



**India Data Centre, Cloud Services  
and Managed Services Industry  
Outlook.**

**March 2025**

**TABLE OF CONTENTS**

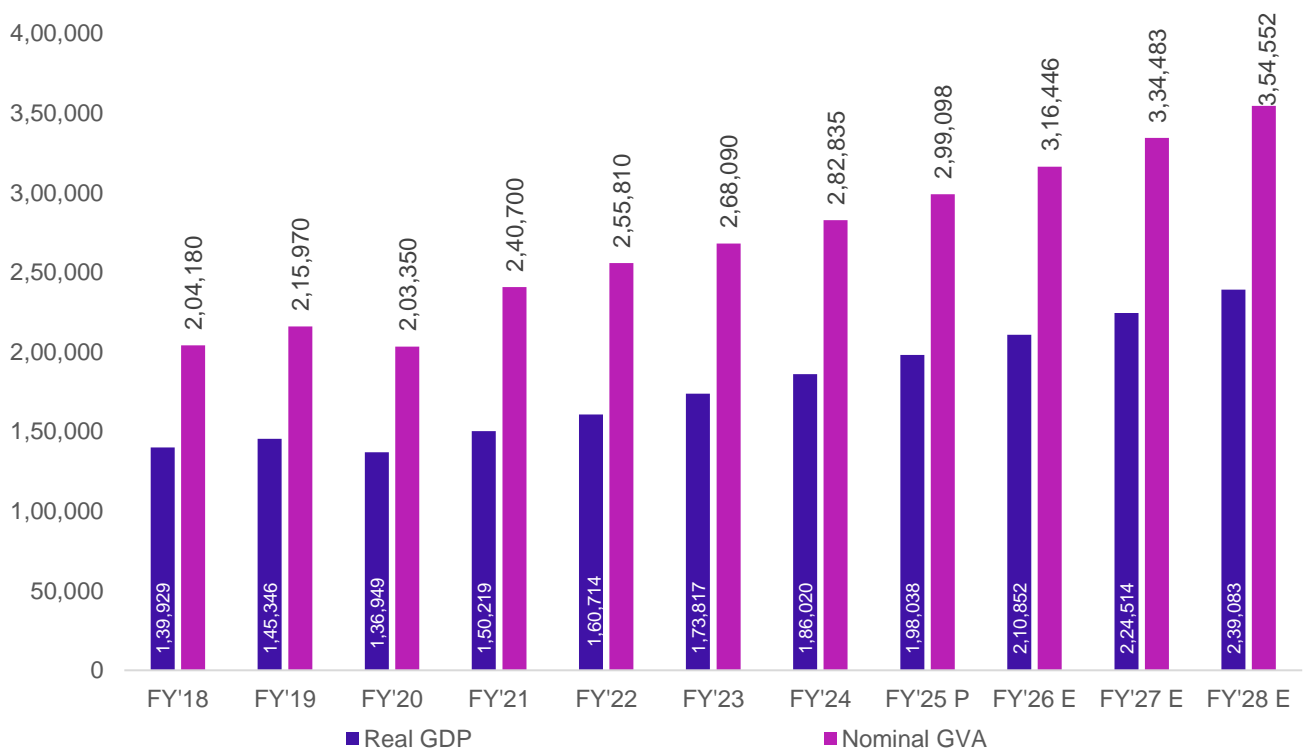
1. Macro Overview .....	2
2. Overview of IT/ ITES Sector .....	6
3. Role of IT in India's Digital Evolution .....	11
4. Government Initiatives .....	15
5. Data Centre Infrastructure in India .....	20
6. Cloud Infrastructure in India .....	24
7. Managed Services in India .....	32
8. Software Development in India .....	37
9. Opportunities and Developments .....	38
10. Technology Disruptions.....	42
11. Innovation and R&D.....	43
12. Potential Threats.....	48
13. Peer Competitive Benchmarking.....	51

## 1. MACRO OVERVIEW

### GDP and GDP Growth Rate at Nominal and Real Level, 2018-2028:

India's economic growth between Fiscals 2018 and 2024 was characterized by resilience and recovery amid global challenges. Following a decrease of 7.3% in 2020 due to the COVID-19 pandemic, the economy rebounded strongly and achieved an impressive growth rate of 8.2% in the Fiscal year ending March 2024, consolidating its position as the fastest-growing major economy globally. In Fiscal 2023 and 2024, government spending on infrastructure significantly boosted growth, although consumer spending decelerated. Despite facing persistent inflation and high unemployment, structural reforms, such as the Goods and Services Tax (GST), and initiatives, like Make in India, have supported economic expansion. During Fiscal 2026-Fiscal 2027, the growth is expected to stabilise at around 6.5% to 7% in the following years, reflecting a more cautious outlook as global economic uncertainties persist.

**Figure 1: India's Real GDP and GVA in INR billion, Fiscals 2018-2028E**



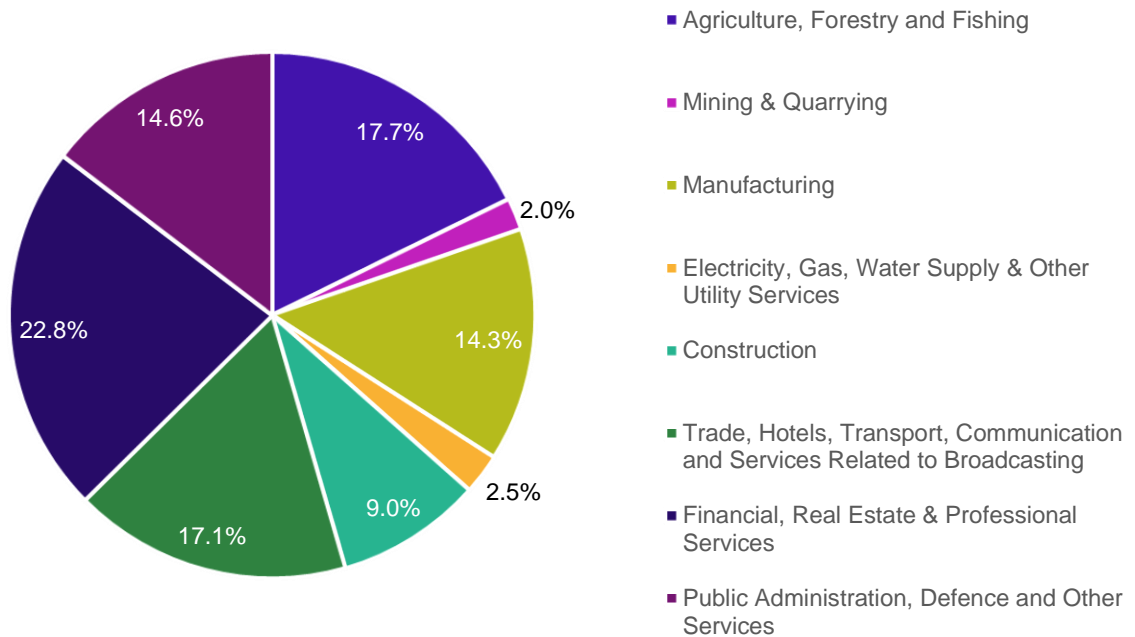
Source: Nexdigm Analysis, IMF, World Economic Outlook Database

GDP: The total value of all goods and services produced in a country at constant prices. GDP is a broad measurement of a country's economic activity

GVA: The value added to products to enhance them. GVA is calculated by adding subsidies paid on products to GDP and then subtracting taxes paid on them

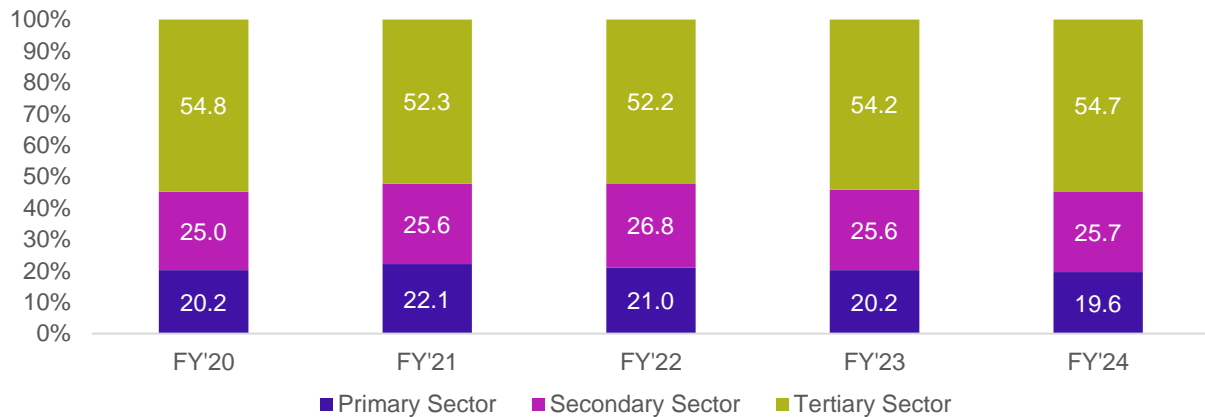
Note: E stands for estimated; P stands for projected

**Figure 2: Sectoral Breakup of India Nominal GVA in Percentage Terms (%), Fiscal 2024**



Source: Nexdigm Analysis, Ministry of Statistics & Programme Implementation (MoSPI)

**Figure 3: Breakup of India Nominal GVA into Primary, Secondary and Tertiary Sectors in Percentage Terms (%), Fiscals 2020-2024**



Source: Nexdigm Analysis, Ministry of Statistics & Programme Implementation (MoSPI)

Note: Primary- It involves the extraction of natural resources, such as agriculture, mining, and forestry.

Secondary- Encompasses manufacturing and industrial activities that transform raw materials into finished goods.

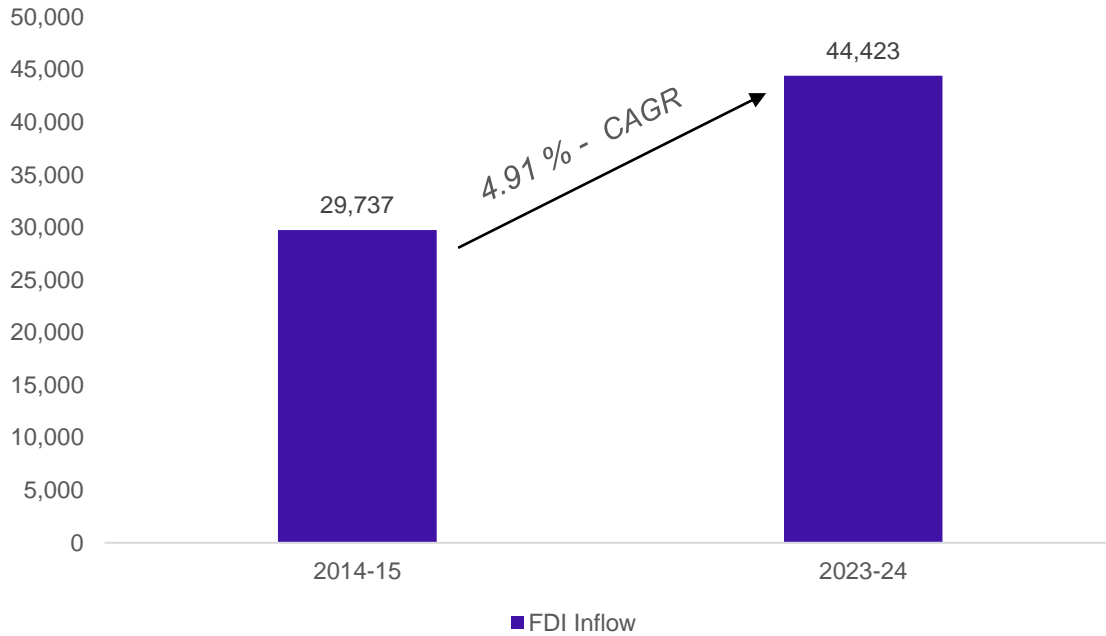
Tertiary- Comprises service-oriented activities that provide support to both the primary and secondary sectors, including retail, banking, and healthcare.

- The secondary sector has maintained a stable contribution, growing to 25.7% in Fiscal 2024. With initiatives like “Make in India” and increased infrastructure investment, this sector has showcased potential for high-value manufacturing and sustainable industrial growth, indicating a strategic area for resource allocation to boost self-reliance and industrial output.
- The tertiary sector dominates India's GDP, growing from 52.3% in Fiscal 2021 to 54.7% in Fiscal 2024, driven by financial services, real estate, and IT. This shift reflects India's transition toward a service-based economy, with high growth in tech-driven industries and digital transformation positioning India as a global hub for IT and business services. Rapid advancements in IT and digital infrastructure have

boosted sectors like finance, communications, and professional services, underscoring the need for policies that further support innovation and tech-driven economic growth.

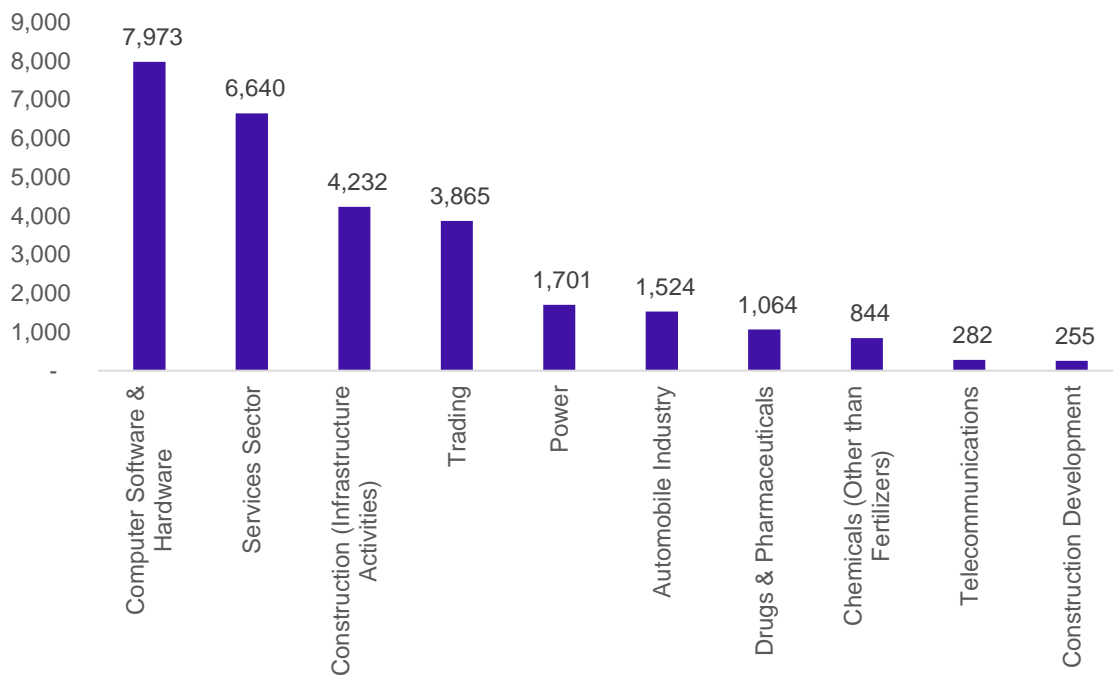
**FDI Inflow Split by Sector:**

**Figure 4: FDI Inflow in India in USD million, Fiscal 2015 to Fiscal 2024**



Source: Nexdigm Analysis, Press Information Bureau- Government of India

**Figure 5: Top 10 Sectors attracting highest FDI Equity Inflow in India (In USD million), Fiscal 2024**



Source: Nexdigm Analysis, DPIIT- Ministry of Commerce

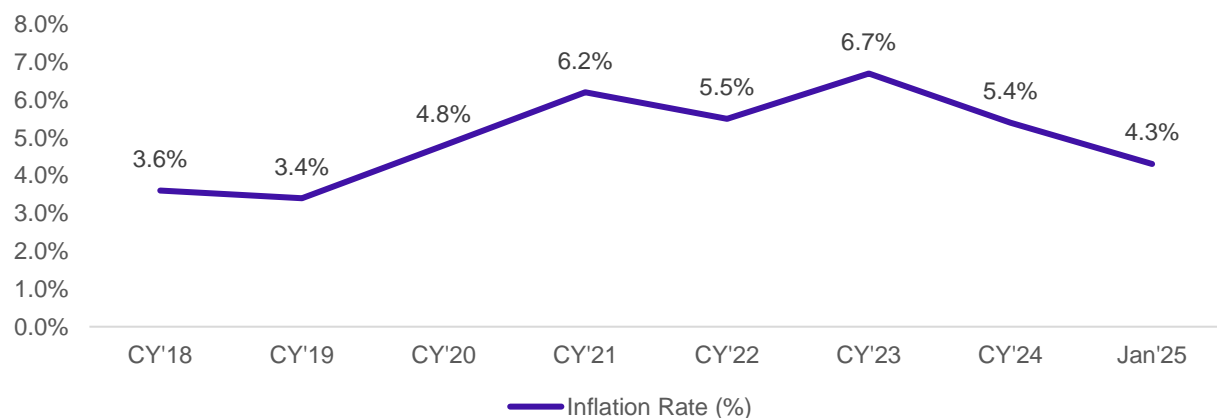
FDI Equity Inflow in India during Fiscal 2024 was reported at USD 44,423 million. Majority of FDI investment has been routed into Computer Software and Services:

- Computer software and hardware sector leads FDI inflows at USD 7,973 million during Fiscal 2024, highlighting India's role as a global technology hub. High investment in IT and digital services showcased appeal of India's talent pool and competitive costs. This FDI concentration strengthens India's IT capabilities, supporting growth in emerging areas like cloud services, artificial intelligence, and software development, with government initiatives such as the Digital India program reinforcing these trends.
- The services sector attracts substantial FDI, with USD 6,640 million during Fiscal 2024, reflecting international confidence in India's finance, banking, insurance, and professional services industries. These investments are pivotal in expanding India's service economy and increasing its contribution to GDP.

### Inflation Rates Calendar Year 2018-2025:

Inflationary pressures have been influenced by a combination of domestic factors in India, such as supply chain disruptions and agricultural output fluctuations, and global dynamics, including commodity price volatility. Inflation in India during 2024 exhibited a dynamic trend, marked by fluctuations primarily influenced by food prices, global commodity market conditions, and domestic supply chain disruptions. While the Consumer Price Index (CPI), the benchmark for retail inflation, showed periods of significant volatility, the Wholesale Price Index (WPI), which tracks wholesale-level inflation, remained comparatively stable, underscoring different pressures at the retail and wholesale levels. In January 2025, the Reserve Bank of India reduced the repo rate by 25 basis points to 6.25%. This tells about their intent to balance inflation control with the need to stimulate economic activity, especially as inflation has shown signs of slowing in recent months. The rate cut is aimed at making borrowing more affordable and encouraging investment, while monitoring inflationary trends.

**Figure 6: CPI Inflation Rates Calendar Year 2018- Jan 2025**



Source: Nexdigm Analysis, Reserve Bank of India

- From 2018 to 2023, India has faced inflationary pressures owing to COVID-19 pandemic which has led to labour shortages and supply chain disruptions, peaking at 6.2% in 2020. The Russia-Ukraine conflict steered an energy crisis, pushing inflation to 6.7% in 2022. Erratic monsoons and agricultural issues, along with volatile global oil prices, further strained the economy. The Reserve Bank of India adjusted policy rates from 6.25% in early 2019 to a historic low of 4.0% in May 2020, implementing liquidity measures amid currency depreciation and supply-demand imbalances during recovery phases.
- Rising inflation in India peaked at 6.7% in 2022, eroding purchasing power for lower and middle-income households and shifting spending towards essentials. Sectors like textiles and electronics faced higher input costs, while manufacturing dealt with increased logistics and energy expenses.

- Inflation rates from January 2024 to January 2025 show fluctuations, peaking at 6.21% and falling to 3.60%. Compared to the previous year, the overall trend appears to be a gradual decline in inflation, with most months remaining between 4.80% and 5.49%. This suggests some easing of inflationary pressures, although the drop to 3.60% could reflect specific economic factors, such as lower energy prices or effective policies.

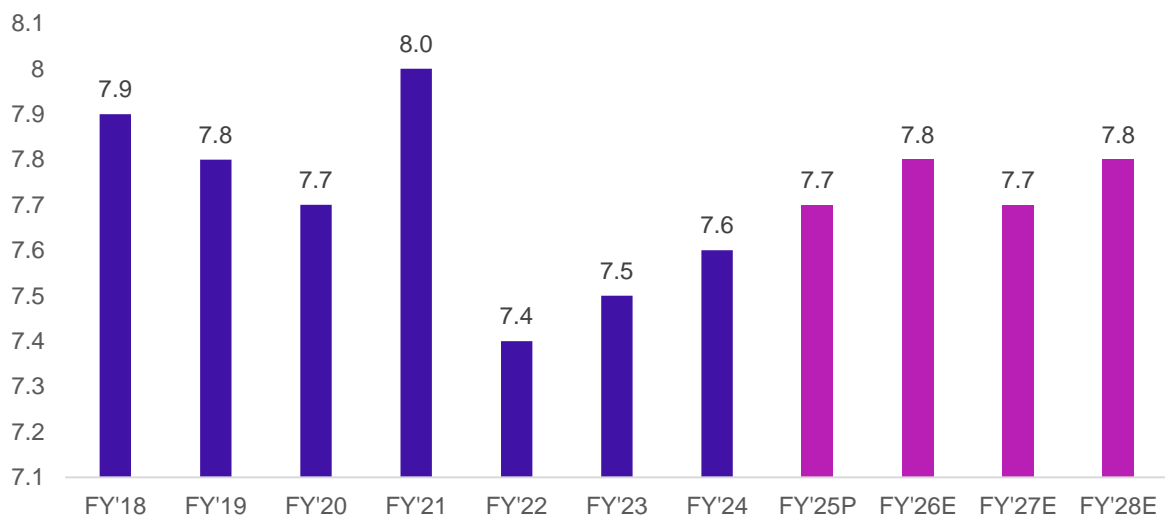
## 2. OVERVIEW OF IT/ ITES SECTOR

The IT/ITES (information technology/information technology-enabled services) industry in India is a key driver of economic growth and contributes significantly to employment and export earnings. The sector is projected to maintain a strong growth trajectory, benefiting from increased demand for digital transformation services, cloud computing, artificial intelligence, cybersecurity, and other emerging technologies.

According to NASSCOM, the IT-BPM industry's revenue reached approximately USD 254 billion in Fiscal 2024, marking a 3.8% year-over-year growth and an addition of over USD 9 billion compared to the previous fiscal year. The industry employed approximately 5.43 million people in Fiscal 2024, adding 60,000 new jobs despite global economic challenges. IT/ITES industry is poised for continued expansion, with a projected compounded annual growth rate (CAGR) of 7-8% over the next five years. By 2028, the IT industry is expected to be driven by the increasing adoption of emerging technologies such as artificial intelligence, cloud computing, and cybersecurity. This growth will further strengthen India's position as a global leader in IT services and outsourcing. With a 36% digitally skilled workforce, the industry remains largest in terms of AI skills penetration, second largest in terms of Artificial intelligence/ machine learning big data analytics talent pool, and third largest, in terms of installed supply of Cloud professionals at the global level. Regarding government initiatives, the government has introduced the Software Technology Park Scheme, which is a 100% export-oriented scheme for the development and export of computer software, including the export of professional services using communication links or physical media.

According to the Ministry of Electronics and IT, the Indian semiconductor market was valued around USD 38 billion in 2023, with projections indicating that it will grow to USD 109 billion by 2030. To support this rapid expansion and reduce dependence on imports, the Indian government has implemented several initiatives aimed at promoting domestic semiconductor manufacturing. The India Semiconductor Mission (ISM) aims to build a sustainable semiconductor and display ecosystem that positions India as a leader in electronics manufacturing and design. Launched in 2021 with a financial outlay of INR 7,600 million, the Semicon India programme is structured to promote the domestic semiconductor industry through incentives and strategic partnerships.

**Figure 7: Contribution of IT AND BPM Share in India's Nominal GDP in Percentage (%), Fiscal 2018-2028E**



Source: Interview with Industry Experts, Nexdigm Analysis  
 Note-E stands for Estimated, P stands for projected

## Role of Digital India in Boosting Cloud and Data Centre Industry

India's swift move into the digital world, intensified by efforts like Digital India, has led to an increase in the creation of data across various industries, including online shopping and the Internet of Things. This rise in data transmission has highlighted the importance of strong data infrastructure, with data centres being key in addressing these needs. According to Ericsson, India is projected to have 270 million plus 5g subscribers by the year end of 2024. At the same time, the 4G subscribers have risen from 635 million in Fiscal 20 to 707 million in Fiscal 24 and wireless subscribers have also seen a rise from 1,157 million in Fiscal 20 to 1,165 million in Fiscal 24. This has led to the increased usage of cloud computing among Indian businesses, taking advantage of its ability to scale and its cost-effectiveness to improve their operations.

