TECHNOLOGY READINESS INDEX OF INDIAN STATES

DECEMBER 2025

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PHD Chamber of Commerce and Industry (PHDCCI) has been working as a catalyst for the promotion of Indian industry, trade and entrepreneurship since 1905. It is a forward looking, proactive and dynamic PAN-India apex organization. As a partner in progress with industry and government, PHDCCI works at the grass roots level with strong national and international linkages for propelling progress, harmony and integrated development of the Indian economy. Under the aegis of its State Development Council (SDC), PHDCCI essentially carries forward the mission of "Empowering States" to strengthen India's federal structure of governance and create global partnership linkages.

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Executive Summary

Digital technology is deeply embedded in India's economic and social fabric. Indians today make more than a hundred billion fast retail payments transactions via the Unified Payments Interface annually, and the country has one of the world's most diverse digital public infrastructure ecosystems. From education and health to commerce, mobility, and governance, technology shapes how individuals live, work, and access essential services in India.

The Union Government has articulated its ambition for a trillion-dollar digital economy, supported by initiatives across connectivity, digital public infrastructure, and manufacturing. This raises important questions: how prepared are states to participate in this digital transformation? How much does access to technology vary across regions? And what kind of policy and institutional environments exist to support digital growth?

Koan Advisory Group and PHD Chamber of Commerce and Industry (PHDCCI) have developed the 'Technology Readiness Index' to help answer these questions. It evaluates Indian states on 25 parameters related to technology access, infrastructure, business orientation and institutional readiness, and ranks them accordingly. The Index assembles and analyses data on how technology is spreading across the country.

Key Findings

- Tamil Nadu, Karnataka and Maharashtra are the top three performers in the Index. Tamil Nadu ranks 1st with a score of 80.95. Karnataka ranks 2nd with 69.09. Maharashtra ranks 3rd with 66.14. These states perform well across multiple pillars and maintain balanced readiness profiles.
- The three leader states form part of a broader Southern and Western cluster that dominates the top 10 positions. Telangana, Andhra Pradesh and Kerala rank 4th, 6th and 10th respectively. Gujarat ranks 7th and Goa ranks 9th. The concentration of top-ranked states in these regions reflects sustained investment in digital networks and infrastructure as well as technology-oriented economic activity.
- Northern states tend to occupy the middle ranks of the Index. The exceptions are Delhi, which is ranks 5th and Haryana which ranks 8th. Uttar Pradesh, Rajasthan, Punjab and Madhya Pradesh appear between ranks ten and eighteen, with composite scores typically between 25 and 45. Their performance indicates progress on access and selected infrastructure indicators but gaps in business ecosystem depth or policy preparedness.
- Eastern and North-Eastern states remain concentrated in the lower half of the Index. Bihar, Jharkhand, Assam, Arunachal Pradesh, Manipur and Meghalaya appear below rank 20 with composite scores less than 20. The notable exception is Odisha, which ranks 11th. The laggard states continue to reflect constraints in connectivity, service access and institutional capacity.

The Index is constructed in two steps. First, we calculated scores for each pillar using principal component analysis. This method assigns weights to indicators based on the patterns in the data, so indicators that differ more across states receive higher weights and those that show little variation receive lower weights. Each pillar score is therefore a weighted summary of its indicators.

Second, the four pillar scores are combined using equal weights to produce the final composite score for each state.

The Technology Readiness Index aims to encourage a spirit of competitive and cooperative federalism among states. It can help policymakers assess where digital public infrastructure has taken root, where policy support is strong, and where gaps exist between ambition and implementation. It offers insights into how states can prioritise investments to strengthen digital participation and economic opportunity.

Greater technological readiness can enhance public service delivery, attract investment, expand employment opportunities, and improve citizen welfare. Strong performance in the index therefore signals a commitment to both economic dynamism and social well-being. We hope this exercise supports states in mapping their progress and identifying areas for further action.

Context

In recent years, advances in digital technologies have continued to reshape economic activity across sectors. The expansion of high-speed mobile broadband and the rollout of 5G networks have supported new applications in manufacturing, logistics, and services, including large-scale Internet of Things (IoT) deployment and data-driven production systems.

At the same time, global value chains are becoming increasingly technology-intensive. Firms are shifting production to locations that offer strong digital infrastructure, reliable connectivity, a skilled workforce, and predictable policy environments. India's own progress with Digital Public Infrastructure, cloud adoption, digital payments, and emerging AI capabilities has therefore become a relevant factor in how businesses operate and invest. The post-pandemic transition to hybrid work and digital service delivery has further reinforced the role of technology as a foundation for competitiveness and inclusive growth.

The developments discussed here highlight why technology readiness is essential for economic resilience. For India, this becomes even more relevant as the country expands its digital public infrastructure and pursues higher-value growth. National initiatives such as Digital India, the IndiaAI Mission, and ongoing investments in connectivity and digital services reflect the scale of this ambition.

