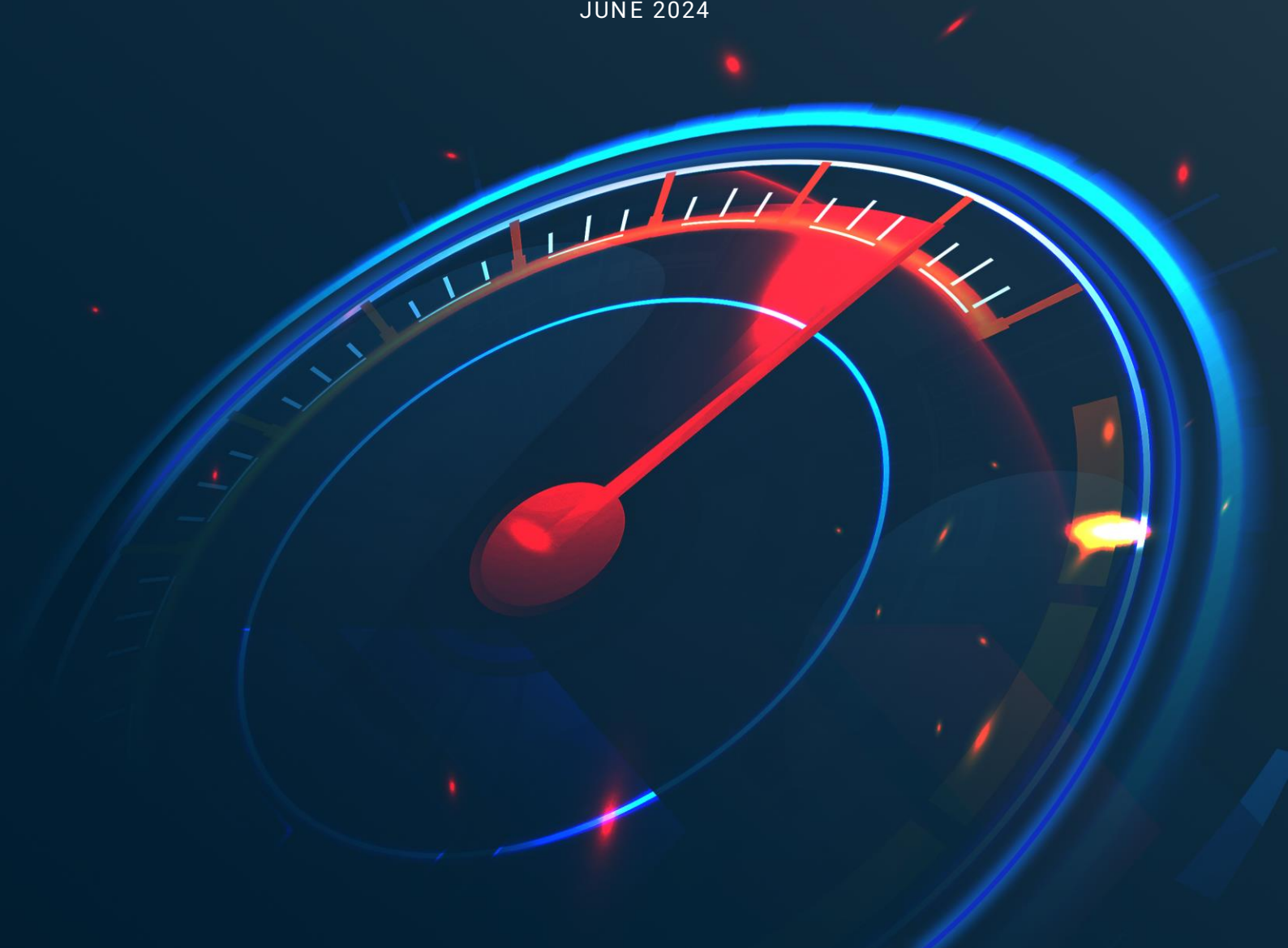# MOVING
THE NEEDLE

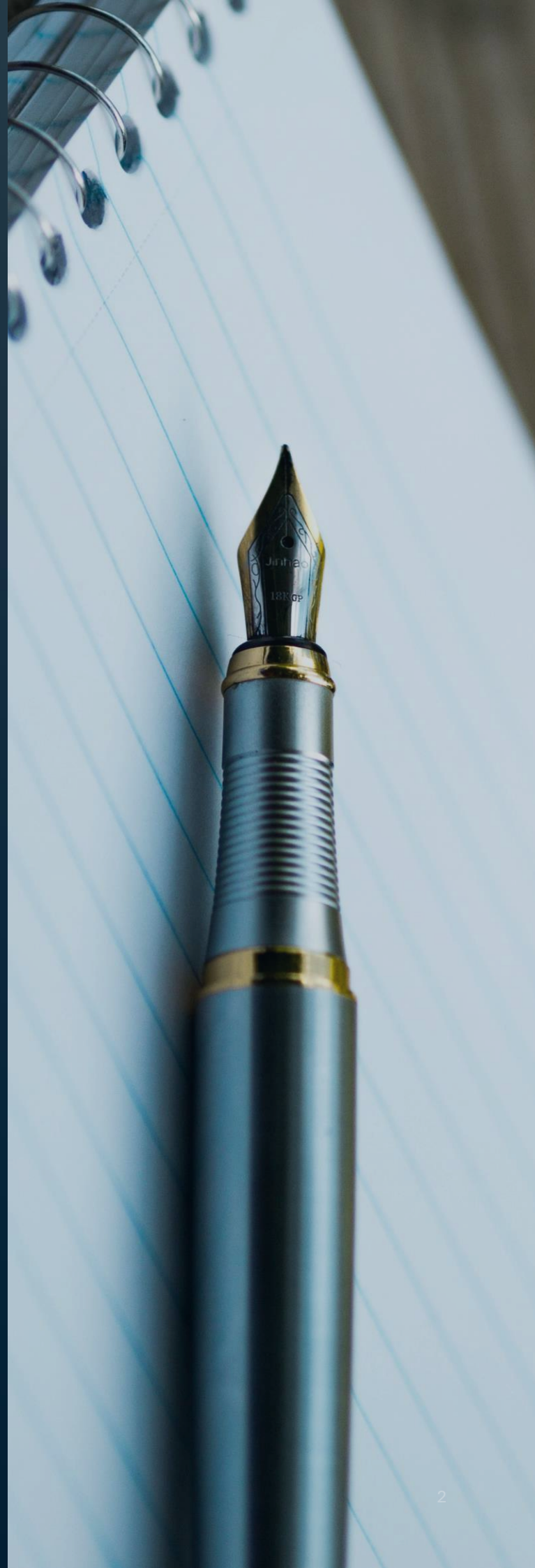### THE JOURNEY FROM POLICY TO IMPLEMENTATION

JUNE 2024

Dear readers,

In this June 2024 edition, we explore a tapestry of transformative themes reshaping the global landscape and India as it enters into a critical juncture with its newly formed government.

As India charts its course towards a $40 trillion economy by 2047, we cover the progresses, challenges and potential of the key initiatives that have and continue to contribute to various domains, such as those unlocking the Potential of India's Blue Economy, bolstering multimodal connectivity and logistics efficiency nationwide and digital literacy initiatives bridging the digital divide.