India is witnessing a transition from an emerging market economy to a developed market economy. Telecom India has witnessed a remarkable surge in internet usage in recent years, reflecting the nation's rapid digital transformation. The Digital India initiative has also improved entrepreneurship and innovation in India and encouraged the growth of the Indian start-up ecosystem, with the government providing support through initiatives such as Start-up India and Atal Innovation Mission. SMEs are leveraging Industry 4.0 solutions like Internet of Things (IoT), Artificial Intelligence (AI) and Machine Learning in to improve efficiency and productivity.

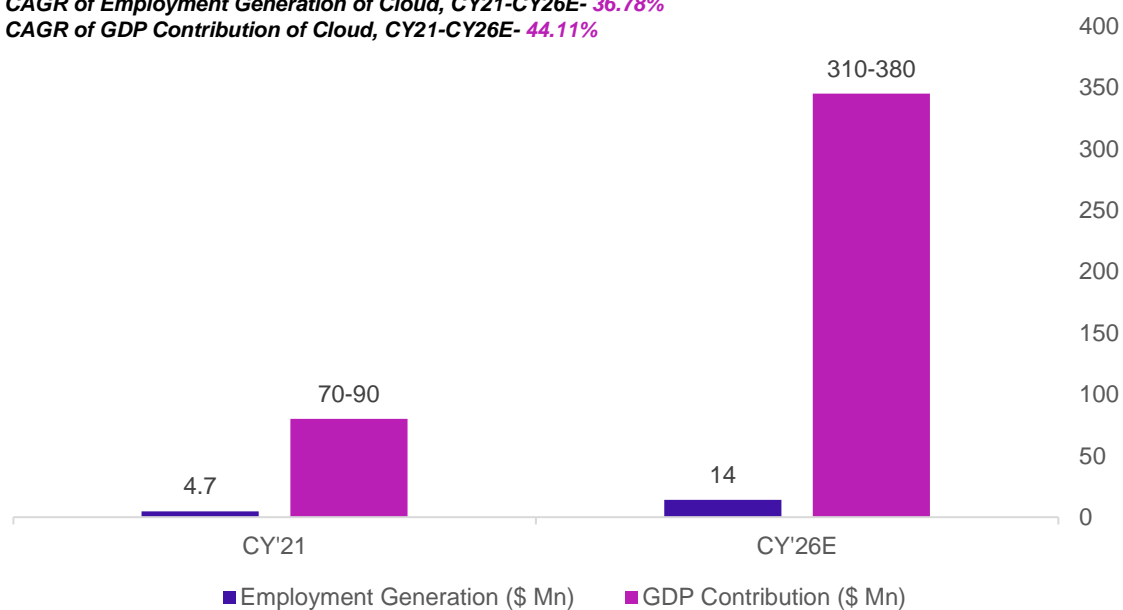
**Table 1: Smartphone and 4G Usage in India, Fiscal 2020-Fiscal 2024**

	Fiscal 2020	Fiscal 2021	Fiscal 2022	Fiscal 2023	Fiscal 2024
<b>Wireless Subscribers (million)</b>	1,157	1,181	1,142	1,144	1,165
<b>Data Subscribers (million)</b>	720	799	814	883	956
<b>Data Subscription as % of wireless subscribers</b>	62%	68%	71%	77%	82%
<b>4G Data Subscribers (million)</b>	635	719	734	786	707
<b>4G Data Subscribers Proportion</b>	88%	90%	90%	89%	74%

Source: Nexdigm Analysis, TRAI

**Figure 8: GDP and Employment Contribution of Cloud (In USD million), Calendar Year 2021 and Calendar Year 2026E**

**CAGR of Employment Generation of Cloud, CY21-CY26E- 36.78%**  
**CAGR of GDP Contribution of Cloud, CY21-CY26E- 44.11%**



Source: Nexdigm Analysis, NASSCOM

Note-E stands for Estimated, P stands for projected

Cloud and cloud technologies are one of the core themes of Digital India along with the demand for digital infrastructure, services and digital democracy as a core objective for every citizen. Potential GDP contribution

of cloud and cloud enabled services by Calendar Year 26 is expected to reach at INR 310-380 billion where in each sector will leverage cloud and cloud enabled technologies in unique ways to enable value addition. According to NASSCOM, This growth will also lead to creation of over 14 million direct and indirect job opportunities.

The growth of cloud in India has been driven by several factors such as the rise in the digital population, inflow of investments, digitization of enterprises and favourable government policies. Several state and central governments in India have leveraged cloud to combat the COVID-19 pandemic. Cloud-based initiatives such as MyGov Saathi, Curfew ePass, COVID-19 Repository, Arogya Setu and CoWIN are some of the examples of the role of cloud in delivering timely citizen services.

Some of the major value additions of cloud services in GDP includes:

- **Value added by end-user industries:** Through revenue uplift, efficient tech spends, new venture creation, cost savings, better productivity, increased exports, ability to access global markets and improved compliance with regulations.
- **Value added by supply chain activities:** Procurement/set-up of mechanical, technology, electrical and physical infrastructure for data centres.
- **Value added by spending of workforce's income**

**Table 2: Advantages of Cloud Computing for End User:**

Sector	Key Benefits and Trends
<b>Financial Services</b>	<ul style="list-style-type: none"> <li>• Establishes transparency in banking and lending, reducing fraud.</li> <li>• Enables secure transactions and real-time data processing.</li> <li>• Digital payments in India projected to reach 71.7 billion transactions by 2025.</li> </ul>
<b>Communication, Media &amp; Entertainment</b>	<ul style="list-style-type: none"> <li>• AI enhances media and gaming experiences.</li> <li>• 98% of companies rely on data-driven insights for consumer experience.</li> <li>• AI algorithms for content personalization improve user engagement on platforms like Netflix and Amazon Prime.</li> </ul>
<b>Technology</b>	<ul style="list-style-type: none"> <li>• Streamlines routine tasks and automates complex workflows.</li> <li>• Reduces operational costs by over 45-50%, allowing IT teams to focus on strategic initiatives.</li> </ul>
<b>Retail</b>	<ul style="list-style-type: none"> <li>• Creates immersive retail experiences.</li> <li>• Provides real-time data on inventory and consumer demand.</li> <li>• Streamlines supply chain processes; Walmart uses IoT and AI for operational efficiency.</li> </ul>
<b>Government</b>	<ul style="list-style-type: none"> <li>• Enhances digital engagement with citizens.</li> <li>• Improves internal operational efficiency.</li> <li>• MeitY's Centres of Excellence promote innovation in IoT and AI across cities like Bengaluru and Gurugram.</li> </ul>

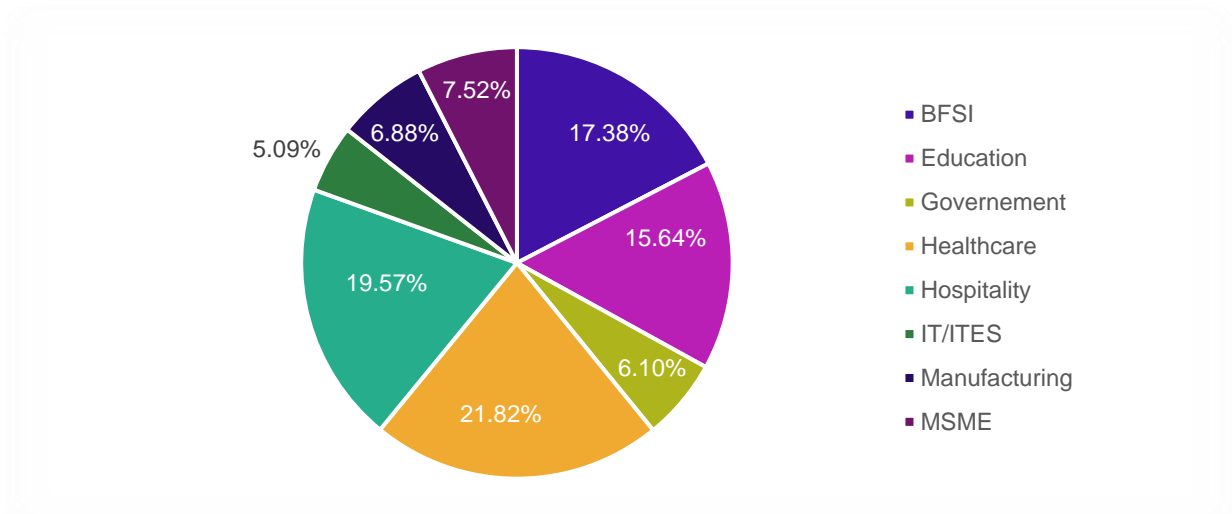
Source: Nexdigm Analysis, Industry Articles

### Number of Phishing and Rogue Attacks, 2019-2024

India faces significant business losses due to cyberattacks, reflecting the increasing digitization and data dependence of industries. As digital infrastructure expands, the sophistication and volume of cyber threats, posing significant challenges to data security. This trend underscores the critical need for robust data centre solutions capable of ensuring secure, resilient operations in a rapidly evolving threat landscape.

India faced approximately 370 million malware attacks at a rate of 702 such detections per minute in 2024. Among these, healthcare, hospitality, business, financial services, and insurance (BFSI) were the most targeted industries, contributing over 58% to the total attacks. Over 1 million ransomware attacks were also detected within the past year. The healthcare sector recorded over 108,870+ cases of malware attacks, making it the worst hit. Closely followed by the hospitality sector, which experienced over 82,130+ malware detections. The banking, financial services and insurance (BFSI) sector reported over 27,837+ malware attacks.

**Figure 9: Industry Wise Malware Attacks in India, Fiscal 2024, (%)**



Source: Nexdigm Analysis, Data Security Council of India

**Table 3: Digital Attacks Snapshot, Calendar Year 2021-2024**

Year	Phishing Incidents	Network Scanning and Probing	Virus/Malware Incident	Website Hacking Incidents	Cybersecurity Incidents
2021	215	86,585	9,203	18	122,764
2022	1,145	10,220	2,559	58	27,482
2023	401	12,330	1,185	39	23,158
2024	1,136	8,154	439	76	12,342

Source: Nexdigm Analysis, Press Information Bureau

### Data Localization Trends and Initiatives in India

The Digital Personal Data Protection Act 2023 (DPDP) ensures that personal data is processed in a manner that recognises the rights of individuals to protect their personal data while allowing for the processing of such personal data for lawful purposes.

Apart from this, Reserve Bank of India (RBI) has introduced mandates for BFSI sector in 2019, requiring all payments data to be stored in India, except in cases of banks, specifically foreign banks which are allowed to store banking data abroad, for cross border payment transactions. To meet localization requirements, India has seen substantial growth in data centre infrastructure, with both global giants and local players investing in facilities.

Indian data centre providers like ESDS Software Solutions Ltd. (ESDS), Yotta, Sify technologies, CTRLS are well-positioned to benefit from this regulatory push, offering secure, compliant, and scalable solutions for enterprises navigating localization mandates. With growing infrastructure investments and cutting-edge technology, domestic players are steadily strengthening their capabilities to compete with global giants.

### Role of System Integrators in Cloud and Managed Services:

As cloud computing becomes an indispensable part of modern business, the complexities of managing cloud environments have grown significantly. Cloud computing is not just about migrating data to remote servers; it requires deep integration with existing IT infrastructure, secure and scalable systems, and optimized management for efficiency. System Integrators help businesses navigate this complex landscape, ensuring

seamless integration of cloud services with on-premises systems while optimizing performance, security, and costs.

### **Role of System Integrators:**

**Digital Transformation** - System Integrators have stepped into the vanguard of this transformation by assisting businesses in the transition to cloud-based platforms that promise efficiency and scalability. Leveraging their expertise, they are helping eliminate silos of legacy systems, enabling a seamless flow of information and functionality across the enterprise

**End to End Packaging Solutions** - One of the key trends that has been observed is that system integrators shift towards packaging end-to-end solutions tailored for specific industries. By orchestrating a suite of services and technologies, they are providing comprehensive solutions that address complex customer needs from start to finish. This approach not only streamlines the integration process but also provides businesses with a harmonious system that is ready to meet their unique challenges

**Hyper Scaler Partnerships** - An important aspect of system integrators modern strategy is about building strong partnerships with hyper-scalers like Amazon Web Services (AWS), Microsoft Azure, and Google Cloud. These alliances provide hyperscalers with foundational cloud services upon which they can build scalable solutions for their customers. For instance, Tata Consultancy Services has partnered with major cloud providers like Azure, AWS, Google Cloud to adopt the cloud solutions easily and migrate their workload.

**Enhanced Security** - System integrators help organizations ensure that their technology infrastructure complies with industry regulations and cybersecurity standards. By connecting systems securely and implementing strong security measures, integrators can mitigate vulnerabilities and protect sensitive data. Integrated systems also make it easier for businesses to monitor compliance, as data is centralized and more accessible to audits and reporting. This helps reduce the risk of data breaches and regulatory penalties.

### **Challenges Faced by System Integrators**

**Data Sovereignty and Compliance issues**- System integrators in India navigate a complex regulatory environment regarding data privacy, especially with government laws like the Digital Personal Data Protection Act, 2023. For instance, organizations face significant data sovereignty and compliance challenges when adopting cloud solutions, as seen in the integration of Oracle Cloud Infrastructure (OCI) for projects such as Digital Parliament, which underscores the need for secure infrastructure to protect sensitive data.

Indian system integrators with their deep understanding of local regulatory frameworks are well-positioned to manage these compliance challenges by providing customized solutions that align with global standards and India-specific data protection laws. Their local expertise allows them to design secure compliant cloud infrastructures that support projects like these giving them an advantage over global players

**Talent Shortage** - The Indian IT sector is currently facing a mid-level management talent gap. A NASSCOM report highlighted that India's demand for cloud-related talent is expected to reach 2 million by 2026, but there is a significant supply-demand gap of 30-40% in skilled professionals especially the technical expertise required for cloud migration projects. With the growing demand for cloud-related expertise, companies need to focus not only on attracting top-notch talent but also on retaining and upskilling their employees. This ensures that they stay ahead in an increasingly competitive industry. By investing in ongoing training programs, offering competitive compensation packages, and fostering a culture of growth, companies can bridge the skills gap and position themselves for long-term success.

**Network Latency**- Cloud environments are often preferred on-premises because of their scalability which can easily change use of calculation and storage resources in a matter of minutes. But if your network latency is too high, scaling your cloud environment will have limited impact, which puts a firm cap on the data integration workloads you can run though Hybrid clouds use wide-area networks (WANs) instead of local area networks (LANs) but WAN can become clogged by transmitting too many small, uncompressed data

packets over a remote database connection, putting a burden on the network. India's growing technology ecosystem and investment in network infrastructure gives it a significant edge over global players positioning the country to effectively address these challenges and optimize cloud performance for data-intensive workloads. This gives Indian enterprises a competitive advantage in enabling scalable, high-performance hybrid cloud solutions for data integration.

### 3. ROLE OF IT IN INDIA'S DIGITAL EVOLUTION

India's **Digital India Programme** aims to transform the country into a digitally empowered society and knowledge economy. The programme aims to generating USD 1 Trillion in economic value, contributing significantly to the target of a USD 5 Trillion economy by 2025. The program identifies 30 digital themes across sectors like Agriculture, Healthcare, Education, Energy, and Digital Payments, promoting the adoption of digital technologies.

As of March 2024, India has 954.40 million internet subscribers, with 398.35 million rural subscribers. Out of 644,131 villages, 612,952 (95.15%) have 3G/4G connectivity. The number of internet subscribers grew at a CAGR of 14.26%, from 251.59 million in March 2014 to 954.40 million in 2024. The total telephone subscribers increased to 1,199 million by March 2024, with tele-density rising to 85.69%. The growing adoption of cloud computing and AI by SMEs presents further opportunities for data centres and cloud service providers to support Digital India's infrastructure.

**Table 4: India's Digital Evolution Key Achievements (as of March/April 2024)**

Metric	March 2014	March 2024	% Increase
<b>Broadband Definition</b>	>= 512 Kbps	>= 2 Mbps	300%
<b>India's Ranking in Average Internet Download Speed</b>	130	16	Improved by 114 ranks
<b>Average Download Speed</b>	4.18 Mbps	105.8 Mbps	2,432.3%
<b>Internet Subscribers (in million)</b>	251.59	954.4	279.3
<b>Total Subscribers (in million)</b>	933	1199.3	28.5
<b>Urban Tele-density</b>	145.8%	133.72%	-8.3
<b>Rural Tele-density</b>	44.0%	59.2%	34.6%
<b>Overall Tele-density</b>	75.2%	85.7%	13.9%
<b>Average Data Cost/GB</b>	INR 268.0	INR 9.2	-96.6%
<b>Average Data Consumption</b>	0.26 GB	20.3 GB	7,696%

Source: Nexdigm Analysis, Press Information Bureau- GOI

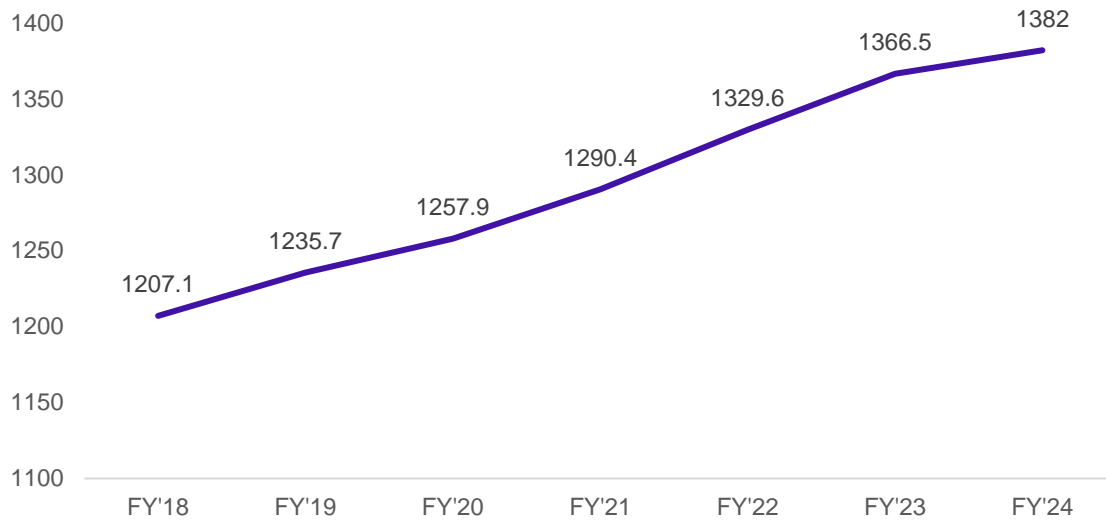
#### **IT services enabling the growth of digital transformation initiatives:**

India is getting closer to becoming a digitally advanced nation and is way ahead of the developing and emerging countries. This robust growth has been possible by the initiatives of the government and its step towards digitalization. Projects like Digital India has been the key pillar in achieving this goal where the total budget has been extended to INR 149,030 million from Fiscal 2022 to Fiscal 2026.

- **Financial Inclusion and Digital Identity** - Strengthening the digital revolution and initiatives such as Aadhaar has empowered millions of people with access to various essential services and financial

inclusion. Aadhaar holders executed 8 billion authentication transactions in April 2023 compared to 13.3 billion in April 2024, which reflects an increase of 66.2%, reflecting the growth of the digital economy and the use of Aadhaar in India.

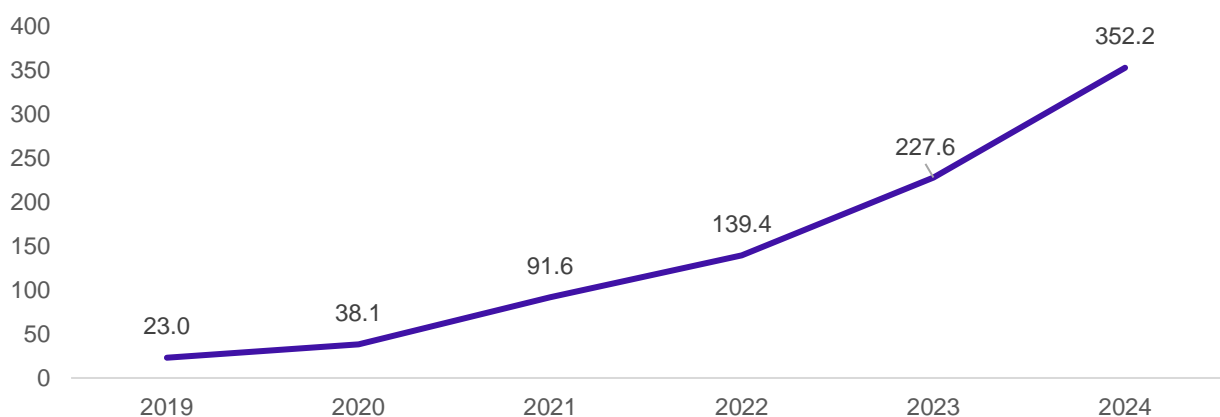
**Figure 10: Number of Aadhaar Users in INR million (Cumulative Terms), Fiscals 2018-2024**



Source: Nexdigm Analysis, UIDAI

- Revolutionizing Document Management-** Initiatives such as Digi Locker provide document management facilities digitally from access to driver license to academic mark sheets. The user base currently stands at 352.2 million users in Fiscal 2024 compared to 227.6 million in Fiscal 2023.
- Digitalizing Education:** Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) which is the world's largest digital literacy program, equips rural communities with essential digital skills such as marketing, e-commerce, finance and cyber security, enabling them to participate fully in the digital economy. Under this scheme, 73 million candidates were enrolled, out of which 64 million were trained and 47.8 million were certified.
- Boost to Digital Infrastructure:** The number of broadband subscribers increased from 846 million in March 2023 to 924 million in March 2024. This robust growth rate of 9.1%, coupled with a massive growth of 78 million broadband subscribers, underlines the importance of high-speed connectivity which is now expanding into rural areas as well.

**Figure 11: Year Wise Digi Locker User Registration Data (in million)**

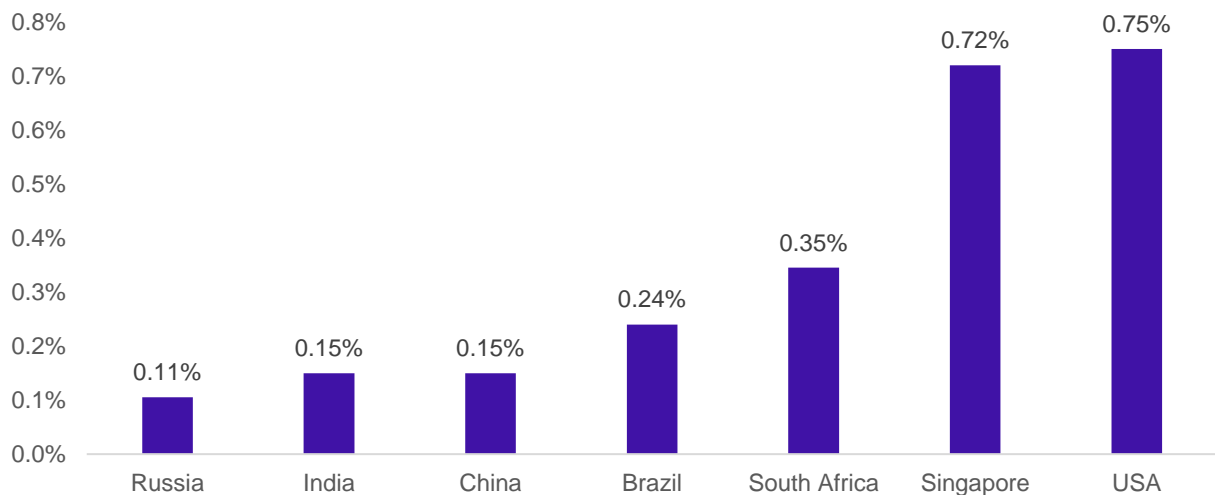


Source: Nexdigm Analysis, DigiLocker

### Shift from traditional IT to cloud-based services, AI, and machine learning

Global public cloud market has increased at a CAGR of 22.3% while the Indian public cloud market has overpassed the global CAGR and has grown at 31.9% CAGR (Fiscals 2020-2024). While cloud adoption in India is growing rapidly, its spending as a percentage of GDP remains lower than global markets due to factors like cost sensitivity, slower digital maturity, regulatory challenges, and a smaller IT spending base. However, with increasing awareness, improving infrastructure, and supportive government policies like the Digital India initiative, cloud spending is expected to rise significantly in the coming years. As cloud spending in India moves closer to global benchmarks, domestic players that have built strong capabilities in cloud-based services, such as ESDS, Yotta, CyFuture, are well-positioned to capture this growing demand.

