Partners Universal Innovative Research Publication (PUIRP)
Volume: 04 Issue: 01 | January-February 2026 | ISSN: 3048-586X | www.puirp.com

India's M.A.N.A.V Vision: Redefining Global AI Governance Through Human-Centric Principles and Strategic Sovereignty

Dr.A.Shaji George[1], Dr.T.Baskar[2], Dr. M. M. Karthikeyan[3]

[1]Independent Researcher, Chennai, Tamil Nadu, India.
[2]Professor, Department of Physics, Shree Sathyam College of Engineering and Technology, Sankari Taluk, Tamil Nadu, India.
[3]Assistant Professor, Department of Computer Science, Karpagam Academy of Higher Education, Coimbatore, Tamil Nadu, India.

Abstract - The M.A.N.A.V Vision, which was announced at the AI Impact Summit in India in February 2026, is a paradigm change in the field of AI governance. It puts human welfare, developmental equity and strategic sovereignty at the center stage. M.A.N.A.V -Moral and Ethical Systems, Accountable Governance, National Sovereignty, Accessible and Inclusive AI, Valid and Legitimate Systems is not simple to place under the umbrella of techno-deterministic narratives that are prevalent in the Euro-Atlantic policy. It provides a new roadmap by integrating ethics into the industrial strategy, data rights and the infrastructure of the people. This article discusses the main concepts of M.A.N.A.V, the way it is being operationalized in the India AI Mission and Digital Public Infrastructure and the potential of this to change the global AI norms as seen through the prism of the Global South. The results indicate that M.A.N.A.V transforms the marginal issues of sovereignty and inclusion to the ethical pillars. Based on the constitutional principles and the goals of development, India is about to transform into a norm-entrepreneur, which will connect technology innovativeness with democratic responsiveness. Its success will depend on the strength of the institutions, regulatory coherence, and the capacity of India to demonstrate the fact that human-centred artificial intelligence can flourish together with the technological competitiveness.

Keywords: AI governance, Data sovereignty, Digital inclusion, Ethical AI, Public infrastructure, M.A.N.A.V Vision, Technology policy, Human-centric systems.

1. INTRODUCTION

1.1 The Geopolitical Stakes of AI Governance

Artificial intelligence has developed as an activity of an elite computational device to as a fundamental infrastructure of economic competitiveness, national security, and social organization. By 2025, the world has invested over 200 billion in AI that includes autonomous systems, medical diagnostics, climate models, and administrative decisions. Nevertheless, this has led to severe governance challenges due to this rapid increase. Devoid of appropriate supervision, algorithmic systems have increased lending bias, facilitated mass surveillance, sidelined workers with no safety nets, and concentrated authority within a small number of tech giants.

The current governance systems are an indication of the interests and circumstances of the people who made them. The AI Act of the European Union, which will be implemented until 2027, is risk-based and focuses on consumer protection and basic rights. The US has chosen a decentralized and sector-specific approach that focuses on innovation and market leadership which is underpinned by voluntary industry

commitments. China combines state-directed investment, social credit and content controls, with stability and national champions. These frameworks, though significant, usually lack the developing expectations of nations that have to spur development, narrow digital disparities, and work with few resources and AI application.

The M.A.N.A.V Vision of India introduced by Prime Minister Narendra Modi in the 2026 India AI Impact Summit in New Delhi is a specific contribution. India has 1.4 billion people, it is an enormous market of AI, but also provides an opportunity to test large-scale implementation in harsh environments. The paradigm refutes the idea that AI is some independent agent it sees AI as a tool that should be used to support human desires, honor, and well-being. This anthropocentric approach extends beyond technical safety to address sovereignty, accessibility and democratic legitimacy- concerns which tend to be overlooked in discussions of governance that have been dominated by advanced industrial economies.

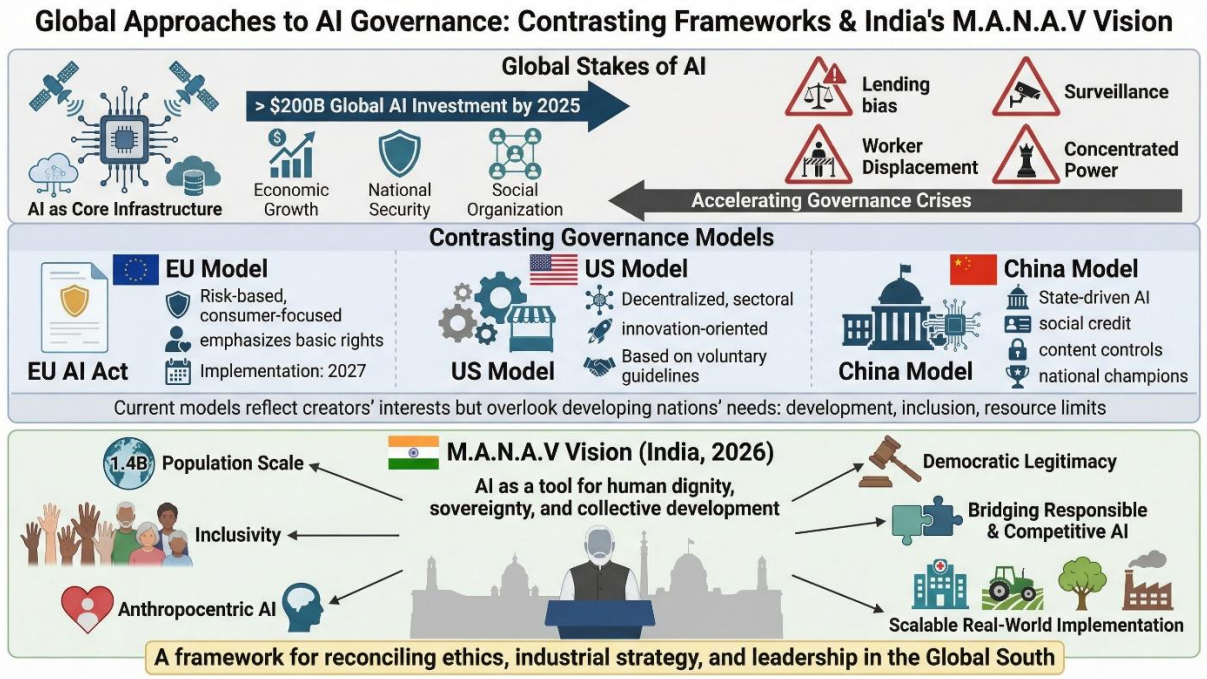

Fig -1: Global Approaches to AI Governance: Contrasting Frameworks & India's M.A.N.A.V Vision

M.A.N.A.V's timing is crucial. With multilateral organs failing to consensus on rules of AI and geopolitics influencing policy on technology, India has a framework that can reconcile conflicting visions. M.A.N.A.V helps to break this false dichotomy between responsible AI and competitive AI by integrating ethics with goals of industrial strategy and industrial development, indicating that human-centric governance is not incompatible with long-term technological leadership.

2. OBJECTIVES: ANALYTICAL GOALS AND RESEARCH QUESTIONS

This article aims at achieving three objectives. First, it provides a critical discussion of the conceptual architecture of M.A.N.A.V in relation to its five pillars, which integrate human-rights, developmental state, and technology-sovereignty traditions. Second, it looks at the policy instruments and establishments, by which India is implementing the framework, namely, the India AI Mission, Digital Public Infrastructure projects, and regulatory measures. Third, it assesses how M.A.N.A.V can contribute to the governance of AI

Partners Universal Innovative Research Publication (PUIRP)
Volume: 04 Issue: 01 | January-February 2026 | ISSN: 3048-586X | www.puirp.com

in the world by defining priorities of the Global South and transforming the paradigms of data rights, accountability of algorithms, and independence of technologies.

The discussion addresses certain questions. What are the philosophical and political attachments behind M.A.N.A.V demanding that AI must continue to be subordinate to human welfare and not a neutral system. Which is the balance between speed of innovation, cautionary regulation, global collaboration and strategic independence. How does India seek to transform abstract principles into enforceable standards and practices in its institutions. What distinguishes M.A.N.A.V among the already existing frameworks and what does this imply to other developing countries that experience similar problems.

The approach is an amalgamation of policy-document research, institutional structure and budget research, and a critical reflection on AI governance studies. It is not only an attempt to describe M.A.N.A.V but also evaluate its consistency as a governance framework and its feasibility as a domestic policy and as a model exporters to other nations that do seek to align AI paths with their own values and priorities.

3. HISTORICAL CONTEXT

3.1 India's Digital Transformation and AI Ambitions

In order to understand why M.A.N.A.V has succeeded, we should consider how India is undergoing digitalization in the past fifteen years. The trip started with Aadhaar in 2009, a biometric identification platform that registered over 1.3 billion citizens creating a universal digital identity platform. This was followed by Unified Payments Interface (UPI) which by 2025 was processing 131 billion transactions amounting to $2.3 trillion, making India a global leader in real-time digital payments. In 2021, Account Aggregator framework was introduced and enables the sharing of financial data by consent. And the Open Network for Digital Commerce (ONDC) aims at democratising e-commerce through providing open, interoperable options to mainstream sites.