Assessing technology readiness at the state level is critical. It helps understand how different states compare with one another, in line with the ideals of cooperative and competitive federalism. Such analysis showcases regional variations, and offers practical reference points leaders and laggards alike. Instead of relying on a unitary path, it allows each relevant stakeholder to identify strengths, areas of improvement, and simultaneously provides a realistic anchor for the next phase of India's digital growth.

Against this backdrop, Koan Advisory Group and PHDCCI present the Technology Readiness Index 2025. This Index offers a structured assessment of how prepared India's states are to participate in a technology-driven economy. It evaluates the extent to which foundational digital services are accessible, the strength of underlying technology infrastructure, the orientation of state economies toward technology-led business activity, and the presence of supportive laws and policies. By organising indicators across these four themes, the Index provides governments and stakeholders with a clear, comparable view of strengths, gaps, and opportunities to enhance technology readiness in the years ahead.

Index Design

We conceptualise the tech-readiness of states as a multi-faceted phenomenon resting on four key dimensions: (i) tech access, (ii) tech infrastructure, (iii) tech business orientation, and (iv) tech institutions and Laws.

- **Tech Access** measures how readily citizens and businesses can connect to and use digital services. It includes indicators such as internet penetration, Unified Payments Interface (UPI) transactions per capita, and median 4G speed.
- **Tech Infrastructure** captures the physical backbone required for digital activity. Representative parameters are gram panchayats connected with optic-fibre under BharatNet, operational electric-vehicle charging stations, smart-city projects, and 5G Base Transceiver Stations (BTS) deployment.
- **Tech Business Orientation** reflects the conduciveness of the state environment for technology-driven enterprises. It covers aspects like Foreign Direct Investment (FDI) inflows, strength of the start-up ecosystem, operational Software Technology Parks of India (STPI) centres, and patents filed per capita.
- **Tech Institutions and Laws** assess formal policy preparedness of states for the digital economy by examining the existence of dedicated, publicly available state-level policies on Information Technology / IT-Enabled Services (IT/ITES), digital skilling, cybersecurity, and three major emerging technologies (Artificial Intelligence, Internet of Things, and blockchain). For the purpose of this Index, the pillar records only whether a conducive and enabling policy framework exists without comparing the depth, quality or sophistication of the policies.

Each dimension is built from several measurable parameters. We began with an initial pool of 32 such variables and applied three basic filters: (i) the variable must have reliable data for at least twenty-five states, (ii) it should not be too closely correlated with other variables, and (iii) it should meaningfully distinguish one state's performance from another. Based on these criteria, seven variables were dropped, and the remaining indicators form the basis of the Index. Table 1 presents the final set of parameters used for index construction.

Table 1: Design of the Tech Readiness Index

Sub-Indices	Parameters
Tech Access	Internet Penetration UPI Payments Per Capita Number of ATMs Internet Shutdowns Median Downloadable 4G Speed
Tech Infrastructure	Gram Panchayats Connected with Optic Fibre Smart Cities Electric Vehicles Charging Stations Number of Public E-Services Offered Number of Operational Special Economic Zones Number of Operational Common Service Centres (CSCs) 5G Base Transceiver Stations (BTS) Deployed
Tech Business Orientation	FDI Inflows Share of Higher Education Enrolments in Technical/Engineering Courses Start-up Ecosystem Number of Software Technology Parks (STPI) Wholesale Regulated Markets Integrated with e-NAM Patents Filed

Sub-Indices	Parameters
Tech Institutions and Laws	IT Policy Cybersecurity Policy Digital Skilling Policy AI Policy Internet of Things Policy Blockchain Policy

Notes: This table presents the parameters used for index construction, out of a pool of 32 variables.

How Indicators Weights Were Determined

The Index uses **Principal Component Analysis (PCA)** to assign data-driven weights to indicators within each pillar. PCA takes all the indicators in a pillar and combines them into a single score that captures the largest amount of measurable difference across states. The procedure operates through three steps:

1. **Identifying informative indicators:** PCA first examines the extent to which each indicator varies across states. Indicators with greater variation contain more information about how states differ in that dimension. These indicators contribute more strongly to the statistical pattern that PCA extracts and therefore receive higher weight.
2. **Distinguishing independent information from duplication:** PCA also evaluates how indicators move relative to one another. When indicators are highly correlated, they reflect the same underlying pattern. Giving them high weights simultaneously would replicate the same information. PCA reduces their relative influence by allocating lower weights to overlapping indicators while retaining the one that captures the pattern most effectively.
3. **Constructing the pillar score:** Within each pillar, PCA combines the weighted indicators into a single score representing the dominant pattern of performance across states. This score captures the maximum shared variation across all indicators in that pillar. The resulting values are then rescaled between zero and one hundred to ensure comparability.

Annexure A provides definitions and data sources and Annexure B outlines the algorithm and data treatments underlying this process.