**Figure 12: Cloud spending across countries as a % share of GDP, Fiscal 2024**



Source: Asian Development Bank, Nexdigm Analysis

**Table 5: Overview of India's Digital Landscape**

Parameters	Description
<b>Growing Digital Population</b>	2.4x Increase in internet subscribers from 343 million in 2016 to 954.40 million in 2024
	1.2 billion total wireless subscribers (as of September 2021) with 69%+ wireless internet subscribers
	82% Reduction in mobile data prices between 2016 and 2021
	53% Of enterprises have increased their cloud adoption over the last one year
<b>Favourable Government policies</b>	84% Of large organizations have adopted SaaS
	Data Centre Scheme Government aims to attract USD 4 billion of investments by 2025 in data centre industry and intends to provide 3-4% of capital investment as incentive along with faster approvals
<b>Increasing interest of investing community</b>	Infrastructure status to data centres: As data centre industry is seeking expansion, infrastructure status to data centres was provided in the Government's Budget for Fiscal 2022 It is expected to improve credit availability at lower rates and provide flexibility for power sourcing
	5.6x Increase in SaaS investments from USD 800 million in 2018 to ~USD 10 billion in 2024.
	Indian data Centre industry has secured investment commitments worth USD 19 billion in 2024

Source: Nexdigm Analysis, Industry Articles

**Table 6: Breakdown of key service types: IT Consulting, Cloud Services, Managed Services**

Service Type	IT Consulting	Managed Services	Cloud Services	Data Centre
<b>Type of Services</b>	Strategy consulting, Operations consulting, Technology consulting:	Security as a Service, Network Management, Disaster recovery, Application and database management, Back-up service, Cross platform management and remote infrastructure management.	Public Cloud, Hybrid Cloud, Private Cloud	Colocation, Managed Hosting, Cloud Edge Computing
<b>Cost Structure</b>	Hourly or project-based fees	Monthly subscription	Pay as you go, Subscription based, Reserved instances and hybrid cloud billings	Monthly or annual leasing, Pay-as-you-go, Subscription-based
<b>Key Applications</b>	Technology strategy, digital transformation	IT infrastructure management, security monitoring	Data storage, SaaS, remote work	Data storage, Backup, Disaster recovery, Network management
<b>Value Proposition</b>	Expert guidance, strategic alignment	Reliability, predictability, proactive maintenance	Scalability, cost efficiency, accessibility	High uptime, security, infrastructure reliability
<b>Demand Patterns</b>	High demand in BFSI, healthcare, retail	High demand among SMEs, healthcare, financial services	Strong demand across all sectors, especially in tech, BFSI	Growing demand across all sectors, especially in tech, healthcare, finance
<b>Industry Trends</b>	Focus on specialized services, remote/hybrid models	Growth in managed security services, co-managed IT	Multi-cloud and hybrid cloud adoption, cloud security focus	Adoption of hybrid infrastructure, AI/ML integration, Edge computing growth

Source: Nexdigm Analysis, Industry Articles

**Key Growth Drivers - AI/ML/NLP, Edge Computing, Increasing Focus on Digital Services**

- Natural Language Processing (NLP):** NLP helps enhance operational efficiency, improve data management practices, strengthen security measures, and simplify advanced analysis. Beyond the data centre sector, NLP has been adopted by Indian Railways for inquiries through the AskDISHA Chabot. It is also utilized by the Supreme Court to translate verdicts into vernacular languages. According to the interviews with industry experts the Indian market for NLP is estimated as USD 2.6 billion during 2024, driven by advancements in AI and Machine learning, adoption across industries and demand for voice activated technologies.
- AI and Machine Learning:** The integration of machine learning (ML) and artificial intelligence (AI) is significantly transforming the data centre industry by enhancing operational efficiency, optimizing energy consumption, and improving security measures. AI-driven predictive maintenance deducts the downtime and operational costs, while intelligent workload management ensures optimal resource utilization. AI technologies have enhanced energy efficiency by optimizing cooling systems and power allocation, potentially reducing energy. Artificial intelligence accounted for 5.8% of the Indian cloud market, generating revenue of INR 48.8 billion in Fiscal 2024.

- **Edge Computing:** Edge computing plays a crucial role in modernizing data centres by reducing latency, improving bandwidth efficiency, enhancing reliability, providing scalability, and supporting real-time applications. As businesses increasingly depend on fast and efficient data processing, integrating edge computing into their strategies will be essential for maintaining a competitive advantage. Oracle and Tata Communications are few prominent companies that have expanded into this technology.
- **IoT and Block Chain Technology:** The integration of Internet of Things (IoT) and block chain technology is enhancing data centre security by using decentralized and tamper-proof data storage, ensuring data integrity with immutable audit trails, and enabling skilled data management through smart contracts. This convergence allows for real-time monitoring, automation, and scalability to manage the increasing number of connected devices. Ultimately, IoT and block chain together create a more efficient, skilled, and secure data centre capable of handling the demands of a growing interconnected world. As per Nexdigm, Indian market for IoT is estimated at around INR 880 million, which is expected to grow at a CAGR of 16% during 2025-2029.
- **GPU's:** Data centre GPUs are designed to meet the demands of enterprise-grade applications such as artificial intelligence, machine learning, high-performance computing, data analytics, and scientific simulation GPUs consume more power than CPUs, they offer superior energy efficiency for specific tasks that benefit from parallel processing. This efficiency stems from the ability of GPUs to complete computations faster than CPUs by distributing workloads across numerous core. The Indian government plans to invest approximately INR 100,000 million to procure 10,000 AI-capable GPUs within the next 18 months. As of now, 675 GPUs are operational through the Centre for Development of Advanced Computing (CDAC) under its AIRAWAT supercomputing facility, which ranks 75th globally in terms of supercomputing power. The overall infrastructure for computing in India is reported to be less than 2% of the global capacity, indicating significant room for growth and investment in this area NVIDIA holds a dominant position in the GPU market in India, accounting for about 85% of the market share

#### 4. GOVERNMENT INITIATIVES

The cloud and data centre industries are rapidly transforming India's digital landscape, driven by government initiatives promoting cloud adoption and data localization.

##### Cloud adoption in public services:

Cloud adoption in sectors such as BFSI, healthcare, and education significantly enhances accessibility, operational efficiency, data security, and scalability in India's public sector.

- **Banking, Financial Services, and Insurance (BFSI):** Cloud adoption enables financial services to deploy secure, scalable solutions for customer data management and transaction processing. According to NPCI, as of December 2024, there are 641 banks live on UPI. During September 2024, there are over 15 billion transactions valuing over INR 20 Trillion registered. The Government e-Marketplace (GeM) facilitates the procurement of cloud services for government financial institutions, ensuring compliance with stringent security protocols to protect sensitive data. This supports the scalability of digital financial services in India, as evidenced in MeitY's GI Cloud (MeghRaj) initiative, which has bouquet of 22 Cloud service providers on their website.
- **Healthcare:** Through the Ayushman Bharat Digital Mission (ABDM) and the National Digital Health Mission (NDHM), India leverages cloud infrastructure to create interoperable digital health records, enabling health services to be accessible nationwide. As of March 2024, over 670 million Ayushman Health Bharat Accounts (ABHA) have been created and over 1.3 Lakh facilities are ABDM-Enabled, including 17,000 private facilities.
- **Education:** Cloud solutions improve digital access to educational resources, making remote learning more accessible, especially in underserved regions. As of 2022, the number of fresh admissions for Online-Distance learning (ODL) have crossed the 2 million figures, which is an increase of 41% over the Fiscal 2021. Total fresh admissions for online higher education have grown from 25,905 in Fiscal 2021 to 95,023 in Fiscal 2024.

### Trends in Cloud Computing adoption and the growth of digital services:

- **Hybrid and Multi Cloud** – The number of Global Capability Centres in India has increased by 1700 organizations, reaching 2,975 as of March 31, 2024. These Global Capability Centres are expected to generate USD 64.6 billion in revenue and employ more than 1.9 million people in Fiscal 2024. As organizations adopt multi-cloud strategies, they gain cost and flexibility advantages while enhancing data governance and integrating with legacy systems.
- **Cloud Innovation and Security** - In 2025, organizations will increasingly leverage real-time data for insights, shifting towards streamed content like movies, music, and cloud gaming, necessitating fast storage solutions, such as Flash and solid-state devices. This transition will create opportunities for innovation and user engagement.
- **Sustainability Through Cloud** - In 2025, cloud providers and users alike will face increasing pressure to reduce their environmental impact. From renewable and nuclear-powered Data Centres to energy-efficient infrastructure, sustainable cloud practices will become a critical factor in business strategy and success.
- **Quantum Computing** - Quantum computing is poised to break into the business mainstream by 2025, primarily through cloud services from industry giants like IBM, Google, Microsoft, and AWS. This democratization will enable organizations of all sizes to access quantum capabilities, leading to breakthroughs in drug discoveries and unbreakable encryption, fostering innovations previously deemed impossible.

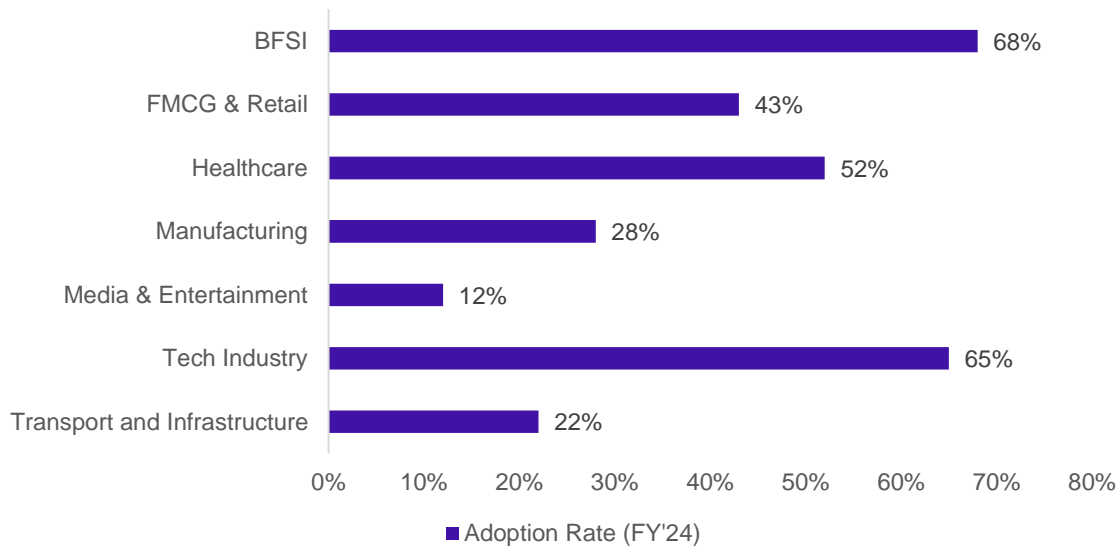
### Evaluation of policy impact metrics specifically targeting our sector:

- **Software Technology Parks of India (STPI) 1991:** The STPI were set up to boost software exports and services from the country by promoting the IT/ITeS industry. STPI has supported exports by increasing STPI-registered units from INR 520 million in Fiscal 1993 to INR 8,500 billion in Fiscal 2023. Presently, STPI has five tier-3 compliant data centres in five major Indian cities namely, Bengaluru, Mohali, Bhubaneswar, Chennai and Vijayawada, of which, the Bengaluru and the Mohali ones are run by ESDS. Being associated with a premier science and technology organization under Government of India adds to the credibility of its partner companies.
- **National Digital Communications Policy (NDCP) 2018:** The NDCP 2018 aims to drive investment of over USD 100 billion in India's digital communications ecosystem, focusing on expanding data centre and cloud infrastructure to position India as a global hub for data storage. It seeks to streamline regulations for streamlining data centre operations and foster innovation in IT hardware and technologies.
- **Digital Personal Data Protection Act (DPDP) 2023:** The Digital Personal Data Protection Act 2023 is set to impact India's data centre industry by enforcing stricter compliance, promoting local infrastructure development, and enhancing security measures, once fully enforced. While it may raise operational costs initially, the bill aims to create long-term opportunities for growth and innovation as businesses adapt to a more regulated environment.
- **Data Centre Policy 2020:** The policy aims to attract significant investments by 2025 by granting infrastructure status to data centres, offering fiscal incentives through Data Centre Incentivization Scheme (DCIS), and simplifying regulations through Data Centre Economic Zones (DCEZs). It supports innovation and R&D in IT equipment manufacturing, driving growth for start-ups and MSMEs.

### India AI Mission: Encouraging AI development through cloud infrastructure support

The India AI Mission, approved by the Indian government, aims to create a robust ecosystem for artificial intelligence (AI) in India. As per NITI Aayog by 2035, AI has the potential to add 1 trillion dollars to India's economy. The Ministry of Electronics and Information Technology (MeitY) has been allocated a budget of INR 219,360 million for the fiscal year 2024-25, with INR 5,500 million specifically designated for the AI mission. This initiative focuses on several key objectives and components that will enhance data centres and

**Figure 13: Sectoral AI Adoption Rate, Fiscal 2024**



Source: Nexdigm Analysis, Industry Articles

**Impact of India’s AI mission on Data Centres and Cloud Infrastructure: -**

- **Computer Capacity Development:** The India AI Mission plans to build a scalable AI computing ecosystem comprising over 10,000 Graphics Processing Units (GPUs). This infrastructure will support India's rapidly expanding AI startups and research community.
- **AI Marketplace Creation:** AI marketplace will be established to offer AI as a service along with pre-trained models for innovators. This initiative aims to provide essential resources for effective AI development.
- **Datasets Platform:** The creation of a centralized datasets platform will improve access to quality data necessary for machine learning applications, thereby supporting the development of data-driven solutions across industries

**Role of MeitY in promoting Cloud, Data Centre, and Managed Services**

Ministry of Electronics & Information Technology (MeitY) through its Data Centre Policy 2020 has laid down multiple policies and frameworks to Make India a global data centre hub, promote investment in the sector, propel digital economy growth, enable provisioning of trusted hosting infrastructure to fulfil the growing demand of the country and facilitate state of the art service delivery to citizens. As a result, there are over 48 million registered users on MyGov.in 1.3 billion Aadhar registered users, 694 boarded hospitals on eHospital platform, and a total of 1,895 departments under Meghraj cloud initiative as of October 2024.

The strategies for growth of data centre sector in India, as used by MeitY are as follows:

- Enable Ease of Doing Business like single window system
- Enabling a favourable ecosystem for the operations of data centres
- Setting up of Data Centre Economic Zones (DCEZs)
- Promote indigenous technology development, research and capacity building
- Institutional Mechanism for Policy governance

Some of the key policy thrust areas under these strategies include:

- Availability of uninterrupted, clean and cost-effective electricity for data centres
- Facilitating a robust and cost-effective connectivity backhaul

- Data centres to be declared as an Essential Service under The Essential Services Maintenance Act, 1968 (ESMA)
- Recognition of data centres as a separate category under National Building Code
- Single window time-bound clearance system
- Skill development programmes in association with Ministry of Skills Development and Entrepreneurship (MSDE).
- Independent Data Centre industry council (DCIC)

### Government Initiatives and Regulations in cloud, Data centre and SaaS ecosystem:

Government of India is prioritizing the development of strong cloud ecosystem, aiming for global leadership in cloud and data centre services. Through the “GI Cloud” initiative, known as ‘Meghraj,’ the government seeks to optimize ICT spending and accelerate e-service delivery. As of October 2024, the number of departments under Meghraj has grown from 1,655 in May 2023 to 1,895, while virtual machines have increased from 24,836 to 28,495, reflecting greater adoption of cloud services within the government. Across the world, government departments have initiated automation of business and IT processes through Government SaaS or platform as a service (“PaaS”) is a cloud computing model that provides a complete environment for developing, running, and managing applications initiatives, aimed at digitalization of services. Such digitization initiatives have been accentuated by the COVID-19 pandemic, increase in the use of mobile phones, rapid increase in subscription-based cloud services, increase in use of biometric authentication, regulatory enforcement of individual privacy, etc. Government institutions in India are increasingly also migrating their workloads on cloud because their existing legacy systems are not scalable and secure

The Ministry of Electronics and IT (MeitY) has streamlined cloud service procurement for Government departments through the Government e-Marketplace (GeM), empanelling major Cloud Service Providers (CSPs) offering a range of services, including Basic, Advanced, and Managed Cloud Services. This includes models such as Public Cloud, Virtual Private Cloud (VPC), and Government Community Cloud, with 22 CSPs and over 90 data centres empanelled by 2023. In line with national policies like the National Digital Communications Policy (NDCP) 2018 and Data Centre Policy 2020, the Government aims to boost digital infrastructure, cloud adoption, and local data centre development. In 2015, RBI mandated all co-operative banks and district co-operative central banks to migrate to core banking. Additionally, the Digital Personal Data Protection Act 2023 is driving demand for local data centres, emphasizing the need for secure, scalable infrastructure.

**Table 7: State-wise incentives for Data Centre setup. (1/2)**

Feature	Maharashtra IT-ITES Policy 2023	Karnataka Data Centre Policy 2022-27
<b>Stamp Duty Exemption</b>	<ul style="list-style-type: none"> <li>• 100% exemption for land acquisition and related transactions.</li> </ul>	<ul style="list-style-type: none"> <li>• 100% Exemption from Stamp Duty, Up to 10 acres for data centres outside Bengaluru Urban district</li> </ul>
<b>Electricity Duty Exemption</b>	<ul style="list-style-type: none"> <li>• Permanent exemption from electricity duty for data centres.</li> </ul>	<ul style="list-style-type: none"> <li>• 100% for 5 years from the month of operation.</li> </ul>
<b>Power Tariff Subsidy</b>	<ul style="list-style-type: none"> <li>• INR 1 per unit subsidy for five years for new data centres outside Zone-I.</li> </ul>	<ul style="list-style-type: none"> <li>• Data centres who have minimum 30% component of green energy in total power consumption will be provided with power tariff concession.</li> </ul>
<b>Single Window Clearance</b>	<ul style="list-style-type: none"> <li>• Unified system for streamlined approvals across IT &amp; ITES sectors.</li> </ul>	<ul style="list-style-type: none"> <li>• Government will ensure single window clearance for enabling power supply in time bound manner for data centres.</li> </ul>
<b>Water Supply</b>	<ul style="list-style-type: none"> <li>• The State would facilitate uninterrupted water supply (24x7) for data centre entities.</li> </ul>	<ul style="list-style-type: none"> <li>• The State would facilitate uninterrupted water supply (24x7) for data centre entities.</li> </ul>
<b>Investment Target</b>	<ul style="list-style-type: none"> <li>• Aims to attract USD 20 billion in investments.</li> </ul>	<ul style="list-style-type: none"> <li>• Targets INR 100,000 million in investments over five years.</li> </ul>

Source: Nexdigm Analysis, Maharashtra Industry, Trade, Investment and Facilitation Cell, Karnataka Government Data Policy 2022-27

### Data Sovereignty Requirements

The need for data centre infrastructure within the country is growing, driven by the data localization requirements of the Digital Personal Data Protection Act (DPDP) 2023 and the need to safeguard the country

digital sovereignty. Countries like Russia, China, Turkey, Australia, France, and Germany have implemented data localization policies, though the scope and enforcement of these regulations vary.

**Digital Personal Data Protection Act (DPDP) 2023 and rising demand for cloud and data centres;**

- The Digital Personal Data Protection Act (DPDP) 2023 mandates that sensitive personal data be stored within India, while critical data may face stricter localization rules. It allows cross-border data transfer only to countries with adequate data protection. International companies invest in local data centres to comply, increasing infrastructure and operational costs. The DPDP Act imposes penalties for non-compliance and establishes a Data Protection Authority to oversee adherence. Businesses will need to update their data governance practices, ensuring transparency, consent, and data minimization. Overall, the DPDP Act 2023 will drive data centre expansion and strict compliance measures in India.
- Due to rising data localisation, the cloud and data centre requirement is constantly rising in India. The current under-construction capacity additions are estimated to reach 1.03 GW by 2028. Additionally, there are plans for further capacity expansion of 1.29 GW, bringing the total projected Data Centre capacity in India to 3.29 GW by 2028.
- RBI mandate of storing financial data in India; the financial sector has become increasingly dependent on digital solutions, from online banking to algorithmic trading. This digital transformation has necessitated secure and reliable data storage, rendering data centres an integral component of their infrastructure.

**Penalties imposed by Indian Government for abrogating the data localisation law (DPDP, 2023):**

- American Express and Diners Club were prohibited from accepting new clients for six months beginning in May 2021 after the RBI imposed the first fines relating to localisation of payments data in April 2021.
- In July 2021, it prohibited MasterCard from bringing on board new domestic clients for an indeterminate period. Given that MasterCard controls around a third of India's total cards network market, the prohibition is likely to have a considerable effect.

**Budget 2025: A Catalyst for the Future of Technology**

India’s technology sector has received a boost in the Government’s latest Union Budget for Fiscal 2026, with key initiatives focusing on artificial intelligence (AI), global capability centres, education and digital public infrastructure. A key plank in the Government budget for Fiscal 2026 is the ‘*Centre of Excellence in AI*’ for education, which has an allocation of INR 5,500 million. The initiative follows the launch of three similar centres for agriculture, health and sustainable cities in 2023. Companies such as ESDS, BEL, and Xenius who operate in smart cities can improve product offerings, reduce operating costs and remain competitive by the integration of AI in its operation. The Smart City cloud is designed to host and manage the data centre and disaster recovery workloads by smart cities under an initiative of the Government of India. It efficiently processes and analyzes the vast amounts of data generated by IoT devices, sensors, and connected systems

The Government believes AI-powered education will empower youth, improve job readiness and ultimately boost the digital economy. Research, development and innovation, which was first highlighted in last year’s budget, has also been identified as a key driver of growth. The Fiscal 2026 budget proposes a “*fund of funds for advanced technologies*” worth INR 20 billion to boost the next generation of start-ups and translate ideas into tangible results. New employment opportunities, education and skill development are the key areas that this year’s budget will focus on. Over the next five years, around 50,000 Atal Tinkering labs will be established in public schools to cultivate scientific thinking and encourage student innovation will help India deliver innovative solutions in emerging areas such as AI, cyber security, financial technology, space technology and sustainability.

**Table 8: Key AI Initiatives and Investments by Government in India**

Initiative	Description	Allocation/Investment
<b>Centre of Excellence in AI for Education</b>	Establishment of a dedicated centre to drive AI innovation in the education sector.	INR 5,000 million

<b>Deep Tech Fund of Funds</b>	Proposal to create a fund to support start-ups in deep tech sectors, including AI.	INR 200,000 million
<b>AI Centres of Excellence</b>	Establishment of three centres focusing on AI applications in agriculture, healthcare, and sustainable cities.	INR 5,000 million
<b>IndiaAI Mission</b>	Government initiative to enhance AI infrastructure and support AI start-ups.	USD 1.25 billion
<b>Microsoft's Investment in AI and Cloud Services</b>	Microsoft's plan to invest in AI and cloud services in India, including training 10 million Indians in AI skills by 2030.	USD 3 billion

Source: Industry Articles, Nexdigm Analysis

## 5. DATA CENTRE INFRASTRUCTURE IN INDIA

The growing demand for digital services is a crucial factor driving the expansion of data centres in India. The proliferation of smart devices, increased use of digital payments, and the shift towards cloud-based solutions have significantly increased the need for data storage capabilities. With over 1.1 million wireless subscribers, 270+ million 5G and 700 million 4G data subscribers in 2024, this increase in internet usage requires a robust data centre infrastructure to support activities such as e-commerce, cloud computing, and digital transactions. Moreover, the anticipated rollout of 5G technology is expected to further amplify this demand by enabling faster internet speeds and more connected devices. Several industries, including e-commerce, artificial intelligence (AI) and online gaming, are increasingly relying on advanced data centre capabilities to manage large amounts of data generated by AI applications and other digital services, driving the need for sophisticated storage solutions.

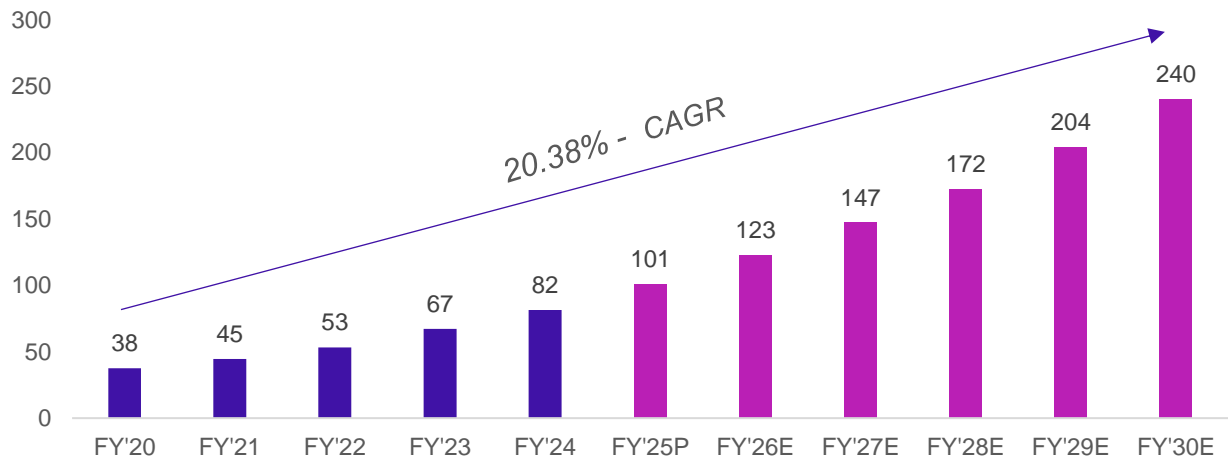
State Governments across India are implementing digital initiatives such as MahaOnline in Maharashtra, e-Pragati in Andhra Pradesh, and Akshaya Centres in Kerala to improve governance, enhance public services, and drive economic growth. These efforts align with the national Digital India campaign, which focuses on local needs and leverages technology for development. Data centres and cloud computing are vital to these initiatives, providing the infrastructure required for efficient data management and processing. A robust data centre infrastructure is essential for the reliable operation of Government services and businesses that millions of Indians rely on daily, supporting both current demands and future technological advancements.