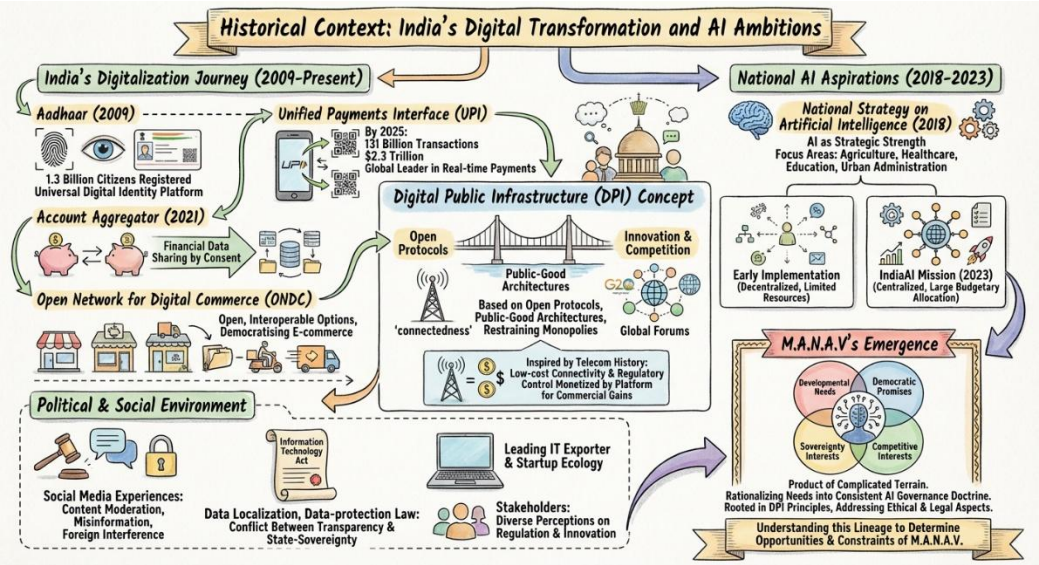

Fig -2: Historical Context: India's Digital Transformation and AI Ambitions

These are under the Digital Public Infrastructure (DPI) concept of India, which is known in the world forums like the G20. In contrast to traditional digital infrastructure, which is concerned with physical connectedness,

DPI is based on open protocols and public-good architectures. This structure will encourage innovation and restrain monopolistic domination. The strategy is based on the experience gained in the history of Indian telecommunication industry when the aggressive competition and the regulatory control provided low-cost connectivity which could be monetized by the platform to generate commercial gains. In 2018, the AI aspirations of India became official with the National Strategy on Artificial Intelligence which made AI a strategic strength that must be coordinated by investing in research, skill, and implementation. The plan identified how AI can address the issues of development in the agricultural sector, healthcare, education, and urban administration. Nonetheless, the early implementation was still decentralized on the ministries and agencies level, which did not have sufficient resources or coordination. This changed the focus to a more centralised approach with a large budgetary allocation in 2023, with the India AI Mission.

Similar trends influenced the political environment. As India has had experiences related to the social media platforms, it has revealed the problems of content moderation, misinformation, and foreign interference. Rules and legislations like the Information Technology Act responded to these issues, usually controversially. The concerns of localization of data required by payment systems and continuing discussions on data-protection law expressed the conflict between transparency and state-sovereignty. In the meantime, the situation with India as a leading exporter of IT services and a location of an active ecology of startups formed a group of stakeholders who have different perceptions of the value of regulation and innovation. M.A.N.A.V is a product of this complicated terrain. It is an effort to rationalise developmental needs of India, democratic promises, sovereignty interests as well as competitive interests into a consistent doctrine concerning AI governance. The framework is based on the principles of DPI but goes out to cover the ethical and legal aspects which cannot be resolved solely by infrastructure. It is imperative to know this lineage to determine the opportunities and constraints of M.A.N.A.V.

4. CONCEPTUAL FOUNDATIONS

4.1 Philosophical and Normative Underpinnings

M.A.N.A.V is based on a number of claims, which contrast it with prevailing AI governance paradigms. The initial and the most basic one is that AI cannot be viewed as an autonomous technological entity but rather as a continuation of human agency. This is opposed to the techno-optimist histories that view AI as an unstoppable force of progress and techno-pessimist histories that view AI as an existential threat that human beings cannot stop. Rather, M.A.N.A.V argues that the AI systems are created, implemented, and regulated by human institutions with particular goals, and these decisions can, and should, be subjected to the power of democratic masses.

This anthropocentric orientation is based on various schools of thought. It resembles the capabilities approach of Amartya Sen and Martha Nussbaum that assesses technologies based on their contribution to increasing human freedoms and functioning, and not based on efficiency-related narrow measures. It also takes the components of the Ubuntu philosophy of community and relationality, which is evidenced by the collective welfare of M.A.N.A.V, as opposed to the maximisation of utility of a person. It also echoes Gandhian ideas of proper technology and village self-sufficiency, replicated into modern issues of digital inclusion and decentralised innovation.

The second premise assertion is that both ethics and sovereignty are interdependent aspects of AI controls. M.A.N.A.V criticizes systems where ethical principles are considered universal and self-evident and leave the issues of power, dependency, and structural inequality to political scope. Having made the National Sovereignty a central pillar in the framework, in addition to Moral and Ethical Systems, the framework claims

that control over data, compute infrastructure, and algorithmic capabilities is an ethical problem, not just a strategic one. This is an expression of post-colonial critique of so-called universal norms that systematically favour powerful actors at the expense of limiting the agency of the weaker parties.

Third, M.A.N.A.V does not perceive inclusion and accessibility as design considerations, but rather as retrospective additions. The Accessible and Inclusive AI pillar tool disregards the trickle-down premise that the benefits of AI will trickle down to every part of society. It appreciates, rather, that, absent conscious action, AI development will concentrate resources and capabilities in those who already have advantages in skills, capital and contacts. This is based on the experiences of the digital divides in India, where the benefits of connectivity have been distributed unequally in geography, class, caste and gender.

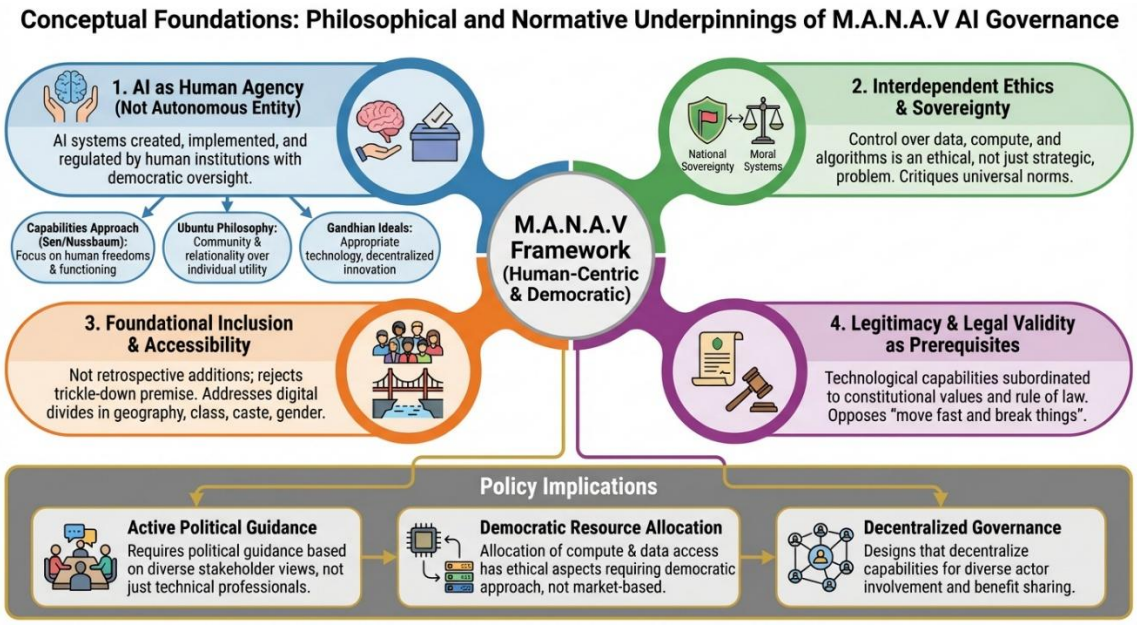

Fig -3: Conceptual Foundations: Philosophical and Normative Underpinnings of M.A.N.A.V AI Governance

Fourth, the framework focuses on the legitimacy and legal validity as the prerequisites to the AI implementation. The Valid and Legitimate Systems pillar makes the demand that technological capabilities should be subordinated to constitutional values and statutory requirements and the rule of law principles. This is an attack on Silicon Valley beliefs of move fast and break things, which holds that innovation should be achieved within guardrails imposed by democratic procedures. This is the experience that India had had with platform overreach and the difficulty of retrofitting government on technologies that were implemented without proper regulation.

These philosophical commitments have certain policy implications. They propose that it is impossible to devolve AI governance to technical professionals or industry-led self-regulation it needs political active guidance based on the views of various stakeholders. It suggests that the decision on resource allocation, especially the allocation of compute infrastructure and access to the data, has ethical aspects that require a democratic approach, rather than an approach based on market allocation. They indicate governance designs that decentralize instead of centralize capabilities so that very diverse actors can be involved in AI development and enjoy the benefits of AI applications.

5. THE FIVE PILLARS ARCHITECTURE AND OPERATIONALIZATION

5.1 Moral and Ethical Systems Beyond Compliance to Cultural Transformation

The pillar of Moral and Ethical Systems indicates that AI must be founded on sound ethics which involve fairness, transparency, human control, and human dignity. It does not just address technical criteria of fairness but considers the functions of AI and social contexts where AI is applied.

In reality, the pillar is implemented in the following ways. Ethics guidelines of AI utilized by government have been published by the Department of Electronics and Information Technology. The requirements include impact evaluations, human review of significant decisions and documentation of system thresholds. These include such areas as criminal justice, welfare programs and hiring. National Education Policy of 2020 has introduced AI literacy and ethics to schools and professional training, attempting to develop AI responsible culture throughout society rather than considering ethics as an independent compliance exercise. The explainable AI tailored to Indian language and cultures, uncovering bias in AI trained on Western data but applied to India, and participatory design are researched by the India AI Mission. The industry partners have attempted to install the experts of ethics within the tech teams rather than maintaining them in periphery.

However, it is difficult to transform principles that are at a high level into practice. On fairness with historical and inequality, the definition is controversial and ambiguous. The regulations of transparency should not compromise accountability, intellectual property protection, and security. Without resources and authority, human oversight may turn into a rubber-stamp. Ethics checks can only ensure the pillar is successful when they actually help to curb unhealthy applications or they will only be a paperwork that only justifies existing results.

5.2 Accountable Governance Institutional Architectures for AI Oversight

This pillar emphasizes on strict guidelines, effective supervision and duty. It recognizes that the handling of technology has to be mastered with both skills and organisations that are not shared in the other sectors.

The primary organization that organizes AI governance in the government is the India AI Mission. The mission has been approved at a budget of over 10,372 crore (approximately 1.25 bn dollars) until 2026 with seven pillars. India AI Compute provides access to high-performance computing on a shared basis, providing researchers with 18,693 GPUs on demand. India AI Innovation Centre assists startups, and scholars in terms of money, mentorship, and facilities. India AI Datasets is a project to make high-quality datasets, carefully edited and tailored to Indian languages, to meet the needs of the local market. India AI Application Development encourages industry-Base AI in agriculture, healthcare, education, and government.