Assessment of Tech-readiness Rankings and Scores

Table 2 has the ranking of states on the composite tech-readiness index and the four sub-indices. **Tamil Nadu, Karnataka and Maharashtra emerge as the most tech-ready states and perform well across all four dimensions. Telangana, supported by a perfect policy score, and Delhi complete the top five.**

At the other end of the spectrum, Nagaland, Chhattisgarh, Arunachal Pradesh, Sikkim and Mizoram appear at the bottom of the rankings. Their positions reflect long-standing constraints: several North-Eastern and Himalayan states face difficult terrain and smaller markets, while states such as Chhattisgarh have a thinner industrial base. Together, these factors translate into weaker digital infrastructure, smaller business ecosystems and slower adoption of technology.

Table 2: Ranking of States

State	Tech Readiness	Sub-Indices			
		Tech Access	Tech Infrastructure	Tech Business Orientation	Tech Institutions and Laws
Tamil Nadu	1	7	1	2	3
Karnataka	2	6	2	3	10
Maharashtra	3	9	3	1	8
Telangana	4	4	5	9	1
Delhi (National Capital Territory)	5	2	11	15	18
Andhra Pradesh	6	14	9	12	2
Gujarat	7	17	8	4	8
Haryana	8	5	10	16	6
Goa	9	1	16	21	14
Kerala	10	3	4	13	27
Odisha	11	22	15	7	4
Madhya Pradesh	12	27	7	8	13
Punjab	13	12	13	6	21
Uttar Pradesh	14	28	6	5	19
Rajasthan	15	23	12	10	15
Jammu and Kashmir (Union Territory)	16	16	18	27	4

Uttarakhand	17	13	25	14	15
Himachal Pradesh	18	11	28	11	20
Assam	19	24	21	22	7
West Bengal	20	18	14	17	26
Bihar	21	30	20	18	12
Tripura	22	25	22	23	10
Meghalaya	23	20	26	20	15
Jharkhand	24	29	17	19	21
Manipur	25	19	24	25	23
Mizoram	26	8	27	28	28
Sikkim	27	10	30	30	25
Arunachal Pradesh	28	15	19	26	29
Chhattisgarh	29	26	23	29	24
Nagaland	30	21	29	24	30

Notes: The indices are developed using Principal Component Analysis. Annexure discusses variable definitions, data sources and the methodology.

While rankings show relative positions, they do not reveal how far a state is from the leader (the "frontier"). Table 3 therefore presents normalised scores (scaled from 0 to one hundred, where one hundred represents the best-performing state in that dimension). **Tamil Nadu sets the overall frontier at 80.95, followed by Karnataka (69.09) and Maharashtra (66.14).** The heat map shows the widest gaps in technology infrastructure (Tamil Nadu at one hundred versus several states below ten) and in tech access, where Goa reaches one hundred while many larger states remain far behind.

Table 3: Scores of States

Rank	State	Sub-Indices				Tech Readiness
		Tech Access	Tech Infrastructure	Tech Business Orientation	Tech Institutions and Laws	
1	Tamil Nadu	45.79	100	92.21	85.79	80.95
2	Karnataka	45.91	91.5	85.56	53.36	69.09
3	Maharashtra	40.32	70.17	100	54.09	66.14
4	Telangana	53.41	57.83	47.69	100	64.73

5	Delhi (National Capital Territory)	96.24	38.98	31.5	38.53	51.31
6	Andhra Pradesh	29.54	48.95	33.77	86.22	49.62
7	Gujarat	24.98	50.18	69.11	54.09	49.59
8	Haryana	49.12	48.44	30.61	65.42	48.4
9	Goa	100	20.15	17	42.77	44.98
10	Kerala	55.4	63.33	33.53	16.51	42.19
11	Odisha	14.97	21.92	48.86	77.47	40.81
12	Madhya Pradesh	6.23	51.57	48.52	50.06	39.09
13	Punjab	34.97	31.66	55.92	29.77	38.08
14	Uttar Pradesh	3.84	54.42	55.98	30.72	36.24
15	Rajasthan	11.88	32.12	46.38	42.04	33.11
16	Jammu and Kashmir (Union Territory)	27.5	17.87	4.19	77.47	31.76
17	Uttarakhand	33.11	8.13	31.66	42.04	28.74
18	Himachal Pradesh	38.21	3.91	34.76	30.51	26.84
19	Assam	10.27	14.59	11.36	60.39	24.15
20	West Bengal	19.48	27.98	27.78	18.23	23.37
21	Bihar	0	15.57	20.68	52.37	22.15
22	Tripura	7.43	11.67	11.34	53.36	20.95
23	Meghalaya	15.59	7.99	17.56	42.04	20.8
24	Jharkhand	2.19	18.44	17.94	29.77	17.09
25	Manipur	17.82	9.31	11.11	27.83	16.52
26	Mizoram	40.98	5.88	3.27	13.21	15.83

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27	Sikkim	38.46	0	0	18.45	14.23
28	Arunachal Pradesh	29.28	16.61	9.82	0.94	14.17
29	Chhattisgarh	6.79	10.19	1.54	25.48	11
30	Nagaland	15.15	0.8	11.21	0	6.79

Notes: The scores are scaled between 0 and 100, obtained from Principal Component Analysis. In the heat-map, dark red indicates the maximum level of effort needed to reach the frontier, while dark green is the frontier. Annexure discusses variable definitions, data sources and the methodology.

