

The rise and rise of technology

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As technology's influence on geopolitics continues to expand, it is crucial that the new government implements strategic policy initiatives akin to the JAM trinity



Representative Picture

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In June 2014, shortly after Prime Minister Narendra Modi commenced his first term, a pivotal meeting took place. The Ministry of Electronics and Information Technology was tasked with presenting its action plan for the next five years, later branded as Digital India. The presentation outlined various initiatives, including those that became popular as Jandhan, Aadhaar and Mobile (JAM), direct benefit transfer (DBT), as well as the promotion of electronics manufacturing. Towards its conclusion, a significant financial requirement was detailed to implement these initiatives. Anticipation filled the room, with many expecting concerns to be raised over the substantial funding request. Mr Modi, who attentively followed the presentation, noted that investing in technology was inherently beneficial. He asserted that the returns from these investments would significantly surpass the initial costs. The Prime Minister was arguably the first to fully grasp the transformative power of technology in a way that eluded many in the room and some of his predecessors.

Throughout history, technological advancement has reshaped human existence, marking distinct trends that underscore its evolving influence across four dimensions: Social progress and development, military power, economic strength, and geopolitical leverage. Initially, technological progress primarily symbolised progress and development, enhancing living standards: The discovery of fire, the advent of agriculture, and the invention of the wheel, for example. These breakthroughs marked the dawn of human progress, setting the foundation for subsequent advancements and laying the groundwork for societies.

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As human societies grew and formed nation-states, the role of technology evolved beyond mere progress. It became a source of military power, with advancements used to develop superior weaponry and tools, conferring significant advantages to those who possessed them. The use of metal in weapons and armour revolutionised warfare, making armies more powerful. During the industrial revolution, technological advancements further transformed military capabilities, shaping global power dynamics. The era of colonisation and the World Wars in the 20th century epitomised the critical role of technology in military capabilities. Nations with advanced technology, such as tanks, airplanes, and nuclear weapons, held significant power on the global stage.

Beyond the developmental and military dimensions, technological advancement also became the cornerstone of economic strength. The trend formalised through the increasing importance of intellectual property (IP) over physical assets. The rise of digital technologies accelerated this shift, with the information age giving rise to multiple trillion-dollar companies whose physical assets are only a small fraction of their economic value. The IP assets of these companies, a consequence of technological prowess, surpass the physical assets of many nations, becoming a pivotal driver of economic growth.

In the contemporary global landscape, technological advancements have transcended their initial roles of driving development, enhancing military capabilities, and boosting economic strength. Today, technology serves as a critical instrument of geopolitical leverage, shaping international relations and global power dynamics. Nations with technological supremacy wield significant influence, using their technological advantage to assert dominance and protect their strategic interests.

One prominent method of leveraging technological advancement for geopolitical gain is through trade restrictions and export controls. By limiting access to critical technologies, nations can hinder the progress of their rivals. A recent example is the US restrictions on the sale of advanced semiconductor and artificial intelligence (AI) technologies to China, aimed at curbing China's technological advancements in areas critical to national security and economic competitiveness. In retaliation, China has imposed export restrictions on rare earth elements essential for advanced materials used in electronics, space, and nuclear technologies. China's dominance in rare earth production provides it with significant geopolitical leverage, as seen when it restricted exports to Japan in 2010 amid a territorial dispute. The pandemic showcased another arena where technological

advantage was used for geopolitical leverage through vaccine diplomacy. Additionally, control over international standard-setting bodies allows certain nations to dominate emerging technologies and block competitors' technologies from the global market.

Due to the increasing importance of geopolitical leverage through technology, discussions on technology are becoming increasingly central in international engagements, whether multilateral or bilateral. Critical topics such as cybersecurity, AI, semiconductors, electric vehicles, deep ocean exploration, space technology, biotechnology, 6G and beyond, and quantum computing are important parts of international discussions and negotiations.

What makes geopolitical leverage so crucial? It acts as a force multiplier across other dimensions. When a nation secures a trade concession by offering advanced technology, its benefit is twofold: It gains economically from the value of the technology and additionally from the trade concession. Similarly, supply of advanced military equipment helps forge strategic alliances that enhance military might as well as economic return.


While technology's influence across dimensions has not unfolded sequentially or uniformly across the four dimensions, its impact has undeniably grown over time. Today, the geopolitical leverage of technology is particularly evident. Overall, technology's influence has broadened, expanding its footprint on human existence. Moreover, history indicates that technology will continue to expand its impact, not only in known dimensions but also in new and unforeseen ways.

As Prime Minister Modi embarks on his third term, his vision to propel India to the forefront of technological advancements through strategic policy initiatives will be crucial. As the head of a coalition, he must bring his partners along on India's journey of technological advancement.

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