enhance capability but also bring more interdependence (Mishra, 2025). This creates a conflict between autonomy and alignment (Chopra, 2008). The fundamental issue is whether the techno-nationalist strategy in India can provide plausible self-reliance without compromising preparedness or the ability to adapt strategies (Chari, S. G., 2025). This paper addresses this

gap by evaluating the extent to which Indian defence policy has transformed intent into capability and why structural factors have restricted full strategic freedom (Chari, 2019).

Significance of the Study

This research has significance to the policy, security, and industry analysis. It makes you realize how techno nationalism works in practice in the defence sector in India. The study elucidates the relationship between political intent and material capability by analyzing the policy tools, programs and results. This observation promotes evidence based defence planning. The research is relevant to the field of strategic studies because it illustrates how India strikes the right balance between self-reliance and foreign relations. It reveals the fact that autonomy does not imply loneliness. This perspective evaluates India's stance in a multipolar security setup and allows comparison with other middle powers pursuing defence indigenization. For policymakers, it highlights gaps in critical technologies like engines, sensors, and electronics, clarifying why some reforms succeed while others fail. It informs budgetary, time, and research priorities, as well as procurement and industrial policy. For industry and research institutions, it identifies opportunities and constraints in domestic defence manufacturing, justifying capacity building, skill development, and technology partnerships. The study offers a structured approach to analyzing techno-nationalism and strategic autonomy, grounding theory in India's empirical defence experience. It contributes to literature by bridging policy discourse gaps with practical insights for enhancing India's defence self-reliance.

Theoretical Framework

The theory of techno nationalism and strategic autonomy forms the basis of the study as it associates national security with the extent of the domestic technological capacity and industrial self-reliance. Techno nationalism is a more intensive approach to build a defence technology that is less reliant on external intervention, and enhances greater national sovereignty strategic autonomy is a more intensive approach of making independent decisions in defence and foreign policy without excessive reliance on external powers. Through this framework, the analysis of the defence policy of India can be performed relating the policy efforts, including Atmanirbhar Bharat and Defence Acquisition Procedure 2020, to the institutional functions of DRDO, HAL, and the private industry. It also assists in the assessment of the critical defence initiatives, local content rates, procurement reforms, and strategic alliances with other nations such as Russia, United States and France. With this lens, this paper will focus critically on why the goals of techno nationalism are operationalized in terms of achievement of operational facility, industrial growth, and strategic placement with both advances and ongoing technological and structural limitations in the quest to ensure complete self reliance and autonomy is achieved.

Objectives

The main objectives of the paper are to examine how techno nationalism has evolved within India's defence and security policy framework, to assess the impact of defence procurement reforms on indigenization and self reliance, to evaluate the extent to which key defence programs have strengthened domestic defence industry performance, and to analyses how India balances strategic autonomy with continued reliance on external defence partnerships.

Methodology

The paper adopted a qualitative research approach to examine techno nationalism and strategic autonomy in India's defence and security policy. It relies primarily on secondary sources, including government policy documents, official defence procurement reports, white papers, and strategic frameworks such as Atmanirbhar Bharat and the Defence Acquisition Procedure 2020. Data from public sector units like

DRDO and HAL, along with industry reports from firms such as BEL, Tata Advanced Systems, and L and T, were analyzed to assess domestic capability, production outcomes, and technological progress. The study also incorporated insights from international defence trade data, including SIPRI reports, to evaluate import dependence, export performance, and global partnerships. Key defence programs such as Tejas, Akash, and Pinaka were examined as case studies to measure indigenous content, production quality, timelines, and operational readiness. Strategic partnerships with Russia, the United States, and France were analyzed to understand the balance between autonomy and external reliance. The methodology emphasizes critical analysis by comparing policy intent with implementation outcomes, identifying gaps in capability, technological constraints, and the effectiveness of reforms. Limitations due to restricted access to classified or operational data were addressed by triangulating information from multiple credible sources. This approach allowed the study to provide a comprehensive assessment of India's progress in techno nationalism, domestic defence industrial performance, and strategic autonomy.

