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RESEARCH PAPER

India's Technological Ascendancy: Implications for Pakistan's Security

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ABSTRACT

The purpose of this study is to examine how India's technology developments affect Pakistan's security. Pakistan's national security is significantly impacted by India's rapid technical advancement, which calls for a thorough analysis. The goal of this research is to comprehend how India's technology advancements have affected Pakistan's security dynamics, including the political, military, and economic domains. India's technological innovations and their effects on Pakistan's security were examined using a qualitative methodology that included a thorough descriptive analysis of the body of existing research and scholarly perspectives. Pakistan faces serious security difficulties as a result of India's increased military capabilities sourced by its technological advancements, especially in the areas of cyber security, nuclear deterrent, and space technology. Consequently, this study suggests that Pakistan should make investments in cutting-edge technology, fortify its cyber security framework, and create efficient national security.

KEYWORDS India, Pakistan, Technology, Implications, Security

Introduction

Over the decades, massive advances in science and technology have turned India from an impoverished state into a rising global power with major implications for all its neighbors and particularly Pakistan. India's technical success, from an internationally renowned information technology (IT) industry, to advances in defence technologies, space research, and renewable energy, is transforming its military capabilities, economy, and geopolitical significance. As India leverages its infrastructure, talent, and resources to secure its position on the global innovation board, the widening disparity in technology capabilities between India and Pakistan presents opportunities and challenges for the region. Thanks in large part to its IT sector, which is backed by a strong network of start-ups, multinational corporations, and skilled people, India has produced numerous and varied technological advances, transforming into one of the world's leaders in the software and digital services sector. Breakthroughs in space exploration, such as the Chandrayaan-3 lunar mission and the Mars Orbiter Mission, have underscored Indian high-tech innovation capabilities. In addition, developments in biotechnology, artificial intelligence, renewable energy, and military technologies are firmly cementing India's status as a technological leader in the developing world. They are underpinned by consistent investment in R&D, world-class academic institutions and pioneering government initiatives.

The other side of reality of these changes for Pakistan are that cooperation can be made possible by India's technological dominance, particularly in areas such as energy security, climate change, and regional connectivity. Both countries face challenges such as resource management and environmental degradation that would benefit from

cooperation between the two. Pakistan could benefit from India's expertise in renewable energy technology, for instance, which could assist in overcoming their energy shortage and transitioning to green energy resources. Bootstrap Enhanced: Newest models of digital infrastructure and ICT developments will channel opportunities for international trade and communication in order to promote economic integration.

But India's rapid technology developments also widen the competitive gap between the two nations and further inflame long-standing tensions. Pakistan, with relatively small resources and institutional limitations, has increasingly had trouble matching India's pace of innovation. This widening technical gap directly impacts regional influence, economic competitiveness and national security. Indian defence technology innovations–involving rocket technology, high-tech monitoring, cyberwarfare weapons, and various similar innovations–transform its military lead into a very substantial challenge for Pakistan, and Pakistan must adjust to this dynamic with a very huge investment in the defence sector including in industries, often sacrificing other crucial needs of social and economic development.

Moreover, India's technological developments enhanced its global profile; enabling engendering alliances; attracting foreign investment and a more assertive stance in global fora. They will make try to FOCUS on tech. till three main outcomes, so unless something is done to re-prioritize IT and tech development, Pakistan is on the verge of being ignored in the global arena. To narrow this gap, we have to focus on structural problems such as bad educational system, brain drain and lack of research and development. India's technological superiority has wide-ranging implications for Pakistan; both opportunities for collaboration and challenges to sustaining strategic balance. Pakistan must learn and go ahead by adopting a forward-looking plan that focuses on education, innovation and regional cooperation. At a time when the technological chasm widens, the demand for visionary leadership and a resolve to forge a more secure and prosperous South Asia only increases (Nawab, et. al., 2021).