India AI Future Skills educates half a million AI talents and increases AI literacy. India AI Safe and Trusted AI comes up with testing and certification guidelines, establishes shields against risky applications, and offers means to seek redress in case AI has caused harm. This combined model demonstrates that there should be governance and infrastructure, skills and innovation together. Beyond the mission, the sectoral regulators can be held accountable by developing AI-specific guidelines, sandboxes that enable firms to experiment safely with minimal systemic risk and civic engagement via consultations and advisory bodies. The Information Technology Act has provided legal support in regulating what is done on the web, protecting data, and holding platform accountable although a full data-protection law is in the process of being written.

The actual issue is the coordination of a large number of agencies. AI cuts across various ministries and regulators, which introduce inconsistencies and gaps. The regulation agencies are under resourced in

Partners Universal Innovative Research Publication (PUIRP)
Volume: 04 Issue: 01 | January-February 2026 | ISSN: 3048-586X | www.puirp.com

terms of their ability to match the rate and magnitude of AI use. There is political pressure that can interfere with an independent judgment. The development of effective governance requires a long-term investment in processes and political will as well as talent that is not limited to election periods.

5.3 National Sovereignty Strategic Autonomy in the AI Era

The Sovereignty pillar is concerned with information proprietorship, internal computer capacity, and indigenous AI capabilities. It demonstrates the determination of India to remain unaffected by forces that may exploit technology to acquire a geopolitical or economic advantage over other countries. The motto of his pledge to safeguard the personal and national data right is summarized by the saying, whose data, his right.

There are a number of policies that advance this goal. India Semiconductor Mission with 76,000 crore incentives are to be established so as to establish local chip manufacturing. AI needs chips, and when the majority is manufactured in Taiwan, South Koreas, or China, then countries are at risk strategically. It is expensive and difficult to build a factory on its own and hence India begins by wrapping and testing chips, acquiring design skills and slowly ascending the value chain.

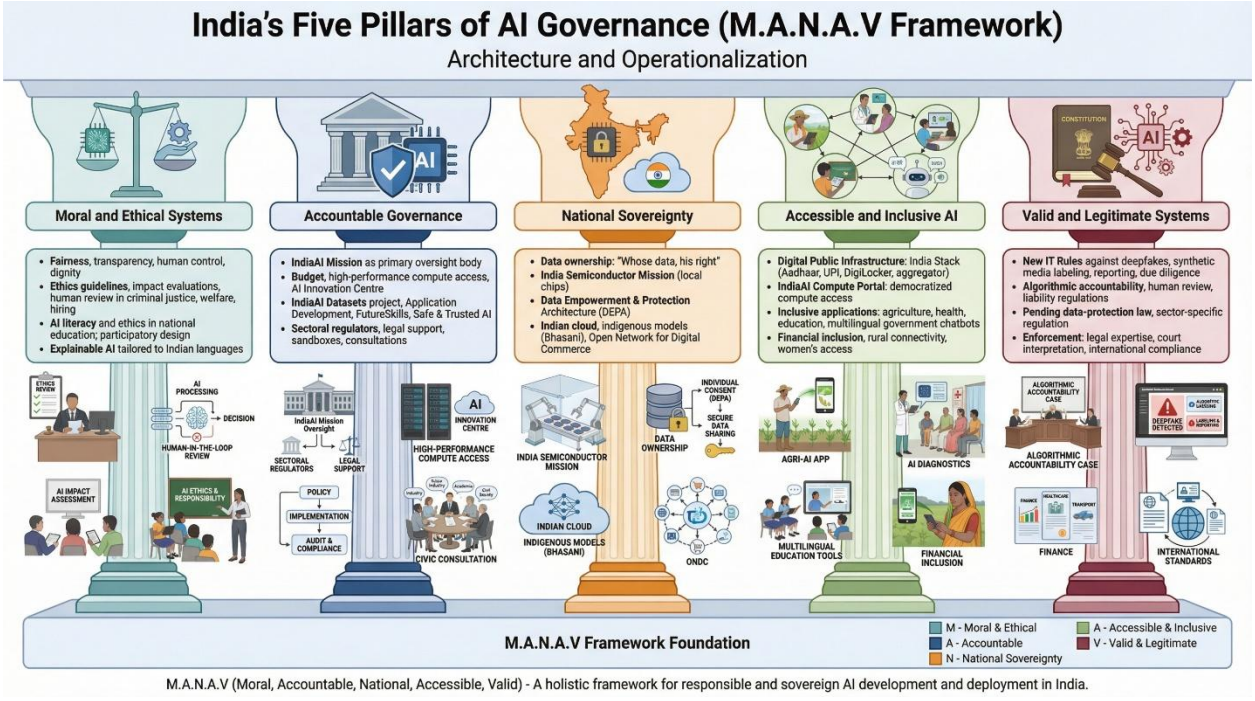

Fig -4: India's Five Pillars of AI Governance (M.A.N.A.V Framework)

The actions in data sovereignty are local regulations of payment system data, new digital lending regulations restricting foreign firms, and cross-border data draft plans that strike a balance between assistance and protection. Data Empowerment and Protection Architecture (DEPA) establishes consent-based regulations that look at people as data owners, rather than as inactive data reservoirs. The Open Network to Digital Commerce does not allow a single platform to take control of e-commerce and makes Indian companies enjoy the benefits of using their data internationally.

India AI Compute supports Compute autonomy by deploying across India and collaborating with Indian cloud providers and hyperscalers worldwide. The idea is to retain the strategic AI jobs within India without necessarily compelling the use of overseas clouds. Indian-trained large language models like Bhasani in

translation and new foundation models eliminate the use of foreign AI that may not be representative of Indian situations, or may be biased.

Critics caution that sovereignty initiatives will isolate India in beneficial cooperation with other countries, divide the AI environment, and require corporations to operate two systems in every jurisdiction. They observe that even individual countries cannot be self-sufficient in the entire chain of AI and the autarkic push can slow the development and increase expenses. According to supporters, policy flexibility requires strategic autonomy, dependence can be dealt with instead of abolished and sovereign issues are based on actual history when technology was politicized.

This sovereignty and openness will have an impact on the success of M.A.N.A.V. Excess isolation may hamper the framework by depriving new technology and isolating Indian AI to the rest of the world development. Lack of emphasis on the sovereignty would expose India to the pressure of outsiders and the inability to establish its own AI rules. Locating the right balance requires a keen consideration of what relationships are strategic and routine, and the process of how to cultivate home-grown power and at the same time collaborate with others.

5.4 Accessible and Inclusive AI Infrastructure for Democratic Innovation

The pillar of Accessible and Inclusive AI considers AI as an enhancement to opportunities and not a privilege of a few large companies. It is aware that currently, a small number of tech giants control the greater part of computing power, data and talent. Unchecked, such concentration may lead to the establishment of another digital divide in which only people who have benefits receive the benefits of AI.

India has the Digital Public Infrastructure that provides the fundamental framework to open AI. The India Stack, which consists of Aadhaar ID, the UPI paying system, a document-sharing system called DigiLocker, and the Account Aggregator, is a set of interconnected systems that allow a developer to use existing systems rather than develop new ones. Open protocols reduce the cost of entry and prevent platform lock-in to enable smaller businesses and government agencies to use AI services.

This is demonstrated by the India AI Compute Portal. Rather than purchasing costly GPU clusters, or paying to access cloud-based resources, the portal provides researchers and universities, in addition to qualified startups, with discounted access to national resources, to be trained and to execute AI models at significantly reduced prices compared to commercial ones. Curated datasets, ready-to-use models which may be re-trained to meet specific requirements and tools to assist the developer are shared in similar projects. These common resources bring the playing field between big businesses and small companies on limited budgets to the same level.

The sectoral usage is inclusive. In agriculture, AI trained on local data personalizes advice to small farmers on planting, pest control and markets via local-language interfaces. In the medical field, AI diagnostic devices in community health hospitals expand the expertise of specialists to the rural communities that do not have physicians. Adaptive learning systems are used in education to provide students with diverse backgrounds and learning requirements with an instructional approach. AI chatbots can help people in government by providing multilingual assistance to government services, removing complexity and red tape.

Particular attention is paid to financial inclusion. AI assesses creditworthiness by use of alternative data on individuals with no formal credit history enabling them to access conventional finance. The problem of the multiplicity of languages in India is addressed by language tools, which already support 22 languages and

numerous regional versions with translations and speech recognition, meaning that AI is not limited to the English speaking population.

Yet many hurdles persist. The digital literacy is not that widespread and many citizens cannot use AI services to their full extent even when they are provided technically. There is no uniformity in internet connectivity, as rural and remote areas continue to experience spotty internet connectivity. Female disparities in the possession of devices and digital expertise place women in opposition to the lack of AI opportunities. Most of the Indian workers are in the informal sector, which is not covered by most of the data and institutional structures that AI is based on.

Suitability and sustainability are also issues expressed by inclusion. The AI solutions developed to fit the developed nations can be incompatible with the Indian environment or pose a difficult dependency. The environmental consequences of AI, particularly, the energy consumption costs of training large models, is a cause of concern in a nation where every citizen still has affordable power. The need to balance innovation, environmental considerations, and the ability to make AI a servant of the vulnerable populations must be observed.

5.5 Valid and Legitimate Systems Legality and Rule of Law

The pillar of the Valid and Legitimate Systems states that AI should operate within the legal laws and constitutional values. It refutes the notion that law becomes an obstacle of innovation, noting that a long-term trust in AI should be accompanied by democratic governance and the rule of law.

This is demonstrated by new policies. The New IT Rules address synthetic media and deepfakes, compelling platforms to label AI-created content, provide means of reporting manipulations, and engage in due diligence to prevent harmful synthetic media. The rules react to the instances of fraud and reputation harm and political interference due to deepfakes, including bogus videos of politicians saying false things and non-consentual sexual deepfakes.

