Harnessing AI to Shape India's IT Leadership

For Prelims: Artificial intelligence, Large Multimodal Models, Non-personal datasets, Generative AI, MSMEs

For Mains: Impact of AI in IT Sector, Opportunities & Challenges of AI for India's Economic Growth, Key Challenges AI Poses to India's Traditional Economy

Source: TH

Why in News?

The **Indian IT sector,** a USD 280 billion industry employing 5.8 million people, is undergoing a profound shift as **Artificial Intelligence transforms service delivery and business operations.** This disruption, however has led to moves like **TCS halting experienced hiring and cutting 12,000 jobs**, sparking concerns over the future workforce and the evolving nature of IT employment.

What are the Key Applications of AI in the IT Sector?

- **Productivity, Automation & Workforce Transformation:** AI has **increased software development productivity** through tools like **coding assistants and automated code generation (GitHub Copilot by Microsoft)**.
    - AI **automates routine IT tasks, reducing errors** and boosting efficiency. For instance, **UiPath** is a **leading robotic process automation (RPA) too**l that uses AI to **automate repetitive, rule-based tasks.**
    - **Developers** are evolving into **AI supervisors** focusing on **strategy, ethics, domain-specific logic, and security.**
        - **McKinsey** predicts that between **2030 and 2060,** generative AI could automate about **50% of global work activities**.
- **Enhanced Cybersecurity & Threat Detection: AI algorithms** detect **unusual patterns** in real-time for early **threat identification** and **prevention**. **Machine learning models** analyze large datasets to **predict attacks**, while AI-driven systems **respond faster than humans, strengthening IT security.**
    - **Darktrace's "Enterprise Immune System"** uses AI to **learn normal network behavior and flags unusual activities**, like unexpected file transfers or logins from new locations, as potential threats.
- **Improved Data Management: AI automates** data **collection**, **storage**, and **analysis** of large, **unstructured datasets**, enabling sectors like **Customer Relationship Management (CRM)** to better understand **customer behavior** and drive **business growth**.
- **Predictive Maintenance:** AI analyzes **historical data** to forecast hardware and software failures, enabling **proactive maintenance** that reduces **downtime** and extends the **lifespan** of IT infrastructure.
    - **For instance, Company Splunk** uses **AI to predict system failures from performance data,** enabling **proactive maintenance.**

What are the Key Challenges in the Indian IT Sector's AI Adoption Journey?

- **Skill Gap & Workforce Displacement:** Rapid AI adoption has created a significant **skill gap**, with urgent need to retrain the workforce in **AI tools**, **data science**, **cybersecurity**, and **ethical AI**.
    - Routine coding, maintenance, and back-office roles face automation risks, leading to potential **unemployment** and **wage stagnation** in certain segments.
    - A **World Economic Forum (WEF)** report suggests that **AI and automation** could displace up to **85 million jobs by 2025.**
- **Regulatory, Ethical & Security Concerns:** Ensuring AI systems are **transparent**, **unbiased**, and **GDPR-compliant** adds operational complexity.
    - Protecting **data privacy and security** is vital as AI processes **sensitive data,** requiring **regular ethical audits and strict accountability.**
    - India's **Digital Personal Data Protection Act, 2023 (DPDP Act)** sets a **framework for data privacy**, but its **applicability to large-scale data collection** and **processing for AI model training** remains **unclear.**.
- **Integration Challenges with Legacy Systems:** Many Indian IT firms operate on **outdated legacy infrastructure**, making AI integration complex, costly, and time-consuming.
    - **Migrating to AI-ready systems often requires overhauling existing architectures**, which disrupts operations and demands substantial investment.
- **Global Competition & Infrastructure Gaps:** Competition from **Philippines**, **Vietnam**, and **Eastern Europe** in AI **challenges India's cost advantage.**
    - Limited **high-performance computing**, **advanced research facilities**, and **AI infrastructure** slow innovation, increase reliance on **foreign cloud services**, and raise **data sovereignty** concerns.
    - Initiatives like the **IndiaAI Mission** aim to strengthen infrastructure, yet India continues to **lag behind global leaders**.

How can India's IT Sector Effectively Harness the Potential of Artificial Intelligence?

- **Government-Industry Collaboration & Reskilling:** The government should partner with the **private sector** to build **AI computing infrastructure**, including **high-performance GPU data centers**.
    - It should facilitate access to **large, high-quality datasets** for AI training, exemplified by platforms like **AIKosh** under the **IndiaAI Mission**.
    - Nationwide **AI skilling missions** in **AI, machine learning, and advanced software development** are essential to align workforce capabilities with **industry needs** and **global ethical standards**.
- **Driving AI-Led Product Innovation:** Indian IT firms should leverage **AI** to enhance **productivity**, moving from traditional service-based models to creating **proprietary AI-powered enterprise solutions**, **cloud services**, and **cybersecurity products**.
    - For instance**, Ola's AI venture, Krutrim**, is developing its own **cloud platform**.
- **Promoting AI Research through PPP:** Encourage **PPP** for **AI research**, **intellectual property creation**, and the development of **specialized AI hubs**.
    - The government should **prioritize funding deep-tech AI startups** that focus on **foundational, high-tech solutions.**
    - A recent allocation of **Rs 10,000 crore under the Fund of Funds scheme** marks a significant step in this direction.
- **Towards Ethical and Explainable AI:** Establish robust **AI ethics**, **data privacy**, and **bias mitigation standards**.
    - Government policies should **incentivize AI R&D**, **startup growth**, and encourage IT firms to become **strategic AI solution partners globally**.
    - Also, promote the use of **explainable AI (XAI)** to build **trust with clients and regulators**.

Conclusion

AI is a **catalyst for reinvention**, not a threat, for the Indian IT sector. The industry must shift from **manpower-intensive outsourcing** to **knowledge-driven, AI-powered innovation**. Firms that embrace change, invest in **talent transformation**, and position themselves as **strategic AI partners** will shape **India's technological leadership** in the coming years. This vision should be a core theme at the **AI Impact Summit, New Delhi, 2026**.

Drishti Mains Question:

Examine the impact of AI on the IT sector. What are the opportunities and challenges, and how can India leverage AI for sustainable growth?

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims:

Q. With the present state of development, Artificial Intelligence can effectively do which of the following? (2020)

1. Bring down electricity consumption in industrial units
2. Create meaningful short stories and songs
3. Disease diagnosis
4. Text-to-Speech Conversion
5. Wireless transmission of electrical energy

Select the correct answer using the code given below:

(a) 1, 2, 3 and 5 only

(b) 1, 3 and 4 only

(c) 2, 4 and 5 only

(d) 1, 2, 3, 4 and 5

Ans: (b)

Mains:

Q. Introduce the concept of Artificial Intelligence (AI). How does AI help clinical diagnosis? Do you perceive any threat to privacy of the individual in the use of AI in healthcare? (2023)