Furthermore, the publication delves into navigating the Fintech Disruption, Great Power Rivalries as also the Indian naval modernization; how Q commerce and Telemedicine are revolutionizing the status quo. The edition also features Mr. Ganesh Mahabala, heading the Strategic Business Development vertical at NVIDIA, sharing interesting insights as they strive to make AI & supercomputing capabilities more accessible, integrable and scalable across South Asia.

Thank you for joining us on this insightful journey through the complexities and opportunities shaping our future. We invite you to engage with these topics and share your perspectives as we continue "Moving the Needle".

1 Primus Outreach

#PolicySquare
To understand the more fundamental questions in policy making

#LeadersSpotlight
To highlight opinions of sector/segment leaders

#PrimusPodcast
To bring together policymakers & thinkers in areas of critical importance

Policy Square, Leaders Spotlight and Primus Podcast are initiatives by Primus Partners wherein key constituents of the public policy ecosystem as well as the sector experts – senior policy-makers, civil society members, business executives etc. – are interviewed on critical issues and policies of national importance to explore their impact on the country and industry at-large.

The motivation for these initiatives series is driven by Primus Partners' rich policy-sectoral-regulatory knowledge base, as well as experience of delivering projects across multiple domains and geographies, with an aim to leverage this knowledge, and create a platform to table in–depth discourse.

#PolicySquare
Latest episode features:
Dr. Dheeraj Shah, Director of the National Institute of Health and Family Welfare (NIHFW)

With this initiative, we have attempted to engage with experts at various levels within the country's ecosystem. Each expert has brought in a new perspective – all towards enabling India's growth both in absolute and relative terms.

2 Economy

The country is on track to become a US$40 trillion economy by 2047, a goal that can be achieved by maximizing its resources. India has a total of 7516.6 km of coastline, including 2094 km of island territories and 5422 km of mainland coastline, possessing a significant potential in the blue economy. Realizing the potential, the United Nations has termed the period from 2021 to 2030 as UN Decade of Ocean Science for Sustainable Development and included blue economy in SDG charter with Goal 14 dealing explicitly with the conservation and sustainable use of the oceans, seas and marine resources for sustainable development.

The Blue Economy is defined as the "sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of the ecosystem." India was among the first countries to publish a draft policy framework in this sector, which is regarded as a crucial cornerstone for achieving the nation's economic and environmental well-being. The draft document covers the seven thematic areas emerging as a central point that can significantly benefit the country's economy in various ways.

Additionally, the Government is harnessing the potential of the marine ecosystem through various initiatives including Sagarmala Project, Deep Ocean Mission, Pradhan Mantri Matsya Sampada Yojana , National Fisheries Policy etc. which offers a promising way forward in the ocean of opportunity. India is the third largest fish-producing country, contributing 8% to global fish production and ranks second in aquaculture production , holding immense potential for food security, employment, and export earnings.

Fragmentation and lack of regulation hinder farmers, necessitating comprehensive rules covering sustainable fishing practices, safety standards, and fair trade.

Regular awareness and training programs on new technologies will educate fishermen and ensure adherence to best practices, leading to a more efficient and sustainable sector.

Adequate investment and financing through public-private partnerships are essential for the development and growth of Blue economy activities. Investing in modern infrastructure, such as ports, harbors, and coastal protection, can greatly enhance the efficiency and transform the operational landscape of marine ecosystem. This year's interim budget also focuses on promoting climate-resilient activities for blue economy 2.0, a scheme for restoration and adaptation measures, coastal aquaculture and mariculture with an integrated and multi-sectoral approach.

Timely financing of projects creates bottlenecks and therefore introduction of Blue Bonds to fund projects that support water-related infrastructure, can play a crucial role in enhancing water security and facilitating India's shift towards a sustainable economy.

These bonds can provide revenue for infrastructure projects and significantly improve water use efficiency and resource management.

Effective monitoring and evaluation of maritime resources are essential for the sustainable management and conservation of marine ecosystems. This process involves systematic collection, analysis, and interpretation of data to assess the health of marine environments, track the impact of human activities, and ensure compliance with environmental regulations. Therefore, there should be a dedicated committee set up that shall come up with an effective framework for properly measuring blue economy activities and their contribution to the national income.

The blue economy is one of the core dimensions of growth and by adopting eco-friendly practices, this can presents a vast opportunity for growing India's economy and food security, sustainable devolvement, and enhancing exports and employment.

3 Geopolitics

Navigating the intricate web of great power rivalries in the 21st century is complex and ever-evolving. Unlike the previous Cold War, which presented a relatively apparent dichotomy, today's hyperconnected world is far from offering a straightforward picture of a new Cold War or the emergence of new Superpowers. This dynamic and fluid nature of the global power structure demands that we delve deeper into the intricacies of international geopolitics, constantly updating our understanding and strategies.

However, with Russia's diminishing stature due to its declining population, overdependence on its natural resources to power its economy, and large-scale sanctions by the West, China has emerged as a formidable challenge to the Unipolar world hitherto led by the U.S. The Chinese economic miracle, spanning three decades between 1978 and 2010, has catapulted it to the position of the world's 2nd largest economy. As the world's manufacturing hub, the CCP's political ambitions and mismanaged zero-Covid policy have witnessed shrinkage in space for significant businesses that wish to

compete freely globally. The implications of this are substantial. The IMF predicts that the Chinese GDP will reach $24.8 trillion in 2029, while the U.S. GDP will reach $35 trillion by 2029, potentially reshaping the global economic landscape.

Meanwhile, the United States, backed by the strong dollar, the world's largest fleet of blue water navy, over 750 military bases worldwide, allies and strategic partners across every continent and the global hub for any cutting-edge R&D and inventions, still holds the reigns of the world albeit slightly loose. The U.S. still dominates the world as a superpower, while China is a central pole in a bipolar world with many other contestants.

Today, emerging economies such as India, Brazil, Germany, France, Japan, Saudi Arabia, and the UAE are no longer mere spectators in the extraordinary power rivalry between the U.S. and China. Their active participation, as evidenced by India's repeated invitations to the G7, the expansion of BRICS, the emergence of QUAD and I2U2, and the rivalling projects of IMEC and BRI, is a testament to

their growing influence and the power of strategic decision-making in shaping the global order. This shift in the global power dynamics presents a unique opportunity for these economies to assert their influence and shape the future.

Further, the Washington Consensus, heralded as the new deal in the post-World War Order, finds few takers, even amongst the West's allies in Asia, Africa, and South America. China's BRI has not found widespread acceptance as an alternative to the consensus, besides being dubbed a debt trap of low-quality infrastructure projects.

Along with this is a divided Europe—America's all-weather ally, which is looking to exercise its strategic autonomy on significant issues such as Taiwan and the Indo-Pacific and also has a softer stance on managing China, unlike the U.S., which sees China as a competitor with the intent to reshape the international order coupled with the economic, diplomatic, military, and technological power to do it.

Against this backdrop, emerging economies must assess the path best suits their national interests.

One of the immediate ironic implications is that they are spoilt for choices when picking a development partner! For example, today, Africa stands to benefit from the Washington Consensus, BRI, India's Development Partnership, and UAE's record-breaking investment commitments in 2023, amongst many others.