Literature Review

Nanotechnology has emerged as a technology that is both promising and dangerous in the last ten years as having a Janus-like appearance and has entered the development agenda. In India, the advancements, conversations, and silences around nanotechnology are noteworthy. Indian government initiatives dominate the nanotechnology scene and the number of participating universities, scientific collaborations, and worldwide publication rankings all steadily increased as a result of government investments. Public research institutes and elementary research are primarily responsible for this increase. Both industry participation and patenting activities are still in their infancy and are growing slowly. Concerns about financing, capability, commercialization, risk control, and benefit sharing were brought up in the Indian setting. Although there are noticeable silences on ethical issues and the relationship to the public, nanotechnology is generally seen favorably (Koen, et al, 2013)

Emerging technologies like cyber weapons, autonomous weapons, weaponization of space, and artificial intelligence, either unaided or aided with traditional forms of warfare, are deciding whether conventional, sub-conventional, and nuclear wars succeed or fail in today's battlefields. According to nominal exchange rates, China and India are the fourth and eleventh largest economies in the world, respectively, while still being developing nations with per capita incomes of only $1,740 and $720 (2005). They have been the second and fourth largest economies in terms of purchasing power parity (PPP) for a while, though. (Yaseen, et. al., 2023). Additionally, their rate of growth is more than three times quicker than the global average. They have a critical mass of highly educated individuals, including scientists and engineers, despite having a low percentage of people with higher education by developed country standards due to their vast size. Additionally,

their R&D spending reaches a critical mass. This produces a lot of innovation capacity that they use for both their own requirements and to do research and development for global corporations. They are playing a bigger role on the international system (Batool, et. al., 2024)

Cooperation in science and technology is fundamental to solving multilateral issues like climate change, pandemics, nuclear proliferation, and more. Innovation, science, and technology have been increasingly prominent in international affairs in recent years. In order to solve global issues and improve international relations, science diplomacy is becoming increasingly popular. In order to face the new global issues, the European Union's EIR of Orum, South East Asia's e-ASIA JRP, Africa's African Scientific Institute, and the Arctic Council have all encouraged science diplomacy among their member nations (Raghav, Badatya, Rai, & Sonowal, 2021).

In the international system, states express their identities and foreign policy interests in an effort to shape others' opinions and foster an atmosphere that accepts their objectives and effectiveness as actors. The public diplomacy efforts used to spread these narratives have gone digital in the era of new media and mass communication technology. In order to communicate foreign policy goals and decisions, create a strategic narrative of Indian foreign policy, and counter narratives that are detrimental to Indian interests, India has made use of this new media environment for its public diplomacy. Digital diplomacy viewed as a broader set of practices that constitute an essential component of diplomacy itself (Natarajan, 2014).

Changing Patterns of Warfare between India and Pakistan examines the ways in which the conflict between India and Pakistan has changed as a result of the introduction of disruptive technology and sophisticated nuclear weapons. The region's crisis dynamics and warfare domain have been complicated by advanced nuclear technologies like nuclear submarines, aircraft carriers, ballistic missile defense systems (BMDs), multiple independently targetable re-entry vehicles (MIRVs), and anti-satellite weapons (ASAT); as well as disruptive technologies like hypersonic weapons, artificial intelligence (AI), lethal autonomous weapons (LAWs), unmanned aerial vehicles (UAVs), drones, space-based and cyber technologies. Furthermore, India's use of the coercive method shows that its position has changed and that smart or surgical attacks are now more likely. How disruptive technologies will be utilized to obtain direct or indirect military control and so threaten the current status quo and deterrence stability is a concern that is brought up by the occurrence of surgical strikes. It is important to measure how to stabilize deterrence and control the militarization of disruptive technologies and artificial intelligence between India and Pakistan in case this war develops in the future (Abbasi, & Uzzaman, 2023).

Since 1957, new opportunities for the peaceful use of space have been created by advancements in space-based technologies. Non-traditional risks impact a state's populace and pertinent institutions and come from a variety of natural causes. Satellites are essential in this field for addressing such dangers. Both conventional and unconventional security challenges affect the South Asian region.Similarly, Pakistan's socio-economic security is under risk from a variety of unconventional dangers. These difficulties range from state to state and are spiral in nature, particularly when it comes to environmental risks, the security of food and water, and the escalating population increase and social inequality in resource allocation (Khan, et. al., 2022). Numerous agreements pertaining to the peaceful application of space technology have been inked by Pakistan. Pakistan's space program emphasizes the application of space technology in a variety of fields, including as geology, mineral prospecting, agriculture, health, education, disaster management, the environment, climate change, land planning, and coastal and marine resources. Pakistan is prepared to confront and neutralize the new, non-traditional challenges to its national security and is committed to improving its infrastructure through the peaceful use of space technology (Noreen, et al ,2018).