Draft regulations deal with AI-specific issues, including algorithmic accountability. They need explanations regarding key decisions on issues such as credit, employment and criminal justice. The proposals include automated decision investigations by humans with significant impacts on rights of individuals, evaluation of effects of impacts to be levelheaded before rolling out high-striking AI, and liability regulations in relation to damages inflicted by AI. They are based on the European models but adjusted to the institutions and needs of development in India.

The pending data-protection law is likely to establish detailed regulations on the personal data, and has sections addressing automated decision-making and profiling. Industry-specific regulations are applied to AI in financial, healthcare, and telecom sectors, and the requirements are based on industry risk.

Enforcement is difficult. Representatives will have to acquire technical expertise to manage AI, which is not an easy task because of the dynamism in the field of technology and technical expertise. New AI queries of cause, liability and rights require court interpretation of the current laws. The international factors are a complication, with AI frequently extraterritorial and foreign firms having minimal physical presence in India taking over. Critics are worried that the possibility of heavy regulation will stem out innovation and that it will drive AI advancement to more liberal nations besides making compliance unaffordable to small companies without legal departments. They prefer self-regulation and industry norms to laws, emphasizing the inability of regulators to keep up with the development of technologies.

Partners Universal Innovative Research Publication (PUIRP)
Volume: 04 Issue: 01 | January-February 2026 | ISSN: 3048-586X | www.puirp.com

According to the proponents, no regulation is self-damaging such as loss of confidence, abusive use, and power concentration with fast-moving companies. They claim that proper regulation may in fact be beneficial to innovation by creating a level playing field through proper expectations and avoiding a race to the bottom. The legitimacy perspective extends past legality to the issue of social approval and moral correctness. M.A.N.A.V perceives the fact that legal systems can be perceived as illegitimate even when they uphold against popular values or when the laws fail to represent the consent of the people. The thing is that AI governance should continue to develop, and it will require social discussion and adaptation with the changing effects of technology with time.

6. CURRENT TRENDS

6.1 Operationalization and Early Implementation

By the beginning of 2026, M.A.N.A.V is shifting to implementation. There are a number of trends in operationalization that are evolving. India AI Mission has begun deploying compute infrastructure the initial GPU clusters have already been deployed, and researchers have submitted applications. The first compute capacity is being channeled to natural-language processing, agricultural and medical computer vision, and climate modelling. The demand is significantly greater than supply, which proves the fact that access to compute was a constraint as well and demonstrates the amount of investment required to overcome it.

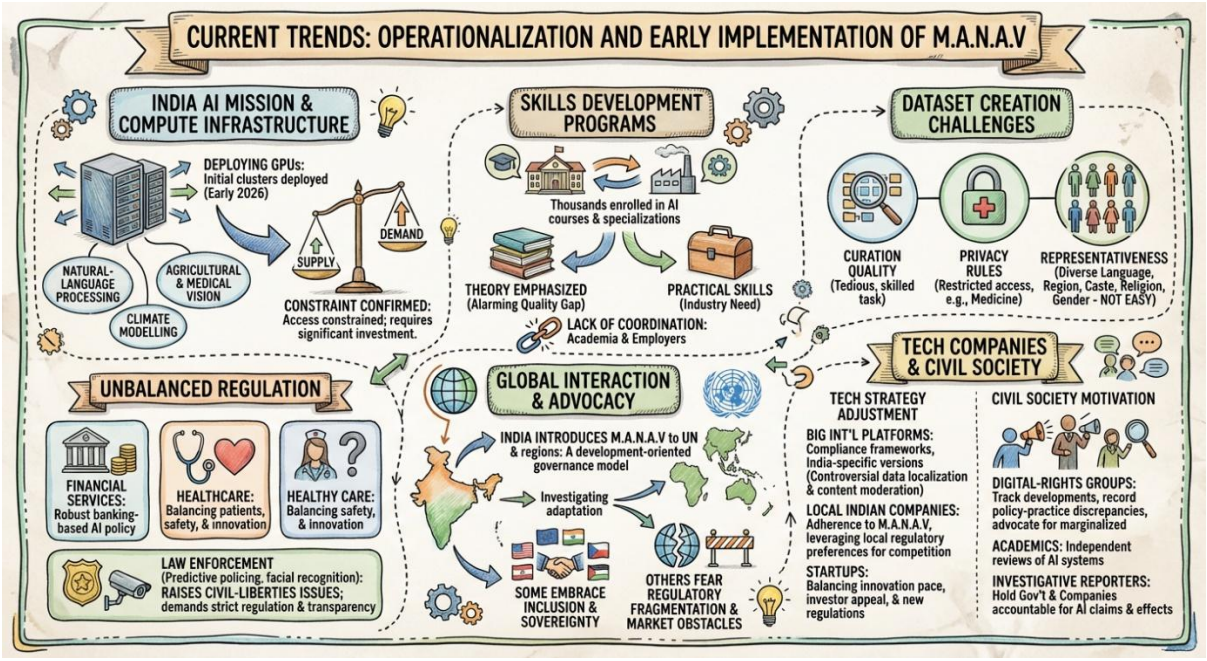

Fig -5: Current Trends: Operationalization and Early Implementation of M.A.N.A.V

Development programs on skills are on the rise. There are thousands of professionals who enroll in AI courses and universities are offering AI specializations. The quality however differs in range among institutions. There are schools where the theory is more emphasized than practical skills, which is alarming. The partners of the industry desire training to suit job requirements but there is still lack of coordination between academia and employers. The creation of datasets encounters three big challenges, namely curation quality, privacy, and representativeness. Creation of annotated datasets is a tedious task that needs skills. The rules of privacy restrict access to information, particularly in medicine. In order to avoid

being biased, datasets need to be diverse in terms of language, region, caste, religion, and gender, which is not easy.

There is an unbalanced regulation. The financial services AI policy is developed and based on robust banking regulation. AI regulations in healthcare strike a balance between patients, safety and innovation. Predictive policing and facial recognition represent law-enforcement AI that raises civil-liberties issues and demands more strict regulation and transparency.

The global interaction is increasing. Indian authorities introduce the M.A.N.A.V framework to the UN and other regional organizations positioning it as a development-oriented model of AI governance. Africa, Southeast Asia, and Latin America countries investigate ways of adapting these principles. The advanced industrial economies are uneven; there are those who embrace inclusion and sovereignty concerns, and there are those that fear fragmentation of regulation and market obstacles.

Technology companies are strategically adjusted. Big international platforms establish compliance frameworks and versions India-specific, however, data-localization and content moderation are controversial. Local Indian companies boast of adherence to the M.A.N.A.V principles, leveraging on the local regulatory preferences as a way of competing with foreigners. Start-ups seek to weigh a fast pace of innovation, attractiveness to investors, and regulation against new regulations. Implementation is motivated by the civil society. Digital-rights groups keep track of developments, record discrepancies between policy and practice, and advocate more powerful protections of marginalized populations. Independent reviews on the performance and governance of AI systems are made by academics. The investigative reporters keep the governments and companies responsible of the AI claims and effects.

7. CHALLENGES AND LIMITATIONS CRITICAL ASSESSMENT

The implementation issues might transform M.A.N.A.V into a viable system. The institutional capacity is the greatest challenge. A sound AI management requires technical expertise, resources, and activities that are absent in various regulatory agencies. The AI Mission aims to develop capacity, and the level of expertise will not develop quickly, and the sphere changes rapidly, that is why it is necessary to learn continuously. A threat is regulatory capture where the regulators are controlled by the same firms they are controlling.

There is complication in terms of coordination in the federal system of India. There are numerous ministries, state governments, and regulators of AI projects. The rules of M.A.N.A.V need to be consistently interpreted throughout this discontinuous landscape, which has been a challenge to India. The interplay between central and state governments, overlapping regulatory roles and divergent development and supervision priorities may stop everything.

Budget limits real ambition. The sums of money that the AI Mission gets are not large, but they are small in comparison with tech giants and other countries. Ramping up semiconductor manufacturing, scaling compute, and providing everyone with AI literacy require resources that test fiscal sustainability. The funds on AI can also be used to address other pressing national demands.

There is a constant conflict between innovation and precaution. Excessively rigid regulations may drive out growth in foreign countries or knowledge. Weak regulations can permit destructive applications and destroy societal confidence. It is difficult to find the appropriate balance when the harms are doubtful or in the long-run. Phased rollout and sandboxes are beneficial, yet they need to rely on the judgment of the experts and are unable to remove the trade-offs.

Partners Universal Innovative Research Publication (PUIRP)
Volume: 04 Issue: 01 | January-February 2026 | ISSN: 3048-586X | www.puirp.com

Sovereignty pillar opposes autonomy to cooperation. Full custom independence is neither technically nor economically possible. The global partnership is the driver of the AI development, and cross-national applications enjoy mutual experience. The advantages of data-localizations are good in terms of sovereignty, but increase the costs and the performance of the system, which relies on various data sources. The appropriate balance between autonomy and interdependence requires constant modification.

Inclusion objectives are faced with deep rooted obstacles. Digital divides are still significant, particularly in the case of women and the rural population. The differences in access and skills which are based on gender, caste, and rural, and urban differences are profound and cannot be resolved through policy. This diversity in language is, despite its value, a technical problem; the majority of AI studies are in English and some other languages.