Understanding the Frontier States

To interpret these rankings meaningfully, it is useful to look beyond composite scores and examine the factors that contribute to high levels of tech readiness. Deconstructing this helps illustrate the breadth of capabilities that underpin high readiness and highlights the different pathways through which states can accumulate technological capacity.

Tamil Nadu

Tamil Nadu ranks first on the Index with a composite score of 80.95. It shows strong performance across three pillars: Tech Infrastructure, Tech Business Orientation and Tech Institutions and Laws. This breadth of capabilities distinguishes it from other leading states.

On infrastructure, Tamil Nadu does well on indicators that reflect the scale and reach of its digital and industrial systems. The state has the highest number of operational SEZs, supports a large set of online public services, and has achieved broad fibre coverage across gram panchayats. These features show that the state has built digital and industrial infrastructure that is available across both urban and rural areas.

On the business dimension, Tamil Nadu benefits from a large pool of technically trained manpower, a strong startup ecosystem, and significant innovation output, reflected in its high patent filings. The high FDI share that the state receives is also reflective of these strengths. Together with its broad policy coverage across emerging technologies, this gives Tamil Nadu a wide set of capabilities across the three different pillars.

Karnataka

Karnataka's second rank in the Tech-Readiness Index is the result of its strong performance across the Tech Business Orientation Pillar supported by a solid digital-infrastructure base. Its business orientation score reflects the concentration of technology-driven economic activity in the state: high FDI inflows, the largest STPI presence, strong innovation output, and a mature startup ecosystem.

Infrastructure strengths include extensive fibre coverage, a substantial SEZ network, a wide range of online public services and a high EV charging station density, all of which support the scale and diversity of technology-enabled activity in the state.

Maharashtra

Maharashtra is ranked third on the index driven by a combination of scale-driven business strength and robust urban infrastructure. The state attracts the highest share of national FDI and has a large base of STPI units and technology-intensive firms. These, alongside strong startup activity, underpin its leading performance on the business pillar.

Maharashtra's infrastructure performance is anchored in its high number of smart cities and extensive network of operational SEZs, as well as a sizeable portfolio of online public services. These elements signal a broad and mature urban and administrative capacity that supports technology adoption at scale.

Tech-Readiness Inequality Among States

Table 4 measures how unevenly the benefits of technological progress are shared across states, using three straightforward yardsticks: the coefficient of variation (how much scores differ when compared with the average), the inter-quartile range (the gap between the states in the top quarter and those in the bottom quarter), and skewness (whether a few states are far ahead while many lag behind).

Table 4: Tech-Readiness Inequality Among States

Index	Coefficient of Variation (%)	Interquartile Range	Skewness
Tech Readiness	54.22	26.71	0.67
Tech Access	80.27	28.16	1.32
Tech Infrastructure	84.07	39.32	0.98
Tech Business Orientation	80.09	36.97	0.96
Tech Institutions and Laws	57.20	25.78	0.35

Note: Higher CV and IQR values indicate greater inequality; positive skewness shows a longer tail of lower-performing states.

A close look at the coefficient of variation and interquartile range reveal that the widest gaps appear in tech infrastructure, closely followed by tech access and tech business orientation. The high positive skewness scores for tech access suggests that a handful of states continue to host far denser connectivity networks and digital-service capacity than others. The overall tech-readiness index also shows substantial dispersion. By contrast, states are relatively closer to one another in tech institutions and laws, reflecting the fact that most states have now adopted basic IT, cybersecurity or skilling policies, even if the depth and coverage of their policies vary.

Technology businesses, start-ups, and investment remain concentrated in a few major clusters like Bengaluru, Mumbai–Pune, Hyderabad, Chennai and Delhi-NCR which continue to drive dispersion in the business pillar. The comparatively narrower gap in policy adoption suggests that most states have reached a basic level of institutional preparedness. The large gaps in infrastructure and access, however, point to a persistent digital divide and the need for sustained investment in connectivity, local digital capacity, and affordable access.

Regional Patterns

Southern and Western Region: States from the southern and western parts of the country (Tamil Nadu, Karnataka, Telangana, Andhra Pradesh, Kerala, Maharashtra, Gujarat and Goa) are the most technology-ready. The top four ranking states in the Index – Tamil Nadu, Karnataka, Maharashtra and Telangana – all belong to this group. All the southern states feature in the top ten positions of the Index, and most of these states perform strongly on tech infrastructure and tech business orientation, reflecting sustained investment in connectivity, smart-city projects and relatively vibrant start-up and services ecosystems.

Northern Region: States from the northern region of the country (Haryana, Delhi, Punjab, Uttar Pradesh, Rajasthan, Jammu and Kashmir, Uttarakhand and Himachal Pradesh) mostly occupy the middle of the table,

although two of them – Delhi and Haryana – feature in the top ten. Northern states generally score well on tech access, but show a more mixed picture on tech infrastructure and tech business orientation: some, such as Uttar Pradesh and Punjab, have relatively strong business scores, while others lag behind in building dense digital infrastructure or deepening their tech-driven business base.