The region of South Asia is still among the most susceptible to future conflicts that may involve the deployment of WMDs. When states like India engage in reckless weapons-building initiatives that jeopardize the region's fragile strategic stability, the problem gets worse. Given the ambiguity of the two governments' relationship, the likelihood of a major conflict including the use of nuclear weapons is still present and cannot be completely ruled out. The Indian Army intends to upgrade its material and technological capabilities to meet contemporary demands. For the 2016–2017 fiscal year, India spent more than US $52.2 billion on defense procurement; this amount is anticipated to rise soon in order to meet the challenges and maintain the rate of modernization (Shazia,2019).

Material and Methods

A qualitative research methodology has been used to explore the impacts of India's technological advancements on Pakistan's security. Following the qualitative method descriptive and analytical approaches have been adopted. Secondary sources such as books, journals and newspapers have been used.

Theoretical Framework

According to the theoretical framework of technological determinism, which was developed by academics like Thorstein Veblen and Karl Marx and later improved by Marshall McLuhan, technical advancement is the main factor influencing the economy, society, and power structures. According to this theory, technology drives change on its own and forces society to adjust to its influence rather than the other way around. When examining India's explosive scientific advancements in the fields of military, space, and cyberspace, as well as the ensuing security threats to Pakistan, this argument becomes very pertinent. Applying technological determinism, one can investigate how Pakistan is forced to respond within a limited range of possibilities as a result of India's developments. The fundamental question is how technology has changed the geopolitical dynamics between India and Pakistan? And with the use of this paradigm, the investigation of the core question can be done easily.

Basic Principles of Technological Determinism

Technology as the Prime Mover: In terms of societal and geopolitical change, technology is thought to be the primary driver. It frequently overrides human agency in determining how political, economic, and military systems develop.

- **Unidirectional Impact:** Regardless of cultural, social, or political circumstances, technological advancement propels irrevocable changes that force nations and society to adjust to its demands.
- **Structural Imbalance:** Power imbalances are exacerbated by technology, which widens the gap between creative leaders and those who fall behind.
- **Reactive Adaptation:** Because technology's influence is deterministic, non-innovating entities such as states with limited technical capabilities are compelled to adopt reactive methods.

For example, with respect to the unstable relationship between India and Pakistan, technological determinism can speak of ways the burgeoning technological leap by India is altering the security calculus in the region. Pakistan has found itself at a crossroads in the last few decades, caught up in the demands of the space race, the challenges of cyber warfare and defense technology, primarily because of India's aggressive posture. The theory of technological determinism is also useful as evidence of the need for Pakistan to formulate a comprehensive national strategy to counter the security threats created by India's rapid technological development. This also includes funding of research and

development and education, and not just international collaborations and partnerships, so that Pakistan can build its own technological capabilities. With the increasing threat of Indian cyberattacks, Pakistan also focuses on consolidating its cyberwarfare capabilities. Investing in cyber security infrastructure, training cyber security specialists, and developing cyber warfare strategies can help with this. Pakistan needs to understand the workings of technological determinism to successfully counter the security risks that India's galloping technological development poses to the country. A leading national strategy with an emphasis on the security dimensions of technology is not only required to mitigate India's power imbalance but would be key to safeguarding Pakistan's national defence.

Results and Discussions

India's Technological Advancements

One of the factors that contribute to the technological dominance of India is the achievements of industrial technology, health care, cyberspace and political management. These advancements reflect India's resolve to be the world leader in innovation and technology.

Digital Transformation: Digital India program helps to improve digital literacy and access to government services. In addition to enable the E-Governance and enhance the access to healthcare and education, the Bharat Net initiative has increased internet connectivity in rural areas. By helping to close the digital divide, this program has made it possible for millions of people to engage in the digital economy. With improvements in digital infrastructure and connectivity, India rose to 49th place in the Network Readiness Index (NRI) in 2024. Additionally, the nation leads in AI research publications, demonstrating its expanding proficiency in the field (Yaseen, et al,2022).

Telecommunications Advancements: With the rollout of 5G services starting in 2022, India's telecommunications sector has made significant strides. By late 2024, 5G coverage had expanded to 779 districts, considerably increasing mobile broadband speeds, moving India up from 118th to 15th in the world in terms of mobile broadband speed. The 5G Intelligent Village Initiative intends to use this technology to empower rural communities by enhancing connectivity and information access. In the future, India is actively pursuing leadership in 6G technology, with plans outlined in the Bharat 6G Vision document, which aims to develop sixth-generation wireless technology by 2030, promising unprecedented data speeds and ultra-low latency for applications like smart vehicles and remote-controlled factories.