Further, the Global South can influence international decisions to correctly reflect their nuanced national positions, moving away from the business-as-usual approach, in which the West dictated the terms of the emerging global order.
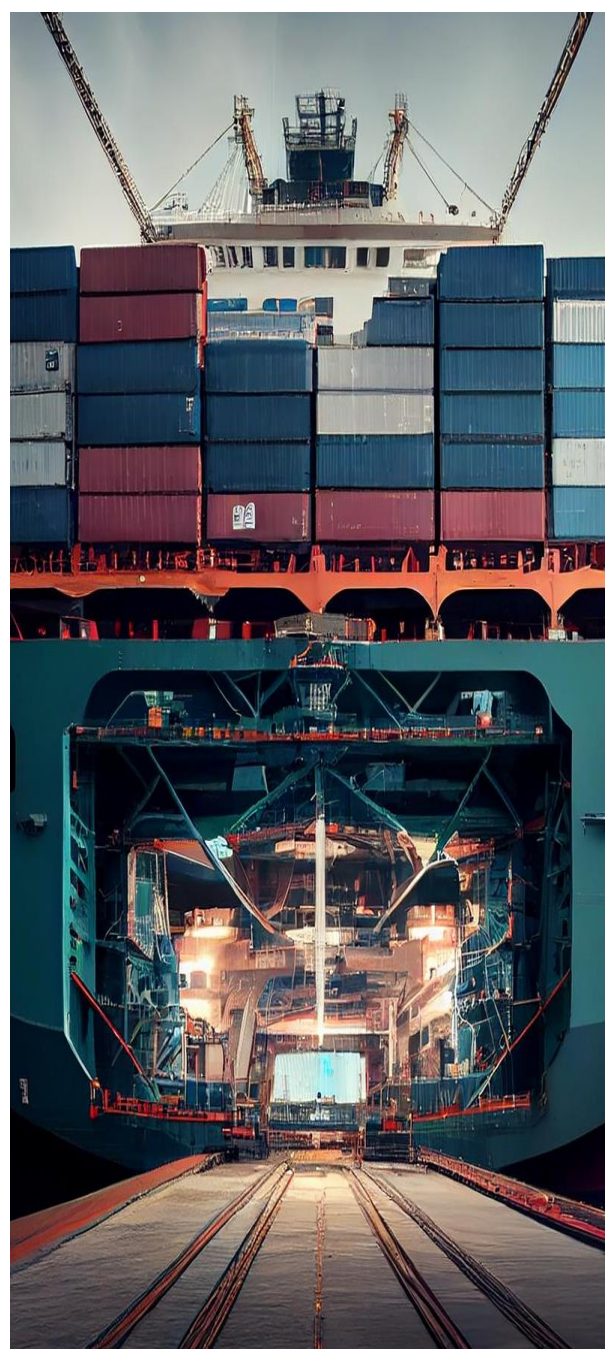
Another positive outcome of this great power rivalry has been the decoupling of major economies from each other, leading to the friend-shoring of significant investments into Vietnam, Malaysia, India, and Mexico. Due to the increased interdependence of the global economy, shifting global value chains into emerging economies has been a hidden blessing due to such contradictions.

However, the rivalry is not short of negative implications. The Russia-Ukraine War highlighted that despite interconnectedness, countries face severe vulnerabilities in necessities such as Food, Fuel and Fertilizers.

The heated exchanges between the U.S. and China over Taiwan and the One China Policy v/s One China Principle simulate massive aftershocks that East Asia, Southeast Asia, and India would have to bear in case of an all-out war.

The economic inwardness and national security interests of advanced countries—the flag bearers of globalisation to compete with China- have baffled many emerging economies on the increasing cost of doing business and trade, which is highly detrimental in alleviating billions out of poverty.

In the long run, while emerging economies may gain significant strategic autonomy and hedge their national interests over ideology, the economic inwardness of advanced economies, which are the champions of globalization in their competition with China, may hinder them from reaping the benefits of their strategic advances.

The increasing fragmentation of the world, the deviation from a rules-based international order, and the 'walk, whistle, and chew gum at the same time' attitude of major powers need to be immediately halted in the larger interest of the Global South, which has barely recovered from the pandemic and is on a path to recovery.

4 Infrastructure

Detailed examination of the PM GatiShakti National Master Plan's progress, its integration across sectors, and challenges faced in its implementation

Launched in October 2021 with an outlay of $1.2 trillion, the PM GatiShakti National Master Plan is India's one of the most ambitious initiatives aimed at boosting multimodal connectivity and logistics efficiency across the country. Few years into implementation, the plan has made noteworthy strides across various sectors, while also facing certain challenges that will need to be addressed for its successful long-term execution.

Progress Across Key Sectors

On the logistics infrastructure front, over 1900 data layers from central ministries and states/UTs have been uploaded to the integrated PM GatiShakti digital platform that forms the backbone of the master plan. Capacity building efforts are underway, with live demonstrations and workshops conducted for over 2500 attendees from central ministries and state departments. Additionally, 102 universities across 32 states/UTs have been identified to offer specific courses on the master plan.

The institutional framework has also been established, with an Empowered Group of Secretaries (EGoS) at the national level holding multiple meetings so far.

All 36 states/UTs have formed their own respective EGoS and Network Planning Groups as part of the three-tier governance structure.

Sector-wise, the Indian Railways has introduced the semi-high speed Vande Bharat trains, with plans to launch 75 upgraded sleeper versions by the end of 2024. The airports sector is progressing well, with a target of building 220 airports by 2025, including greenfield projects by the private sector worth INR 30,000 crore.

The PM Gati Shakti initiative has seen 115 projects examined by the Network Planning Group (NPG) worth INR 11.70 Lakh crore; over 200 worth ~INR 5,500 crore from States recommended for improving logistics infrastructure, and more than 300 projects from Central Ministries and States/UTs worth INR 11.75 Lakh crore planned using the National Master Plan.

Challenges to Overcome

While the PM GatiShakti plan has made a promising start by putting in place the necessary digital architecture and institutional mechanisms, some key challenges remain that will need to be addressed for its successful long-term implementation and impact.

A primary challenge lies in ensuring seamless coordination among the multitude of stakeholders involved - across central ministries, state governments, urban and rural local bodies, and private sector players - will be crucial.

The PM GatiShakti platform aims to integrate decision-making across these entities, but real-time monitoring and issue resolution mechanisms will need to be robust.

Additionally, securing timely land acquisition and environmental clearances for critical infrastructure projects also remains an often-voiced concern that could hamper implementation timelines if not addressed systematically.