### Market Size for India Data Centre Industry Basis on Operational Revenue:

The Data Centre market in India is currently valued at INR 82 billion, with around 85,000 number of racks for co-location and is projected to grow at a compound annual growth rate (CAGR) of 21.4% from Fiscal 2020 to Fiscal 2024. The market in the future is expected to grow at a CAGR of 19.7% from INR 82 billion in Fiscal 2024 to INR 240 billion in Fiscal 2030. As of 31<sup>st</sup> March 2024, the total data centre installed capacity in India is 1050 MW and the total utilized capacity in India for data centre stands at 850MW.

Key factors driving the growth of the Indian data centre market include the rapid expansion of internet users, which are projected to increase from 794.4 million in 2022 to 1.2 billion by 2029, coupled with the rollout of 5G technology, which will significantly enhance data consumption capabilities. Additionally, the growing reliance on cloud computing and digital services across various sectors such as e-commerce, finance, and online gaming demands robust data centre infrastructure to ensure secure and efficient data management. The strong demand for Tier-3 and Tier-4 data centres is particularly notable due to their superior uptime performance and disaster recovery capabilities. As these trends continue, the data centre market is well positioned for substantial growth, reflecting the increasing digitalization of the Indian economy.

**Figure 14: Market Size for India Data Centre Industry On The Basis of Operational Revenue (In INR billion), Fiscals 2020-2030E:**

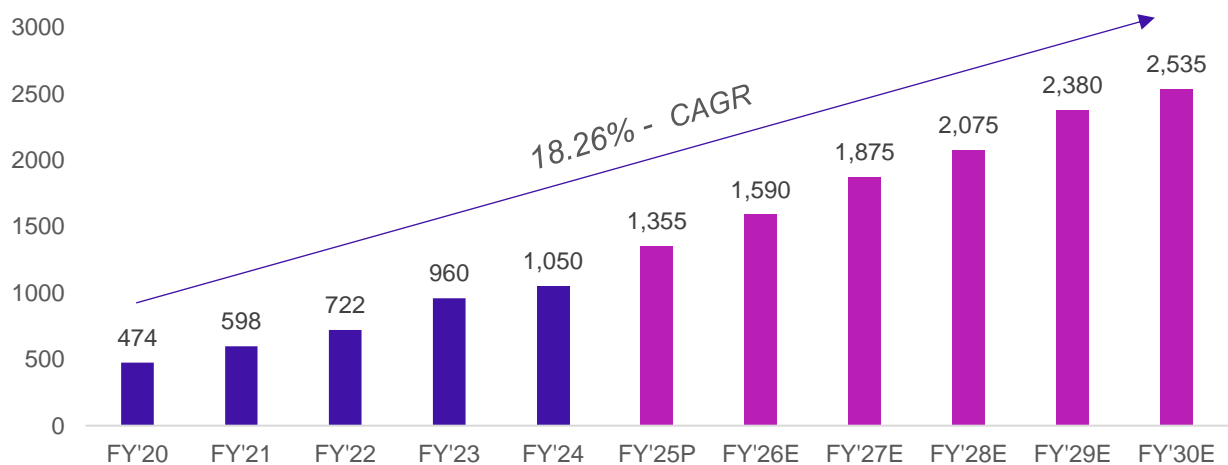


Source: Interview with Industry Experts, Nexdigm Analysis

Note-E stands for Estimated, P stands for projected

The market has been defined on the basis of realized revenues by data centre operators which includes revenue from co-location, hyperscalers and managed data centre services.

**Figure 15: India IT MW Capacity Projections, Fiscals 2020-2030E:**



Source: Interview with Industry Experts, Nexdigm Analysis

Note: The data provided for every year is as of March 31<sup>st</sup>

Note-E stands for Estimated, P stands for projected

**Table 9: Market Segmentation for India Data Centre Industry by Major Cities Installed Power Capacity in MW, Fiscal 2024**

Cities	Total Capacity (In MW), March 2024
Delhi NCR	94
Kolkata	10
Hyderabad	48
Mumbai Metropolitan Region	490
Pune	64
Bengaluru	97
Chennai	147

Source: Interview with Industry Experts, Nexdigm Analysis

As of 31 March 2024, India's current installed data centre capacity stands at 1,050 MW, with approximately 94% of this capacity concentrated in key cities. Among these, Mumbai and Chennai lead the sector, benefiting from a dense wet cable ecosystem that ensures optimal global latencies. Mumbai alone accounts for 48% of India's total data centre capacity, supported by its strategic submarine landing stations, reliable infrastructure for power and fiber optics, and significant demand from the banking, financial services, and insurance (BFSI) sector. The city is projected to contribute over 35% of the additional capacity expected in India over the next five years. Meanwhile, Delhi and Kolkata serve as the primary locations in North and East India, catering to regional enterprise demand, with Delhi anticipated to account for approximately 15% of incremental capacity. Notably, Noida is emerging as a significant player with substantial capacity additions on the horizon.

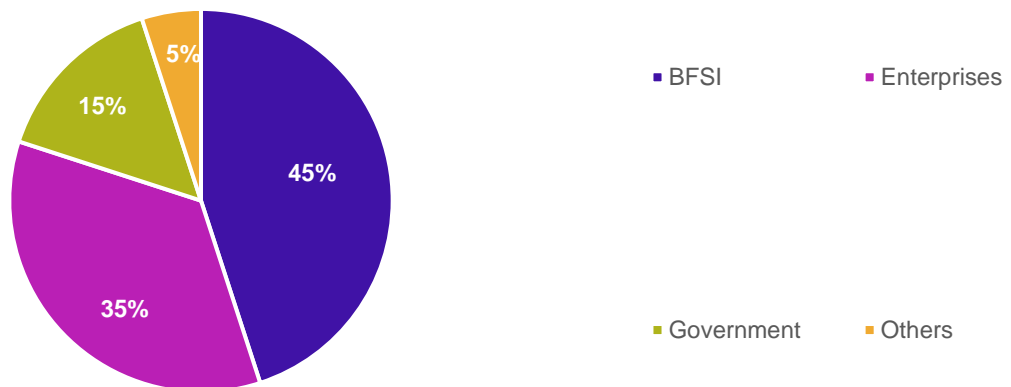
India's data centre industry is experiencing significant growth as it expands into Tier-2 and Tier-3 cities, driven by strategic advantages and increasing demand for digital infrastructure. Cities such as Nashik, Chandigarh, Kochi, Jaipur, Ahmedabad, Lucknow, Patna, and Visakhapatnam are becoming key players in this expansion. These locations offer several benefits, including lower land and labour costs, improved infrastructure, and enhanced network resilience, making them attractive for data centre operations.

Leading companies in this sector, including ESDS, CTRLS, Yotta, and Nextra by Airtel, are actively pursuing opportunities to establish their presence in these smaller cities. The shift towards Tier-2 and Tier-3 cities not only aims to meet the growing demand for digital services but also to leverage the cost efficiencies and strategic benefits these cities provide. As the digital landscape evolves, these cities are poised to play a crucial role in supporting India's burgeoning data centre capacity and overall economic growth

**Segmentation by End User Industry**

The data centre market is characterized by a diverse range of end-user sectors, with the Banking, Financial Services, and Insurance (BFSI) sector leading the way, accounting for 45% of total revenues. Enterprises follow closely, representing 35% of the market, driven by their increasing reliance on cloud services and digital transformation initiatives. The Government sector contributes 15%, focusing on e-governance and secure data management while other sectors collectively make up the remaining 5%. This distribution highlights the varying needs and priorities of different industries in leveraging data centre capabilities to support their operations. Players with a well-diversified presence across multiple industry segments have already built a strong foundation in the Indian data centre and cloud market. As adoption accelerates, their extensive expertise across BFSI, enterprises, Government, and other sectors positions them as 'knowledge leaders,' enabling them to stand out from the competition and establish a clear competitive advantage.

**Figure 16: Market Segmentation for India Data Centre Industry Basis End User Industries Based on Revenues in Percentage (%), Fiscal 2024**



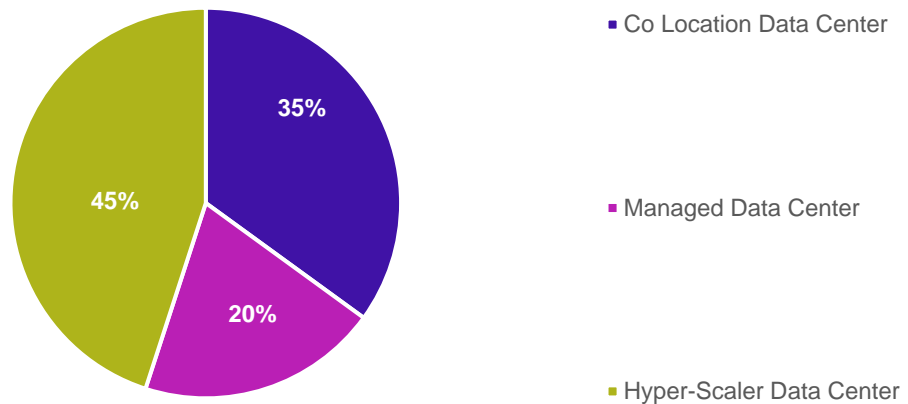
Source: Interview with Industry Experts, Nexdigm Analysis

**Table 10: Key End-User Industry Applications of Data Centres**

End User Industry	Applications
<b>BFSI</b>	Real-time transaction processing: Data centres support high-frequency trading and instant payment systems, ensuring minimal latency and maximum uptime.
	Advanced analytics for risk management: Utilization of data centres for big data analytics to assess credit risk and fraud detection in real-time.
	Regulatory compliance and reporting: Infrastructure to securely store and process sensitive financial data while ensuring compliance with regulations like GDPR and local data localization laws.
<b>Enterprises</b>	Hybrid cloud solutions: Data centres facilitate seamless integration between on-premises infrastructure and cloud services, allowing businesses to scale operations efficiently.
	Disaster recovery and business continuity: Enterprises leverage data centres for backup solutions that ensure data integrity and availability during outages or disasters.
	Development and testing environments: Providing isolated environments for software development, testing, and deployment, enabling faster innovation cycles.
<b>Government</b>	E-governance applications: Data centres support platforms that enable citizens to access Government services online, improving transparency and efficiency.
	Secure storage of citizen data: Infrastructure to manage sensitive information related to citizens, ensuring compliance with data protection regulations.
	Disaster recovery for critical public services: Ensuring continuity of essential services through robust backup solutions that protect against data loss or system failures.

Source: Industry Articles, Nexdigm Analysis

**Figure 17: Market Segmentation for India Data Centre Industry by Segments Based on Revenues in Percentage (%), Fiscal 2024**



Source: Interview with Industry Experts, Nexdigm Analysis

**Table 11: Types of Data Centres**

Type	Managed	Colocation	Hyperscaler
<b>Description</b>	Combines co-location services with managed IT support, allowing businesses to rent space for servers and outsource infrastructure management to specialized vendors. It helps businesses focus on core activities without IT management burdens.	Provides physical space to house servers and networking equipment, offering power, cooling, security, and connectivity. This model allows businesses to share infrastructure costs while maintaining control over their hardware.	Large-scale facilities supporting data processing, computing, and storage services for major organizations (e.g., Amazon, Google, Microsoft), housing at least 5,000

			servers across 10,000+ square feet
<b>Key Benefits</b>	<ul style="list-style-type: none"> <li>• Expert management of IT resources</li> <li>• Flexible scalability</li> <li>• Focus on strategic initiatives</li> <li>• Reduced IT management burden</li> </ul>	<ul style="list-style-type: none"> <li>• Enhanced security measures</li> <li>• Cost savings on infrastructure investments</li> <li>• Improved interconnectivity with network providers</li> </ul>	<ul style="list-style-type: none"> <li>• Extreme scalability</li> <li>• Cost efficiency through economies of scale</li> <li>• High performance infrastructure for rapid growth</li> </ul>

Source: Industry Articles, Nexdigm Analysis

## 6. CLOUD INFRASTRUCTURE IN INDIA

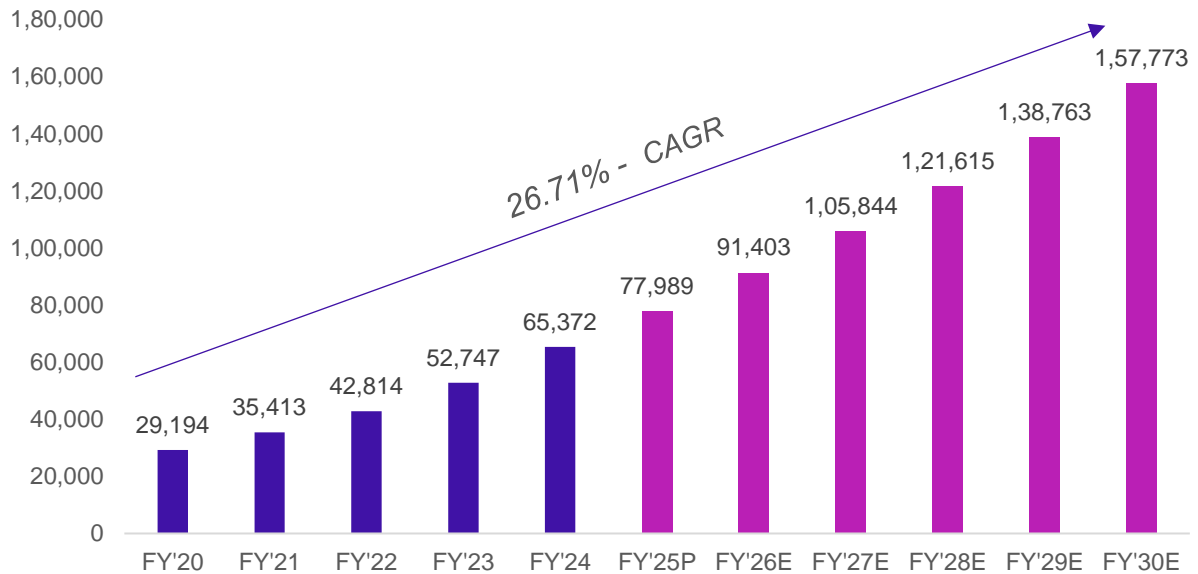
Cloud has emerged as a strategic priority for enterprises, Governments and SMEs today. The potential of cloud is limitless and forms a crucial foundation for successful digital transformation. Cloud underpins several emerging technologies such as AI/ML, IOT, RPA, AR/VR, etc., which rely on cloud computing to maximize their benefits. India is still at a nascent stage of cloud adoption compared to mature markets. According to Asian Development Bank, even among BRICS nations, India is behind Brazil and South Africa in terms of cloud adoption. Strong customer focus across industries is driving cloud adoption in BRICS nations where infrastructure changes are led by organizational cloud ambitions.

### Market Size for Cloud Services in India Basis Revenues, Fiscals 2020-2030

Global cloud services market reached at INR 65,371.8 billion in Fiscal 2024 wherein Indian cloud services market has grown at a CAGR of 22.3% during Fiscal 2020 to Fiscal 2024 and is expected to grow at a CAGR of 15.8, from INR 523.8 billion in Fiscal 2024 to INR 1,844.1 billion in Fiscal 2030. Artificial intelligence accounted for 5.8% of the Indian cloud market, generating revenue of INR 48.8 billion in Fiscal 2024

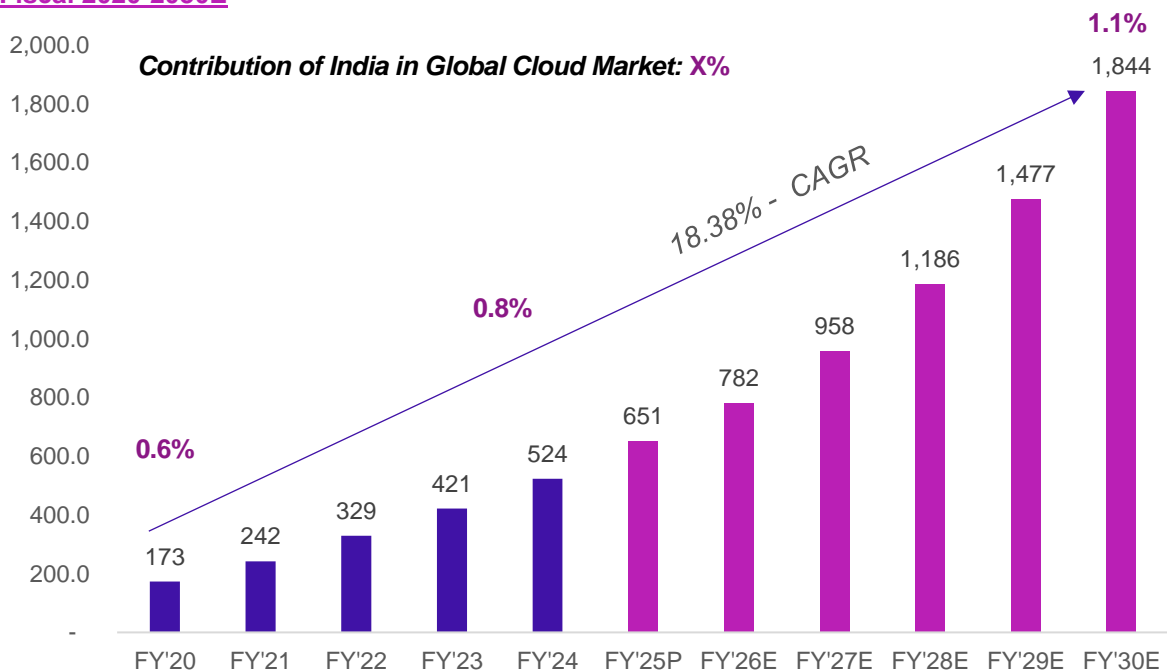
The cloud industry in India is poised for rapid growth due to the Digital India initiative driving Government-led digital transformation, which requires scalable cloud infrastructure. Additionally, the increasing availability of a skilled IT workforce specialized in cloud technologies supports migration and innovation. Evolving data localization regulations are forcing enterprises to adopt on premise cloud solutions, while the expansion of global providers such as AWS and Azure improves service accessibility and reliability

**Figure 18: Market Size for Global Cloud Industry on the Basis of Revenues in INR billion, Fiscal 2020-2030E**



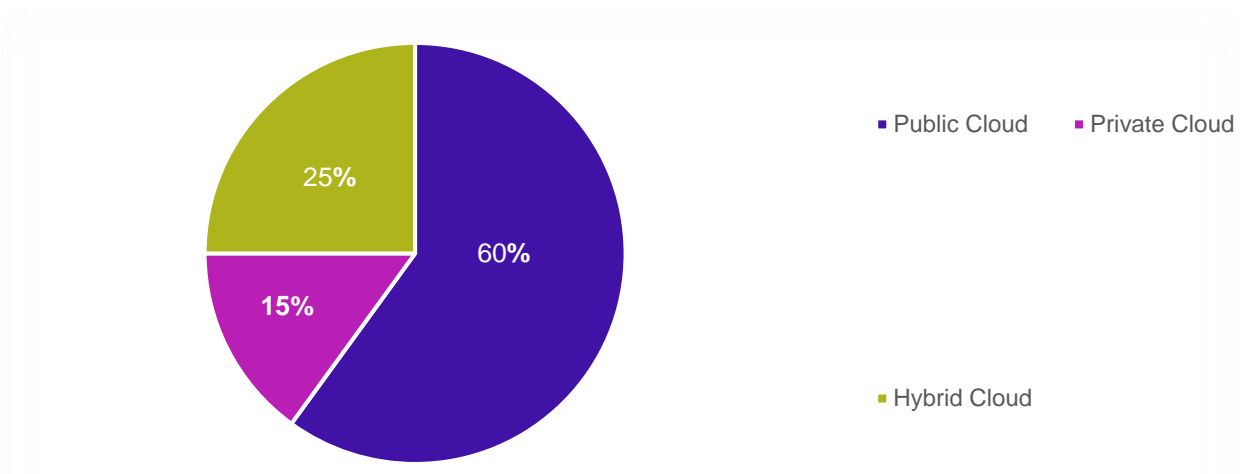
Source: Interview with Industry Experts, Nexdigm Analysis  
 Note-E stands for Estimated, P stands for projected

**Figure 19: Market Size for India Cloud Industry on the Basis of Revenues in India in INR billion, Fiscal 2020-2030E**



Source: Interview with Industry Experts, Nexdigm Analysis  
 Note-E stands for Estimated, P stands for projected

**Figure 20: Market Segmentation for India Cloud Industry by Type of Cloud on the Basis of Revenues in Percentage (%), Fiscal 2024**



Source: Interview with Industry Experts, Nexdigm Analysis

- Public cloud:** Cloud services offered by third-party providers over the Internet and shared among multiple users. It is commonly adopted by small and medium-sized businesses (SMEs), startups, and industries with variable workloads, such as e-commerce and media.

*Example- Zomato, an Indian food delivery service, uses AWS for hosting its website and managing customer data.*
- Private cloud:** Dedicated cloud infrastructure for a single organization, hosted on-premises or by a third party In India, largely adopted by Large enterprises, Governments, and industries with strict compliance requirements, such as finance, healthcare, and Government agencies.

*Example-State Bank of India (SBI) uses private cloud infrastructure to ensure secure, compliant banking services for its customers.*
- Hybrid cloud:** A combination of public and private clouds that allows data and applications to be shared between them for flexibility. Companies that need a balance between security and scalability, including industries such as retail, finance, and manufacturing opt for a hybrid cloud model.

*Example-Tata Motors uses a hybrid cloud approach to manage both sensitive operational data in private clouds and scalable, customer-facing applications in public clouds.*
- Government Community Cloud-** A secure cloud model designed for Indian Government agencies and public sector organizations to share infrastructure, applications, and data while complying with national regulations like Data Privacy Laws. It enables cost-effective collaboration across Government departments, supporting initiatives such as Digital India and ensuring data protection and transparency.

*Example- The Government-led Mudra Yojana scheme is hosted on ES&S's ,Government Community Cloud, which has sanctioned over INR 3,217 billion in loans, benefiting 60+ million Indians.*
- Enterprises cloud** – An Enterprise Community Cloud is a shared cloud infrastructure created for multiple enterprises that share common goals or compliance requirements. It provides enhanced security, governance, and resource optimization tailored to meet the specific needs of its clients. This setup ensures scalability, reliability, and performance while maintaining data isolation and compliance for each individual enterprise. It is particularly well-suited for applications that require robust data management, seamless integration, and secure collaboration among enterprise stakeholders.

### Key Cloud Growth Drivers-

**Digital transformation initiatives:** Organizations across industries are prioritizing digital transformation, which relies heavily on cloud infrastructure. This trend is particularly strong among small and medium-sized enterprises (SMEs), which are increasingly adopting cloud solutions to modernize their IT frameworks and improve service delivery.

**Government Support:** The Indian Government is actively promoting cloud adoption through policies aimed at improving digital infrastructure. Initiatives such as the National Digital Communications Policy aim to transition a significant portion of Government services to the cloud by 2025, thereby fostering an enabling environment for cloud growth.

**Growing demand for advanced technologies:** The integration of technologies such as artificial intelligence (AI) and data analytics into cloud services is driving demand. Enterprises are leveraging these technologies to improve customer experiences and operational efficiencies, further driving the need for robust cloud infrastructure.

### SMEs adoption of Cloud in India

Indian small and medium-sized businesses are rapidly adopting the cloud, leveraging its efficiency, reliability, and adaptability to transform their businesses. The shift to the cloud has enabled SMEs to streamline their operations, drive growth, and deliver exceptional customer experiences. Cloud adoption unlocks access to cutting-edge advancements like AI, enabling SMEs to compete and thrive. Around 55-60% of surveyed SMEs are leveraging cloud technology for business expansion by Fiscal 2024. This reflects a strong recognition of the cloud's potential to drive growth and enhance operational capabilities.