Artificial Intelligence Initiatives: India is committed to developing AI technologies, as evidenced by the announcement of the India AI Mission. This mission has a budget of over $1.2 billion and was approved in March 2024, aims to build domestic AI models and increase GPU computing capacity. In addition to encourage safe AI techniques, the program seeks to develop a competitive AI ecosystem. Numerous industries, including healthcare, agriculture, and finance, are changing as a result of AI applications. AI-driven analytics, for example, are being used to increase crop yields and optimize supply networks (Shazia.2019).

Quantum Computing Advancements: The National Quantum Mission (NQM), which was authorized on April 19, 2023, and with a budget of about 6,000 crore for the years 2023–2031 has allowed India to make tremendous progress in quantum computing. Over the course of eight years, this program seeks to create intermediate-scale quantum computers with capacities ranging from 50 to 1000 physical qubits. The establishment of multi-node quantum networks and safe long-distance satellite-based quantum communications are important goals .The NQM places a strong emphasis on cooperation

between governmental organizations, academic institutions, and business. Leading universities are establishing four Thematic Hubs (T-Hubs) that will concentrate on important fields like materials science, communication, quantum computing, and sensing. These hubs are intended to encourage innovation by bringing together scholars and business leaders. India's first quantum computer is almost finished at Mumbai's Tata Institute of Fundamental Research (TIFR). The goal of this NQM initiative is to create a small-scale quantum computer as a necessary first step toward more complex quantum systems (Jigar,2023).

Semiconductor Manufacturing Initiatives: There a massive investments to create a self-reliant ecosystem of semiconductor manufacturing in India. In an effort to stimulate domestic invention and attract foreign money, the government has launched projects worth roughly $10 billion. Under such push, companies like Tata Electronics have invested heavily into semiconductor ecosystems. This focus on semiconductor production is necessary for bolstering technological capabilities in diverse sectors, reducing dependence on overseas suppliers and ensuring national security (Kalathmika, 2014).

Robotics and Automation: Robots and automation has given a new edge to sectors like manufacturing, healthcare, and logistics in India. The growth of robotics solution delivery startup has lead to increased productivity and efficiency as well. Among the innovations are robotic-assisted surgeries that enhance surgical precision and autonomous robots to help manage warehouses.

Growth of Medical Technology: With government schemes like the Production-Linked Incentive (PLI) plan phasing in incentives for domestic production of medical devices, India has witnessed a significant expansion of the MedTech sector in recent years. The program contributed to India's independence bywas able to create a wide range of medical gadgets by September 2023. The establishment of medical device estates in certain strategic situations which further, is encouraged by the National Medical Devices Policy 2023. Stricter foreign direct investment (FDI) regulations have attracted global players such as Siemens Healthineers and GE Healthcare, a move likely to drive the sector towards USD 50 billion by 2030. Furthermore, home diagnostics and wearable technology are increasingly popular, thus enabling real-time health monitoring critical to the treatment of chronic diseases. Already, by 2024, there is an expectation that AI applications in healthcare will reach an annual growth rate of 45%. Telemedicine, AI-powered diagnostics, telecare etc. to name a few are revolutionizing the delivery of medical care across urban and rural areas(Summar, 2020).

Cyberspace Advancements: India's cyber security environment is changing quickly as a result of growing sectoral digitization. Through programs like the National Cyber Security Policy, which attempt to improve resilience against cyber threats while fostering secure digital environments for residents and businesses, the government has placed a strong emphasis on bolstering cyber security frameworks (Farooq, & Ali, 2023). A growing number of specialist cybersecurity training institutions are being established as part of the endeavor to develop a workforce with the necessary skills to successfully handle new cyberthreats. Additionally, partnerships between public and private organizations concentrate on creating cutting-edge cybersecurity solutions that defend vital infrastructure against online attacks(Summar ,et al ,2021)

Technology in Politics and Management: The way political campaigns are run and messages are distributed has changed as a result of technology's incorporation into Indian politics. Political parties heavily used AI-driven techniques to reach voters in the most recent federal elections in 2024. For example:

- AI-Powered Campaigns: Using AI technologies, political parties were able to target their messaging according to the demographics of their voters. Personalized robocalls

that sent customized campaign messages straight to voters' phones were the examples for AI-powered campaigns.