4 Infrastructure (Contd.)

The Road Ahead

Overall, the PM GatiShakti National Master Plan has laid a robust foundation through its digital, institutional and project implementation progress till now. However, maintaining momentum while negotiating complex federal and sectoral landscapes will be the key challenge going forward. If these can be navigated effectively, the plan holds immense potential to unlock socio-economic gains by reducing logistics costs, boosting manufacturing competitiveness, enabling seamless multimodal connectivity and catalysing sustainable development across the length and breadth of the country.
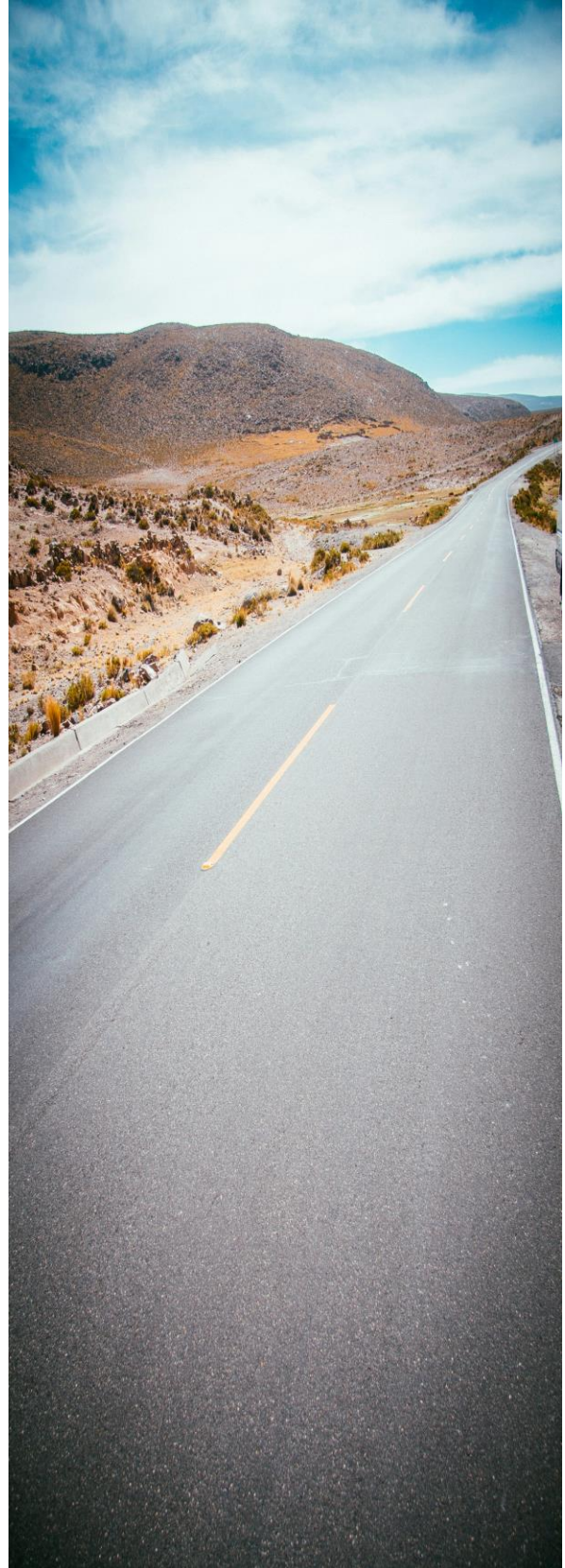
5 Technology

Imagine walking into a store that always has exactly what you need, no matter when you visit. This is the magic of data analytics in Q-commerce. This new model, promising delivery within minutes rather than hours or days, is powered by robust data analytics. Capitalizing on the immense power of data, Q-commerce companies can optimize operations, enhance customer experience and stay ahead of the competition.

A closer look at how data analytics is driving this transformation.

Optimizing Inventory Management:

One of the critical challenges in Q-commerce is managing inventory efficiently. Data analytics plays a crucial role in predicting demand and ensuring that the right products are available at the right time. By analyzing historical sales data, consumer trends and external factors such as weather (time of year), festivals and local events, companies can forecast demand with remarkable accuracy.

For instance, during the pandemic, there was a noticeable spike in demand for health and wellness products.

Data analytics enabled Q-commerce platforms to identify this trend early and adjust their inventory accordingly, preventing stockouts and ensuring customer satisfaction.

**Enhancing Delivery Efficiency:**

The promise of Q-commerce hinges on the speed and efficiency of deliveries. Data analytics helps in optimizing delivery routes and reducing delivery times. By analyzing traffic patterns, historical delivery data and real-time conditions, companies can identify the most efficient routes and dynamically adjust them as needed.

According to a study, companies utilizing advanced analytics in their delivery operations can reduce delivery times by up to 25%. This improvement not only enhances customer satisfaction but also reduces operational costs, making the business model more sustainable.

Personalizing Customer Experience:

In the fiercely competitive Q-commerce space, personalized customer experience is a key differentiator. Data analytics enables companies to offer personalized recommendations, promotions and communications based on individual customer behaviour and preferences.

For example, if a customer frequently orders snacks and beverages, the platform can highlight similar products or offer bundle deals.
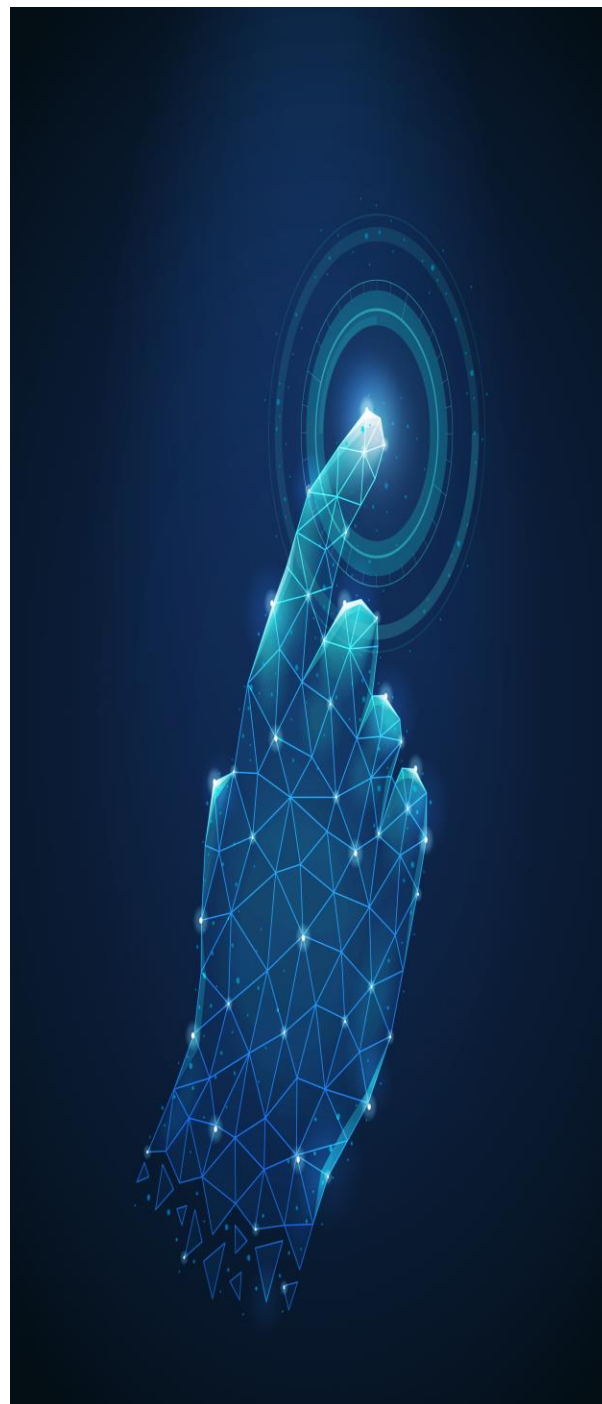
This level of personalization not only increases sales but also builds customer loyalty. According to a report, personalized shopping experiences can boost revenue by 10-15%.