Result and Discussion

Evolution of Techno Nationalism in India's Defence Policy

Techno-nationalism in defence and security policy India has developed through dependence on imports and licensed production by the public sector in the post-independence era to focus on indigenous innovation and integration of the private sector and export opportunities in the post-2014 models, as a strategic autonomy measure in the context of regional threats (Capri, 2024). After the independence, India was left with 18 ordnance factories and yet waged wars in 1962, 1965, and 1971 with old-fashioned equipment thus heavy imports by the Soviet Union (such as MiG-21s in the 1950s and onwards) and licensing, which not only slowed down production but also caused obsolescence (Chopra, 2008).

Early indigenization was led by public sector agencies such as DRDO (established 1958 through the merger of Technical Development Establishment and Defence Science Organization) and HAL, but early success in self-reliance was only reached at 30–35 percent by 2006 despite the targets of 70 percent in 1992, including Project Indigo (1960s SAM, discontinued), IGMDP (1983: Prithvi 1988, Agni 1989), the Tejas Light Combat Aircraft Programme initiated in the 1980s but delayed due to engine and avionics constraints, and the Arjun main battle tank which faced repeated induction challenges (Chakraborty, 2022; Chari, 2019).

Reform of Defence Procurement Procedure (DPP) iterations (2002 post-Kargil GoM reforms; 2006 offsets; 2008 transparency; 2013/2016 strategic partnerships) opened up foreign direct investment up to 49 percent (2016), and allowed the issuance of private industrial licenses (more than 150 as of 2017, compared with 127 in 2010), but persistent bureaucracy, corruption (e.g., the Bofors scandal leading to political fallout), procedural delays, and limited technological absorption capacity continued to sustain high import dependence and constrained meaningful indigenization outcomes (Chari S. G., 2025; Cohen & Dasgupta, 2021). With Narendra Modi since 2014, techno-nationalism leaped through Make in India (2014), Atmanirbhar Bharat (2020 Abhiyan), DAP 2020 (announced 2020 by Rajnath Singh, becomes effective in October 2020: Buy Indian-IDDM at 50% indigenous content, Indian vendors get 49% FDI, new classes such as Buy Global-Manufacture in India), DPEPP 2020 (produce These put technology in the context of security imperative (2016 Surgical Strikes, 2017 Doklam, and two-front threats) and indigenization lists (500+ items banned), SRIJAN portal (2020 MSMEs), iDEX, and corridors in Uttar Pradesh/Tamil Nadu (Bera & Sardana, 2023; Bishoyi, 2025).

Production reached 1.27 lakh crore (2024-25, 174% growth since 2014-15), exports 23,622 crore (2024-25, 30x growth since 2014-15), imports dropped -9.3 (2014-2024), and the share of that of the private sector 23 (FY25) (Capri, 2024). The early (e.g., Akash SAM, Pinaka, Nag ATGM, Rustom UAVs) was dominated by DRDO/HAL with 41 ordnance factories being corporatized into 7 DPSUs (2021) such as AWEIL (AK-203), MDL (INS Kalvari), BEL (radars). Since 2014, the entry took place by partnerships by

private companies: TASL (C-295 with Airbus, Vadodara plant); L&T (PSLV, artillery); Adani (Hermes 900 UAVs, Kanpur ammo complex, counter-drone with DRDO); more than 16,000 MSMEs (Chakraborty, 2022). In the pre-2015 period, the proportion of the role in the domestic market was minimal (less than 10%); after 2015, 75 percent modernization budget (1.11 lakh crore FY26) domestic, 92 percent contracts Indian (193 2.09 lakh crore 202) (Capri, 2024). Techno-nationalism decreased vulnerability to imports (Russia share down post-2015, diversification to France/Israel/US), the issues remain: DRDO lags (119/178 projects late by CAG), no high R&D (5.5-6.5% budget versus global leaders), technology gaps (e.g., jet engines), and bureaucracy (procurement paralysis), and uneven scaled privatization against the backdrop of easy-to-do-business barriers such as single-window lacks (Chari, 2025; Dahlman, 2007). Victories such as Tejas/BrahMos to 100+ countries amplify strategic independence, yet excessive dependence on PSUs before 2014 created complacency; excessively depending on private impetus after 2014 dilutes the quality, unless ongoing research and development is maintained (e.g., Jaguar crashes 2025 shows the perils of obsolescence) (Chopra, 2008; Bera & Sardana, 2023). It requires PPP acceleration, 10-year ICDP, and export multipliers to counter geopolitical pressures but the Modi-era assertiveness (e.g., Balakot) puts tech into nationalism in an effective way (Capri, 2024).