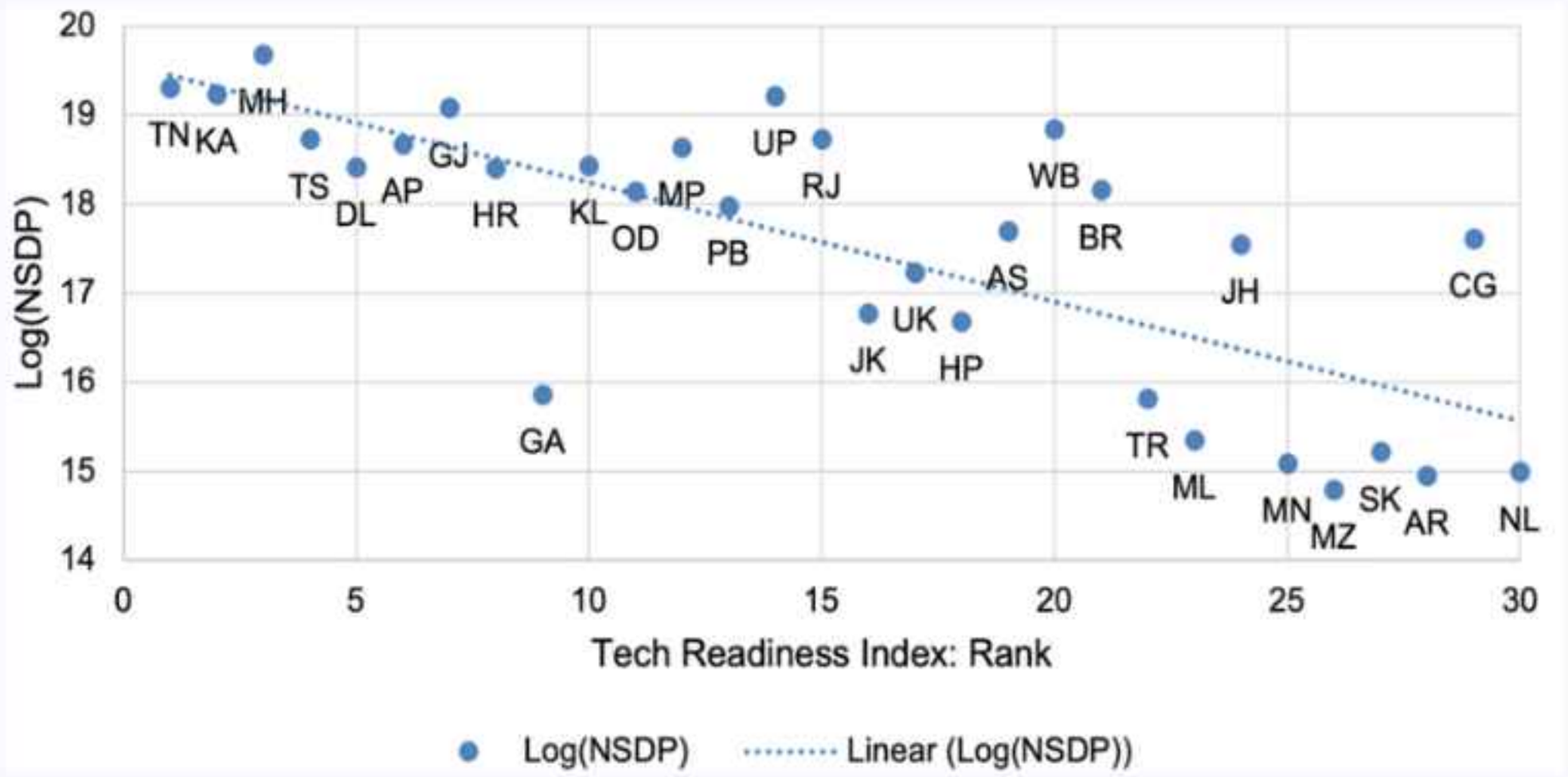
Eastern Region: States from the eastern and north-eastern parts of the country (Odisha, West Bengal, Assam, Bihar, Tripura, Meghalaya, Jharkhand, Manipur, Arunachal Pradesh, Mizoram, Sikkim, Chhattisgarh and Nagaland) remain the least technology-ready overall. Odisha is the only state from this group that falls in the top half of the rankings (eleventh). Across these states, performance is weakest on tech business orientation and tech infrastructure, with almost the entire group ranking in the bottom third nationally on both pillars. Tech access scores show greater variation. Several hill states perform moderately well on mobile penetration and digital payments despite the terrain, while tech institutions and laws remain their strongest relative pillar.

Correlation with the Net State Domestic Product (NSDP)

The Technology Readiness Index shows a strong and significant association with the economic size of states, reflected in a correlation of –0.75 between tech-readiness ranks and the logarithm of NSDP. Economically large states such as Maharashtra, Karnataka, Tamil Nadu, Gujarat, and Telangana perform well on both indicators, suggesting that economically large states are better positioned to invest in digital public infrastructure, broadband networks, and urban connectivity, and to attract skilled workers and technology businesses. Larger fiscal capacities also allow these states to offer incentives, build supporting infrastructure, and scale digital services more effectively.