5 Technology (Contd.)

Reducing Waste and Enhancing Sustainability:

Sustainability is becoming increasingly important to consumers. Data analytics can help Q-commerce companies minimize waste and improve their environmental footprint. By accurately predicting demand and optimizing inventory, companies can reduce overstocking and minimize perishable goods waste.

Efficient route optimization not only speeds up deliveries but also reduces fuel consumption and emissions. A recent report found that smart logistics and route optimization could reduce carbon emissions in urban delivery networks by up to 30%.

The impact of data analytics on Q-commerce is profound and far-reaching. From optimizing inventory and enhancing delivery efficiency to personalizing customer experiences and promoting sustainability, data analytics is at the heart of this retail revolution. As technology continues to advance, the role of data in transforming Q-commerce will only grow, promising an even more dynamic and customer-centric future for the industry.

By utilizing the power of data, Q-commerce companies are not only meeting the high expectations of today's consumers but also setting new standards for the retail industry. The future of quick commerce is undoubtedly bright, driven by the relentless pursuit of data-driven excellence.
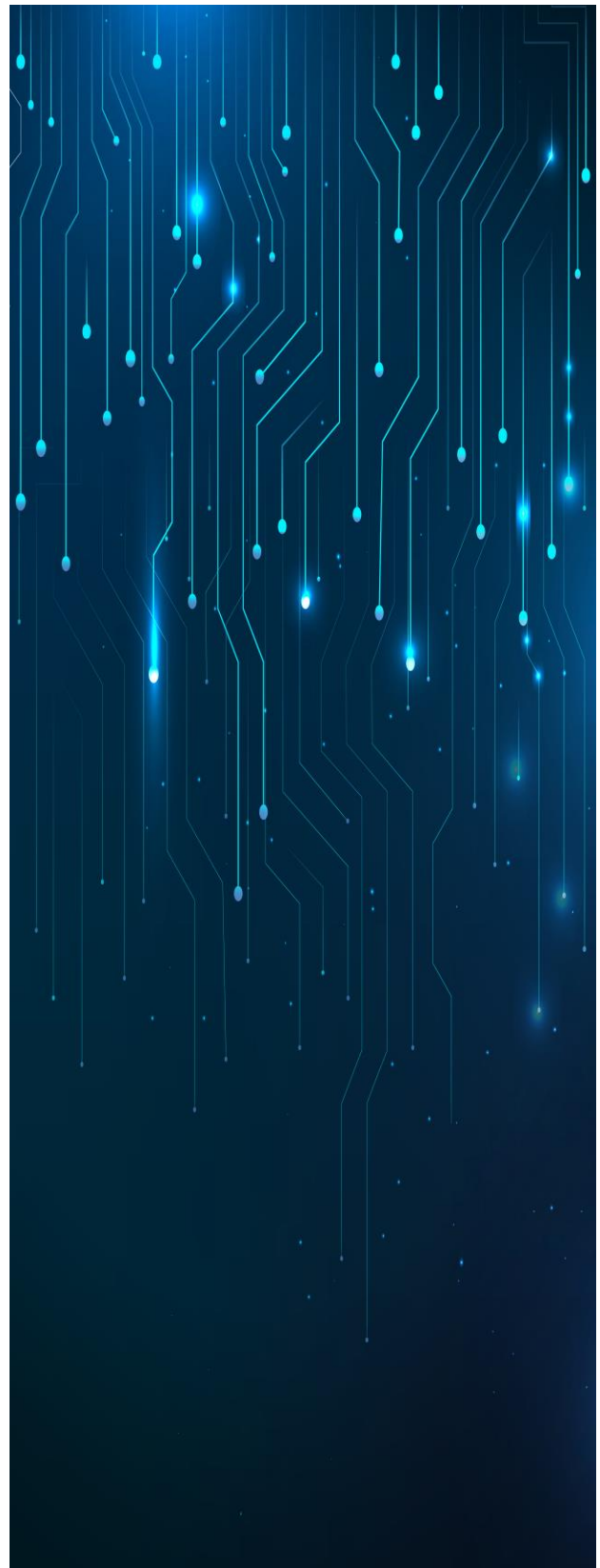
6 Aerospace & Defence

India's strategic maritime interests necessitate a robust and modernized naval fleet capable of safeguarding national security, economic interests, and regional stability. The modernization of the Indian Navy is essential to address emerging maritime challenges, enhance operational capabilities, and maintain strategic deterrence. The journey of modernizing the Indian Navy, marked by strategic milestones and successes, underscores a commitment to maritime excellence.

The Indian Navy is tasked with safeguarding over 7,500 kilometers of coastline and a vast Exclusive Economic Zone (EEZ). It operates a mix of aging platforms and modern assets, including aircraft carriers, submarines, destroyers, frigates, and maritime patrol aircraft. Recent inductions such as

the INS Vikrant (Indigenous Aircraft Carrier-1) and the INS Kalvari-class (Project-75) submarines underscore progress, yet significant gaps remain in fleet capabilities and technological advancements.

Strategic Imperatives for Modernization

• **Geopolitical Dynamics:** The Indo-Pacific region's strategic importance has increased, with heightened naval activities by major powers such as China and the United States. India's maritime interests span crucial sea lanes of communication (SLOCs), necessitating a navy that can ensure freedom of navigation and deter potential adversaries.

6 Aerospace & defence (Contd.)

- **Technological Evolution:** Advances in naval technologies, including stealth, unmanned systems, cyber warfare, and artificial intelligence, require the Indian Navy to integrate these capabilities to remain operationally relevant and maintain an edge over potential adversaries.

- **Operational Readiness:** The Indian Navy's ability to project power, conduct sustained operations, and undertake diverse missions (e.g., anti-piracy, humanitarian assistance, disaster relief) hinges on a fleet that is technologically advanced, well-maintained, and logistically supported.

Challenges

- **Aging Fleet:** A significant portion of the fleet comprises older platforms nearing the end of their service life, leading to higher maintenance costs and reduced operational availability.

- **Budget Constraints:** Naval modernization demands substantial, often strained, necessitating prioritization and efficient allocation of resources.

- **Indigenous Production Capabilities:** While initiatives like 'Make in India' aim to boost domestic defence manufacturing, challenges in terms of technological know-how, production delays, and quality control persist.

- **Technological Integration:** Integrating new technologies with existing platforms poses

technical and operational challenges, requiring substantial investment in training and infrastructure.

Recommendations

- **Strategic Fleet Planning:** Develop a long-term naval acquisition plan aligned with India's maritime strategy, prioritizing platforms that enhance force projection, anti-submarine

warfare (ASW), and network-centric capabilities. Expedite finalization of delayed procurement projects like P-75(I) submarines and Naval Utility Helicopters (NUH).

- **Carrier & Surface Fleet Enhancements:** Strengthen Carrier Battle Groups (CBGs) by commissioning additional indigenous aircraft carriers and modernizing carrier-borne aircraft. Upgrade existing destroyers and frigates and induct versatile new-generation multi-role frigates and corvettes.