Impact of Procurement Reforms on Indigenization and Self-Reliance

Defense procurement reforms, particularly the Defence Acquisition Procedure 2020 and related policy measures, have strengthened indigenization and self-reliance in India's defence sector. However, weaknesses in implementation continue to limit their overall effectiveness (Dedrick, 1993). DAP 2020 reorganized procurement priorities by placing Indian IDDM at the highest level, followed by Buy Indian, Buy Indian IDDM, and Buy with Greater Indigenous Content. Under these categories, contracts above defined thresholds require 50 to 60 percent indigenous content, while the earlier emphasis on Buy Global was reduced (Dedrick, 1993). As a result, about 75 percent of the capital acquisition budget of 4.65 lakh crore rupees in 2023–24 was allocated to domestic procurement. This shift enabled large scale Army procurements through Strategic Partnership models, expanded Buy Global Manufacture in India provisions, and promoted leasing arrangements. These measures increased foreign direct investment, encouraged local assembly, and supported defence production growth to 1.46 lakh crore rupees in FY24, representing an annual increase of 16.7 percent (Gopikrishna et al., 2024).

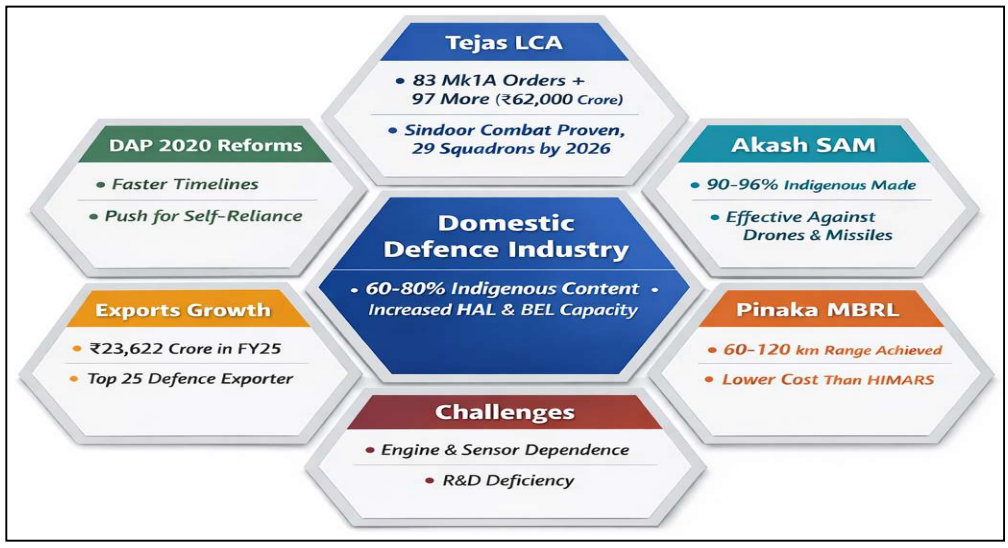
The presence of indigenous content requirements, determined by comprehensive indigenization index and lifecycle cost analyses required suppliers to localize components, leading to a drastic shift of 92% of 193 contracts, seen as ₹2.09 lakh crore, in 2024 being awarded to Indian companies, a sharp increase over pre-reform benchmarks (Gupta, 2022). Major deals are now governed by year-wise indigenization roadmaps, localizing over 3,000 items on embargo lists (e.g., night-vision devices, avionics), nurturing tiered supply chains, but this puts pressure on micro-suppliers that have no technology transfers or scale (Dedrick, 1993). A 2020-2024 five-iterative positive indigenization lists banned importing more than 500 products in 2025 (artillery guns, assault rifles, and sonars) forcing the armed forces to shift to domestic alternatives, and reducing the import dependency (65-70% in the pre-2014 period) to less than 50% by FY25 (Joshi, 2022). These re-defined decisions, including the replacement of foreign bids with the Kalyan-Kalpeshwar joint venture in supplying the Army with ATAGS howitzers, despite initial supply delays and consequent delays in inductions (Jaishankar, 2020). Delegated financial authorities to Service Headquarters, and standardized Defence Acquisition Council (DAC)/Cabinet Committee on Security (CCS) timescales reduced average approvals of 5-7 years to less than 1.5 years, and 70 percent of capital purchases are now being completed in 12 months (Khurana, 2023). On-time and under-overrun projects such as Akash-NG were delivered on time, but long-established DRDO project delays (CAG identified 119 projects out of 178 with overdue status) persist, exacerbated by an average of 3-6 month lag caused by rigorous content verification reviews (Dedrick, 1993).