Significant number of Small and Medium-sized Businesses (SMEs) in India are increasingly adopting cloud solutions, with 25-30% successfully migrating more than half of their workloads to the cloud, highlighting strong commitment to cloud adoption. Over half of SMEs prefer public cloud services due to their scalability and affordability, which makes them adaptable to varying business needs. A key driver for this shift is security, as nearly 40-45% of SMEs cite improved security compliance as a primary reason for adopting cloud solutions, recognizing the importance of protecting sensitive data and meeting regulatory requirements. Additionally, 51-55% of SMEs use cloud services to enhance their customer service capabilities, emphasizing the need for superior customer experiences in a competitive market. To future-proof their businesses, about 36% of SMEs are expected to invest in cloud training initiatives to equip their workforce with the necessary skills. Furthermore, 39% of SMEs actively seek trusted cloud service providers to partner with, ensuring they gain maximum value from their cloud investments and successfully scale their operations.

**Table 12: Demand for Cloud across End User Industries**

Industry	Specific Demand	Key Drivers
<b>Financial Services</b>	<ul style="list-style-type: none"> <li>Trade Finance and Treasury Workloads: By 2024, 80% of corporate banks will run these workloads on the cloud.</li> <li>Digital Lending Solutions: Banks like Axis Bank reduce customer onboarding time to under 8 minutes.</li> <li>Sovereign Cloud Initiatives: RBI plans to launch a sovereign cloud by 2025 to enhance data sovereignty.</li> </ul>	<ul style="list-style-type: none"> <li>Increasing digitization, modernization of legacy systems, and compliance with regulatory standards</li> <li>Need for agility in service delivery and enhanced customer experience</li> <li>Addressing cost concerns for smaller institutions and ensuring local data management</li> </ul>
<b>Healthcare</b>	<ul style="list-style-type: none"> <li>Telemedicine Platforms: Demand for secure, scalable cloud solutions to support remote consultations.</li> <li>Data Security Solutions: Enhanced security measures to protect sensitive patient information.</li> </ul>	<ul style="list-style-type: none"> <li>Growing need for efficient patient data management and compliance with health regulations</li> <li>Increasing cyber threats and data breaches necessitating robust cloud security framework</li> </ul>

Industry	Specific Demand	Key Drivers
<b>Manufacturing</b>	<ul style="list-style-type: none"> <li>IoT Integration: Adoption of cloud platforms to manage IoT devices and enhance operational efficiency.</li> <li>Hybrid Cloud Models: Preference for hybrid solutions to balance on-premises and cloud capabilities</li> </ul>	<ul style="list-style-type: none"> <li>Need for real-time analytics and improved supply chain management</li> <li>Flexibility in managing workloads and integrating legacy systems with modern cloud infrastructure</li> </ul>
<b>E-Commerce and Retail</b>	<ul style="list-style-type: none"> <li>Scalable Infrastructure for Peak Seasons: Cloud solutions to handle increased traffic during sales events</li> <li>Personalized Customer Experience Tools: Use of cloud analytics to tailor offerings based on consumer behavior</li> </ul>	<ul style="list-style-type: none"> <li>Rapid growth in online shopping necessitating scalable IT resources</li> <li>Need to enhance customer engagement and loyalty through targeted marketing strategies</li> </ul>
<b>Technology and Startups</b>	<ul style="list-style-type: none"> <li>Rapid Development Environments: Demand for flexible cloud platforms that support quick iterations in product development.</li> <li>AI and Data Analytics Capabilities: Leveraging cloud services for advanced analytics and machine learning applications.</li> </ul>	<ul style="list-style-type: none"> <li>High competition among startups driving the need for agile development processes</li> <li>Focus on innovation and delivering cutting-edge technology solutions</li> </ul>

Source: Industry Articles, Nexdigm Analysis

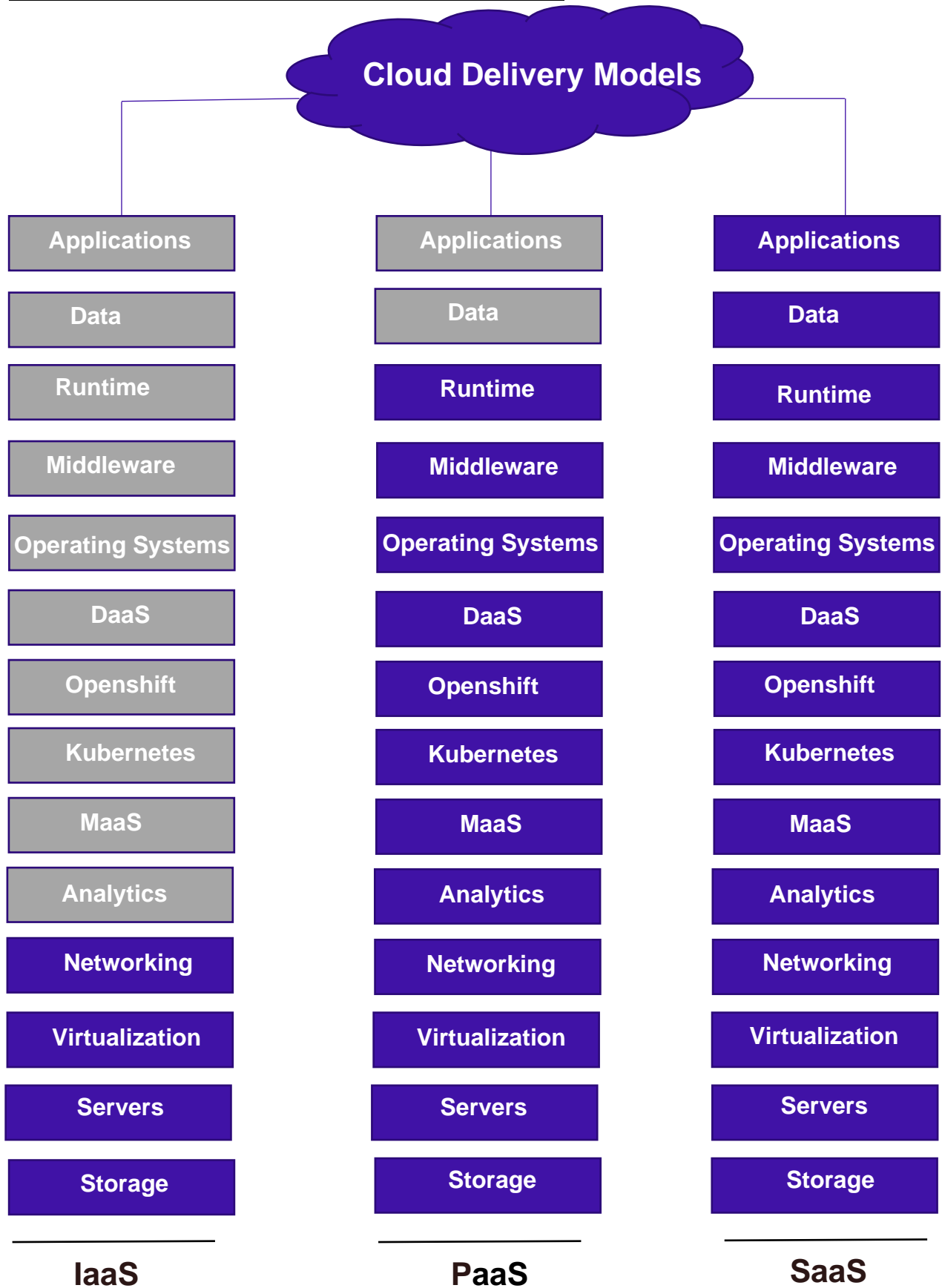
### Public Cloud Adoption in India

Public cloud is a public, hyperscale, multi-tenant platform where computing services can be reserved or rented on demand. These resources are available over the internet and allow customers to provision and scale services instantly, without the time and cost associated with purchasing dedicated infrastructure. Applications, storage and other resources are shared by multiple customers. Public cloud adoption in India continued to rise as enterprises preferred public cloud services for their digital transformation initiatives, application modernization, and productivity improvements. As enterprises continue to modernize their IT with IaaS offerings, core business applications are seeing a shift toward SaaS models in the public cloud, the increased focus on cost optimization in recent times has accelerated the transition towards as-a-service consumption models, thereby driving public cloud adoption. With enterprises making significant investments in next-generation technologies like GenAI, the demand for robust computing infrastructure and data management capabilities will continue to drive public cloud adoption in the coming years.

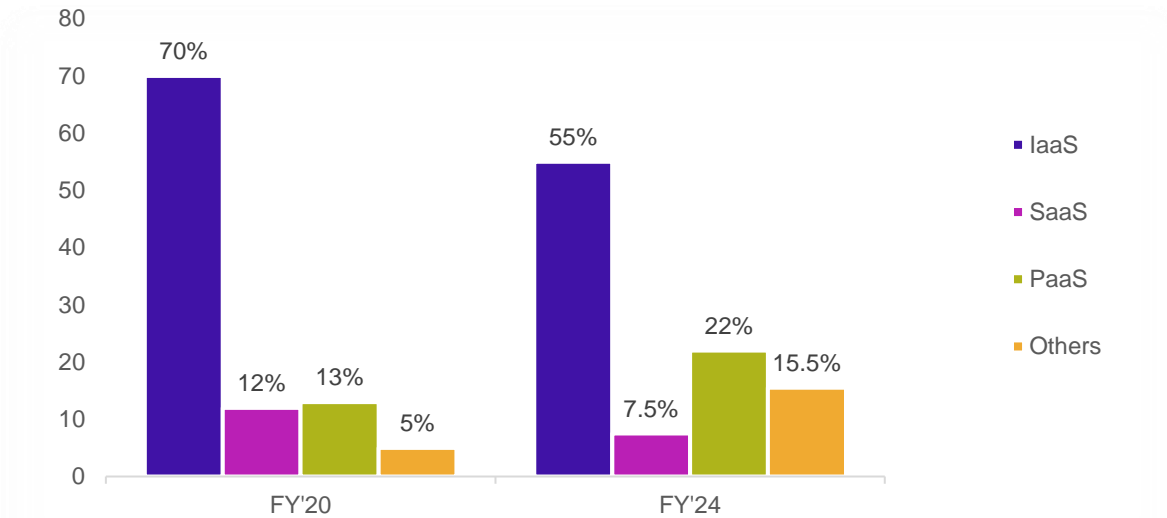
Among the global players, Microsoft Azure, Google Cloud Platform (GCP), and Amazon Web Services (AWS) are considered as key players in public cloud adoption in India, each contributing uniquely to the market. Among the Indian players, ES&S was one of the early adopters of cloud technology in India, establishing their first data centre in Nashik during 2010 while launching cloud services (eNlight Cloud) in 2011.

In addition, events like Technology Sabha provide a forum for dialogue on emerging technology and e-governance. This forum brings together Senior Government officials, IT and digital transformation leaders and industry experts under one roof to create more transparent and efficient governance mechanism. Events like this are very beneficial for industry players as it provides them with an opportunity to leverage the knowledge of industry veterans, access to sponsors and increase brand exposure by participating in multimedia campaigns. Participation of domestic cloud infrastructure and solution companies like ES&S, Nextra, and CTRLS in such events pushes for adoption of cloud in the country.

**Business Model for Cloud Computing Market in India-**



**Figure 21: Market Segmentation for India Cloud Industry by Service on the Basis of Revenues in**



**Percentage (%), Fiscal 2024**

Source: Interview with Industry Experts, Nexdigm Analysis  
 Note: Others include BpaaS, DaaS, and DraaS & Cloud Management

The data reveals a transformative shift in service adoption from Fiscal 2020 to Fiscal 2024. IaaS (Infrastructure as a Service) has seen a decline from 70% to 55%, indicating a move away from traditional infrastructure-heavy solutions. Meanwhile, SaaS (Software as a Service) has seen a slight dip, falling from 12% to 7.5%, reflecting a potential saturation or evolution of software delivery models. The most striking change is the rise of PaaS (Platform as a Service), which has jumped from 13% to 22%, indicating a growing preference for flexible and scalable platforms that empower innovation. Notably, the rise of their services which includes Security as a Service (SECaaS), Business Process Services (BPaaS), Desktop as a service (DaaS), Disaster Recovery as a Service (DraaS) and Cloud Management has risen from 5% to 15.5%, hints at the emergence of hybrid or cutting-edge service models that go beyond the traditional trio. This evolution suggests a more dynamic and versatile approach to service delivery with organizations increasingly prioritizing customization, scalability, and future-proof solutions.

- Platform as a Service:** Platform as a Service (PaaS) provides a complete development and deployment environment in the cloud, offering resources for building everything from simple applications to complex enterprise solutions. PaaS helps organizations achieve operational savings of up to 50% by consolidating resources and eliminating redundancy, reducing capital expenditures and optimizing resource management. It allows users to purchase resources on a pay-as-you-go basis, accessed securely via the internet. The increasing demand for rapid application development, particularly among start-ups, is driving PaaS adoption in India. Innovations like AI Platform as a Service (AIPaaS) and advancements in AI, ML, and big data further accelerate this trend. Examples include AWS Elastic Beanstalk, Microsoft Azure, Heroku, and Google App Engine.
- Software as a Service (SaaS):** Software as a Service (SaaS) enables users to access cloud-based applications over the internet, eliminating the need for on-site data storage and application hosting. Common examples include email, calendaring, and office tools like Microsoft Office 365. As enterprises shift from traditional data centres to SaaS, they leverage cloud providers' infrastructure, reducing costs and increasing efficiency. The demand for automation, AI, and ML applications will further accelerate SaaS adoption. Companies like Salesforce exemplify successful SaaS models driving digital transformation across industries.

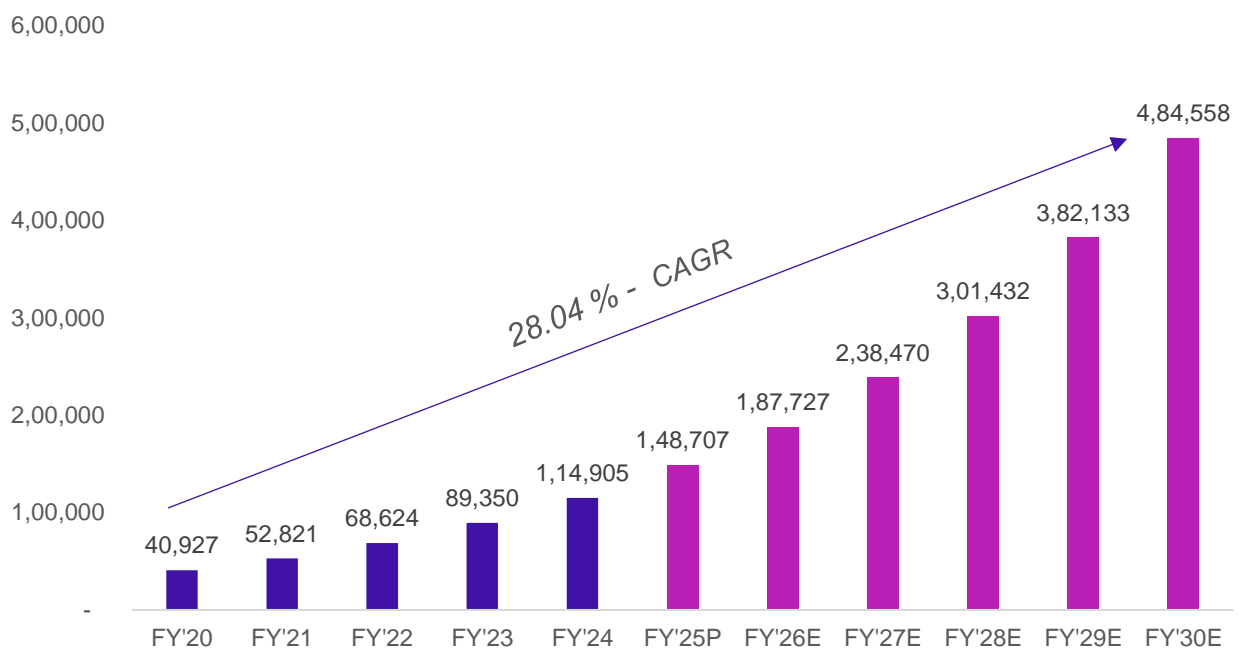
- **Infrastructure as a Service (IaaS):** Infrastructure as a service (IaaS) is a type of cloud computing service that offers essential compute, storage, and networking resources on demand, on a pay-as-you-go basis. IaaS lets you bypass the cost and complexity of buying and managing physical servers and data centre infrastructure. Each resource is offered as a separate service component, and you only pay for a particular resource for as long as you need it. This billing model is in contrast to the “pay-per-use” up to model adopted for other cloud computing services, pursuant to which the customer is charged for the virtual machines allocated to them by the cloud provider. End user spending towards IaaS is projected to grow significantly in the next five years as businesses need to scale their infrastructure that provisions for complex workloads and enables a hybrid workforce. IaaS will become essential, enabling SMEs to gain access to high-end infrastructure with minimal investment. The IaaS environment provides unlimited and on demand infrastructure that would enable new businesses to grow unconstrained. Some examples of IaaS are DigitalOcean, Linode, Rackspace, AWS, Cisco Metapod, Microsoft Azure, Google Compute Engine (GCE). A subscriber has control over the processing, storage and platform related choices. IaaS solutions are highly flexible, scalable and is accessible by multiple users.
- **Other key segments:** Other segments like Security as a Service (SECaaS) Business Process Services (BaaS), Desktop as a service (DaaS), Disaster Recovery as a Service (DRaaS) and Cloud Management are also expected to see growth in demand. BaaS solutions like Customer Management, E-Commerce Enablement and Human Resources tools are likely to see high growth. With increasing cloud adoption, among the other key segments.

## 7. MANAGED SERVICES IN INDIA

Managed services involve outsourcing the management of various processes and functions to enhance operational efficiency and reduce costs. In the current digital landscape, businesses face mounting pressure to innovate, streamline operations, and elevate customer experiences.

The managed services market in India is currently valued at INR 114,905.5 million in Fiscal 2024 and is projected to grow at a compound annual growth rate (CAGR) of 29.4% from Fiscal 2020 to Fiscal 2024. It is expected that the managed services market will grow at a CAGR of 27.1% to INR 484,558.1 million by Fiscal 2030. This promising outlook aligns with the overall expansion of the IT sector in India, indicating a robust future for managed services. By leveraging managed services, organizations can focus on their core competencies while delegating the complexities of technology management to specialized providers.

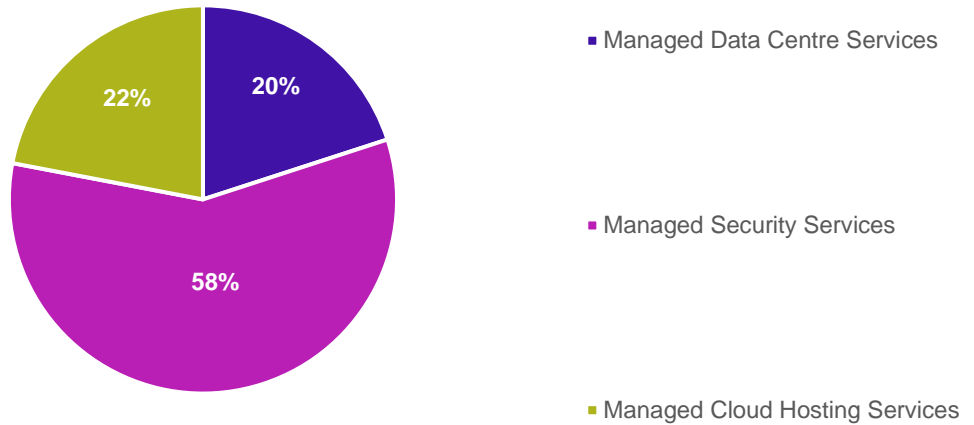
**Figure 22: Market Size for India Managed Services Industry on the Basis of Revenues in INR Million, Fiscals 2020-2030E**



Source: Interview with Industry Experts, Nexdigm Analysis  
 Note-E stands for Estimated, P stands for projected

India managed services market is experiencing significant growth, with enterprises increasingly turning towards specialized service providers to optimize their IT infrastructure, enhance security, and improve overall operational efficiency. The market is primarily driven by managed security services, which account for 58% of the total market share, followed by managed cloud hosting services at 22% and managed data centre services at 20%. The managed security services market and managed cloud services market continue to expand, while the managed data centre services market plays a crucial role in supporting India's digital transformation.

**Figure 23: Market Segmentation for India Managed Service Industry by Service Mix on the Basis of Revenues in Percentage (%), Fiscal 2024**



Source: Interview with Industry Experts, Nexdigm Analysis

**Table 13: Usage of Managed Services by End User**

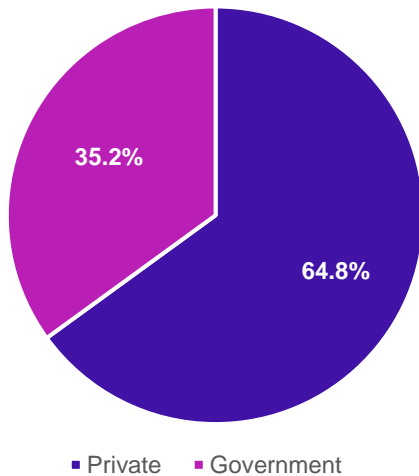
Industry	Usage of Managed Services	Key Applications	Benefits
<b>Banking, Financial Services, and Insurance (BFSI)</b>	Largest consumer of managed services, focusing on compliance and security.	<ul style="list-style-type: none"> <li>Core Banking Systems</li> <li>Risk Management Solutions</li> <li>Fraud Detection Systems</li> </ul>	<ul style="list-style-type: none"> <li>Enhanced operational efficiency</li> <li>Reduced costs through outsourcing</li> <li>Improved compliance</li> </ul>
<b>Retail</b>	Increasingly leveraging managed services for e-commerce and customer engagement.	<ul style="list-style-type: none"> <li>E-commerce Platforms</li> <li>Customer Relationship Management (CRM)</li> </ul>	<ul style="list-style-type: none"> <li>Improved customer experience</li> <li>Real-time inventory management</li> <li>Increased sales</li> </ul>
<b>Healthcare</b>	Reliance on managed services for application support and regulatory compliance.	<ul style="list-style-type: none"> <li>Electronic Health Records (EHR)</li> <li>Telemedicine Solutions</li> </ul>	<ul style="list-style-type: none"> <li>Enhanced patient care</li> <li>Efficient data management</li> <li>Reduced operational costs</li> </ul>
<b>Manufacturing</b>	Utilization of managed services for supply chain management and IoT applications.	<ul style="list-style-type: none"> <li>IoT Device Management</li> <li>Supply Chain Optimization Tools</li> </ul>	<ul style="list-style-type: none"> <li>Increased productivity</li> <li>Real-time monitoring of processes</li> <li>Reduced downtime</li> </ul>
<b>Telecommunications</b>	Leveraging managed services for network management and customer support systems.	<ul style="list-style-type: none"> <li>Network Monitoring Services</li> <li>Customer Support Solutions</li> </ul>	<ul style="list-style-type: none"> <li>Improved service delivery</li> <li>Enhanced customer satisfaction through proactive management</li> </ul>

Source: Industry Articles, Nexdigm Analysis

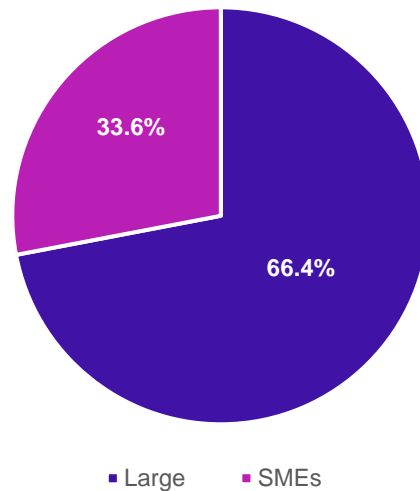
**Segmentation for Managed Services Industry by Government and Private Sector, Fiscal 2024**

The managed services industry in India is expanding rapidly across both the public and private sectors, with organizations outsourcing IT functions to optimize efficiency, reduce costs, and improve security. The Government uses managed services for digital infrastructure, e-governance, and cybersecurity, while private enterprises leverage them for IT infrastructure management, cloud services, business continuity, and application management.

**Figure 24: Market Segmentation for Managed Services Industry in India Basis Private and Government Sector, Fiscal 2024**



**Figure 25: Market Segmentation for Managed Services Industry in India Basis Large and SMEs, Fiscal 2024**



Source: Interview with Industry Experts, Nexdigm Analysis

### **Usage of Managed Services by the Government Sector:**

The Indian Government is increasingly adopting managed services to accelerate digital transformation, improve operational efficiency, and enhance citizen services. Managed service providers support the development of smart cities and digital infrastructure by managing complex IT systems such as sensor networks, data analytics, and cloud computing.