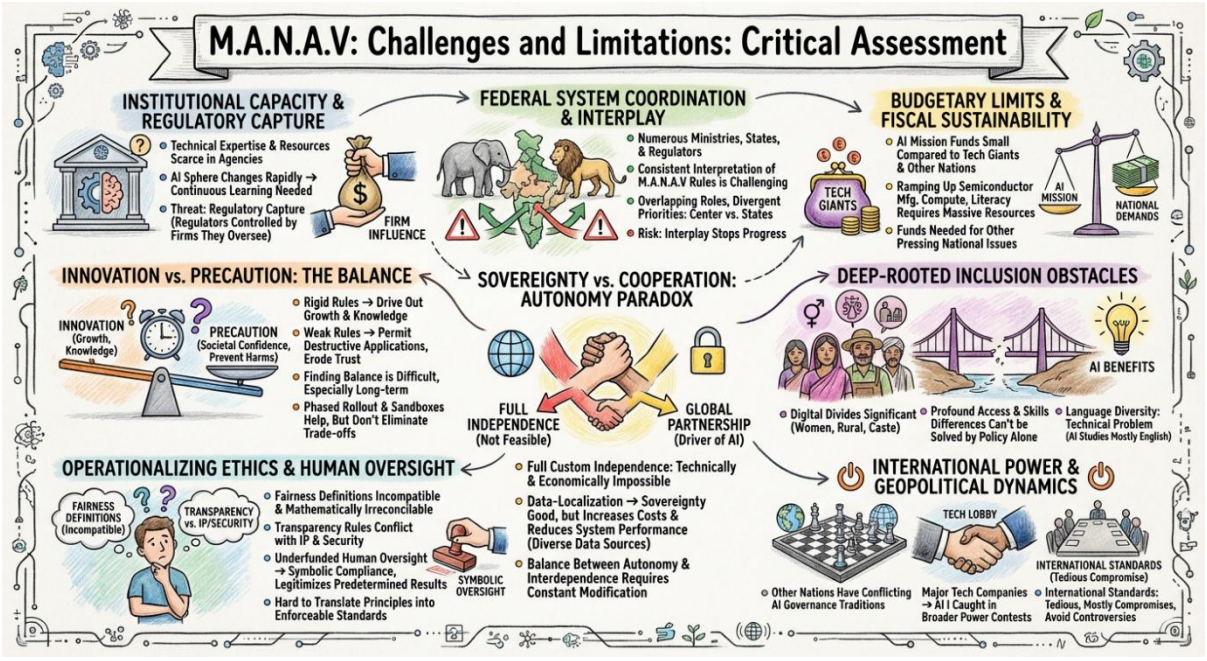

Fig -6: M.A.N.A.V : Challenges and Limitations Critical Assessment

It is difficult to operationalize ethics. The definitions of fairness are incompatible, and usually mathematically irreconcilable. The rules of transparency are contrary to IP and security. Unless well financed, human oversight may turn symbolic, which results in compliance formalities that legitimize predetermined results instead of discouraging harms. It is conceptually and politically hard to translate high-level principles into enforceable standards to permit context-specific variation. International power has outer boundaries. There are other traditions of AI governance in other countries that could bring it into conflict with M.A.N.A.V. Geopolitical competition among the main powers, and AI is caught yet again in broader dynamics of power contests. Major technology companies lobby against regulatory measures, which have a political influence. International standard-setting process is tedious and mostly compromises that will not raise controversial matters.

8. ROBOTICS INTEGRATION

8.1 M.A.N.A.V's Extension into Physical Autonomy

Partners Universal Innovative Research Publication (PUIRP)
Volume: 04 Issue: 01 | January-February 2026 | ISSN: 3048-586X | www.puirp.com

These principles of M.A.N.A.V. are inherently applicable to robotics since AIs interact with the physical world with the help of sensors and actuators. The recent Draft National Strategy on Robotics written in India that is consistent with M.A.N.A.V. is intended to turn India into a significant player in the creation and implementation of robots by the year 2030. This combination demonstrates that robotics is the tangible manifestation of AI and generates the issue of governance combining the issues of AI with emerging issues of the physical safety of people, human-robot relations, and the role of automation in the labor market.

The ethical alignment dimension emphasizes that the human capability should not be substituted by the robots ability in most cases. In the manufacturing industry, collaborative robots (cobots) do not replace human workers but rather work hand in hand by integrating the precision and stamina of robots with the flexibility and judgment of humans. Surgical robots improve the abilities of surgeons in healthcare without removing human medical workers. Robots are used in agriculture to perform monotonous work, including weeding and harvesting, and farmers take up strategic agricultural decisions regarding crops and markets.

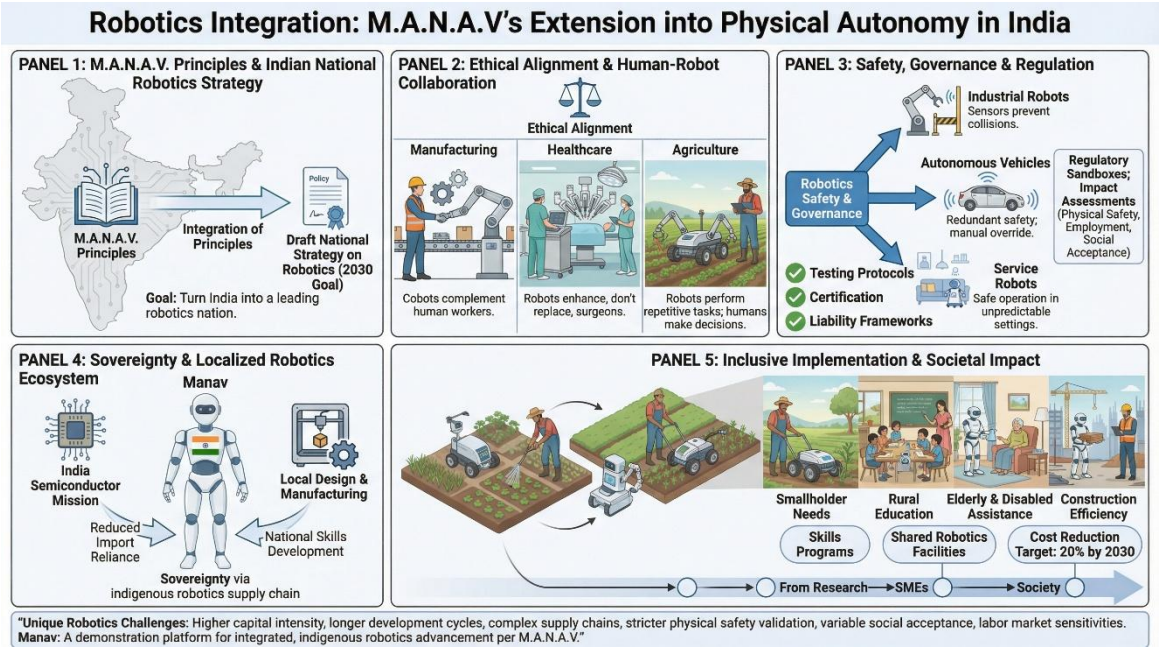

Fig -7: Robotics Integration: M.A.N.A.V's Extension Into Physical Autonomy in India

Robotics-specific safety requirements are applied to physical hazards that are absent in pure software AI. The industrial robots working around people must have sensors and control systems such that they do not cause collisions and injuries. Autonomous vehicles need redundancy in terms of safety and the ability to override human. Home and outdoor service robots need to operate in complicated unpredictable areas without posing a threat to the population. Through these safety requirements, testing protocols, certification and liability frameworks in the M.A.N.A.V. Valid and Legitimate Systems pillar are informed.

Robotics governance systems are based on AI oversight systems and introduce dimensions to them. Robotic systems can also be tested in regulatory sandboxes to ensure their functionality under controlled conditions. Specialized protocols are applied to the specifics of robotics applications, and there are varied needs of industrial manufacturing robots, service robots, medical robots, and defense applications. The impact assessments are also used to determine not only the presence of algorithmic fairness but also the physical safety, employment impacts, and social acceptance.

A sovereignty aspect is reflected in robotics by prioritizing the national production capacity and local control. The India Semiconductor Mission is even more significant in the light of the fact that robotics is highly dependent on sensors, processors and control chips. The Manav humanoid robot Project, where the domestically designed and manufactured robots are produced by 3D printing and local supply chains, is an example of the sovereignty principles used in robotics. That will minimize reliance on external systems and create skills in robotics integration.

Inclusive robotics implementation focuses on application that benefits the Indian developmental challenges. Agricultural robots that suit the conditions of smallholder farming and not big industrial agriculture may enable higher productivity and at the same time, not replace farmers. The interactive learning is offered by educational robots in school environments with limited resources. Robots used in service can help serve older and disabled communities, expand the ability to live independently. Construction robots address the work-intensive activities and generate requirements of operation and maintenance dexterity of the robots. The infrastructure and skills programs of the India AI Mission go up to robotics, and the skills programs have included robotics training among software AI.

The aim of cutting the costs of the robotics by 20 percent by 2030, as denoted in robotics strategy documents, is to ensure that the robotics are made available to Indian SMEs and not only large corporations. Shared robotics facilities, like shared compute portals, enable smaller businesses to share robotics functionality without having to make capital investments. Home manufacturing and localisation help save costs as opposed to importation of foreign-designed systems.

The issues unique to robotics are an increase in the intensity of capital compared to software AI, increased development times between prototype and full scale application, as well as complexities in the supply chain due to the integration of mechanical, electrical, and software development. When compared against the software validation, physical safety testing is much more rigorous and involves testing in the actual world in varying conditions. Robots are socially accepted differently depending on the application and setting and where the highest level of receptiveness can be seen in structured industrial settings rather than in unstructured social settings. The effects of labor markets create political sensitivities, particularly in a country where one of the most important policy goals is the creation of employment.

Manav the 3D-printed, locally developed humanoid robot of India is a technical demonstration and symbolic illustration of how M.A.N.A.V. could be applied to robotics. Although it is an academic platform, but not a commercial project yet, Manav is attempting to demonstrate both the viability of indigenous robotics potential and encourage the local robotics economy. Its advancement is done together with research organizations, manufacturing companies and government labs, the integrated strategy that M.A.N.A.V. views as the future of AI and robotics regulation.

9. GLOBAL IMPLICATIONS

9.1 M.A.N.A.V as a Competing Vision

The greatest contribution that M.A.N.A.V. can possibly have is that it will eventually shape the discourse of the AI governance system globally due to the availability of the alternative to the Euro-Atlantic frameworks. It is a form of ethics mixed with sovereignty, inclusion, and developmental interests that breaks the implicit assumptions of current governing paradigms and sets a precedent of other Global South countries that would like to govern AI in their priorities.

Partners Universal Innovative Research Publication (PUIRP)
Volume: 04 Issue: 01 | January-February 2026 | ISSN: 3048-586X | www.puirp.com

The sovereignty aspect is an innovation to traditional responsible AI models that assume that ethical principles are universal and self-evident but is mostly silent concerning power, dependency, and structural inequality. The argument by M.A.N.A.V. that the need to protect data and technological sovereignty is an ethical challenge, and not a strategic endeavor, might be appealing to nations that have experienced technology as a tool of external influence and economic exploitation.