- **Unmanned Systems and AI:** Invest in unmanned surface vehicles (USVs) and unmanned underwater vehicles (UUVs) for surveillance, mine countermeasures, and reconnaissance. Leverage AI for predictive maintenance, autonomous operations, and enhanced decision-making processes.

- **Cyber and Electronic Warfare:** Establish dedicated units for cyber defence and electronic warfare. Develop capabilities to protect naval assets from cyber threats and enhance electronic attack and defence measures.

- **Indigenous Manufacturing and R&D:** Strengthen partnerships between the Navy, domestic defence industry, and research institutions. Encourage innovation and indigenization in critical technologies, including propulsion systems, advanced materials, and sensors.

- **Infrastructure and Logistics:** Enhance maritime infrastructure, including shipyards, dry docks, and logistics bases. Develop forward operating bases (FOBs) in strategic locations to support extended deployments and rapid response.

- **Inter-Service & International Collaborations:** Foster joint operations and interoperability with the Indian Army and Air Force. Engage in strategic partnerships with allied navies for technology transfer and joint exercises and strengthen regional maritime security cooperation Establish joint commands for integrated maritime operations and ensure seamless coordination in multi-domain operations.

By adopting a focused and phased approach, prioritizing technological integration, and leveraging indigenous capabilities, India can build a resilient and capable navy. These efforts will enable the Indian Navy to effectively address contemporary maritime challenges, project power, and safeguard national interests in the Indo-Pacific region. With continued dedication and strategic planning, India's naval modernization will not only enhance national defence but also contribute to regional peace and stability.

7 Healthcare

In recent years, healthcare delivery has undergone a substantial transformation, driven by technological advancements and the imperative to make medical services more accessible. Telemedicine is one of the most notable innovations in this field, enabling patients to consult with healthcare professionals remotely. This technology has experienced exceptional growth, particularly since the COVID-19 pandemic, with telehealth utilization increasing 38-fold from pre-pandemic levels. According to a report published by a globally renowned firm, telehealth utilization increased 38-fold from the pre-pandemic baseline, highlighting its crucial role in modern healthcare delivery.

With over two-thirds of India's population residing in rural areas, telemedicine provides significant advantages, such as improved access for people in remote or underserved regions, reduced patient travel time, and the ability to deliver prompt care. This innovation has significantly transformed chronic disease management, mental health services, and routine check-ups, enabling patients to receive ongoing care without the constraints of traditional in-person appointments.

The Indian government has actively promoted telemedicine to enhance healthcare access. Initiatives like the Ayushman Bharat Digital Mission and the e-Sanjeevani platform have been pivotal in this endeavor. The e-Sanjeevani Ayushman Bharat-Health and Wellness Centre (AB-HWC) and e-Sanjeevani OPD connect patients directly to doctors from the comfort of their homes.

However, telemedicine is just the beginning. The adoption of artificial intelligence (AI) in healthcare is set to revolutionize the sector further. AI-driven tools analyze vast amounts of medical data, aiding in early disease detection and personalized treatment plans. Notably, AI in radiology has significantly enhanced diagnostic accuracy across various medical conditions.

Wearable technology is another burgeoning field. Devices such as smartwatches and fitness trackers have evolved to monitor vital signs, detect irregular heart rhythms, and even predict potential health issues before they become critical. These wearables enable patients to take a proactive role in managing their health, bridging the gap between regular doctor visits.

Despite significant strides in healthcare technology, challenges remain. Data privacy and security are top concerns, given the sensitive nature of health information and the need for robust protection measures. Additionally, the digital divide remains a significant hurdle, especially for older adults and low-income populations who may not have access to necessary technology. Addressing these issues requires a concerted effort from policymakers, healthcare providers, and tech companies to ensure that digital health solutions are secure and accessible to everyone.

Innovations in healthcare delivery, particularly telemedicine, have already made a profound impact and continue to evolve. Embracing these

advancements, while proactively addressing the associated challenges, is crucial for the future of healthcare. The ongoing investment in and adoption of technologies like AI and wearable devices promise a future where high-quality healthcare is accessible to all, regardless of location or socioeconomic status. To further encourage healthcare innovations in India, key steps include increasing funding and incentives for research and development of technologies, fostering public-private partnerships, promoting cross-disciplinary research, and implementing digital literacy programs. These measures can help drive the adoption and impact of healthcare innovations across the country.
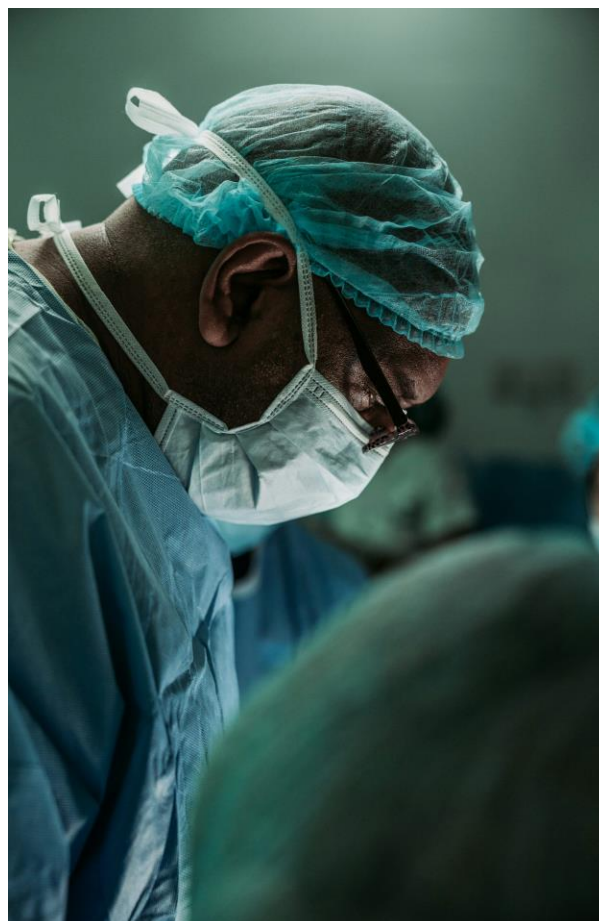
8 Financial Services

Fintech Disruption: Re-imagining financial services for the underbanked

The fintech landscape in India is undergoing a significant transformation, establishing the country as a global leader in financial technology. India, sharing the highest fintech adoption rate with China, is one of the fastest growing fintech markets worldwide. The robust ecosystem, with approximately 9000 fintech firms, contributes significantly to economic growth by creating jobs and attracting substantial investments. Fintech companies in India are poised to revolutionize financial inclusion, providing unprecedented access to financial services for millions traditionally excluded from the banking system.

Digital Transformation and Customer Experience at the Forefront

The private sector, particularly in fintech, has greatly benefited from digital public infrastructure, enhancing services and driving innovation.

- In India, fintech companies have facilitated fast and seamless money transfers with digital payments, notably through UPI.

- Accessing credit lines has become easier with digital payment apps, allowing financial companies to assess repayment capabilities and offer credit cards and loans.

- Online banks and neobanks provide fully digital services, including account opening and real-time money transfers. AI-powered wealth management tools enhance market predictions.