Under the Digital India initiative, managed services facilitate secure and reliable digitization of services such as e-filing, healthcare, and education. Managed cloud services ensure cost-effective and highly available data hosting, while managed security services protect sensitive data, provide real-time threat detection, and ensure compliance with regulations such as the Digital Personal Data Protection Act, 2023.

### **Adoption of Managed Services by Small and Medium Businesses (SMEs)**

Partnering with a Managed Service Provider (MSP) offers significant benefits for Small and Medium-sized Businesses (SMEs) in India, helping them optimize IT operations, reduce costs, and enhance overall performance. Outsourcing IT functions eliminates the need for in-house teams, reducing hiring and training costs while providing predictable, subscription-based pricing for hardware and software management. MSPs offer access to skilled professionals, ensuring quick resolution of IT issues and minimizing disruptions.

Managed services provide the scalability and flexibility to adjust IT infrastructure as needed, enabling SMEs to respond to changing business demands without significant costs. By outsourcing routine IT tasks, businesses can focus on core functions, driving growth and improving operational efficiency. In essence, managed services deliver cost-effective, secure, and scalable IT solutions, allowing SMEs to innovate and thrive. According to experts, SMEs in the private sector account for 33.65% of managed services usage, which is expected to grow substantially in the future as more businesses recognize the value of these solutions.

## Major Managed Services Offerings in India

**Disaster Recovery-** Disaster Recovery as a Service (DRaaS) is a cloud computing model that enables organizations to back up their IT infrastructure and data to a third-party cloud environment, facilitating rapid recovery after a disaster. With increasing cyber threats and the critical need for business continuity, industries such as finance, healthcare, and retail are adopting DRaaS for its benefits, including high-speed recovery, negligible data loss, enhanced security, and improved compliance. This service model alleviates the burden of managing disaster recovery internally, making it an attractive solution for businesses seeking resilience to disruptions.

**Managed Co-Location** - Managed Colocation enhances the colocation process by allowing organizations to maintain control over their IT infrastructure while outsourcing server management to a third-party vendor. This model is particularly beneficial for small and medium-sized businesses (SMEs) that want to avoid the high costs associated with IT infrastructure and management, thus saving on physical space and reducing the need for expensive IT personnel. Key benefits of managed colocation include business continuity, ensuring operations remain uninterrupted; enhanced security, providing robust protection for sensitive data; and global reach, enabling companies to leverage data centres across various locations for improved service delivery and compliance.

**Application Management-** Application management encompasses the entire lifecycle of software applications, including their operation, maintenance, version control, and upgrades. It is an enterprise-wide initiative that ensures applications run efficiently and effectively, integrating seamlessly with back-office functions like databases and ERP systems. This service provides organizations with access to specialized expertise, delivering a cost-effective solution that reduces the burden on internal resources. Additionally, it offers proactive monitoring and enhanced security, which are crucial for maintaining optimal performance and safeguarding sensitive data across various industries such as finance, healthcare, and retail.

**Database Management** - Managed database is a cloud-based service that delegates database management to a third-party provider, covering setup, maintenance, scaling, and security. This approach allows organizations to concentrate on core business activities while simplifying database administration. In today's data-centric environment, managed databases enhance operational efficiency by providing reliable storage and compute services maintained by experts. Key advantages include enhanced security, cost efficiency, and high availability, making this solution particularly beneficial for industries such as finance, healthcare, and e-commerce that demand robust and scalable data management.

**Backup Services-** Backup as a Service (BaaS) is a cloud-based solution that enables organizations to securely back up and recover data without the need for on-premises hardware. By outsourcing backup management to a third-party provider, businesses protect critical data in secure off-site locations, safeguarding it from unauthorized access and physical damage. BaaS offers customizable schedules and rapid recovery options, making it ideal for mitigating data loss from accidental deletion, corruption, or cyberattacks. Key benefits include cost-effectiveness, enhanced security through encryption, and the ability for IT staff to focus on core initiatives rather than routine maintenance, making it essential for industries such as finance, healthcare, and retail.

**Remote Infrastructure Management-** Remote infrastructure management refers to the overall management of all elements of enterprise IT infrastructure and resolving relevant issues from a remote location, thus enabling continuous availability. RIM ensures that onsite repairs and maintenance are required only in cases of hardware failure. RIM services add value to IT systems, improve service availability, increase efficiencies, and reduce costs. Easing infrastructure management, RIM enables IT leaders to focus more on managing labour costs and productivity. In India, RIM is used across industries such as Banking, Financial Services, Insurance (BFSI), healthcare, IT and telecommunication, retail and eCommerce, transportation, etc.

**Cross Platform Migration-** With continuous innovations and the emergence of new players in the cloud market, it is crucial for cloud solution providers to attract potential customers who already have cloud infrastructure in place and are looking to enhance or shift their cloud presence. This challenge is addressed through cross-platform migration services, which enable providers to tap into a larger market of existing cloud

users and expand their customer base. These migration services are also supported by cross-platform data recovery tools, ensuring that the migration process is smooth and reliable. In India, the growing popularity of non-hyperscale providers has made this offering particularly valuable as it facilitates a smoother transition for customers looking to shift to alternative cloud solutions.

### Development of Edge Computing Nodes

Edge computing is a distributed computing paradigm that brings data processing and analysis closer to the source of data generation. The growing importance of edge computing is driven by the rapid expansion of the Internet of Things (IoT) and the need for real-time data processing. With the proliferation of IoT devices and the massive amounts of data they generate, sending all that data to a remote cloud server for processing can lead to latency, bandwidth constraints, and increased costs.

Edge computing nodes play a critical role in managed services by facilitating faster data processing, reducing latency, and supporting industries with immediate data needs. This decentralized approach to computing is particularly beneficial for sectors such as finance, retail, and Internet of Things (IoT) applications, where real-time data access and processing is critical.

### Benefits of Edge Computing in Managed Services-

- **Reduced Latency-** By storing and processing data at or near the source—whether on a local device, a regional data centre, or an IoT gateway, edge computing significantly reduces the distance data must travel. As a result, businesses can experience faster application performance and more responsive systems, which is critical for time-sensitive applications such as telemedicine, smart grids, and online gaming.
- **Real Time Data Processing-** Edge enables real-time data processing, businesses can deploy AI and machine learning models at the edge to automate decisions without the need for constant communication with a central cloud. This is particularly important for industries such as manufacturing, where real-time data from sensors can be used to predict equipment failures and trigger automated maintenance responses, or for smart cities, where traffic management systems need real-time data to avoid congestion.
- **Enhanced Security-** Edge computing improves security in several ways. One of the main security benefits of edge computing is that it limits the potential impact of data breaches by decentralizing data storage and processing. In centralized systems, a successful attack on the main server can compromise the entire system. However, in an edge computing setup, if one node is compromised, the breach is typically limited to that local node, preventing widespread damage. For industries with stringent security requirements, such as finance, healthcare, and defence, edge computing offers a solution to process and store sensitive data locally, ensuring that only aggregated or non-sensitive information is transmitted to central systems.
- **Reduced Cost-** Edge computing can also result in significant cost savings for organizations. Traditional cloud architectures often require large amounts of bandwidth to transmit vast amounts of raw data to centralized data centres for processing. With edge computing, data is processed locally, which means less data needs to be sent to central servers, reducing bandwidth requirements and associated costs.

## 8. SOFTWARE DEVELOPMENT IN INDIA

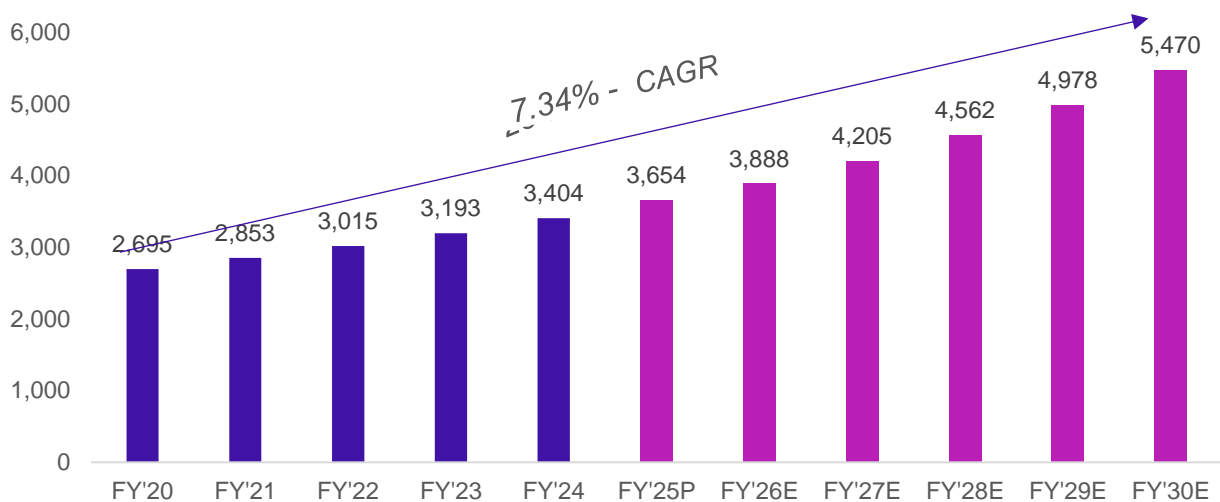
During 2000-2010, the rise of Indian MNCs and R&D, with the confidence in solving complex IT problems and the experience of working with international clients, boosted the Indian entrepreneurial spirit. Thus, many Indian companies opened offices in India and overseas and thereby became multinational organizations. These new MNCs started offering a wide spectrum of services ranging from complex IT projects to last-mile infrastructure integration.

### Market Size for Software Development in India:

Indian software development market has demonstrated significant growth over the past few years, particularly following a notable boom in the IT industry in 2021. During Fiscal 2020 to Fiscal 2024, the market revenues increased from INR 2,695 billion to INR 3,404 billion, reflecting a compound annual growth rate (CAGR) of 6%. This steady growth trajectory highlights the industry's resilience and adaptability amid global economic fluctuations. During the forecasted period, software development industry in India is poised for robust expansion. Projections indicate that the market will continue to grow at a CAGR of 8.2% annually, increasing from INR 3,404 billion for Fiscal 2024 to an estimated INR 5,470 billion by the end of Fiscal 2030.

The ongoing digital transformation in sectors such as finance and healthcare is significantly increasing the demand for advanced software solutions. Additionally, the growing adoption of cloud computing and artificial intelligence is improving operational efficiency and facilitating data-driven decision making. Government initiatives, such as Digital India and Make in India, are fostering an enabling environment for innovation and investment in the software sector.

**Figure 26: Market Size for Software Development Industry in India on the Basis of Revenues in INR Billion, Fiscals 2020-2030E**



Source: Interview with Industry Experts, Nexdigm Analysis  
Note-E stands for Estimated, P stands for projected

### Software Development Adoption by SMEs in India:

Small and medium-sized enterprises (SMEs) in India are increasingly adopting software development to drive digital transformation and improve operational efficiency. It has been observed that nearly 70% of SMEs have integrated some form of software solution, ranging from custom applications to off-the-shelf software for customer relationship management (CRM), inventory management, and accounting. The rise of cloud-based software and SaaS (Software as a Service) platforms has made it easier for these businesses to access advanced technology without significant upfront investments. These SMEs are leveraging software to streamline operations, improve customer service, and scale their businesses, while reducing reliance on manual processes. As the digital economy grows, more SMEs are expected to adopt enterprise-grade software tools, fostering a more competitive business environment.

## 9. OPPORTUNITIES AND DEVELOPMENTS

As businesses undergo rapid digital transformation, the need for secure, high-performance, and cost-effective cloud solutions has become paramount. Enterprises require scalable infrastructure to handle growing workloads, while SMBs look for cost-efficient cloud adoption without heavy upfront investments. Government bodies seek compliance-driven and secure cloud environments, and BFSI institutions demand high-availability architectures with stringent security standards. Cloud Service Providers bridge the identified gaps faced by businesses, enabling businesses to focus on their core operations, while Cloud service providers handle the complexities of IT Infrastructure Management.

### Expansion into Tier-2 and Tier-3 Cities

Indian Government initiatives such as the Digital India program are promoting the development of digital infrastructure in small towns. In addition, local Governments often offer incentives and fast-track approvals for data centre projects, making it easier for companies to set up operations. This also aligns with Government initiatives on data localization, which will lead to the development of infrastructure such as IT parks and office spaces in Tier-2 cities and Tier-3 cities and attract more companies there.

Data centres located in Tier-2 cities and Tier-3 cities in India offer significant cost advantages, with lower real estate and operational expenses compared to Tier-1 cities. These regions provide ample room for expansion and scalability, minimizing congestion-related delays. Additionally, geographic diversification in these areas improves business continuity by mitigating the risks of outages. Proximity to regional markets reduces latency, which improves service quality for underserved populations. Additionally, Government incentives in these areas further reduce operating costs, stimulate local economies, and contribute to environmental sustainability and job creation. Indian companies

**Table 14: Total Tech Talent Availability in Tier-2 and Tier-3 Cities**

City	Installed Tech Talent	% of Total Tech Talent in India
Chandigarh	70,000	1.27
Coimbatore	60,000	1.09
Jaipur	80,000	1.45
Vizag	100,000	1.82
Kochi	90,000	1.64
Nashik	20,000	0.36

Source: Journal published on Indian Tech Talent by Harshad Katikar, Nexdigm Analysis

**Table 15: Cost Effectiveness of Hiring in Tier-1 vs Tier-2 Cities**

Metrics	Tier-1	Tier-2	Advantage in Tier-2 Cities
Average Salary	INR 12,00,000	INR 8,00,000	50%
Attrition Rates	20%	10%	100%

Source: Journal published on Indian Tech Talent by Harshad Katikar, Nexdigm Analysis

### Examples of organizations shifting towards Tier-2 and Tier-3:

- **ESDS**; stands out as the only player in the data centre industry to have started operations in a Tier-2 city, Nashik. While most data centre companies typically start in Tier-1 cities due to limited power availability in Tier-2 and 3 cities, ESDS has consistently prioritized sustainability. This forward-thinking approach has not only enabled them to overcome challenges but has also provided them with a competitive advantage, allowing them to successfully scale up their operations in Tier-2 and 3 cities.
- **CTRLS** aims to establish more than 20 edge data centres in Tier-2 and Tier-3 cities in the coming years. Currently, it has data centres in Kochi and Vizag. The company also plans to expand its capacity and introduce new facilities in Kolkata.

- **Yotta Data Services** is expanding its operations in Greater Noida and Guwahati, capitalizing on the growing demand for edge facilities in Tier-2 markets. These operations are expected to be fully operational by the end of 2024.
- **Airtel Nxtra**; operates 120 edge data centres in 65 cities, such as Bhopal, Nagpur, Cuttack, Ranchi, Patna, Raipur, Kanpur, Madurai, and Leh. These facilities have capacities ranging from 1 to 5 megawatts, and the company plans to expand and build more edge data centres.

### Introduction of Cloud Service Verticals

**Sustainable Cloud Computing:** Sustainable cloud computing focuses on energy efficiency, reducing carbon emissions, and using renewable resources to minimize environmental impact. Major providers like Amazon, Microsoft, and Google are committing to net-zero emissions, with Amazon aiming for 2040 and Microsoft before the next decade. The technology used in cloud computing is virtualization software, which separates physical computing device into one or more “virtual” devices, each of which can be used and managed to perform computing tasks. Virtualization provides the agility required to speed up IT operations and reduces cost by increasing infrastructure utilization

**AI Cloud** allows businesses to harness the power of AI and technology, without need to allocate resources. AI models, such as large language models, such as GPT, are trained on massive amounts of data using the computational power of computers. The role of infrastructure that enables AI to be accessible to the public is crucial, as it plays a significant role in making AI available and providing all the economic and social benefits it generates.

**Edge computing and IoT capabilities;** Cloud providers are undergoing transformation, rebranding themselves as distributed clouds, while traditional content distribution network (CDN) vendors are enhancing their offerings to integrate edge computing capabilities. With the rise of GNAI and edge technologies, local LLAM contracts have gained traction, particularly for remote applications like oil rigs, where real-time data analysis is crucial. For example, Akamai Technologies is using its acquisition Lineode to bridge the gap between centralized hyperscaler models and classic CDNs with its thousands of locations. Fastly and Cloudflare are also taking similar steps.

**CloudOps;** refers to the practice of managing and optimizing cloud spending through collaboration between finance, operations, and technology teams to ensure cost efficiency and resource allocation. The flexible and dynamic nature of cloud computing has shifted market perspectives from a "cloud-first" approach to viewing the cloud as a necessary tool.

Private cloud is cloud infrastructure operated solely for a single organization and operates on a dedicated infrastructure. Private cloud services are required for customers who propose to migrate their business and corporate data on a secure, customizable and flexible cloud platform, without capital investment required for maintaining a “on premise” cloud environment

Virtual public cloud functions like a private cloud that run on public or shared infrastructure. The virtual private cloud isolates one user’s resources from another user’s resources using an individualized, private IP subnet or a virtual local area network

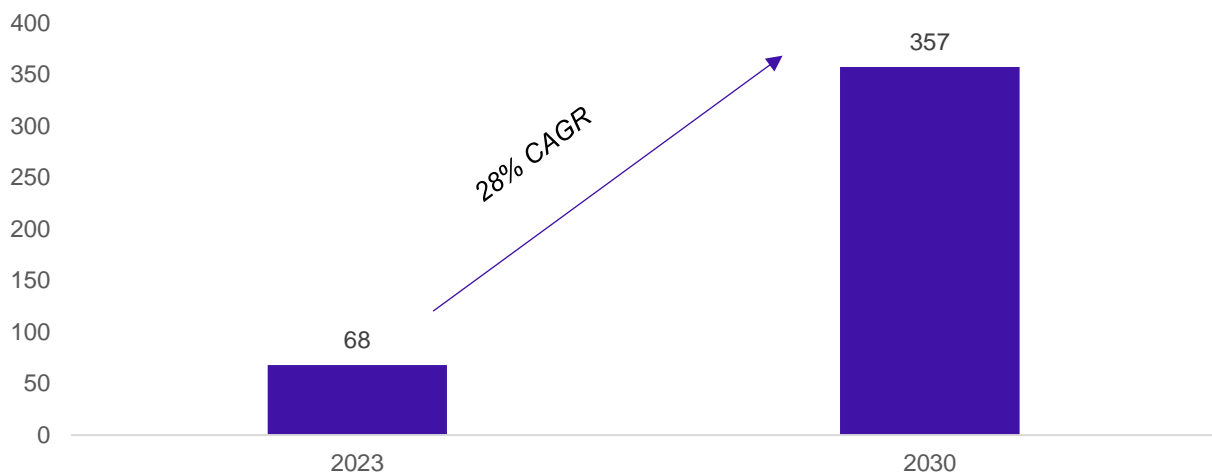
Hybrid cloud model includes a combination of private and public cloud offerings. It is a composition of a public cloud and a private environment, such as a private cloud or on-premises resources, that remain distinct entities but are bound together, offering the benefits of multiple deployment models

**Community Cloud:** A community cloud is a virtual infrastructure that is shared between several organizations from a specific community with common concerns (security, compliance, jurisdiction, etc.). ESDS was one of the first cloud service provider in India to offer community cloud services, provided on multi-tenant model to a group of organizations that have similar business model and requirements, such as data privacy, security, compliances and regulatory considerations.

### Partnerships with Startups for AI and Machine learning:

According to Avendus, there are over 1,300 AI companies in India as at 24 August 2024. The growth of AI is expected to significantly increase the demand for high-density server racks and cooling solutions. The generative AI market in India is projected to grow at a compound annual growth rate (CAGR) of 28% between 2023 and 2030, driving strong demand for data centres. Additionally, there is a growing demand for over 500 MW from hyperscalers, suggesting that AI workload demands could soon outstrip traditional cloud computing needs.

**Figure 27: India's Generative AI Sector Market Size on the Basis of Revenues in INR million, Calendar Year 2023-2030**



Source: Nexdigm Analysis NASSCOM

The Gen AI startup ecosystem in India has been expanding rapidly, driven by increased funding and support from both the private and public sectors. According to NASSCOM, by 2024, more than **240 + Gen AI startups** were operating in the country, many of them focusing on advanced technologies such as computer vision, natural language processing, and generative AI.

AI and machine learning are required to increase energy efficiency and sustainability, improve asset performance management, enhance customer relationship management and security, and bolster capacity management and planning in the Data Centre space. India vision for **“Make AI in India”** and **“Make AI work for India”** is aimed at leveraging AI for a variety of use cases.

- **Sarvam AI and Microsoft:** Sarvam AI is collaborating with Microsoft to develop its Indian speech Wide Language Model (LLM) on Azure. This partnership aims to empower developers to build generative AI applications tailored for Indian languages, improving accessibility and usability in sectors such as education and healthcare.
- **Tech Mahindra and Google Cloud Partnership:** Tech Mahindra has partnered with Google Cloud to accelerate the adoption of generative AI across multiple industries. This collaboration focuses on improving supply chain processes and developing AI-powered applications for Mahindra & Mahindra, showcasing how cloud technology can drive operational efficiency.
- **Open Cloud Computing Network:** Backed by Nandan Nilekani, the Open Cloud Compute (OCC) project aims to establish a network of interoperable micro data centres in India. This initiative involves a consortium of 24 tech giants, including AMD and Oracle, to address the growing demand for AI infrastructure, thereby facilitating better utilization of resources among independent vendors.
- **Google Cloud Initiatives:** Google Cloud has launched several programs aimed at empowering early-stage AI startups. These include Springboard for emerging ISV partners, which offers USD 200,000 in cloud credits over two years and up to USD 350,000 specifically for AI-focused startups. Additionally, Google is offering access to NVIDIA H100 GPUs and TPUs through partnerships with accelerators like Y Combinator.
- **Deliver-Health and Google Cloud:** DeliverHealth, a healthcare technology startup, is working with Google Cloud to transform clinical documentation processes using AI. This partnership uses Google

Cloud's advanced AI models to enable healthcare providers to document patient care via voice, improving efficiency and accuracy in clinical settings.

- **ESDS Autonomous Cloud:** ESDS has initiated work on its Autonomous Cloud, an intelligent cloud platform that can autonomously manage the cloud services and operations, as it is the need of the hour. This platform will enable enterprises to seamlessly manage, deploy and transform cloud infrastructure across multiple cloud environments by minimizing the need for manual intervention, leveraging AI-driven intelligence for enhanced efficiency, scalability, and security.

### Transition from Colocation and Cloud to End-to-End Services:

- **Colocation;** Services involves renting space in a data centre where businesses place their servers, networking equipment, and other hardware. It offers benefits such as reliable power, cooling, and physical security, without the need for businesses to build and maintain their own data centres. However, as businesses grow and their needs evolve, colocation can present challenges. Expanding infrastructure can be costly and time-consuming, and the physical space required can limit scalability. Because of these limitations, many businesses eventually transition to cloud services, which offer more flexibility, scalability, and on-demand resource allocation without the need to manage physical hardware.
- **Cloud;** Services provide scalability, flexibility, and on-demand resources, allowing businesses to adapt quickly without the limitations of physical infrastructure. They offer global reach, automated backups, and enhanced security, making them a better option compared to colocation. However, services like Azure and AWS often rely on middlemen adding 20-30% margins, which can make them up to 40-50% more expensive than alternatives like end to end domestic players. Additionally, these providers impose strict access restrictions, making it difficult for industries like BFSI to conduct physical audits as required by the RBI mandate, unlike colocation, which offers more audit control and flexibility.
- **End-to-end;** Services combine the best of both colocation and cloud, offering businesses the flexibility and scalability of the cloud along with the control and security of colocation. Unlike cloud data centres, which often rely on middlemen and have higher costs, end-to-end solutions provide seamless integration, easy management, and cost-effectiveness. This approach ensures that businesses have complete control over their infrastructure while still benefiting from the on-demand resources and scalability of cloud services, making it a superior option compared to traditional cloud-only and colocation solutions. With the push of Data Sovereignty Regulations and the Digital Personal Data Protection Act 2023, the need to move away from foreign players becomes more evident as they remain costly and require additional intermediaries for management.

### Growing Importance of End-to-End Data Services

- In conclusion, end-to-end data services offer the ideal balance between flexibility, scalability, control, and cost-effectiveness. While co-location provides physical security, it comes with high costs, scalability limitations, and significant infrastructure investment. Pure co-location providers like Adani and CTRLS offer secure environments, but lack the scalability and flexibility of cloud services. Cloud data centres like AWS and Azure provide resources on-demand, but often involve middlemen, adding costs and restricting access, particularly for regulated industries like BFSI.
- End-to-end services combine the benefits of both co-location and cloud, offering scalability and flexibility while maintaining control and security. Companies like ESDS and Yotta are leading the way in this approach. ESDS stands out for its extensive experience in integrating on-demand resources with infrastructure control, while Yotta, a newer entrant, is still evolving. By cutting out the middleman, end-to-end solutions reduce costs and improve transparency. As regulations around data sovereignty increase, on-premise providers like end to end domestic players offer a more cost-effective and scalable solution that ensures compliance, making them a superior option to traditional cloud and co-location models.