Accessibility and inclusion pillar focuses on structural interventions, including digital public infrastructure and shared resources, which are in contrast to the market-focused approaches that presuppose that competition and privatization will bring the socially optimal outcomes. In nations where market failures are widespread and large-scale populations cannot afford to purchase their needs in a commercially viable way M.A.N.A.V. express role in terms of public infrastructure and state coordination provides a legitimating scheme to interventions that would otherwise be discounted on grounds of distortion of efficient markets.

The framework can be used to make alliances of nations influence the international governance of AI in a way that considers developmental issues. Diplomatic activities of M.A.N.A.V. in India involve the partnership with African nations that discuss the same systems, partnership with the countries of the Southeast Asia on the issue of data governance, and the presidency in such forums as the G20 and Global Partnership on Artificial Intelligence. The fact that M.A.N.A.V. provides a substitute to extensive regulation in Europe and the market-driven model in the US allows hybrid models that are flexible to different national environments.

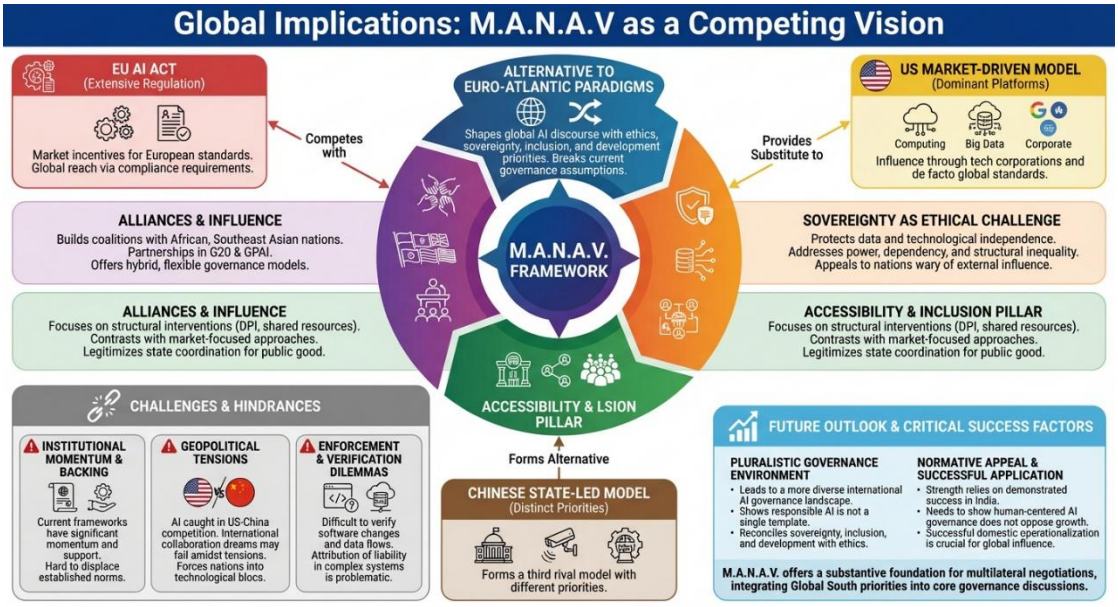

Fig -8: Global Implications: M.A.N.A.V as a Competing Vision

But the international impact of M.A.N.A.V. has some serious hindrances. The current AI governance frameworks possess considerable momentum and institutional backing. The EU AI Act brings about market incentives to conform to the European standards all around the world because companies interested in entering the European markets change their practices as well. The influence of US technology corporations domination on the market of de facto global standards is regardless of formal governance structures. The priorities used to develop Chinese AI are different than those of Western shapes and M.A.N.A.V. and form a third rival model.

Technology governance is increasingly influenced by geopolitical tensions, including AI being caught in greater US-China competition, and in the effects of other countries in alignments and rivalry. The dream of M.A.N.A.V. to eradicate the boundaries and become a platform of international collaboration can fail in the environment of such tensions, and nations are forced to operate within the frames of competing technological blocks instead of developing intermediate ways to work. These issues are reflected on the framework level by the Indian own strategic positioning, which aims to retain the relations with various great powers and not to lose its independence.

Any international AI governance regime has a problem in enforcement and verification. Software character of AI systems can be changed quickly and is hard to verify. Ranging Data flows and cloud computing imply that the physical location of AI systems can be unclear. The problem of attributing liability when complex AI systems with many developers, deployers, and sources of data cause harms themselves flouts traditional legal concepts. M.A.N.A.V. as with other methods of governance must overcome these dilemmas without apparent solutions.

Irrespective of these challenges, M.A.N.A.V. leads to a more pluralistic international AI governance environment. The framework demonstrates that responsible AI does not presuppose a single template and that the various priorities, including the sovereignty, inclusion, and development, may be effectively reconciled with the ethical principles and legal protections. The expression of Global South priorities elucidated by M.A.N.A.V. can be taken as a substantive foundation of negotiation by the multilateral institutions that are interested in the consensus instead of shaping developmental concerns as a mere figment of wishful thinking that does not play a central role in the core governance discussions.

Normative appeal of the framework will be its eventual strength not only because it is capable of providing it, but also because it will be able to show successful application by India. Provided that India can demonstrate that human-centered AI governance does not oppose technological leadership and economic growth, the model developed by M.A.N.A.V. would be more appealing to other countries with similar issues. In case the implementation fails and the development of AI in India makes progress lag in relation to or because of the needs of M.A.N.A.V., the world impact of the framework will be minimal. This establishes strong motivations to good operationalization that do not only consider immediate domestic interests of India but also extend to other countries.

10. FUTURE PROSPECTS EVOLUTION AND ADAPTATION

The future of M.A.N.A.V is whether it will be a permanent type of framework or a policy that is only temporary. There are a number of possible outcomes. Integrating the concepts of the framework into the daily practices, regulations, and industry rules can establish permanent boundaries and supports that will help formulate AI development with consideration of human values. The infrastructure and governance of Indian AI can evolve to offer effective supervision and at the same time permit innovation. The framework can be relevant to other countries because the methods of M.A.N.A.V can be spread by international partners who can create a network.

However, there is an alternative, a less hopeful way. Implementation may compromise the principles of M.A.N.A.V, and those of the regulators when they are captured or when resources are limited. Top-level commitments might not be converted into obvious, enforceable rules that in fact limit misuse of AI. Sovereignty actions would be costly, cumbersome and provide no actual benefit in terms of independence or power. The intention to make everyone a part of it might stay as a dream, and digital gaps are still

Partners Universal Innovative Research Publication (PUIRP)
Volume: 04 Issue: 01 | January-February 2026 | ISSN: 3048-586X | www.puirp.com

present, and the use of AI is still focused on those who are already ahead. In such an event, M.A.N.A.V would become a conversation point and not a reality in governance.

A more materialistic case is one that combines the two Part of M.A.N.A.V will be successful on areas where it coincides with the existing strengths and political priorities. To illustrate, the digital public infrastructure in India can successfully expand to include AI, as success has been achieved in the payments and identity. The government AI ethics may create precedents which would then be transferred to the private sector. Rules of high-risk industries may change over time by enhancing them on a continuous basis.

Other challenges are harder. The creation of competitive semiconductor manufacturing and homegrown AI models requires long-term investment and is challenging in terms of technical and economic challenges. Inter-coordination of rules in federal systems and bureaucracies can only be enhanced gradually. The strike of a balance between fast innovation and care will always lead to clashes and remedies. International power will be dependent on geopolitical occurrences beyond the jurisdiction of India.

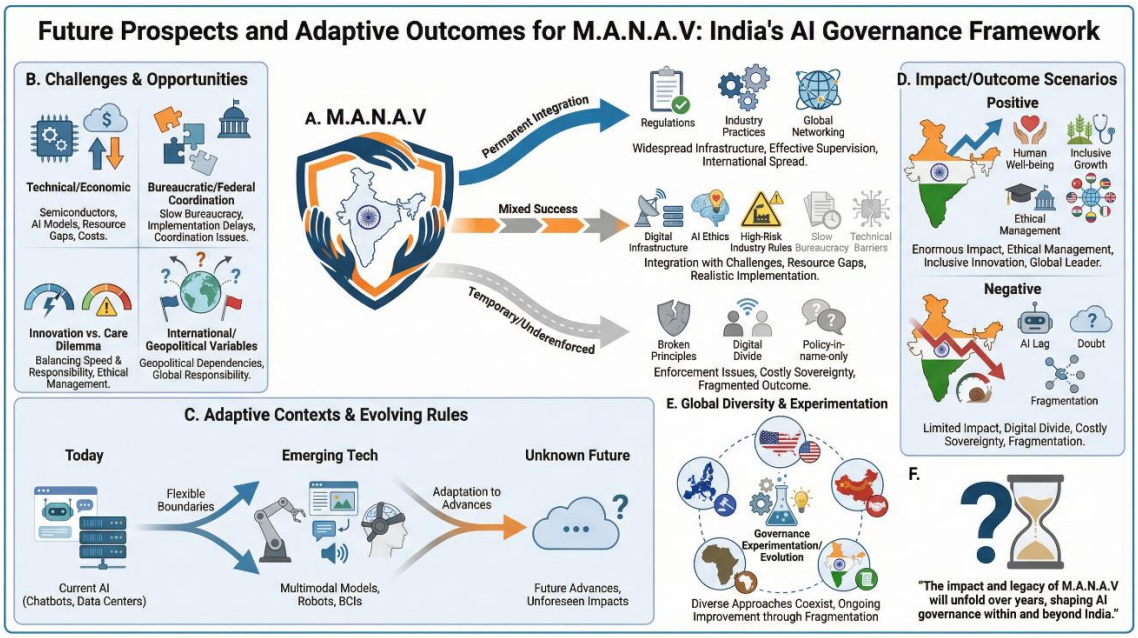

Fig -9: Future Prospects and Adaptive Outcomes for M.A.N.A.V: India's AI Governance Framework

We need to adapt according to the changes in contexts. AI is progressing at an accelerated pace, and multimodal models, general-purpose robots, and brain-computer interfaces bring forth new governance challenges that M.A.N.A.V had never foreseen. Political alliances are shifting and new opportunities and restrictions become available. The attitudes towards AI change economically, technologically and socially and require rules that can evolve and adapt to the situation, instead of following its initial strategies strictly.