- Fintech firms innovate in insurance, enabling easy plan comparison and purchase. They democratize banking through mobile banking and digital KYC, enhancing customer experience with personalized services and secure operations using data analytics and AI algorithms.

Navigating Challenges in India's Thriving FinTech Landscape

Low financial literacy, especially in rural areas, impedes the adoption of FinTech services, creating barriers to financial inclusion. Transitioning from cash to digital transactions encounters resistance due to fraud concerns and limited internet access. The lack of talent with necessary tech and domain expertise hinders FinTech startup growth, along with a shortage of early-stage funding, restricting scalability.

Regulatory uncertainties, particularly for early-stage startups lacking dedicated legal and compliance teams, demand constant adaptation to manage risks associated with technological advancements, like those from cryptocurrencies and AI-driven algorithmic trading. Cybersecurity and data privacy are crucial as the industry expands, requiring robust digital controls to maintain customer trust.

Balancing the industry's need for open data with consumer privacy poses a challenge for market regulators. Despite positive initiatives like the Account Aggregator framework, data security and privacy remain vital for the FinTech sector.

Striking the right balance between financial service risks and fintech innovation is a significant challenge.

Empowering the Underbanked: Strategies for FinTech Advancement

To better serve the underbanked population, FinTech companies must expand digital payment infrastructure, develop user-friendly mobile payment applications, and ensure broader access to digital wallets. Prioritizing innovative credit scoring models, utilizing alternative data sources like mobile phone usage and social media activity, is essential for assessing their creditworthiness.

Introducing tailored microfinance and microinsurance products, accessible through digital platforms, is crucial to enhancing convenience and affordability. Collaboration among FinTech firms, government agencies, and non-profit organizations is vital to implement enhanced financial and digital literacy programs, educating individuals about basic financial concepts and responsible borrowing.

RBI's 'Draft framework for recognizing Self-Regulatory Organizations (SROs) for the FinTech Sector' signifies significant progress. The move towards SROs in the FinTech sector is promising for enhancing industry standards and innovation, and its effectiveness hinges on robust governance, sufficient resources, and strong regulatory support.

9 Impact
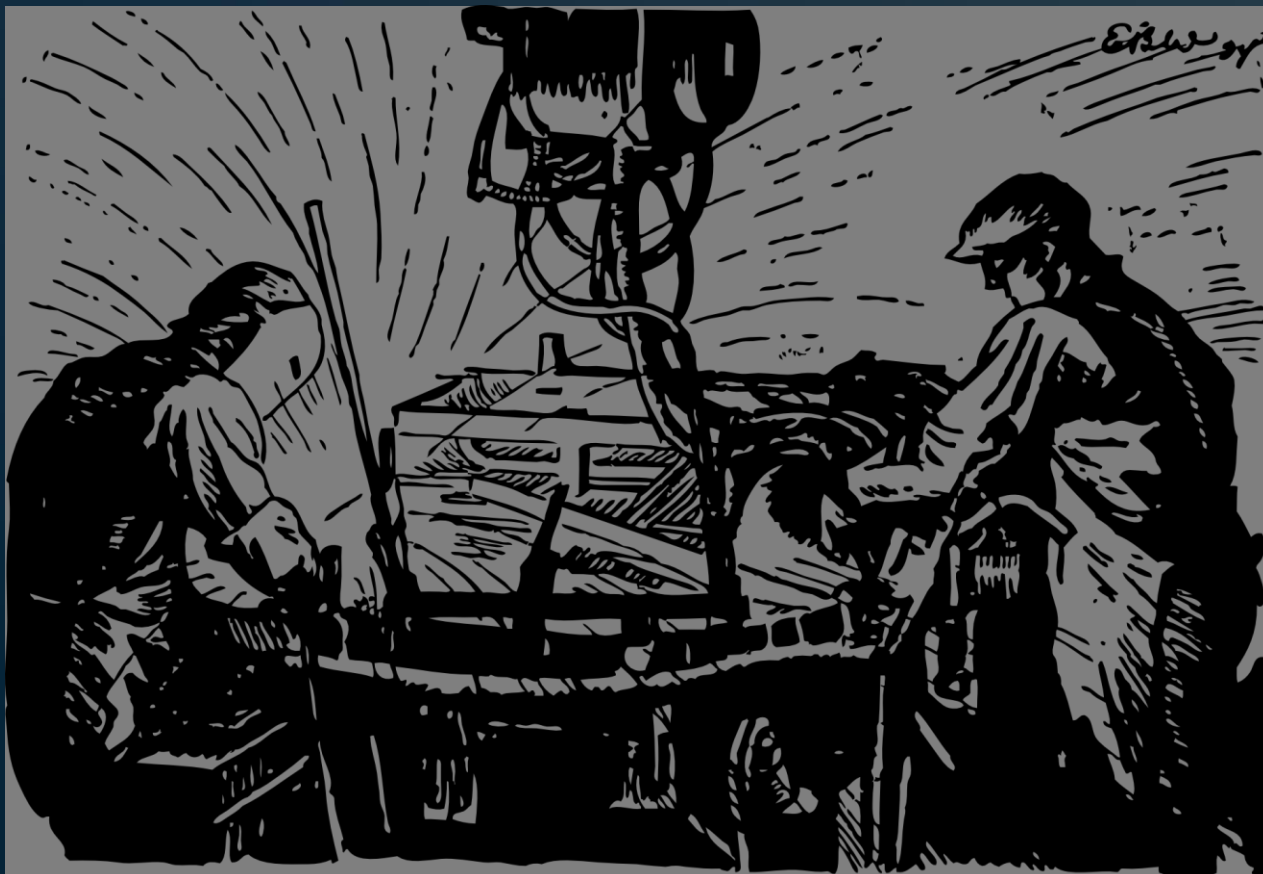
In an age characterized by swift digital evolution, digital literacy has emerged as a fundamental skill. It gives individuals with the ability to access information, navigate the complexities of the online environment, and participate effectively in the digital economy. For India, aspiring to be a digital superpower, connecting the digital divide and improving digital literacy across its vast and diverse population is a formidable challenge. According to a study by Nielsen, rural India has 352 million internet users, yet 60% of the rural population remains inactive online, likely due to low digital literacy.

This digital illiteracy and limited technology adoption leave tier 4 and 5 regions without essential services such as basic banking, finance, and e-commerce, rendering them unexplored outliers.

Understanding the profound impact digital literacy can have on rural populations, the Government of India has launched several initiatives aimed at various life aspects, from school education to digital skills training programs.

- **Digital India Program:** This comprehensive initiative focuses on infrastructure development, digital empowerment of citizens, and delivering government services digitally, particularly in rural areas. It has successfully extended mobile connectivity to more than 6 lakh villages as of December 2023. BharatNet was introduced to provided internet connectivity to all 2,50,000 Gram Panchayats (GPs) and as of January 2024 there were more than 2,10,000 service ready GPs. India Post Payments Bank (IPPB) transformed 1.55 lakh post offices into multi-service centres (as of May 2022).

- **Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA):** Approved by the Cabinet to usher in digital literacy in rural India, this program targets covering six crore rural households (one person per household). As of March 2024, 7.4 crore beneficiaries registered and 4.8 crore have been certified under the scheme.