## 10. TECHNOLOGY DISRUPTIONS

### AI and Machine Learning: Cloud-Driven AI Models Powered by GPUs

India has seen the rise of cloud-native startups driving AI innovation in sectors like fintech, healthcare, and e-commerce. Startups like “ZestMoney” (AI-powered lending) and “Aindra Systems” (AI for healthcare) has introduced how AI and cloud can deliver solutions at scale. The launch of 5G networks will further accelerate cloud and AI adoption by providing the necessary high-speed connectivity. This will enable faster data transfer, real-time analytics and seamless integration of IoT devices.

#### Examples of GPU Driven Cloud and AI Models-

- Mumbai-based data centre giant Yotta, known for its Shakti Clouds, plans to acquire additional NVIDIA GPUs and expand its infrastructure. Currently, Yotta has around 700 GPUs and has also launched its Yantra and Shakti Cloud. Yantra is a hyperscale cloud designed for Government, enterprise, and startup sectors. Shakti Clouds, India's first AI-centric GPU-based cloud, will feature 16,384 NVIDIA GPUs including a combination of H100s and the newly launched L40s.
- Tata Communications is deploying NVIDIA Hopper GPUs to bolster its public cloud infrastructure and support a variety of AI applications. The company also plans to expand its capabilities next year by adding NVIDIA Blackwell GPUs.

### Sustainability Efforts: Energy-Efficient Data Centres and Green Computing:

The digital age has created a huge demand for data storage and management. According to the United Nations, the IT industry accounts for 2-3% of global emissions, which could increase to 14% by 2040. This rapid digital transformation presents a major challenge related to balance technological growth with environmental sustainability, ensuring that the rapid expansion of cloud infrastructure does not come at the cost of rising carbon emissions and resource depletion.

- **Green Data Centres**-Organizations use green data centres to increase energy and resource efficiency, extend the lifespan of equipment, reduce data centre costs, and minimize carbon impact.
- **Data Centre De-carbonization**-Initiatives can provide an impetus that enables organizations to modernize, optimize, and automate their data centres.
- **Efficient Cooling Systems**-play a crucial role in addressing the challenges of energy consumption in data centres. Traditional facilities often rely on air conditioning systems to cool servers and prevent overheating.
- **Power Usage Effectiveness**- It measures the energy efficiency of data centres by comparing the total energy usage of the facility to that of IT equipment alone. Lower PUE values indicate better energy performance, helping organizations reduce operating costs, optimize energy consumption, and minimize their environmental impact, contributing to greener and more sustainable data centre operations.

## 11. INNOVATION AND R&D

### Use of AI and Machine Learning to Enhance Operational Efficiency

AI for operational efficiency involves applying artificial intelligence and machine learning to optimize business processes, enhancing productivity, reducing costs, and improving customer satisfaction. By automating various tasks, AI allows human resources to focus on more strategic and creative work. This transformative technology should be viewed in terms of its potential for the common good, improving quality of life and access to opportunities.

AI adoption by various industries in India has been influenced by technical and regulatory challenges, among other factors, but business implications have been the most important driving factor. While technical feasibility, availability of structured data, regulatory barriers, privacy considerations, ethical issues, and preference for human relationships have played a role in determining an industry's readiness for large-scale AI adoption, compelling business use cases (For instance; increased efficiency, accuracy, speed, forecasting, and precise decision-making) that lead to a direct impact on revenue and profitability have been the primary driver for businesses to pursue accelerated AI adoption.

**Table 16: Highlights of AI adoption hits and misses by End-User Industries, 2024**

Dimensions	Sector Hits	Sector Misses
<b>AI Strategy and Impact</b>	<ul style="list-style-type: none"> <li>➤ <b>39%</b> of manufacturing and <b>65%</b> transport and logistics have transformation-focused AI strategy</li> <li>➤ <b>70%</b> BFSI and healthcare companies seek competitive differentiation with AI</li> </ul>	<ul style="list-style-type: none"> <li>➤ Over <b>50%</b> of BFSI, CPG &amp; Retail, E&amp;U, Healthcare and TM&amp;E sectors have a pilot tested AI strategy rather than full implementation.</li> </ul>
<b>AI Investments</b>	<ul style="list-style-type: none"> <li>➤ <b>50%+</b> manufacturing and transport and logistics have some dedicated AI budgeting</li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>55%+</b> BFSI, CPG and retail, E&amp;U, healthcare, and TM&amp;E sectors have ad-hoc AI budget</li> </ul>
<b>Data and Technology Readiness</b>	<ul style="list-style-type: none"> <li>➤ <b>60%+</b> BFSI, manufacturing, CPG and retail, transport and logistics, and TM&amp;E companies have BU or enterprise-level standardized data</li> <li>➤ BFSI and CPG and retail companies show near equal propensity towards public and hybrid clouds for AI workloads</li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>48%</b> E&amp;U companies and over 30% of all sectors except transport and logistics have non-standardized data in silos</li> <li>➤ <b>20%</b> companies in E&amp;U and TM&amp;E use hybrid cloud, the lowest propensity of all sectors</li> </ul>
<b>AI Use Cases</b>	<ul style="list-style-type: none"> <li>➤ <b>3-7%</b> BFSI, healthcare, transport and logistics, and TM&amp;E companies have over 20 AI use cases</li> <li>➤ <b>29%</b> of healthcare and <b>13%</b> of BFSI companies have conducted PoCs of over 10 AI use cases</li> <li>➤ <b>3-7%</b> of BFSI, healthcare, transport and logistics, and TM&amp;E companies have over 10 AI production cases</li> <li>➤ <b>5%+</b> BFSI, healthcare, transport and logistics, and TM&amp;E companies have conducted over 5 Generative AI PoCs</li> <li>➤ <b>2%</b> of BFSI and <b>4%</b> of healthcare companies have over 5 production-grade Generative AI cases active</li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>50%+</b> of manufacturing and healthcare firms have had no AI use cases identified</li> <li>➤ <b>37%</b> of manufacturing companies have not PoC AI use cases</li> <li>➤ <b>71%</b> of E&amp;U, <b>67%</b> of manufacturing, and <b>47%</b> of TM&amp;E have had no production-grade AI use cases</li> <li>➤ <b>85%+</b> of manufacturing and E&amp;U companies have not PoCed Generative AI yet</li> <li>➤ <b>50%+</b> of E&amp;U, healthcare and manufacturing companies have had no Generative AI production cases</li> </ul>

Source: Industry Articles, Nexdigm Analysis

## Digital Platform Enablement across Multiple Verticals (IoT and Blockchain)

**Block chain Technology** keeps records in a very secure and organized way. Block chain has the potential to address significant challenges by ensuring the authenticity and security of data. The inherent design allows for transparent visibility into transactions, preventing any unauthorized alterations to the information

**Internet of Things (IoT)** refers to a big network of connected devices. These devices have parts like sensors and software that help them collect and share information. Smart thermostats that control the temperature in your home, wearable health devices, or even big machines in factories.

**Table 17: Used Cases of Digital Platform Enablement**

S. No	Companies	Applications
1	Infosys	Infosys has been involved in multiple block chain initiatives, including developing solutions for the banking and insurance sectors. They leverage IoT data to enhance the functionality of their block chain applications.
2	Tech Mahindra	Tech Mahindra has implemented blockchain solutions for supply chain management, including a notable project called Vaccine Ledger, which uses IoT data to ensure traceability of vaccines. The company has demonstrated important applications in various industries such as telecom and manufacturing.
3	TCS	TCS has developed a block chain platform that supports various enterprise applications including supply chain management and digital asset management, integrating IoT data to improve operational efficiency.
4	Bajaj Finserv	Bajaj Finserv uses blockchain to automate claims processing in travel insurance, using IoT data to streamline operations and improve customer experience. Block chain enables instant settlement of claims, significantly reducing processing times
5	Jio Platforms	Jio has developed an integrated IoT platform that incorporates Block chain technology, providing a secure medium for onboarding and management of IoT ecosystems. The platform supports multiple access technologies and uses Block chain for device identity management and data integrity.
6	Apollo Hospitals	Apollo Hospitals partnered with Oracle Financial and Strides Pharma to pilot a drug supply chain solution using block chain and Iota, ensuring the authenticity of medicines through real-time monitoring.

Source: Nexdigm Analysis

## Edge Computing and 5G Integration

5G edge computing combines high-speed 5G networks with decentralized edge computing, enabling real-time data processing and decision-making at the network's edge. This integration enhances data transmission speed, reduces latency, and improves capacity, while edge computing processes data locally, minimizing bandwidth usage. According to World Bank, by 2025 1.2 billion 5G connections will cover 34% of the global population, unlocking new opportunities in previously unfeasible industries:

- **Improved Delivery Speed:** 5G and edge computing are key complementary technologies for delivering data-intensive consumer and enterprise applications like real-time inferencing for AI, cloud gaming, autonomous drones or remote tele surgery.
- **Ultra-low latency experiences:** By processing data at the edge, 5G and edge computing can deliver immersive experiences without delay, which is critical to achieving amazing user experience and engagement. Industries can use avail this technology through AR/VR to train employees in a safe environment, enhancing learning experiences through interactive simulations.
- **IoT (Internet of Things);** 5G and edge computing can help with real-time data processing where devices can analyze data locally instead of sending it to a central server, enabling faster insights and action which leads to improved connectivity through the high capacity of 5G networks supports connected devices, enabling broader IoT deployments across multiple industries.

## Vertical Auto Scaling in Data Centres

Vertical scaling, also known as “scaling up” is the process of improving the capacity of an existing server by adding resources such as CPU, RAM, and storage. This approach offers several benefits for data centres, including cost, efficiency, resource utilization, and energy savings. Vertical auto scaling is technically and commercially beneficial while operating a large volume of virtual machines in a cloud environment and has high optimisation effect from capacity utilisation. While companies like Google Cloud, AWS and Azure offer auto vertical scaling globally, ESDS is the only player in India holding a patent for this technology which was granted to them in November 2022.

Vertical Scaling offers significant benefits to data centres by improving cost-effectiveness, efficiency, resource utilization, and energy savings. By upgrading existing hardware rather than purchasing new servers, organizations can maximize their investments and extend the life of their infrastructure without incurring substantial additional costs. This approach simplifies system architecture because fewer machines need to be managed, reducing maintenance complexity and operational overhead. In addition, vertical scaling enables better resource utilization, allowing organizations to efficiently handle larger workloads. With fewer physical servers running, energy consumption for cooling and power can also decrease, leading to lower overall energy costs. The simple implementation of vertical scaling minimizes disruption compared to horizontal scaling, making it an attractive option for organizations with predictable growth patterns and high computing needs. Horizontal scaling refers to provisioning additional servers to meet customer needs, while vertical scaling is a more efficient system, in which more power and memory is added to the same virtual machine, thereby increasing the resource capacity of the virtual machine and in effect, the machine optimization. Overall, vertical scaling is a strategic choice that improves performance while optimizing resource allocation in data centre operations.

## Quantum-Resistant Cryptography

Quantum-resistant, or post-quantum, cryptography involves developing cryptographic algorithms that can resist attacks from both classical and quantum computers. The National Institute of Standards and Technology (NIST) has been at the forefront of this initiative, selecting and standardizing algorithms designed to be secure against quantum attacks. In August 2024, NIST published the first three finalized post-quantum encryption standards, marking a significant milestone in this field.

As quantum computing technology advances, the risk of quantum-enabled cyberattacks becomes more imminent. Organizations, particularly those handling sensitive information, must proactively adopt quantum-resistant cryptographic measures to protect their data. This proactive approach is crucial to preventing potential breaches that could arise from the capabilities of future quantum computers. Companies such as ESDS, QNu Labs, and BosonQ PSI are some companies who are leading the way in offering this technology to their clients.

## Key Developments in Quantum Industry related to Cloud Solutions

**MeitY Quantum Computing Applications Lab:** Set up by the Ministry of Electronics and Information Technology (MeitY), this lab offers access to quantum computing resources on the AWS cloud, allowing researchers and developers to experiment with quantum algorithms and run simulations without incurring costs. The lab aims to accelerate research and development in quantum computing in sectors such as finance, healthcare, and agriculture.

**Real-time quantum cloud services:** Platforms like D-Wave’s Leap™ provide Indian businesses with immediate access to advanced quantum computing capabilities. This service supports hybrid solvers that can address diverse business challenges from logistics optimization to drug discovery, significantly accelerating problem-solving processes compared to classical methods.

**Research collaboration and innovation:** The establishment of collaborative frameworks like the “India Quantum Alliance” by C-DOT aims to foster joint research and development in quantum communication technologies. This initiative aligns with India’s goal of enhancing its digital economy through cutting-edge technologies, including quantum computing.

**Quantum key distribution (QKD):** The Indian Space Research Organization (ISRO) is developing satellite-based QKD systems that will enable ultra-secure communication channels. These systems are essential for protecting sensitive data transmitted across cloud platforms, ensuring that even potential threats from quantum computers cannot compromise the security of communications.

### DevOps as Managed Services

DevOps is the combination of cultural philosophies, practices, and tools that increase an organization's ability to deliver applications and services at high velocity—evolving and improving products at a faster pace than organizations using traditional software development and infrastructure management processes.

DevOps enables organizations to innovate faster, adapt to changing markets, and enhance efficiency by integrating development and operations teams. It ensures speed through streamlined workflows, security by automating compliance and tracking policies at scale, and scalability by leveraging automation and consistency. DevOps also promotes improved collaboration, reducing inefficiencies and enabling faster deployments by emphasizing shared responsibilities. Additionally, it ensures reliability through practices like continuous integration and continuous delivery, ensuring quality and security in application updates.

### Awards, Recognition and Patents in India's Data Centre and Cloud Industry:

The data centre and cloud industry in India has seen significant growth and innovation, with numerous organizations being recognized for their exceptional contributions to the sector. These companies have set new standards in the industry through advanced infrastructure, cutting-edge cloud solutions, sustainability initiatives, and a strong focus on customer service. Prestigious industry awards have recognized their ongoing commitment to innovation, operational excellence, and environmental responsibility. Highlighted below are some of the notable accolades received by leading players in the Indian data centre industry.

- **Nxtra by Airtel** in 2024 has become the first in the country to integrate AI into its data centres, leveraging Ecolibrium's SmartSense platform. This AI deployment aims to improve operational and energy efficiency, predictive maintenance, and optimize capital expenditure utilization. With the deployment across its core data centres, Nxtra is targeting key efficiency milestones including a 10% increase in asset lifespan, a 10% reduction in non-IT energy consumption, and a 15% increase in equipment performance.
- **ESDS** in 2023 was recognized as the "Most Outstanding Cloud Service Provider" at the NBFC Technology Summit. The company also won the Aegis Graham Bell Award in 2022 for "Fighting COVID-19 with AI" and was named "Most Preferred and Trusted Cloud Service Provider" by the Economic Times.
- **E2E Networks** has been awarded the Times Business Award 2023 for being one of the top performers in the AI and Cloud industry, demonstrating its commitment to innovation in India's cloud technology landscape. Additionally, the company has been recognized in G2's spring 2024 rankings as a leading global Infrastructure-as-a-Service (IaaS) provider, highlighting its excellence in delivering scalable and reliable cloud services.
- **Sify Technologies** was recognized as an Iconic Cloud Player in 2018 by The Economic Times, highlighting its leadership and impact in the cloud services sector. Additionally, the company has been a multiple-year winner of the Golden Peacock Award for Corporate Governance, reflecting its commitment to transparency and ethical business practices.

Tata Communications and ESDS lead Indian companies in cloud-related patents, with Tata Communications holding 86 patents issued between 2002 and 2022, positioning it at the forefront of cloud innovation in the region. In May 2024, Tata Communications and Cisco launched Webex Calling to transform cloud communication in India. Additionally, Tata Communications is enhancing its AI cloud infrastructure in India through a collaboration with Nvidia.

Meanwhile, ESDS has obtained an Indian patent for its vertical auto-scaling cloud technology, which enables real-time adjustment of computing resources to optimize cloud utilization. This technology powers ESDS'

IaaS “eNlight Cloud,” which is patented in the UK, US, and India. Infosys Ltd, another key player in the sector, holds 25 cloud-related patents, further strengthening India’s position in cloud innovation.

### **Shift towards Autonomous Cloud**

The Autonomous Cloud Platform represents a transformative shift in cloud computing, leveraging AI and machine learning to deliver a fully autonomous, self-healing, and optimizing environment. Unlike traditional cloud platforms, which require extensive manual monitoring, our solution enables real-time monitoring, automated remediation, and intelligent workload management, significantly reducing operational complexities and costs.

As businesses increasingly migrate to the cloud, the demand for intelligent, resilient, and cost-effective cloud operations is growing. The Autonomous Cloud Platform meets this need by delivering AI-powered anomaly detection, automated remediation, predictive analytics, and seamless mobility across clouds. With its vendor-agnostic architecture, the platform ensures seamless integration across diverse cloud ecosystems, eliminating human intervention and improving operational efficiency while optimizing costs.

### **Market Opportunity**

The global cloud computing market is projected to surpass USD 1 trillion by 2030, with a significant shift towards AI-based and autonomous cloud solutions. However, enterprises face increasing challenges in managing multi-cloud environments, ensuring high availability, and optimizing costs. Current cloud solutions often lack intelligent automation for real-time performance tuning and proactive incident management, leading to high operational overhead.

### **Autonomous Hiring Portal:**

Autonomous Hiring Portal is an innovative AI-powered recruiting platform designed to revolutionize the hiring process. By automating candidate screening, interview scheduling, and assessment, it addresses inefficiencies caused by manual resume reviews, lengthy interview coordination, and subjective decision-making. The platform leverages AI-powered resume parsing, chatbots for initial screenings, automated interview scheduling, and AI-powered video interview assessments to streamline processes, reduce time-to-hire, and improve both candidate quality and experience. The cloud-based and scalable portal employs load balancing, distributed computing, data encryption, multi-factor authentication and GDPR compliance to ensure high standards of security and privacy while minimizing recruiter workload and eliminating bias in the selection process.

The autonomous recruiting portal streamlines the HR hiring process, increasing efficiency and reducing manual effort. Key features like AI-powered resume screening, which uses advanced NLP and ML models. A chatbot performs the initial screening, assessing suitability and qualifications for the role, saving valuable time. The portal automates interview scheduling and uses AI-powered video interviews for sentiment analysis, facial expression recognition, and speech processing, providing deeper candidate insights. It also seamlessly integrates with HR and ATS systems for seamless workflows. Data analytics and AI-powered insights help HR teams make informed decisions, improving hire quality and reducing time-to-hire. Additionally, the portal ensures impartiality with explainable AI (XAI) techniques and protects candidate data with strong security measures such as AES-256 encryption and GDPR compliance. Overall, this autonomous solution improves recruitment by automating tasks, ensuring impartiality, and improving decision-making.

### **Key Benefits**

Autonomous hiring portal streamlines recruitment with AI-powered features such as automated resume screening, which ranks candidates based on job requirements, and AI-powered interview scheduling, reducing coordination efforts by 80%. It includes a chatbot for initial assessments, video interviews analyzed for communication and trust using emotion detection and natural language processing, and an adaptive skills assessment module. The portal seamlessly integrates with ATS, automates feedback and reporting, and uses AI for background checks with blockchain credential validation.

## 12. POTENTIAL THREATS

### New Entrants: Competition from Emerging Tech Firms

Emerging cloud service providers with decentralized and open-source offerings are starting to disrupt traditional managed and cloud services markets, especially in markets like India, where there is a growing interest in cost-effective, transparent, and highly secure cloud solutions. These new entrants focus on blockchain-based, peer-to-peer, and open-source models that challenge the conventional, centralized cloud models offered by established players like Amazon Web Services (AWS), Google Cloud, and Microsoft Azure.

- **Filecoin:** It is a decentralized cloud that offers a superior network, storage at hypercompetitive prices with provable authenticity and data security. DeStor, the data storage space built on Filecoin network, offers Archival storage, backup and recovery, ransomware protection, and highly scalable and cost-effective solutions. It has served over 1800 clients across the globe that have saved 2.2 million TB data (*source: Filecoin Website*).
- **Storj:** Storj is another decentralized cloud network with consistently fast, limitless scalability and hypercompetitive prices (*source: Storj Website*).

### Threats from New Entrants:

Decentralized cloud providers like Filecoin and Storj are disrupting the traditional cloud market by offering cost-effective, scalable, and secure alternatives to centralized services such as AWS, Google Cloud, and Microsoft Azure. Leveraging blockchain technology, these platforms provide transparent, tamper-proof data storage with enhanced security features like ransomware protection and backup solutions, while maintaining hypercompetitive pricing due to their peer-to-peer architecture. Their decentralized nature enables greater flexibility, faster scalability, and compliance with local data sovereignty laws, which are particularly appealing in emerging markets like India. By eliminating intermediaries, reducing costs, and offering open-source, community-driven innovation, these companies present a direct challenge to traditional cloud providers, pushing for more competitive, secure, and transparent alternatives. Companies are under significant pressure to optimize the cost and performance, enhance the operational expectations and maintain high level of cyber security for their business

### Economic Factors: Inflation, Rising Costs, and International Competition

#### Current Economic Context

**Inflation Trends:** In 2021, inflation decreased to 5.5%, indicating recovery, before rising again in 2022 to 6.7%, driven by growing commodity prices and the impact of the Russia-Ukraine war. Overall growth prospects remain cautious, particularly for emerging markets such as India.

#### Cloud Sector Challenges

**Rising Cloud Costs-** It has been observed that nearly 60% of businesses in India have seen increased cloud spending, with nearly 40% reporting cost increases of more than 25%. This trend is largely attributed to inflation and rising energy costs affecting cloud service prices.

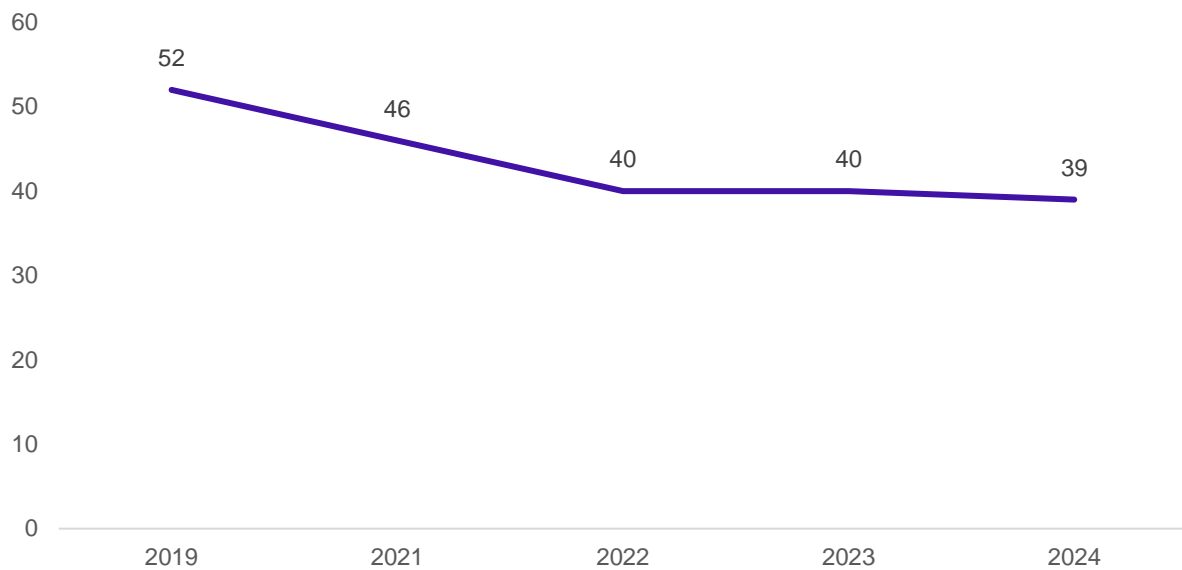
**Labour and resource costs-** A shortage of skilled IT professionals has increased labour costs, while production prices for CPUs and memory chips have also increased. These factors contribute to higher operating expenses for cloud providers, which are often passed on to customers

#### Global competition:

This always remains a threat to India's IT sector as other countries such as Philippines and Vietnam are emerging as attractive alternatives for outsourcing due to their competitive labour costs and improving infrastructure. Global players such as Google Cloud, AWS, and Azure are enhancing their capabilities further which may make Indian companies like Tata Communications, Nxtra, and Yotta Infrastructure struggle to maintain their market share unless they continuously innovate and improve service delivery.

On the other hand, economic factors like **Inflation** can have several significant impacts on the data centre industry by influencing both demand and operational costs. India has managed to keep its inflation rate within the target range of 2-6%, at 5.4% for Fiscal 2024. While the core inflation, that is inflation without including Food and Energy price changes, sat at 4.3%, the Food Inflation (CFPI) was at 7.5% which is almost twice the CFPI in Fiscal 2022, when it was at 3.8%.