- Deep fake Technology: Some parties used deep fake technology for innovative campaign techniques that sought to engage younger voters with relatable or humorous content, despite the fact that it was controversial owing to the possibility of misinformation.
- Translation Tools in Real Time: In order to effectively communicate with a variety of language audiences around India, leaders such as Prime Minister Narendra Modi were able to use tools like Bhashini to translate speeches and public addresses in real time. The importance of tech-driven tactics in contemporary electoral politics is further demonstrated by the political parties' significant expenditure of approximately $16 billion on digital platforms for outreach during the election period123.
- E-Government Platforms: Projects like the Government e-Marketplace (GeM) have improved transparency and expedited the procurement process. Using Data Analytics to Make Policy: For well-informed decision-making processes that successfully meet the requirements of their constituents, governments are depending more and more on data analytics tools.

Industrial Technological Developments Innovations like big data analytics, automation technologies, and the Internet of Things (IoT) are causing technological changes in a number of Indian industries:

- Manufacturing: Smart factories that use Internet of Things (IoT) sensors to monitor production processes in real time are implementing Industry 4.0 principles.
- Retail: E-commerce platforms optimize supply chain management through data analytics and use sophisticated algorithms to provide individualized customer experiences.

Implications for Pakistan's Security

The security environment of Pakistan is significantly impacted by India's quick technical breakthroughs, especially in fields like artificial intelligence (AI), drone technology, cyber capabilities, and military modernization.

Military Imbalances: The incorporation of cutting-edge technologies like artificial intelligence and precision-guided bombs is a defining feature of India's military modernization. India's first-strike capabilities are improved with the development of missiles like the Agni-5, which has Multiple Independently Targetable Reentry Vehicles (MIRVs). India can now target many sites at once by using this technological advancement, making Pakistan's defense strategy more difficult. Military operations are now more accurate and efficient by the integration of AI into missile and observation systems. Pakistan might therefore feel overstretched to improve its own military prowess in order to preserve a credible deterrent. An arms race in South Asia could result from India's military development. To offset India's progress, Pakistan might try to create or obtain comparable technologies .This dynamic raises the possibility of miscalculations during crises and escalates tensions. Security issues might be made worse by the belief that India could launch preemptive attacks on Pakistan's nuclear installations, which would lead Pakistan to take more fervent stances or create counterforce plans (Saba.2024).

Cyber Security Threats: The national security of Pakistan is seriously threatened by the increasing complexity of cyber capabilities. Through collaborations with technologically proficient countries, India has been aggressively boosting its offensive cyber capabilities while fortifying its cyber defenses. AI's incorporation into cyberwarfare may result in increasingly complex attacks that are hard to blame, making diplomatic

reactions more challenging and possibly escalating conflicts unintentionally (Babar, Mirza, & Qaisarani, 2023).

Space Militarization: Pakistan's security is also affected by India's space technological breakthroughs. India's intelligence, surveillance, and reconnaissance (ISR) capabilities are improved by the development of satellite systems. India can gain a strategic edge in any future battle by gathering real-time data on Pakistani military activities. Pakistan may feel more vulnerable as a result of the placement of military satellites. As both countries try to protect their strategic interests in space, tensions may rise as a result. Concerns over possible conflicts that transcend conventional battlefields are also raised by the militarization of space. There is a greater chance of errors or miscommunications when both nations build up their space-based military capabilities, especially when nuclear weapons are at stake .

Regional Influence and Alliances: India's technology innovations also increase its power both inside and outside the region. India is improving its geopolitical position at Pakistan's expense by fortifying its connections with world powers through technological alliances. This change could result in a reorganization of South Asian alliances, which could diplomatically isolate Pakistan. Pakistan must negotiate a challenging environment as India looks to increase its might through technology, as its long-standing friends might be less able or ready to stand behind a more formidable foe. To guarantee that its security interests are sufficiently served, Pakistan's foreign policy plans and alliances must be reconsidered in light of these circumstances(Yaseen , et al 2023).