- **Digital Saksharta Abhiyan (DISHA) or National Digital Literacy Mission (NDLM):** This scheme aims to impart IT training to 52.5 lakh individuals, which includes Anganwadi and ASHA workers, and legitimate ration dealers from all over country; enhancing their ability to participate actively in democratic and developmental processes and improving their livelihoods.A total of 53.67 lakh beneficiaries were trained under these two schemes, enhancing.

- **Samagra Shiksha ICT Program:** This program covers government and government aided schools from classes VI to XII, providing ICT labs and smart classrooms. The initiative includes one-time and recurring grants to establish these facilities, with over 120,614 ICT Labs and 82,120 Smart Classrooms sanctioned nationwide.

- **National Digital Library of India:** This is a digital repository of learning resources, offering access to a substantial collection of e-books, e-journals, and other learning materials. It fosters self-learning and lifelong learning opportunities, thereby enhancing digital literacy among students and educators.

- **Scheme for Promotion of Information Technology in Rural India (SPIRIT):** This program provides financial assistance to NGOs and institutions for establishing rural IT training centers, furthering digital literacy in rural areas.

Digital literacy enables rural populations to participate in the digital economy, access services like banking, finance, and e-commerce, which are crucial for economic empowerment and growth. Enhanced digital literacy promotes social equity by providing access to information and public services, thereby fostering a more inclusive society. Initiatives like the Digital India Program are not only about providing access but also about building robust digital infrastructure, essential for sustained digital engagement. Programs like Samagra

Shiksha ICT and NDLI enhance educational opportunities, equipping the younger generation with the necessary digital skills to thrive in the modern world. Furthermore, digital literacy among Anganwadi and ASHA workers under the DISHA scheme has the potential to significantly improve healthcare delivery in rural areas, as these workers are better equipped to leverage digital tools and resources. Therefore, there is a sustained need for India to continue its efforts and advance further in bridging this digital divide.

10 Expert speak

Ganesh Mahabala, Director –
Strategic Business Development,
NVIDIA India

Ganesh Mahabala, Director – Strategic Business Development, Nvidia India, is a Senior IT Sales and Business Development Professional with over 32 years of experience in Business Development, People Management and Country Operations. At NVIDIA, Ganesh is responsible for evangelizing accelerated computing GPU platforms and technologies in Governments and Strategic Projects.

Ganesh Mahabala
NVIDIA

1. As AI continues to evolve rapidly, what are some key areas where NVIDIA is focusing its efforts to further the boundaries of AI in India?

India, with its rich culture, demography, and technological prowess, is uniquely positioned to lead in the new era of AI. The concept of Sovereign AI- of owning and refining our national intelligence through data, stands as a testament to our commitment to not just participate in but shape the future of artificial intelligence in India.

Recognizing the fact that India is rich in data, developer talent, and innovative business models, NVIDIA is focusing on creating an ecosystem that supports this vision through accelerated computing infrastructure. The aim is to develop sovereign AI capabilities that can serve the country's 1.4 billion people, who speak diverse languages, and address challenges at local as well as global scale.

A significant part of this initiative involves partnering with Indian business houses and governments to create access to large-scale

sovereign AI infrastructure- that pushes the boundaries of research and supports startups and enterprises to develop AI applications tailored for India.

We are also collaborating with leading educational institutions in India to promote AI education and research- enabling students and researchers to work on advanced AI projects. Programs like NVIDIA's Deep Learning Institute offer workshops and training sessions to upskill students and professionals.

By focusing on enabling a robust AI ecosystem in the country, NVIDIA aims to empower researchers and developers with the right tools and technology to solve complex problems in their fields. This approach ensures that the benefits of AI can be leveraged at population scale, contributing to the growth of the industry and academia in India, while also making AI more accessible and relevant to the Indian context.

2. Could you share your perspective on the current landscape of AI adoption in South Asia, and how do you foresee it evolving in the next few years especially India?

India has a very wide technology and developer base, and it has immense potential to be the AI foundry for the world. Our goal at NVIDIA is to help research and solve the most complex problems of humanity while being the AI business partner for enterprises globally.

3. NVIDIA is renowned for its innovation in GPU technology. What are some upcoming developments or advancements in GPU architecture that you're particularly excited about, and how might they impact AI and HPC applications?

We continue to innovate and build more capability into our accelerated computing platform. The Nvidia H100, built on the Hopper architecture, excels in enterprise AI deployment and building large language models (LLMs) by offering unparalleled computational performance with optimized Tensor Cores, advanced precision capabilities like FP8, and high-bandwidth memory. Its scalability through multi-GPU configurations and NVLink allows efficient handling of large-scale AI workloads, making it ideal for accelerating model training and inference, thus enhancing AI development and deployment in enterprise environments. Earlier this year, at GTC 2024, Jensen Huang – CEO of NVIDIA, announced our

roadmap towards our latest architecture: Blackwell. As generative AI is fast becoming integral to numerous industries, the Blackwell platform will serve as a powerful engine to drive this technological revolution further. This platform is set to revolutionize the ecosystem of Generative AI by allowing organizations to build and run real-time, trillion-parameter large language models at a fraction of the cost and energy consumption of previous models. Blackwell's GPU architecture features six transformative technologies destined to catalyze breakthroughs in data processing, engineering simulation, electronic design automation, computer-aided drug design, quantum computing and generative AI.

It will be interesting to witness how the innovations in GPU technology, such as the Blackwell architecture, will continue to reshape the fields of AI and high-performance computing.

4. From your vantage point, how do you see the adoption of GPU-accelerated computing evolving in key sectors such as healthcare, finance, and manufacturing in India?

Due to the rapid increase in data size and the need for extremely low latency in the era of generative AI, pure classical computing cannot exist alone. Accelerated computing must be a greater and growing part of every data center to leverage AI. Enterprises must ensure that they have sufficient real or synthetic data to power generative AI. They should envision the right use cases that will impact

their businesses and they need to have in-house or outsourced developers to build custom large language or custom models using techniques like RAG (Retrieval-Augmented Generation).

5. What can individuals and industries expect from NVIDIA in terms of future product offerings or initiatives that aim to democratize access to AI and supercomputing capabilities in the region?

We work with the entire industry and government ecosystem to aim to build accelerated computing infrastructure in the country to make it more accessible to researchers, developers, startups, and companies in the country to boost innovation at scale. These researchers and companies typically run GPU-accelerated applications either through the cloud, on-premises, or in a hybrid combination of both. Therefore, our accelerated computing platform of hardware and software is designed and optimized to be accessible in all three of these form factors with utmost flexibility and various price points of entry based on the appetite of consumption of the consumer. In addition, we try to make technology as easy to use as possible. For example, the way that software is containerized in dockerized containers in the NVIDIA GPU cloud repository or NGC which helps to automate the installation and optimization of software on our hardware platforms for ease of use.

We are also focused on making generative AI models more accessible by developing tools and platforms that allow businesses and developers to integrate and scale AI into their workflows.

NVIDIA NIM simplifies this process by providing standardized APIs, optimized containers, broad model support, portability, accelerated performance, and broad ecosystem integration. This makes it easier for developers to incorporate AI into their products and services.

![PRIMUS RESEARCH]

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