**Figure 28: India's rank on Global Innovation Index, 2019-2024**



Source: World Intellectual Property Organisation Archives, Nexdigm Analysis

### **Operational Challenges-**

- **Scalability:** This remains a major challenge for data centres as the demand for data storage and processing continues to increase. To accommodate this growth, data centres have to adopt modular and scalable designs. The use of prefabricated modules enables rapid deployment and expansion, reducing the time and cost associated with infrastructure upgrades.
- **Power Downtime:** have been steadily declining, but the costs of just one outage is very high. Severe downtimes can typically cost them more than USD100, 000. Current solutions are not financially feasible for smaller facilities, with power outages topping the list of root causes of outages. With upgrades, data centres should add additional redundancies and upgrade their existing equipment to mitigate power failures
- **Sustainability:** It has been observed that data centres generate approximately 3.5% of global greenhouse gas emissions. To address this issue, data centres have to prioritize sustainable practices. The use of server virtualization technologies has showcased great potential in reducing energy consumption.
- **Data Localization and Regulation:** India's data localization and security regulations, particularly under the Digital Personal Data Protection Act 2023, impose strict requirements for storing personal data within the country. These regulations, while aimed at enhancing data sovereignty, can significantly increase operational costs for data centres and deter global investments from major players like AWS and Microsoft Azure due to the burdensome compliance landscape.

### **Managing Increased Data Traffic and Ensuring Optimal Storage Solutions**

The transition from magnetic tapes and hard disk drives to modern solid-state drives (SSDs) and cloud storage solutions exemplifies a significant shift in computing, emphasizing greater power, efficiency, and functionality. These advancements have revolutionized how organizations handle and utilize data, fuelling ongoing digital transformation across various sectors. This drop in cost per gigabyte enables organizations to manage extensive data volumes more effectively, allowing them to reallocate resources toward other critical business areas.

**Table 18: Threat and Opportunities in India Data Centre and Cloud Service Industry**

Key Issues	Threat	Opportunity
<b>Regulatory and Legal Compliance</b>	<ul style="list-style-type: none"> <li>Lack of clarity on legal status of emerging technologies (e.g., blockchain).</li> <li>The RBI's ban on blockchain (overturned by the Supreme Court) reflects regulatory uncertainty.</li> </ul>	<ul style="list-style-type: none"> <li>Clear and consistent regulations can balance innovation and consumer protection.</li> <li>Resolving regulatory issues can lead to growth in India's data centre industry and attract foreign investment.</li> </ul>
<b>Cyber Security and Infrastructure Costs</b>	<ul style="list-style-type: none"> <li>Rising vulnerability to cyber-attacks, data leaks, and ransomware incidents due to increased digital reliance.</li> <li>Critical infrastructure and sensitive data at risk, damaging reputation.</li> </ul>	<ul style="list-style-type: none"> <li>Strengthening cyber security measures can enhance investor confidence.</li> <li>Increased security can make India an attractive hub for data management and cloud services, driving growth.</li> </ul>
<b>Growing Global Competition</b>	<ul style="list-style-type: none"> <li>Intense global competition from countries like the US and China.</li> <li>Disruptions in global supply chains due to geopolitical tensions (e.g., semiconductor technology limitations).</li> </ul>	<ul style="list-style-type: none"> <li>India can attract investment by offering an alternative to China (China+1 strategy).</li> <li>India's low cost and robust infrastructure can be appealing for foreign investment</li> </ul>

Source: Industry Articles, Nexdigm Analysis

### 13. PEER COMPETITIVE BENCHMARKING

This section focuses on the financial and operating performances of leading players in the cloud, managed services, data centre infrastructure and software solutions sectors on a consolidated basis. The data has been sourced from publicly available materials, including annual reports, rating rationales, interviews with the management and relevant documents published by the companies, as well as other authoritative industry resources.

*Note- The peer comparison solely focuses on the financial parameters, operational parameters, strengths, USP's and future plans.*

**Table 19: Peer Offering Comparison in India**

Parameters	ESDS	E2E	Yotta	CY Future	Web Werks	CTRLS	Nxtra	Adani ConneX	AWS	Azure	Google
IaaS											
Cloud	✓	✓	✓	✓	✓	✓	✗	✗	✓	✓	✓
Colocation	✓	✗	✓	✓	✓	✓	✓	✓	✗	✗	✗
Managed Services											
Cloud Operations & Management	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Data Centre Build & Audit Consulting	✓	✗	✓	✓	✓	✓	✓	✓	✗	✓	✓
Development Operations	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SECaaS	✓	✗	✓	✓	✗	✓	✗	✗	✓	✓	✓
SaaS											
Marketplace	✓	✗	✗	✓	✗	✗	✗	✗	✓	✓	✓
In-house applications	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
G-SaaS	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
PaaS	✓	✓	✗	✓	✓	✗	✗	✗	✓	✓	✓

Source: Interview with Industry Experts, Nexdigm Analysis

Note: For CTRLS, we have considered Cloud4C as their subsidiary service offering as well

[ Note: The services offered by companies are subject to change on the basis of industry insights before the final deliverable ]

Table 19 provides a comparative view of the service offerings of various leading players in the cloud, managed services, data centre infrastructure and software solutions sector.

ESDS; offers a comprehensive platform of cloud infrastructure and software solutions consisting of (1) infrastructure as a service, which is broadly divided into colocation and Data Centre services, cloud services and cloud computing (2) managed services and (3) software as a service.

ESDS faces competition from varied players across our different product and service offerings. Global players such as AWS, Azure, and Google Cloud are part of large multinational technology conglomerates, where cloud infrastructure, managed services, data centre offerings, and software solutions form only a part of their broader business portfolios. These companies derive a significant portion of their revenues from other primary business verticals such as e-commerce, enterprise software, search engines, and digital advertising. As a result, their operating models, scale, capital allocation priorities, and strategic focus differ fundamentally from pure-play cloud, managed services, data centre infrastructure and software solution providers. Hence, a direct comparison with such global players may not yield meaningful insights. Basis this analysis, we have selected 7 Indian cloud, managed services, data centre infrastructure and software solution peers. Such

companies principally include companies of Indian origin, such as CTRLS Data Centres, Nxtra by Airtel, Yotta, WebWerks, CYFuture and E2E Networks.

**E2E Networks;** is a cloud service provider offering cloud hosting, managed services, and infrastructure solutions focused on reliable, high-performance IT solutions for businesses, especially SMEs. It was listed on National Stock Exchange Emerge SME Platform in May 2018, and later migrated to NSE Mainboard in April 2022.

**Yotta;** established in 2007, is a provider of data centre solutions in India. They offer a range of services including data Centre infrastructure, cloud services, managed services and other scalable IT solutions for businesses.

**CYFuture:** Founded in 2003, CYFuture is an IT services company in India specializing in cloud solutions, IaaS, SaaS, and PaaS and managed services.

**WebWerks:** Founded in 1996, it offers services such as colocation, cloud hosting, managed services to businesses. WebWerks currently operates in a JV with Iron Mountain to provide data centre services in India.

**CTRLS:** CTRLS is a data centre services provider in India offering scalable solutions such as colocation, cloud, managed services, SaaS, PaaS, and more to businesses across a variety of industries. The company offers cloud services through its subsidiary Cloud4C.

**Nxtra;** is a subsidiary of the Bharti Airtel group providing data centre services, including edge data centres including colocation and managed services.

Among the leading players in the cloud, managed services, data centre infrastructure and software solutions, ESDS is one of the only two players providing the entire spectrum of cloud, managed services, data centre infrastructure and software solutions in India. Further, among the two, they are the largest in terms of revenue from operations in Fiscal 2024 with delivered revenue of INR 2,865.18 million.

### Financial Parameters:

**Table 20: Revenue from Operations (In INR million)**

Company Name	Fiscal 22	Fiscal 23	Fiscal 24	H1'25
<b>ESDS</b>	1,954	2,076	2,865	1,722
<b>E2E Networks</b>	519	662	945	888
<b>Yotta</b>	NA	1,028	4,594	NA
<b>CYFuture</b>	1,126	1,068	1,512	NA
<b>WebWerks</b>	792	948	1,494	NA
<b>CTRLS</b>	9,329	11,213	13,390	NA
<b>Nxtra By Airtel</b>	13,333	16,011	18,266	NA

Source: Interview with Company Management, Nexdigm Analysis  
NA implies 'Not Available' as the data is not publicly available

In Fiscal 2024, all players increased their revenue from operations with Yotta showing the highest increase from INR 1,028 million in Fiscal 2023 to INR 4,594 million in Fiscal 2024 followed by Nxtra by Airtel from INR 11,213 million in Fiscal 2023 to INR 13,390 million in Fiscal 2024. This is in line with the growing cloud market and increasing demand for data centres.

**Table 21: Earnings Before Interest, Tax, Depreciation and Amortization (EBITDA) (In INR million) and EBITDA Margins (In %)**

Company Name	EBITDA				EBITDA Margins (%)			
	Fiscal 22	Fiscal 23	Fiscal 24	H1'25	Fiscal 22	Fiscal 23	Fiscal 24	H1'25
<b>ESDS</b>	587	475	1019	739	30.05%	22.87%	35.56%	42.90%
<b>E2E Networks</b>	229	331	479	587	44.23%	49.94%	50.75%	66.14%
<b>Yotta</b>	NA	34	254	NA	NA	3.33%	5.54%	NA
<b>CYFuture</b>	161	79	56	NA	14.31%	7.40%	3.68%	NA
<b>WebWerks</b>	140	223	590	NA	17.71%	23.50%	39.49%	NA
<b>CTRLS</b>	5348	6184	6344	NA	57.33%	55.15%	47.38%	NA
<b>Nxtra By Airtel</b>	5481	6185	6953	NA	41.11%	38.63%	38.07%	NA

Source: Interview with Company Management, Nexdigm Analysis  
NA implies 'Not Available' as the data is not publicly available

CTRLS and Nxtra By Airtel have the highest EBITDA figures of INR 6,344 million and INR 6,953 million respectively, with CTRLS achieving high margin of 47.38%, indicating strong operational effectiveness. E2E Networks exhibits significant margin growth, reaching 66.14% in the first half of Fiscal 2025, highlighting improved financial efficiency.

**Table 22: Profit After Tax (PAT) (In INR million) and PAT Margins (In %)**

Company Name	PAT				PAT Margins (%)			
	Fiscal 22	Fiscal 23	Fiscal 24	H1'25	Fiscal 22	Fiscal 23	Fiscal 24	H1'25
<b>ESDS</b>	-27	-225	136	239	-1.36%	-10.82%	4.75%	13.90%
<b>E2E Networks</b>	65	99	219	223	12.44%	14.97%	23.15%	25.11%
<b>Yotta</b>	NA	27	145	NA	NA	2.60%	3.16%	NA
<b>CYFuture</b>	70	109	-17	NA	6.20%	10.20%	-1.12%	NA
<b>WebWerks</b>	64	131	114	NA	8.04%	13.81%	7.64%	NA
<b>CTRLS</b>	2864	2898	2096	NA	30.70%	25.85%	15.65%	NA
<b>Nxtra By Airtel</b>	2384	2201	2318	NA	17.88%	13.75%	12.69%	NA

Source: Interview with Company Management, Nexdigm Analysis  
NA implies 'Not Available' as the data is not publicly available

E2E Networks shows steady growth, with PAT margins improving to 25.11% in the first half of Fiscal 2025, indicating effective cost management. ESDS has turned a profit in Fiscal 2024 after previous losses, achieving a notable margin of 4.75% showcasing high resilience. CTRLS maintains strong PAT figures, though a decline in margins to 15.65% in Fiscal 2024 raises questions about sustainability.

**Table 23: Return on Equity (RoE) (In %)**

Company Name	Fiscal 22	Fiscal 23	Fiscal 24	H1'25
<b>ESDS</b>	-1.36%	-10.81%	6.23%	10.06%
<b>E2E Networks</b>	19.59%	22.56%	36.37%	8.11%
<b>Yotta</b>	NA	NA	28.51%	NA
<b>CYFuture</b>	13.72%	17.74%	-2.48%	NA
<b>WebWerks</b>	15.66%	3.07%	1.14%	NA
<b>CTRLS</b>	35.78%	26.60%	15.62%	NA
<b>Nxtra By Airtel</b>	59.07%	14.41%	8.75%	NA

Source: Interview with Company Management, Nexdigm Analysis  
NA implies 'Not Available' as the data is not publicly available

In Fiscal 2024, ESDS shows a significant recovery, moving from margins of -10.81% to 6.23%, reflecting improved operational efficiency. E2E Networks demonstrates consistent growth with a strong 36% margin in

Fiscal 2024. CYFuture and WebWerks face declining RoE, with CYFuture reporting a decline to -2% in Fiscal 2024.

**Table 24: Return on Capital Employed (RoCE) (In %)**

Company Name	Fiscal 22	Fiscal 23	Fiscal 24	H1'25
<b>ESDS</b>	6.33%	0.84%	14.53%	11.18%
<b>E2E Networks</b>	15.33%	30.16%	29.01%	10.54%
<b>Yotta</b>	NA	NA	12.28%	NA
<b>CYFuture</b>	18.29%	19.58%	1.15%	NA
<b>WebWerks</b>	16.47%	3.66%	1.82%	NA
<b>CTRLS</b>	31.92%	24.59%	16.02%	NA
<b>Nxtra By Airtel</b>	45.44%	17.69%	10.87%	NA

Source: Interview with Company Management, Nexdigm Analysis  
NA implies 'Not Available' as the data is not publicly available

In Fiscal 2024, ESDS shows a notable improvement in RoCE, rising to 14.53% from 0.84% in Fiscal 2023 and maintaining a solid 11.18% in the first half of Fiscal 2025, indicating effective use of capital. CYFuture demonstrated declining RoCE from 20% in Fiscal 2023 to 1% in Fiscal 2024 indicating loss in financial efficiency.

**Table 25: Days Sales Outstanding (DSO) (In Numbers)**

Company Name	Fiscal 22	Fiscal 23	Fiscal 24	H1'25
<b>ESDS</b>	119.30	100.47	87.90	89.51
<b>E2E Networks</b>	0.87	3.33	9.91	15.65
<b>Yotta</b>	NA	NA	146.06	NA
<b>CYFuture</b>	200.88	171.12	148.81	NA
<b>WebWerks</b>	57.85	37.94	79.75	NA
<b>CTRLS</b>	61.82	90.82	66.51	NA
<b>Nxtra By Airtel</b>	78.73	40.72	48.92	NA

Source: Interview with Company Management, Nexdigm Analysis  
NA implies 'Not Available' as the data is not publicly available

Days Sales Outstanding (DSO) is a measure of the average number of days it takes for a company to collect a payment. A higher DSO suggests a delay in receiving payments and hence, an indication of a cash-flow problem.

## Operational Parameters

**Table 26: Total Customers**

Company Name	Total Customers			
	Fiscal 22	Fiscal 23	Fiscal 24	H1'25
<b>ESDS</b>	1427	1492	1465	1398
<b>E2E Networks</b>	2600+	2750+	3000+	NA
<b>Yotta</b>	NA	NA	13000+	NA
<b>CYFuture</b>	NA	NA	9500+	NA
<b>WebWerks</b>	NA	NA	800+	NA
<b>CTRLS</b>	NA	NA	10500+	NA
<b>Nxtra By Airtel</b>	NA	NA	2000+	NA

Source: Interview with Company Management, Nexdigm Analysis  
 NA implies 'Not Available' as the data is not publicly available  
 Note- Customers of Nxtra by Airtel are only for the colocation and the cloud segment.

E2E Networks, without its own data centres, is unable to offer co-location services, limiting its ability to serve enterprises (such as large BFSI customers) that requires dedicated data centres. Players such as ESDS leverage its end to end services which includes both cloud as well co location to attract more stable and diverse clientele including large enterprises along with SMEs.

**Table 28: Average Revenue per Customer (In INR million)**

Company Name	Fiscal 22	Fiscal 23	Fiscal 24	H1'25
<b>ESDS</b>	1.37	1.39	1.96	1.23
<b>E2E Networks</b>	0.20	0.24	0.32	NA
<b>CYFuture</b>	NA	NA	0.15- 0.16	NA
<b>Yotta</b>	NA	NA	0.35	NA
<b>WebWerks</b>	NA	NA	1.87	NA
<b>CTRLS</b>	NA	NA	1.26-1.28	NA
<b>Nxtra By Airtel</b>	NA	NA	9.13	NA

Source: Interview with Company Management, Nexdigm Analysis  
 NA implies 'Not Available' as the data is not publicly available  
 Note: Note: Revenue per Rack- Revenue from Operations / Total Customers

In Fiscal 2024, ESDS leads in average revenue per customer, indicating a strong market position with premium services or infrastructure. Companies such as Nxtra By Airtel, Yotta, and E2E Networks show moderate revenue per customer, focusing on scalability and maintaining competitive pricing. WebWerks and CYFuture have the lowest revenue per customer, which indicates of a low-cost, high-volume strategy targeting a different customer segment

**Table 29: Revenue Split by Customer Tenure (In %)**

Company Name	Revenue from Existing Customers (In %)				Revenue from New Customers (In %)			
	Fiscal 22	Fiscal 23	Fiscal 24	H1'25	Fiscal 22	Fiscal 23	Fiscal 24	H1'25
<b>ESDS</b>	85.29	78.18	92.91	75.50	14.71	21.82	7.09	24.50
<b>E2E Networks</b>	44	50	50-60	NA	56	50	40-50	NA
<b>CYFuture</b>	NA	NA	55-60	NA	NA	NA	40-45	NA
<b>Yotta</b>	NA	NA	65-70	NA	NA	NA	30-35	NA
<b>WebWerks</b>	NA	NA	60-65	NA	NA	NA	35-40	NA
<b>CTRLS</b>	NA	NA	65-70	NA	NA	NA	30-35	NA
<b>Nxtra By Airtel</b>	NA	NA	70-75	NA	NA	NA	25-30	NA

Source: Interview with Company Management, Nexdigm Analysis  
 NA implies 'Not Available' as the data is not publicly available

**Table 30: Revenue Split by Customer Industry (In %)**

Company Name	BFSI (In %)				Government				Enterprises			
	Fiscal 22	Fiscal 23	Fiscal 24	H1'25	Fiscal 22	Fiscal 23	Fiscal 24	H1'25	Fiscal 22	Fiscal 23	Fiscal 24	H1'25
<b>ESDS</b>	10.51	11.64	18.27	31.56	29.64	33.90	34.04	29.30	59.85	54.46	47.69	39.14
<b>E2E Networks</b>	NA	NA	15-20	NA	NA	NA	45-50	NA	NA	NA	30-40	NA
<b>CYFuture</b>	NA	NA	45-50	NA	NA	NA	20-25	NA	NA	NA	30-35	NA
<b>Yotta</b>	NA	NA	40	NA	NA	NA	35	NA	NA	NA	25	NA
<b>WebWerks</b>	NA	NA	30-35	NA	NA	NA	40-45	NA	NA	NA	25-30	NA

<b>CTRLS</b>	NA	NA	25	NA	NA	NA	45	NA	NA	NA	30	NA
<b>Nxtra By Airtel</b>	NA	NA	20	NA	NA	NA	55	NA	NA	NA	25	NA

Source: Interview with Company Management, Nexdigm Analysis  
NA implies 'Not Available' as the data is not publicly available

**Table 31: Revenue Split by Service Line (In %)**

Company Name	IaaS (In %)				SaaS (In %)				Managed Services (In %)			
	Fiscal 22	Fiscal 23	Fiscal 24	H1'25	Fiscal 22	Fiscal 23	Fiscal 24	H1'25	Fiscal 22	Fiscal 23	Fiscal 24	H1'25
<b>ESDS</b>	45.59	41.70	49.59	58.05	26.14	28.54	23.35	20.88	28.27	29.75	27.06	21.07
<b>E2E Networks</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>CYFuture</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>Yotta</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>WebWerks</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>CTRLS</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>Nxtra By Airtel</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Source: Interview with Company Management, Nexdigm Analysis  
NA implies 'Not Available' as the data is not publicly available

**Table 32: Number of Data Centres**

Company Name	Fiscal 22	Fiscal 23	Fiscal 24	H1'25
<b>ESDS</b>	3	4	4	4
<b>E2E Networks</b>	NA	NA	NA	NA
<b>CYFuture</b>	NA	NA	6	NA
<b>Yotta</b>	NA	NA	2	NA
<b>WebWerks</b>	NA	NA	6	NA
<b>CTRLS</b>	NA	NA	11	NA
<b>Nxtra By Airtel</b>	NA	NA	12	NA

Source: Interview with Company Management, Nexdigm Analysis  
NA implies Not Available

## 14. DEFINED TERMS AND ABBREVIATIONS

### Industry and Common Defined Terms and Abbreviations

- AI: Artificial Intelligence
- AIPaaS: AI Platform as a Service
- AIRAWAT: AI Research Analytics and Knowledge Dissemination Platform
- AR/VR: Augmented Reality/ Virtual Reality
- BaaS: Backup as a Service
- BFSI: Banking, Financial Services and Insurance
- BPaaS: Business Process as a Service
- BRICS: Brazil, Russia, India, China and South Africa
- CAGR: Compounded annual growth rate
- CPI: Consumer Price Index
- CPU: Central Processing unit
- CSP: Cloud service providers
- DaaS: Desktop as a Service
- DRaaS: Disaster Recovery as a Service
- ERP: Enterprise resource planning
- FDI: Foreign Direct Investment
- “Fiscal” or “FY”: the year ended March 31 of the calendar year referenced.
- GCP: Google cloud Platform
- GDP: Gross Domestic Product
- GeM: Government e- Marketplace
- GPU: Graphic Processing unit
- GST: Goods and Services Tax
- GVA: Gross Value Added
- IaaS: Infrastructure as a Service
- IoT: Internet of Things
- ISM: India semiconductor mission
- ISV: Independent software Vendor
- IT: Information Technology
- IT-BPM: Information Technology – Business process management
- ITES: Information technology enabled services
- LAN: Local area network
- LLM: Large language model
- ML: Machine Learning
- MSP: Managed service providers
- MW: MegaWatt
- NSE: National Stock Exchange
- OCC: Open cloud compute
- OCI: Oracle cloud infrastructure
- PaaS: Platform as a Service
- DPDP: Digital Personal Data Protection Act. 2023
- RPA: Robotic process automation

- SaaS: Software as a Service
- SECaaS: Security as a Process
- SMEs: Small and Medium Enterprises
- TPU: Tensor Processing Unit
- VPC: Virtual Private cloud
- WAN: Wide-area network
- WPI: Wholesale price Index

### Company/Entity Abbreviations

- AWS: Amazon Web Services
- BEL: Bharat Electronics Limited
- CDAC: Centre for Development of Advanced Computing
- CtrlS: CtrlS Data Centers Limited
- CYFuture: CYFuture India Private Limited
- ESDS: ESDS Software Solutions Limited
- E2E: E2E Networks Limited
- MeitY: Ministry of Electronics and Information Technology
- NASSCOM: National Association of Software and Service Companies
- Nxtra: Nxtra by Airtel
- RBI: Reserve Bank of India
- Sify Technologies: Sify Technologies Limited
- STPI: Software Technology Parks of India
- TCS: Tata Consultancy Services
- WebWerks: Webwerks India Private Limited
- Yotta: Yotta Data Services Private Limited

## About Nexdigm

Nexdigm Private Limited (“Nexdigm”) is an employee-owned, privately held, independent global organization that helps companies across geographies meet the needs of a dynamic business environment. Our focus on problem-solving, supported by our multifunctional expertise enables us to provide customized solutions for our clients.

We provide integrated, digitally driven solutions encompassing Business and Professional Services, that help companies navigate challenges across all stages of their life-cycle. Through our direct operations in the USA, Poland, UAE, and India, we serve a diverse range of clients, spanning multinationals, listed companies, privately-owned companies, and family-owned businesses from over 50 countries.

Our multidisciplinary teams serve a wide range of industries, with a specific focus on healthcare, food processing, and banking and financial services. Over the last decade, we have built and leveraged capabilities across key global markets to provide transnational support to numerous clients.

From inception, our founders have propagated a culture that values professional standards and personalized service. An emphasis on collaboration and ethical conduct drives us to serve our clients with integrity while delivering high quality, innovative results. We act as partners to our clients, and take a proactive stance in understanding their needs and constraints, to provide integrated solutions. Quality at Nexdigm is of utmost importance, and we are ISO/ISE 27001 certified for information security and ISO 9001 certified for quality management.

We have been recognized over the years by global organizations, like the International Accounting Bulletin and Euro Money Publications.

Nexdigm resonates with our plunge into a new paradigm of business; it is our commitment to Think Next.

USA Canada Poland UAE India Hong Kong Japan

[www.nexdigm.com](http://www.nexdigm.com)

Reach out to us at [ThinkNext@nexdigm.com](mailto:ThinkNext@nexdigm.com)