The SRIJAN portal (launched 2020) explicitly allocated 4,666 items to MSMEs and Defence Public Sector Undertakings (DPSUs), iDEX paid 1500 crore to more than 100 startups (e.g., IdeaForge drones, Tonbo Imaging night-vision), and the Technology Development Fund funded 80 R&D projects, bringing 16,000+ MSMEs into ecosystems (Gosling, 2021). Basic one-office clearance and set quotas made MSMEs 20% of overall production increased its export volumes 30 times since 2014. Structural obstacles are still there: important technology gaps in jet engines and AESA radars, insignificant R&D spending (0.6% of GDP, compared to 2-3% of the same in peer countries), spotty monitoring through an underused Indigenization Dashboard in real-time, chronic delays in paying MSMEs (violating 90-day requirements), and audit-imposed procurement stalls (Dedrick, 1993). More importantly, reforms have institutionalized self-reliance on paper, but loose quality controls in the private sector (there are no durably required measures like the Integrity Pact Index (IPI)) and disjointed control threaten to deliver mediocre results, sub-optimal scaling, and weakness in high-stakes geopolitics, and requires rapid creation of synergies between the public and the private, and enforced enforcement (Dedrick, 1993).

Performance of Defence Programs and Domestic Industry

The major defence projects such as Tejas, Akash, and Pinaka have played a moderate role in empowering the domestic sector as they have reached 60-80 percent of indigenous level of content, and facilitated expansion of capacity in companies such as HAL and BEL, though technological deficiency in engines and sensors continue to hamper their transformative effects (Kumar, 2021). Figure below 1.1 shows the structure, key platforms, policy drivers, export outcomes, and persistent challenges of India's domestic defence industry, visually situating Tejas, Akash, and Pinaka within the broader ecosystem of reforms, production capacity, and constraints. Induced in 2015 (Mk1), scaled through 83 Mk1A order plus 97 others (2025, ₹62000 crore), Tejas LCA (Light Combat Aircraft) demonstrated combat capability during Operation Sindoor (2025) to deliver precise strikes, despite its engines falling behind schedule, with 29 of its squadrons operational by 2026 (Malhotra, 2024).

Figure 1.1 Domestic Defence Industry and Indigenous Weapons Systems in India



Akash SAM (inducted 2015, range 25-70km via Akash-NG/Prime), has demonstrated high-altitude hits, Sindoor intercepts, drones/missiles, with an Army model of 30-35km being displayed at Army Day 2026

