India’s Strengths in the era of Distributed Intelligence

What is the issue?

Computing is in its new era of distributed intelligence. Here is how India’s prospects in this technological phaseare.

Top new technology trends

Artificial Intelligence (AI) and Machine Learning, Robotic Process Automation (RPA), Edge Computing, Quantum Computing, Virtual Reality and Augmented Reality, Blockchain, Internet of Things (IoT), 5G, Cyber Security

What is distributed intelligence?

- Distributed intelligence or distributed logic refers to **separating the processing** in a large system (centralised processor) into multiple subsystems.
- There is a surge in usage of new devices (computers, smartphones, IoT devices, sensors, etc) leading to exponential increase in data generation.
- Distributed intelligence thus helps in faster data computation as it takes computing back to the source of the data via edge computing.

64.2 ZB of data were created in 2020 globally. This will see a compound annual growth rate of 23% from 2020 to 2025.

The worldwide edge computing market will reach $250.6 billion in 2024.

What is edge computing?

- Edge computing is a distributed information technology (IT) architecture.
- Data is processed at the periphery of the network, as close to the originating source as possible, instead of centralised processing.
- This enables faster processing bybypassing the bandwidth limitations, latency issues and unpredictable network disruptions caused by cloud computing.

What are India’s strengths?

Large Population

- Amount of data being generated and processed is unmatched.
- Data generated can be used to provide detailed user insights for further growth and development.
- Population density also makes technology solutions scalable and resilient i.e., solutions designed for India, has ease of adaptation in any country.

Technological advantages

- Existing strengths in software, and an emerging hardware ecosystem.
- Innovative start-up community and abundance of talent.
- The proliferation of AI and the upcoming 5G rollout.

Administrative support

- National Strategy on Artificial Intelligence by NITI Aayog
- Emerging Technologies division in the MeitY.

What are the areas of scope?

- **Power** - Smart Meter National Programme put distributed intelligence to use and enabled distributors to achieve 95% billing efficiency during the lockdown using smart meters.
- Once the solution is deployed, it will help the power sector minimize its transmission and distribution losses within a few years.

  India has transmission and distribution losses of over 20% in the power sector.

- **Retail sector -** To tackle consumers' fears for offline purchase amidst the pandemic, Amazon launched its Smart Stores programme in India.
- This turns retail stores into "digital storefronts" that allow smart and contactless product selections and payments.
- With distributed intelligence, the retail segment can look at flexible price adjustments, intelligent product recommendations, cashier-less payments, personalized products and services, etc.
- **Agriculture** - Key challenges are weather unpredictability and lack of crop diversification for better yields.
- Smart agriculture-as-a-service solutions involve use of smart sensors and other devices.
- This helps generate data to develop insights on weather and soil conditions, and manage processes from seeding to harvesting.
- **Healthcare** - Contactless continuous remote monitoring of patients in hospitals or homes.
- Patient data can be processed via edge computing to detect health deterioration and generate early warnings for timely medical intervention.
- **Education**-Distributed intelligence applications offer online services for students through mediums ranging from videos and flashcards to virtual reality enhanced by edge computing.

Source: Business Line

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