At the same time, the pattern is not uniform: states like Uttar Pradesh and West Bengal fall below the trend line despite their economic size, while mid-income states like Goa perform above what their economic size would predict. This indicates that while income enables tech readiness, governance priorities and policy commitment remain equally important in shaping outcomes.

Figure 1: Tech Readiness Index vis-a-vis NSDP

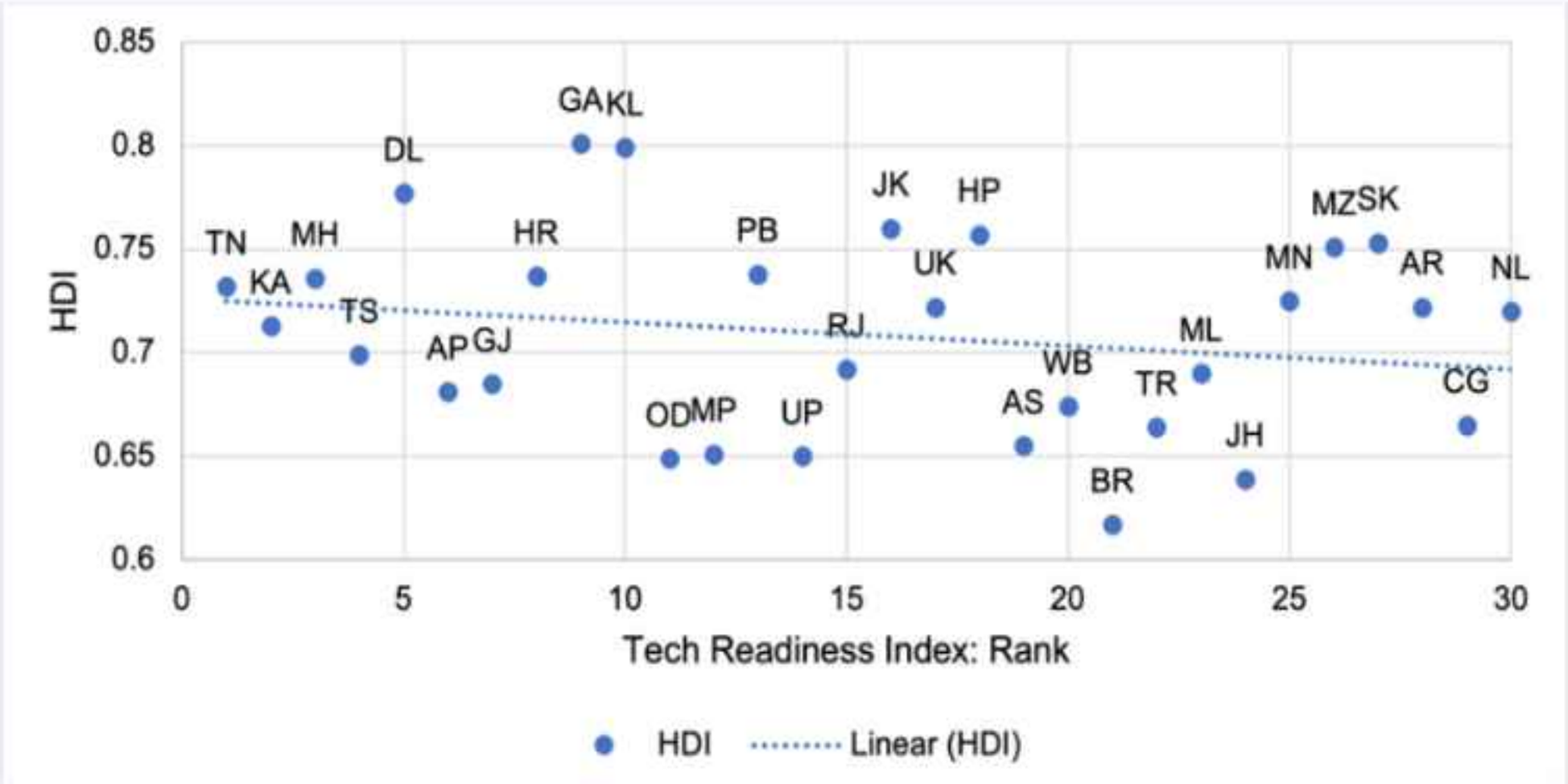


Note: The NSDP values are shown in logarithmic form to smooth out the very large differences between states and make the relationship with tech-readiness easier to interpret visually.
The states are assigned two letter codes in accordance with ISO 3166-2:IN which defines codes for the names of 28 states and 8 union territories of India.

Correlation with Human Development Index

The Tech-Readiness Index shows a very weak correlation with HDI across states (–0.2), indicating that current levels of digital readiness are not strongly linked to human development levels. **States with higher HDI scores such as Kerala, Himachal Pradesh and Mizoram are not necessarily the most tech-ready, while several mid-HDI states such as Telangana, Andhra Pradesh and Gujarat perform relatively well on technology indicators.** This suggests that, at present, tech-readiness is shaped more by state-level policy choices, institutional commitment and targeted investments rather than underlying socio-economic development patterns.