(Kumar, 2021). Pinaka MBRL (Mk1 fired 2000, Mk2 120km range by 2025), 60-90km enhanced rockets were tested, with 10 regiments carrying them after the battlefield of Sindoor, at a cost of ₹2.3 crore/unit compared to HIMARS cost of $4.9-20 million (Ladwig, 2019). Tejas Mk1A will achieve 80% localization (up 59% Mk1) with Akash 90-96% (DRDO-BEL) and Pinaka 75-85% localization of airframes, seekers and propellants, and importation of GE F404 engines (50% offset), RF seekers and AESA radars (Pant, 2022). In general, these programs have localized 3,000+ components through SRIJAN/iDEX, although the core subsystems such as Kaveri engines (going dead 2000s, GE deal 2023) are foreign-dependent (Kumar, 2021). Quality enhanced: On Tejas crash (Dubai 2025) isolated fault, not systemic; Akash Prime successfully hit maneuvering targets perfectly; Pinaka hit targets 100 per cent in experimentations (Malhotra, 2024). This has been demonstrated as operationally reliable in Sindoor, where Akash and D4 systems neutralized hostile drones and BrahMos struck forward bases such as Rafiqui, indicating battlefield credibility rather than trial-stage validation (Mehrotra & Chatterjee, 2022). Post–DAP 2020 timelines were significantly shortened, with development cycles compressed from nearly 30 years to around four years for Mk1A deliveries; however, cost and schedule overruns persist, particularly in the HAL Mk1A Programme during 2020–24 (Kumar, 2021). The scale of production remains constrained, with HAL's Nashik and Bengaluru facilities producing 16–24 aircraft annually, projected to reach 32 by 2028, which still limits rapid force accretion (Malhotra, 2024).

Exports have expanded, illustrated by the ₹6,000 crore Akash agreements with Armenia in 2024, alongside expressions of interest from Egypt, the Philippines, Vietnam, and Brazil (Joshi, 2022). Tejas was approved for export across 156 product lines in 2021, Pinaka has been offered to over 80 countries (Kumar, 2021). Systems such as BrahMos, Akash, Pinaka, and Tejas collectively positioned India among the top-25 global defence exporters, with exports reaching ₹23,622 crore in FY25—almost a 30-fold increase since 2014 (Pant, 2022). Parallel success in the oil and gas equipment segment enhanced industrial credibility, with an export target of ₹50,000 crore by 2029 (Pullamaraju, 2024). HAL expanded Tejas production from a single prototype phase in 2001 to over 50 airframes annually, supported by the Vadodara C-295 assembly line, BEL tripled Akash and Pinaka output and captured nearly 20 percent of the domestic market through defence corridors in Uttar Pradesh and Tamil Nadu (Malhotra, 2024). Public sector units accounted for 77 percent of defence output at ₹1.46 lakh crore in (Kumar, 2021).

These initiatives translated into measurable outcomes: defence production increased by 174 percent since 2014, exports grew 30 times, squadron shortages in the IAF were partially bridged, and DRDO recorded a 67 percent success rate despite persistent delays in several programs (Kumar, 2021). HAL, BEL, and private majors expanded order volumes, with HAL's order book exceeding ₹30,000 crore, yet qualitative limitations remain evident. Tejas unit costs of $74–78 million exceed comparable platforms such as Gripen at around $40 million; Pinaka's range remains inferior to HIMARS at 300 km (Mallik, 2008). Exports remain niche, accounting for roughly three percent of the global market, constrained by reliability perceptions following crashes and the absence of fifth-generation capabilities (Malhotra, 2024). Bridging these gaps will require sustained investment over the next decade, with R&D spending rising from the current 0.6 percent of GDP toward the 2–3 percent benchmark, alongside PPP-driven advances in engines and sensors and the systematic use of Sindoor-type combat data to validate scalability (Kumar, 2021). These programmes strengthen resilience against two-front threats, self-reliance risks stagnation unless technological gaps are decisively closed, rendering autonomy relative rather than absolute (Mathur, 2025).