The influence of M.A.N.A.V on the development of India can be enormous. When it integrates ethical AI management, inclusive innovation, and the development of strategic capabilities, India could emerge as one of the shining examples, which other nations could emulate. The workshop on AI addressing agricultural, health, educational, and governmental issues may represent how well-governed technology can elevate human well-being. However, in case the rules developed by M.A.N.A.V will reduce the pace of AI development in India in comparison to other countries, people will doubt the suitability of the frameworks.

The entrance of M.A.N.A.V into the world of AI is an indicator of increasing diversity in the mode of governance. Universal convergence of some kind of hope is not likely to occur. Rather, numerous models, representing various politics, economies and cultures will co-exist and be competing. Such diversity comes with its challenges and opportunities. Regulatory fragmentation provides global firms with costs and complexity. However, diversity also drives experimentation, which allows testing various approaches in different environments. On going lessons can be used to have ongoing governance improvement.

The evaluation of M.A.N.A.V will not be done until the implementation will be reviewed over years. Its vision is evident, yet the fulfillment of such targets is fraught with challenging the huge responsibility of controlling transformative technology and managing geopolitical pressures and constraints. The only thing that is definite is that M.A.N.A.V is a sizable effort towards global AI regulation, an attempt made by a large democratic developing country, and its success or failure will define the direction taken by AI well beyond Indian territories.

11. COMPARATIVE IMPLEMENTATION

11.1 Learning from Global AI Governance Experiences

The M.A.N.A.V Vision in India is an extension of an even broader national and regional framework of AI governance initiatives. Both of them provide teachings that can inform the application of M.A.N.A.V and demonstrate how various situations should be approached in their specific ways. Through these comparisons, we get to know not only the general difficulties, in implementing AI governance, but also the particular modifications that M.A.N.A.V can implement to suit India.

The most elaborate example of regulation is the European Union AI Act, which has been implemented in phases between 2024 and 2027. It applies a risk-based categorization dividing AI applications into unacceptable, high-risk, limited-risk, and minimal-risk. This pyramid system assists the regulators to direct their resources on the most critical areas. The high-risk AI systems, such as critical infrastructure, employment, law enforcement, or education, should undergo conformity tests, and keep a human supervision and fulfill transparency requirements. The Act demonstrates that a universal rule is not feasible and that any regulation is not only protective but could be proportional.

The EU experience can provide M.A.N.A.V with some crucial lessons. The technical documentation and conformity checks that are given priority by the Act poses a high level of accountability but the small businesses find difficulties in the paperwork and the cost. India could use proportionality reducing requirements based on the size of an organization, but maintaining key defenses. The EU was also finding difficulties in defining such concepts as an AI system and high-risk application. India would be well advised to make investment in such clear, actionable definitions early and establish consultative groups to adjust the classification as experience in the real world continuously increases.

Another way is the Model AI Governance Framework of Singapore. The nation focuses on transparency, explainability, and human control offering more detailed operational guidance rather than strict regulations. Since Singapore is not big and has a high state capacity, industry can self-regulate itself through the guidance of government. The larger and more diverse environment of India is different, but sector-specific guides of Singapore demonstrate how general principles are transformed into practice. M.A.N.A.V might use the elaborate advice of Singapore and introduce heavier implementation that befits the sophisticated regulatory India.

Partners Universal Innovative Research Publication (PUIRP)
Volume: 04 Issue: 01 | January-February 2026 | ISSN: 3048-586X | www.puirp.com

China combines the state-directed investment into technology, and control of the content, social applications access to political agenda. Although India has a different system of governance due to its democratic system, China has made good progress in developing AI capabilities through well-coordinated policy, strategic investment in compute and talent development that could be of value. China demonstrates that a state-coordinated plan can speed up the underlying infrastructure which purely market-driven models may not capture.

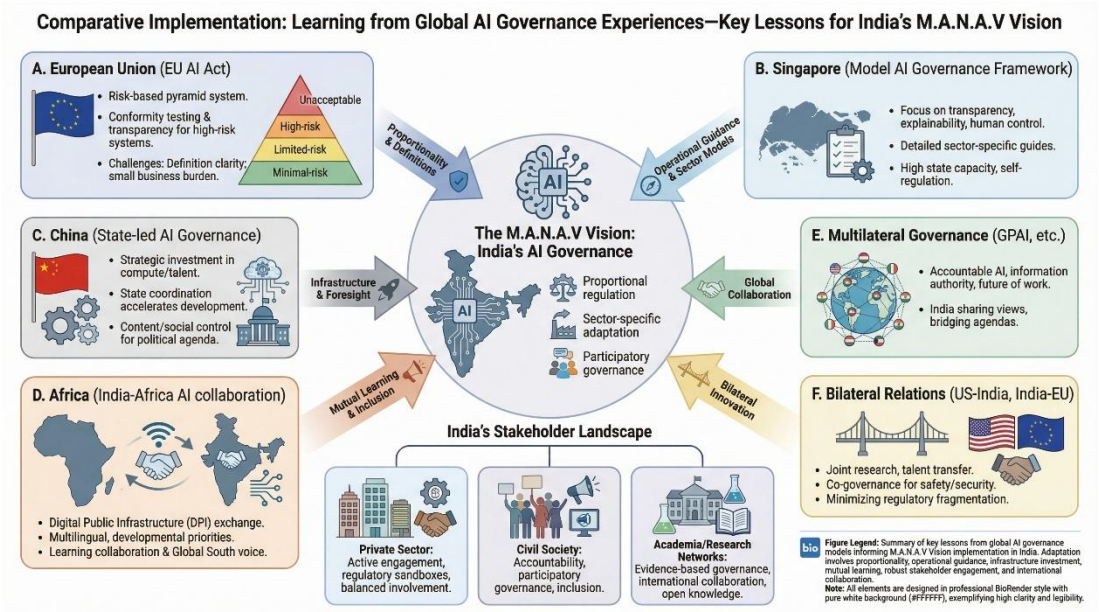

Fig -10: Comparative Implementation: Learning from Global AI Governance Experiences

Foreign relations are of importance to the development and fining of M.A.N.A.V. The participation of India in African countries such as the India-Africa Forum Summit gives an opportunity to exchange Digital Public Infrastructure practices and human-friendly governance. The AI environment in Africa, constrained computing, multilingual cultures, and developmental priorities are in line with M.A.N.A.V priorities. The collaborative projects of adapting India Stack to the context of Africa can contribute to learning together and increase the voices of the Global South in global AI discussions.

Governance Multilateral The categories of GPAI on accountable AI, information authority, and the future of work allow India to share M.A.N.A.V views and get insights on other members. India can be at the forefront by demonstrating good implementations and filling gaps between the developed country agendas and the developing countries.

A closer collaboration can be achieved through bilateral relations with states that also go for complementary strategies. The US-India Initiative on Critical and Emerging Technology also incorporates AI in its priority list, as they assist in collaborative research, talent transfer and co-governance of AI safety and security. India-EU Trade and Technology Council provides regulatory forums to enable firms to align compliance M.A.N.A.V with the EU AI Act and minimize fragmentation.

The role of the private sector cannot be overestimated. The Indian community of technology consists of global service companies, domestic products companies, and an active start-up society that is providing the necessary expertise and ability. M.A.N.A.V needs to develop governance frameworks that reach this sector by consulting them, forming partnerships with the corporate, and providing regulatory sandboxes

to conduct controlled experiments. Experience of failures in regulation in the past when the industry was weak on involvement and when it was captured and the people faced disadvantages will inform the appropriate proportion between engagement and independence.

The civil society organizations offer an important accountability mechanism which may reflect the interests of the people that the governments or the industry may not pay enough attention to. India has a long culture of participative civil society involvement, including digital rights activism and community technology programs, which prepares the ground towards participatory governance. Global civil society networks provide Indian actors with global experience on algorithmic accountability, data rights and inclusive tech design so as to add depth to the discussion using India-specific perspectives.

The independent evidence required in evidence-based governance is provided by academic establishments and research networks. The cooperation of AI research in the international arena, particularly joint projects of Indian universities with international partners, enhances technical progress and governance acumen. Open research sharing accelerates the development and expands the participation further than proprietary methods. M.A.N.A.V makes India a producer rather than a consumer of global AIs knowledge commons by the virtue of supporting open research and safeguarding legitimate intellectual property and security.

12. CONCLUSION

The M.A.N.A.V vision of India is a multi-faceted attempt to create a human-oriented AI governance framework, which would incorporate moral principles along with developmental objectives, autonomous strategy, and democratic responsibility. It prioritizes the welfare of the human being, and AI is seen as an instrument of people and not a self-governing entity. Ethical commitments such as sovereignty and inclusion are not sidelines. This strategy is critical of AI governance schemes of developed industrial economies. The five pillars of the framework, namely, Moral and Ethical Systems, Accountable Governance, National Sovereignty, Accessible and Inclusive AI, and Valid and Legitimate Systems, integrate various governance traditions and can be used to respond to particular issues of the Global South.

The fact that India is shifting away from rhetoric is demonstrated through India AI Mission, digital public infrastructure, regulatory measures and capacity-building programs. The timely introduction illustrates development and difficulties. It has implemented compute infrastructure, skills development, sectoral regulation, and is constrained by institutional capacity, challenges in coordination and resource constraints. Its application is also applicable in robotics, with the Draft National Strategy on Robotics, and with robots like the Manav humanoid robot, it becomes clear that the framework is not limited to software AI.

The significance of M.A.N.A.V on a global level is that it demonstrates a responsible approach of AI governance can combine various priorities and that alternative models to Euro-Atlantic strategies can be developed and are necessary. M.A.N.A.V can serve as a template to countries with a similar level of development issues, sovereignty issues, and inclusion requirements. In the case of multilateral AI work, the paradigm introduces Global South perspectives into the picture that have to be factored into the worldwide collaboration in order to make it indeed inclusive and not hegemonic by several developed economies.

The effectiveness of the Indian implementation of the framework and demonstration that human-focused AI governance can co-exist with technological leadership and economic growth will be assessed as successful. This requires long-lasting political commitment, institutions, and investment and constant

moulding with the changing situations. It also entails the process of juggling conflicting interests, choosing innovation over caution, balancing independence and collaboration, and transforming general values into practices constraining and eliminating harmful applications and enhancing beneficial ones.