Figure 2: Tech-readiness Index vis-à-vis HDI



Note: The states are assigned two letter codes in accordance with ISO 3166-2:IN which defines codes for the names of 28 states and 8 union territories of India.

From a medium-term perspective, however, HDI and tech-readiness are likely to reinforce each other. Better human capital expands the pool of tech-skilled workers, while improvements in digital access and infrastructure can support education, healthcare and economic inclusion. As states progress on both fronts, stronger linkages are expected to emerge over time.

Conclusion

The index shows marked differences in how states are positioned for technology-related growth. Frontier or leader states combine stronger digital infrastructure, wider service access, deeper technology-oriented business activity, and more comprehensive policy framework. Mid-ranked states make progress on one or two pillars but have gaps in others. Laggard states face shortfalls across several foundational areas, especially connectivity, last-mile access, and institutional readiness.

The increasing use of AI across administrative and economic tasks is likely to intensify these differences. AI systems depend on reliable networks, adequate bandwidth, clear data-governance frameworks, and a skilled workforce. States with stronger foundations will find it easier to integrate such applications into service delivery and production processes, while states with persistent gaps may face higher barriers and slower adoption.

Regional variations in the Index offer practical policy lessons. Southern and Western states demonstrate the value of sustained investment in infrastructure and business ecosystems, creating virtuous cycles of innovation and attraction. For northern states, good performance across one or two pillars can serve as a foundation, but must be complemented by stronger execution of existing policies and faster rollout of physical infrastructure to sustain momentum. Eastern and North-Eastern states will benefit from tailored strategies to overcome geographic constraints and a thinner industrial base. Going forward, each group of states faces distinct priorities:

- **Frontier states** should focus on strengthening the quality and depth of their existing systems. They should focus on expanding advanced technical training, improving data and cybersecurity governance, and planning for higher-capacity digital and physical infrastructure relevant for compute-intensive activity. Their challenge is not basic coverage but improving the sophistication of their systems.
- **Mid-ranked states** need to close gaps between pillars. Many have relatively strong access indicators but weaker infrastructure or business ecosystem depth. Addressing these bottlenecks through denser fibre networks, better-equipped urban digital infrastructure, stronger higher-education pipelines and targeted support for technology firms will determine whether they move towards the frontier or stagnate.
- **Laggard states** require sustained attention to the basics: reliable broadband, stronger last-mile delivery channels, consistent service access points, and clear institutional frameworks for digital governance and skilling. Without these foundations, the scope for using newer technologies to improve economic and administrative outcomes remains limited.

Overall, the index suggests that progress comes from strengthening multiple pillars together. As technology becomes more embedded in economic activity and state delivery mechanisms, differences in readiness will translate into differences in the pace at which states can modernise services, attract investment, and support new forms of work.

Annexure A: Definition of Parameters and Data Sources

Technology Access

Internet Penetration: Number of internet subscriptions per hundred people. States with higher penetration offer wider access to online services such as education, health, governance, and communication.
Metric used: subscriptions per hundred population.
Source: *Lok Sabha Questions*

Number of ATMs: Total ATMs operating in the state. ATMs support cash-in/cash-out points for digital financial transactions, especially where banking penetration is uneven.
Metric used: ATMs per lakh population.
Source: *RBI*

UPI Transactions: Total number of UPI-based digital payment transactions in a year. High volumes indicate stronger digital adoption and ease of financial transactions.
Metric used: UPI transactions per lakh population.
Source: *NPCI*

e-Transactions: Total number of digital governance transactions undertaken by citizens. This captures the depth of e-governance uptake across service domains.
Metric used: e-transactions per capita.
Source: *e-TAAL*

Internet Shutdown Score: A measure of the number and duration of state-level internet shutdowns. Fewer shutdowns indicate more reliable digital connectivity.
Metric used: transformed score reflecting frequency and duration of shutdowns.
Source: *Internet Shutdown database*

4G Download Speed: Median download speed experienced by users across the state, reflecting quality of mobile broadband.
Metric used: Mbps
Source: *Ookla*

Technology Infrastructure

Gram Panchayats Connected to Optical Fibre: Number of gram panchayats connected through BharatNet. Higher coverage indicates a stronger rural digital backbone.
Metric used: number of connected GPs as reported by DoT.
Source: *Rajya Sabha Questions*

Smart Cities: Number of cities selected under the Smart Cities Mission. Their presence reflects the existence of digitally enabled urban infrastructure.
Metric used: count of smart cities.
Source: *Smart Cities Mission*

Number of e-Services Offered by the State: Total citizen-facing services provided online by state departments. Higher service availability reflects maturity and integration of digital governance.
Metric used: number of online services as reported in NESDA.
Source: *DARPG (NESDA)*

EV Charging Stations: Operational public EV charging stations in the state. They reflect the underlying digital and electrical infrastructure necessary for clean mobility.
Metric used: charging stations per lakh population.
Source: *Ministry of Power*, *Rajya Sabha Questions*