Balancing Strategic Autonomy and External Defence Partnerships

India pursues strategic independence and alliances with external conventional defense in a multi-faceted, practical approach that is dependent on technology transfers and diversification to promote indigenization, and preserves geopolitical flexibility under the continued reliance (Verma & Verma, 2025). This strategy still keeps reliance to Russia which supplies 60-65 of the Indian arsenal, such as Su-30MKI

fighters, T-90 tanks and S-400 systems, which goes as far back as 2021-2031 under a Military-Technical Cooperation Agreement maintaining the spares of the old MiG-29s and Akula submarine, but Ukraine war damage in 2021-2025 has delayed this by 18 to 24 months, necessitating the hoarding of the older equipment (Singh, 2023). Incentives such as BrahMos (50 percent indigenous by 2025: 6) provide resiliency to disruptions, but, crucially, this inertia continues to make it vulnerable to the non-reliability of Moscow and excessive diversification expenses (Suthar et al., 2023).

Other US alliances have also become offensive with original deals on P-8I Poseidons (12 by 2025), MQ-9B drones (31 approved 2024 at 31,000 crore), and GE F414 engine production co-production (2023 MoU in an aim of 80 percent local content by 2028 to Tejas Mk2) (Tellis, 2022). France counters this with Rafale jets (36 to IAF 2019-21, 26 Navy versions 2025), Scorpene subs (INS Kalvari 2017-2025 at 60% local), Safran-HAL engine contracts under Horizon 2047 and Israel modernize Akash radars and Germany advances Project 75I subs with AIP technology with 2026 MoUs (Vishwanathan et al., 2023). These enhance payoffs: multi-domain operations (e.g. Rafale-AMCA synergy), tradeoffs on high-value deals (e.g. Airbus-TASLs C-295 factory (2026)) 25% import reduction since 2014 (Staniland, 2020). However, threats are high-supplier lock-in on GE/ Safran engines, withheld Rafale source code and US pressure on S-400 /Russia oil trade water down pure autonomy, inflating dual-inventory prices by 15-20 percent and complicating logistics (Yavuz, 2025).

In the long term, diversification has reduced Russia by 75 to 45 percent (2014-2025), in line with Atmanirbhar Bharat 500+ embargoed items but increasing output 1.46 lakh crore of HAL, but fundamental holes remain: 90 percent of imports of engines cut off Russia to platforms such as Tejas, and technological absorption is still behind (DRDO at 67 percent is a success per CAG audit) (Kumar, 2025). The flexibility of non-aligned hedging followed by India, which is reflected in 2024-26 Russia summits with QUAD and France/Germany talks, denies blocs, takes ToT (e.g. French sub skills to P-75I) and certifies multi-source operations in Sindoor 2025 (Vision, 2025). This delivers in quantity (production +174%, exports +23,621 crore FY25), but in quality: joint ventures expedite 60-70 percent indigenization in the short term, but at the cost of getting sucked into the dependency trap: to avoid these traps, indigenous-built engines/sensors will need to be introduced by 2030 (Verma & Verma, 2025). Through creating defenses against ToT requirements and playing off competitors, India strategically pursues resilience disjointedly, yet without alignment, but inefficiencies emphasize the strain-autonomy is still aspirational rather than absolute in a changing multipolar system (Kumar, 2025).

Findings of the study

1. Following the mid 2010s, the defence policy of India changed, as the heavy reliance on imports was changed to self reliance, due to the core of security aimed at techno nationalism.
2. Technology and indigenization were formally introduced in defence planning and procurement through policy frameworks like Atmanirbhar Bharat and the Defence Acquisition Procedure 2020.
3. At the early stage of techno nationalism, the institutions of the public sector such as DRDO and HAL had the foundational role in the building of the indigenous capabilities.
4. The admission of private companies, start-ups, and MSMEs was increased following the procurement reforms and less reliance on defence public sector units.
5. Capital acquisitions were characterized by increased domestic sourcing due to new categories of procurement and increased norms on the indigenous content.
6. The lists of import embargoes affected the purchasing behavior and promoted domestic manufacturing, but the enforcement and schedules are disproportionate.
7. Such defence initiatives as Tejas, Akash and Pinaka show quantifiable improvement in design potential, production potential and export potential.