M.A.N.A.V is an addition to the AI governance across the world when the direction of technology is yet to be determined. Be it that it achieves all its objectives or it is a mere aspirational statement, it has already changed the discourse by demonstrating that responsible AI is required to address not only technical safety and fairness, but also power, equity and sovereignty. Since AI is transforming the world, M.A.N.A.V demands that these transformation be beneficial to people and that these developments protect people and their dignity by combating the techno-determinist narratives that justify the absence of human agency and political decision-making. Now it is to realise that vision by creating institutions and practices that would regulate AI to enable real human flourishing.

REFERENCES

[1] Advani, I. T. (1999). Infrastructure projects public and/or private. China and India. https://doi.org/10.1007/978-0-333-99508-2_3
[2] Balakrishnan, M. (2023). The unified payment interface and the growth of digital payments in india: An analysis. Journal of Payments Strategy & Systems, 17(3), 250. https://doi.org/10.69554/lmxb4081
[3] Che, L. (2019). China's state-directed economy and the international investment regime. China's State-Directed Economy and the International Order. https://doi.org/10.1007/978-981-13-5838-8_6
[4] Dhiman, T. (2025). Transforming governance through digital public infrastructure: A case study of apuni sarkar portal in uttarakhand (india). Journal of International Commercial Law and Technology, 6(1), 823-835. https://doi.org/10.61336/jiclt/25-01-80
[5] J, H., & K, L. (2024). AI for social good: Addressing development challenges in india. NOLEGEIN- Journal of Management Information Systems. https://doi.org/10.37591/njmis.v7i2.1430
[6] Johnson, J. (2022). The US, indo-pacific, AI and emerging security technologies. The Routledge Handbook of US Foreign Policy in the Indo-Pacific. https://doi.org/10.4324/9781003018322-38
[7] Manmadhan, M., Kurian, G. S., & Ravi, N. (2024). Challenges in democratizing e-commerce in india through open network for digital commerce: A seller network node perspective. 2024 15th International Conference on Computing Communication and Networking Technologies (ICCCNT). https://doi.org/10.1109/icccnt61001.2024.10724232
[8] Nancharaiah, G. (2020). Dr. B. R. ambedkar's vision of economic development of india and its relevance. Ambedkar's Vision of Economic Development for India. https://doi.org/10.4324/9781003051572-2
[9] Nussbaum, M. C. (2013). Creating capabilities. Harvard University Press. https://doi.org/10.2307/j.ctt2jbt31
[10] Pasupuleti, M. K. (2025). Dairy and beverages in india: Ai-driven innovation, nutrition, and market growth. https://doi.org/10.62311/nesx/rb32
[11] Rodgers, L. (2024). Relationality and collective personhood. Labour Law and the Person. https://doi.org/10.1332/policypress/9781529223163.003.0005
[12] Thippanna, G. (2025). Assessment of arranged man-made intelligence (AI) apparatuses, their utilitarian design processor and its market size. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.5808962
[13] Vallor, S. (2024). Defining human-centered AI. Human-Centered AI. https://doi.org/10.1201/9781003320791-3
[14] Varma, P. (2015). Building an open identity platform for india. 2015 Asia-Pacific Software Engineering Conference (APSEC). https://doi.org/10.1109/apsec.2015.63
[15] Yellapantula, V., & Miriyala, V. M. (2023). Account aggregator ecosystem: A step towards revolutionising digital lending in india. Journal of Digital Banking, 8(1), 77. https://doi.org/10.69554/jiri3062
[16] Zachariah, B. (2005). The debate on gandhian ideas. Developing India. https://doi.org/10.1093/acprof:oso/9780195670585.003.0004
[17] Unknown. (2024). Risk-based AI regulation: A primer on the artificial intelligence act of the european union. https://doi.org/10.7249/rra3243-3

[18] Unknown. (2025). Running the right artificial intelligence race: A national strategy for AI diffusion. https://doi.org/10.7249/pea4165-1

[19] CARTERETTE, E. C. (1975). I compute, you compute, we all compute. Contemporary Psychology: A Journal of Reviews, 20(7), 565-566. https://doi.org/10.1037/0013489

[20] Chauhan, D. K. (2025). Personal data protection in the technology age of indian scenario. Indian Journal of Law. https://doi.org/10.36676/ijl.v3.i3.96

[21] Hongladarom, S., & Bandasak, J. (2024). Non-western AI ethics guidelines: Implications for intercultural ethics of technology. AI & SOCIETY, 39(4), 2019-2032. https://doi.org/10.1007/s00146-023-01665-6

[22] Jain, A. S. (2025). Decoding consent managers under the digital personal data protection act, 2023: Empowerment architecture, business models and incentive alignment. Journal of Data Protection & Privacy, 7(4), 406. https://doi.org/10.69554/mhlp2916

[23] George, D., & George, A. (2023). The CoBOT Chronicles: Evaluating the emergence, evolution, and impact of collaborative robots in Next-Generation manufacturing. Zenodo (CERN European Organization for Nuclear Research). https://doi.org/10.5281/zenodo.8021406

[24] Khopade, R., Sawargaonkar, G., Kale, S., Davala, M., Rakesh, S., Das, S. S., Verma, R., Raje, K., Singh, R., & Jat, M. L. (2025). Sustainable intensification in coconut for building system resilience and nutritional security of smallholders in eastern india. npj Sustainable Agriculture, 3(1). https://doi.org/10.1038/s44264-025-00080-2

[25] McElfresh, D. C. (2019). A framework for technically- and morally-sound AI. Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society. https://doi.org/10.1145/3306618.3314320

[26] George, D., & George, A. (2025). The AI Job Revolution - How emerging roles are reshaping the future of work and creating new career pathways. Zenodo (CERN European Organization for Nuclear Research). https://doi.org/10.5281/zenodo.17009242

[27] Muhammad Tahir, A. (2025). The efficacy of the information technology act, 2000, in addressing emerging cyber threats in india. International Journal of Science and Research (IJSR), 1692-1694. https://doi.org/10.21275/sr251124195921

[28] Neelima, B. (2017). High performance computing education in an indian engineering institute. Journal of Parallel and Distributed Computing, 105, 73-82. https://doi.org/10.1016/j.jpdc.2017.01.019

[29] RAINA, A., MUNDRA, K., PRASAD, P., & MISHRA, S. (2023). Fostering ethics in AI: Perceptions from the indian AI curriculum. International Conference on Computers in Education. https://doi.org/10.58459/icce.2023.1440

[30] George, D., Dr.T.Baskar, & Siranchuk, D. (2025). Examining university obsolescence claims in the conversational AI era. Zenodo (CERN European Organization for Nuclear Research). https://doi.org/10.5281/zenodo.17715188

[31] Sehgal, S., Malhan, D., & Gothwal, R. (2024). Open network for digital commerce (ONDC): Addressing digital monopolies through revolution in indian e-commerce. International Journal of Management and Development Studies, 13(5), 64-76. https://doi.org/10.53983/ijmds.v13n5.005

[32] Sengupta, A., Barbosa, A. C., & Samdub, M. T. (2025). Understanding interrelationships between AI and digital public infrastructure (DPI) in india and brazil. The African Journal of Information and Communication (AJIC). https://doi.org/10.23962/ajic.i35.20800

[33] George, D., Shaji, T., & Siranchuk, D. (2025). AI personalized Learning The hidden cost to children's critical thinking. Zenodo (CERN European Organization for Nuclear Research). https://doi.org/10.5281/zenodo.17963271

[34] Shameer, K. M., Raja, S., & Durai, S. (2024). The political budget cycle: Evidence from indian municipal corporation elections. Review of Development and Change, 29, 86 - 105. https://doi.org/10.1177/09722661241256713

[35] George, D. (2025). Cyber resilience in an AI-Driven world: a Strategic framework. Zenodo (CERN European Organization for Nuclear Research). https://doi.org/10.5281/zenodo.18002783

[36] Unknown. (2008). International nuclear non-proliferation rules bent for india. New Scientist, 199(2673), 6. https://doi.org/10.1016/s0262-4079(08)62266-6

[37] Unknown. (2020). Digitization of indian financial infrastructure. FinTech Future: The Digital DNA of Finance. https://doi.org/10.4135/9789353885687.n9

[38] Che, L. (2019). China's state-directed economy and the international investment regime. China's State-Directed Economy and the International Order. https://doi.org/10.1007/978-981-13-5838-8_6

[39] Ekuma, K. (2025). Building trust through transparent AI governance: Embedding ethical oversight into academic curricula development. International Conference on AI Research, 5(1), 104-114. https://doi.org/10.34190/icair.5.1.4316

[40] Lim, S. S., & Chng, G. (2024). Verifying AI: Will singapore's experiment with AI governance set the benchmark?. Communication Research and Practice, 10, 297 - 306. https://doi.org/10.1080/22041451.2024.2346416
[41] Pasupuleti, M. K. (2025). AI governance: Data sovereignty, cybersecurity, and ethical compliance. https://doi.org/10.62311/nesx/rb26
[42] Raihan, S., Mahjabin Prima, L., Ferdous Surid, T., & Sharmin, E. (2025). The impact of digital public infrastructure. https://doi.org/10.69814/wp/202597
[43] Rajpara, Y. (2020). Are indian startups technology driven ? investigating potentiality of indian startups. AMC Indian Journal of Entrepreneurship, 3(2-3), 25. https://doi.org/10.17010/amcije/2020/v3i2-3/153296
[44] Sayles, J. (2024). AI policy management and enforcement. Principles of AI Governance and Model Risk Management. https://doi.org/10.1007/979-8-8688-0983-5_10
[45] Sekine, T. (2024). Eu's AI regulation and international economic law: The complex impact of the EU AI act on global economic governance. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.4997043
[46] Zhang, J. (2019). De facto standards. SEPs, SSOs and FRAND. https://doi.org/10.4324/9781003000259-2
[47] Unknown. (2015). Accountability mechanisms. Board Accountability in Corporate Governance. https://doi.org/10.4324/9781315849713-7
[48] Unknown. (2020). India-us relations. India in the Era of China's Belt and Road Initiative, 133-148. https://doi.org/10.5040/9781666996470.ch10