AI Militarization Risks: AI's incorporation into military operations poses additional concerns that could further destabilize the area. Large volumes of data can be processed quickly by AI-enhanced systems, which speeds up decision-making under pressure. While this ability can enhance operational efficiency, it also opens up questions about whether decision-making errors could occur in life-threatening scenarios. For example, without a deep understanding of the context or consequences of its decisions, India can choose to take preventative measures if AI based intelligence analysis tells it of an impending threat. Such a dynamic can then quickly escalate hostilities between the two countries. The development of autonomous weapon systems also raises moral questions, as well as tactical questions regarding responsibility and control on the battlefield. Weapons such as AI-powered drones or missiles that are capable of operating autonomously could have unpredictable consequences that neither side can realistically control.

Conclusion

The great power competition and India's technical ascendancy is rearranging the strategic, economic and geopolitical landscape of South Asia that has important consequences for Pakistan's security calculus. India has attracted attention on world stage for all right reasons with its good work in fields such as information technology, space tech, AI, defence tech, cyber capabilities and many more. These developments pose both direct and indirect threats to Pakistan's security architecture. As India's varied defence technologies, such as its advanced fighter jets, missile systems, and naval capabilities, continue to develop; the strategic balance in the region is shifting. The need to spend enormous amounts of money on defence has aggravated Pakistan's already tenuous economy. The second factor is that due to technological competence disparities, the gap between conventional and non-conventional military capabilities is widening, forcing Pakistan to rely more on strategic deterrents such as its nuclear arsenal.

Because of its advancements in cyber and space technologies, India has also strengthened its surveillance, intelligence, and military capabilities. These developments further complicate Pakistan's security infrastructure, making it vulnerable to cyber

espionage and potential disruptions in defence and communication systems. On the economic front, India's buoyant tech base attracts foreign investment and strengthens its global partnerships, particularly with technologically advanced nations such as America, Japan and Israel. These alliances limit Pakistan's ability to access leading-edge technology and commercial opportunities, while furthering its diplomatic and economic isolation. More broadly, India's technical prowess reinforces its soft power by enabling it to control and influence global narratives about local issues, such as Kashmir (Yaseen, et. al., 2022). This makes it more difficult for Pakistan to bring people around to its positions on these issues. Such security plans will no longer be possible for Pakistan in the face of India's technological supremacy. Attention to domestic technical advancement, cyber security, and economic resilience is important, too, to reduce vulnerabilities. By handling common issues, these cooperative but regional strategies may contribute to stability of the South Asia region and offer an equilibrium perspective to both competitive dynamics of their respective countries.

Recommendations

Pakistan's security would be significantly impacted by India's technological dominance; hence a calculated reaction is required. Few considerable actions are as;

- First, prioritizing the development of a strong cybersecurity infrastructure is the first step Pakistan should take to fend off possible threats from India's advances in cyber defense, artificial intelligence, and quantum computing.
- Second, In order to lessen dependency on foreign technology and rectify the power disparity in the region, it is also imperative to invest in the development of domestic technology, with a particular emphasis on weapons systems, communication, and surveillance.
- Third, Pakistan's capacity to successfully track India's military and technological advancements would be improved by modernizing its intelligence-gathering and surveillance capabilities, including satellite and unmanned aerial vehicle technologies.
- Fourth, in order to lower the possibility of emerging technologies being abused in South Asia, Pakistan should actively engage in regional and global forums to promote standards governing their ethical usage.
- Fifth, actions to control the spread of high-tech military systems like hypersonic missiles and sophisticated drones should be part of diplomatic efforts aimed at managing the arms race.
- Sixth, in order to counterbalance India's technological superiority in traditional fields; Pakistan needs improve its asymmetric warfare capabilities, such as electronic warfare.
- Seventh, in order to acquire and develop technologies that can improve Pakistan's defense capabilities, cooperation with allies that are technologically advanced, including China and Turkey, should be strengthened.
- Eighth, Pakistan needs to maintain its competitiveness in the rapidly changing technical landscape by setting up specialized research and development facilities in fields like artificial intelligence, machine learning, quantum computing, and space technology.
- Ninth, In order to ensure long-term stability, Pakistan needs to diversify and fortify its economy in order to sustain investments in defense and dual-use technologies.
- Last but not the least, encouraging public-private collaborations in the development of defense technologies can positively affect innovation and build an independent ecosystem, allowing Pakistan to successfully mitigate the security risks associated with India's technological advancements. Together, these actions provide a strategic road

plan for preserving Pakistan's national security in the face of India's technological breakthroughs.

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