8. Companies such as BEL, Tata Advanced Systems and L and T reinforced the domestic defence eco system in terms of industrial capacity and supply chain.
9. It still remains dependent on foreign jet engines, sophisticated sensors, and electronics which hinder complete technological self-sufficiency.
10. India has found a way to exercise strategic autonomy as well as external collaboration by using Russia in terms of legacy system, increasing cooperation with the United States and use of France in terms of advanced platform, which increases preparedness at the cost of absolute independence.

Implications of the Study

The research offers information to the political sphere, defence planners, and industry stakeholders. It advances the efficiency of techno nationalism to influence the self reliance of the defence in India and pinpoints the shortcomings in vital technologies. These findings can help policymakers improve their procurement policies, focus on R&D investment, and tighten the program of building skills. Defence companies and startups obtain a better idea of opportunities and limitations in production and export markets both domestically and internationally. The strategic implication of the study is that India can determine how to strike a balance between its freedom and international relations without jeopardizing preparedness. Scholars can use a formal framework to examine the relationship between policy, industry, and capability in an environment that is fast changing in security.

Limitations of the Study

The limited access to sensitive or classified information such as defence programs and procurement limits the study due to the availability and reliability of such data in the public. Part of the conclusion is made using secondary sources, which are not real time operational challenges or delays. The study is concentrated on large platforms and companies and may not be representative of small suppliers or technology niches. There are also temporal constraints since defence capabilities and policy priorities keep changing at a high rate. Lastly, the analysis also highlights the structural and policy-related factors, and the operational performance outcomes in the conflict situations are less prioritized, which can influence the whole evaluation of the strategic autonomy.

Conclusion

Assessing techno-nationalism and strategic autonomy in India's defence and security policy reveals a complex trajectory marked by ambition, incremental gains, and enduring structural constraints. Techno-nationalism has evolved from a state-centric, import-substitution model dominated by public sector undertakings to a more hybrid framework that selectively integrates private industry, foreign investment, and global supply chains retaining sovereign control over critical technologies. Defence procurement reforms—from early DPP iterations to the Defence Acquisition Procedure 2020—have undeniably improved transparency, compressed acquisition timelines, expanded industrial participation, and stimulated indigenous production, contributing to measurable growth in defence output and exports. Flagship programmes such as Akash, BrahMos, Pinaka, Tejas, and the C-295 line have enhanced domestic manufacturing capacity, improved operational credibility through limited combat validation, and positioned India as an emerging, though niche, exporter. These outcomes demonstrate that techno-nationalism has strengthened elements of self-reliance, reduced transactional dependence in selected domains, and reinforced strategic autonomy by diversifying suppliers and retaining decision-making freedom. However, the limitations remain substantial. Indigenous content levels continue to lag behind policy aspirations, cost overruns and delays persist, and critical technologies—engines, advanced sensors, electronic warfare systems, and fifth-generation platforms—remain externally sourced. The dominance of public sector enterprises, stabilizing production, has constrained competition, innovation efficiency, and global price competitiveness, private sector participation remains

uneven and dependent on state demand. The export success is concentrated in a narrow product range, with India's global market share modest and vulnerable to reliability perceptions and after-sales support challenges. Strategic autonomy, therefore, remains relative rather than absolute, as India continues to rely on external partnerships for high-end capabilities, co-development, and deterrence credibility, particularly in the context of two-front security pressures. Overall, India's techno-nationalist project has delivered tangible industrial and strategic dividends, but its sustainability hinges on deeper R&D investment, genuine public–private collaboration, and a calibrated openness to external technology that complements, rather than contradicts, long-term self-reliance.

Ethical Considerations

This study follows standard academic ethical practices. It is based solely on secondary sources such as statutes, policy documents, regulatory reports, court decisions, and scholarly literature. No human participants or confidential information were involved, and all sources have been accurately cited.

Non-Clinical Study

The research is non-clinical and non-experimental. It does not involve clinical trials, medical interventions, or patient data, and therefore did not require approval from a clinical ethics committee.

Conflict of Interest

The author declares no conflicts of interest. The study was conducted independently without financial, institutional, or personal influence affecting its findings.

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