Operational SEZs: Total number of operational Special Economic Zones (all sectors). SEZs reflect availability of developed industrial and commercial infrastructure that indirectly supports technology activity.
Metric used: number of operational SEZs.
Source: *SEZ India*

Operational Common Service Centres (CSCs): Total number of operational CSCs in the state. CSCs act as local digital access points providing assisted services, especially in rural and remote regions.
Metric used: operational CSCs per lakh population to enable cross-state comparability.
Source: *CSC Dashboard*

5G Base Transceiver Stations: Total number of 5G mobile base stations installed in a state. Higher BTS density reflects stronger mobile broadband capacity and readiness for advanced digital applications.
Metric used: 5G BTS per lakh population.
Source: *Department of Telecommunications*

Technology Business Orientation

FDI Share: State's share in India's total foreign direct investment inflows. Higher shares indicate investment attractiveness and a conducive business environment.
Metric used: percentage of national FDI inflows.
Source: *DPIIT*

Start-up Ecosystem Score: State-level performance in the national Startup India ranking. Rankings were converted to a 0–100 score to ensure comparability across states.
Converted Startup India's five category rankings into interval scores:

- Best Performers → 1
- Top Performers → 0.8
- Leaders → 0.6
- Aspiring Leaders → 0.4
- Emerging Start-up Ecosystems → 0.2

This ordinal-to-interval conversion allows use in PCA.
Source: *Startup India*

e-NAM Integrated Markets: Number of agricultural mandis integrated with the National Agricultural Market platform. This measures digital adoption in agricultural supply chains.
Metric used: count of integrated APMC markets.
Source: *eNAM*

Technical and Engineering Enrolment: Students enrolled in engineering, technology, and related fields as a share of all AICTE regulated programmes (UG + PG + diploma). This indicates future availability of skilled technical manpower.
Metric used: percentage share of technical/engineering enrolment.
Source: *AICTE*

STPI-Registered Units: Number of IT and technology firms registered under the Software Technology Parks of India scheme. Reflects depth of technology-business activity.
Metric used: count of STPI units.
Source: *Ministry of Electronics and IT*

Patents Filed: Number of patents filed in the state. Indicates the level of innovation, research output, and knowledge creation.
Metric used: patents filed per lakh population.
Source: *IP India*

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IT Policy: Presence of a dedicated state-level IT policy outlining strategic vision and initiatives for digital-sector growth. States which have IT Policies are likely to have systems, schemes and programmes to facilitate the development of the IT sector in their State.
Metric used: 0 (none), 0.5 (broad digital policy), 1 (dedicated IT policy).
Source: State government notifications.

Digital Skill / ITeS Skilling Policy: Policy framework for digital skilling, ITeS workforce development, or technology-related skill enhancement. Skilled manpower is essential for technology adoption, business growth, and innovation.
Metric used: 0, 0.5, or 1.
Source: State notifications.

Cybersecurity Policy: State-level policy for cyber resilience, law enforcement capacity building, and cybersecurity infrastructure. States which have a cybersecurity are likely more committed to ensuring cybersecurity, by training law enforcement agencies, developing the necessary infrastructure, creating requisite organisations, protocols, etc.
Metric used: 0, 0.5, or 1.
Source: State notifications.

Artificial Intelligence (AI) Policy: Indicates whether the state has articulated a strategy for AI adoption and governance. Shows the state's commitment to adopting advanced technologies and encouraging AI-based innovation.
Metric used: 0, 0.5, or 1.
Source: State notifications.

Internet-of-Things (IoT) Policy: Framework for enabling IoT ecosystems and connected applications. States with IoT policies signal readiness for large-scale sensor deployment, connected infrastructure, and data-driven public services.
Metric used: 0, 0.5, or 1.
Source: State notifications.

Blockchain Policy: Policy initiatives promoting blockchain adoption. They highlight the state's willingness to adopt secure, trust-enhancing digital technologies for public and commercial systems.
Metric used: 0, 0.5, or 1.
Source: State notifications.

Annexure B: Methodology

We followed the following algorithm to construct the Tech-readiness Index and the sub-indices.

1. Information for all variables is not available for the most recent year, 2025. We have taken the most recent values as the proxy for respective variables.
2. In those cases where a value for a state was missing, imputations were made as follows:
    a. Tech/engineering enrolment (Manipur): The national average value was assigned.
    b. Startup ecosystem ranking (Jharkhand and West Bengal): As these states did not participate, median scores were assigned.
3. All variables are rescaled between 0 and 100.
4. Basic checks on data are performed using scatter plots, measures of central tendency and dispersion, correlation matrix, and (cluster) dendrograms.
5. Principal Component Analysis (PCA) is performed. For the index construction, we selected the first principal component (PC1), which captures the largest share of common variation across indicators within each pillar and therefore reflects the dominant underlying pattern.
6. Finally, the fitted PCA scores are rescaled between 0 and 100 and states are ranked on tech-readiness and the four sub-groups.

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