New Ways to Work

ICT tools and applications increasingly transforming businesses

Over the past 20 years, the digital landscape of Indian enterprises has altered significantly. All organisations, irrespective of their size, industry and focus area, have undergone a digital transformation. They are increasingly deploying new technologies to improve their operational efficiency and enhance their offerings. Technologies such as artificial intelligence (AI), internet of things (IoT), automation and big data analytics are seeing high adoption rates among organisations. However, their deployment is laden with several challenges, cybersecurity being one of them. Challenges notwithstanding, the uptake of these technologies is only expected to increase in the near future. Technology experts from leading enterprises discuss the key technology trends and the way forward…

How has ICT adoption across enterprises in India changed over the past 20 years?

Padmanabhan Iyer

Over the past two decades, the power of computing has increased multifold and there has been a dramatic drop in its price, which has made ICT adoption affordable and hence ubiquitous. It has also increased competition among enterprises.

Information management, easy access, quality, business continuity and cost optimisation have gained importance. This has led to the emergence of pay-per-use services, Wi-Fi, social networks, online streaming, e-commerce, touchscreens, wearables, IoT, etc. As per a report by GlobalData, a leading data and analytics company, ICT spending in India will reach around $144 billion in 2023. The strong adoption of emerging technologies such as social media, mobility, analytics and cloud, and AI as well as the implementation of favourable government policies are the key factors driving this growth.

C.V. Ramdas

The key change I have observed across enterprises in India, especially in the government ecosystem, is the acceptance of the change that ICT brings day-to-day life. ICT has brought accountability and visibility into many departments as their data is now digitally collected, analysed and reported by computerised systems. ICT has also brought discipline in work environments as these are now better monitored. Even access control/attendance systems are biometric in many offices. The digital reach of every enterprise has increased, and the middleman is slowly going into oblivion.

All major initiatives of the government such as Digital India have gained traction. Further, digital security systems have gained prominence over the past two decades. Today, data security has become a strategic aspect in many enterprises.

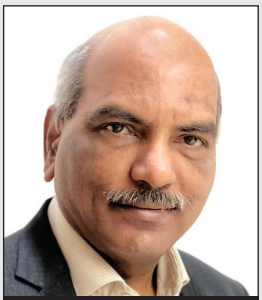
Gururaj Rao

ICT adoption reflects the changing business strategy of organisations. Earlier, the focus was on strengthening enterprise capabilities, delivery to customers, controls, robust core business platforms or ERP integrated with customer relationship management, networked locations, and systems for corporate functions. Now, the scenario has completely changed in line with the changing industry scenario, customer preferences, employee engagement, etc. ICT implementations are mobile first, and are designed to maximise customer experience with self-service or



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Siddhartha Roy

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assisted service, employees' work flexibility, big data-oriented data management, machine learning (ML)-based analytics, etc. The systems are now architected with micro-services and application program interfaces to enable integration across enterprises and ecosystems.

Siddhartha Roy

Hungama was established 20 years ago, when the internet ecosystem in India was still at a nascent stage. In the past two decades, we have seen the industry adopt new technologies to rapidly evolve and become more relevant for the audience. The evolution of mobile telecommunications and internet technologies from 2G to 3G and then 4G, coupled with inexpensive data plans, has changed the way people experience the digital world and consume digital content. The intense competition in the digital marketplace has led enterprises to lay greater emphasis on adopting the latest and most efficient technologies. Big data, AI and ML have become all the more relevant for digital organisations and are increasingly gaining traction.

What are your views on the uptake of next-generation technologies such as cloud, IoT, AI and automation among enterprises?

Manish Amin

The online travel industry has flourished with big data, which has helped in personalising the entire travel experience and meeting the unique needs of each customer. As traveller preferences are constantly evolving, analysing traveller behaviour is a tough nut to crack. Big data resolves this problem by studying the travel behaviour of customers and accordingly customising their entire vacation. Yatra.com has been using data analytics and AI in marketing to enhance their customer service. We are also leveraging the combination of in-house and third-party technologies to offer more personalised experiences to customers. Big data, cloud technology and personalisation have a profound positive impact on the travel industry with customer insights that were not available previously. With this new information, businesses are in a better position to provide customised service, enhance customer satisfaction, increase operational efficiency and at the same time help companies gain a competitive advantage.

Padmanabhan Iyer

According to research firm IDC, India's IT services market is likely to reach $14 billion by the end of 2023. The government's increased spending on the Digital India initiative and the Smart Cities Mission and the growing adoption of next-generation technologies by organisations is driving growth in the IT services market. Historically, for any technology, the key driver was its capability to solve technological problems and not business problems. Over a period of time, technology has evolved to create value in the ever-changing business environment. We are now in an era where merely deploying technology to solve business problems is not enough. The demand is to bring tangible value to customers and solve their problems. The real value from cloud, IoT, blockchain and AI can be derived only when they work in tandem to solve customer problems.

C.V. Ramdas

Technologies like cloud, IoT and AI have matured over the past two decades, and have become an integral part of many ICT solutions/applications today. These technologies have great potential and will keep evolving with human learning. But if we see them in isolation, I believe we are missing the major benefits that they can bring to society. These technologies should be used in tandem, and the approach taken for designing solutions/applications should be top down and domain experience-driven. Their application should be need driven. Instead of just taking the "What else can we do with what we have?" approach, which is conservative in nature, the approach I suggest should include "What else can we do with what others have?" Technology comprehension and interdisciplinary communication are vital today for reaping faster benefits from these technologies.

Gururaj Rao

Next-generation technologies bring many benefits to organisations, but also demand skills for managing them, and evaluating and mitigating associated risks. For example, cloud is an excellent mechanism for quick deployments and helps in scalability too. However, the applications need to be made cloud ready. AI is an evolving field and requires close monitoring to remove biases and provide adequate explanation of results. Automation is not necessarily a new concept. It has been around in fields like testing and now it is evolving rapidly. Automation is a tool to be used in specific use cases and not necessarily as a "one size fits all".

Siddhartha Roy

Cloud, IoT, AI and ML are increasingly being adopted by enterprises to become more efficient and serve their consumers more effectively. Cloud servers, big data, AI and ML are helping organisations manage large amounts of data and understand consumer preferences with greater precision. At the same time, the automation process being implemented across organisations is rapidly improving efficiency, reducing delivery timelines and making the user experience more pleasant. At Hungama, these technologies have helped reduce the response time on our platforms, understand consumer preferences and habits to serve more relevant recommendations, and drive more meaningful exchanges and higher engagement with our users. All these technologies have made back-end operations simpler and smoother.

What are the key challenges that organisations face when deploying new technologies? Do you have a wish list for the government to facilitate the adoption of these technologies?

Padmanabhan Iyer

The biggest problem is that organisations are deploying technology solutions without clearly defining the objectives or identifying the problems that need to be resolved. Chatbots are a good example of this. Almost every customer servicing industry today has deployed some form of chatbots, which has increased customer friction factors rather than improving the customer experience. Technology ought to be an enabler, but the real question every

CTO should ask is what value any technology solution will add to the organisation's goals and vision.

The government needs to quickly adopt technology guidelines, usage policies and regulations. For example, blockchain, which is quite old now, is still waiting for a solid regulatory push. If government policies can match the speed of technology changes, it will greatly help enterprises and users.

C.V. Ramdas

For many technology development communities like research and development (R&D) organisations in India, the main challenge is to understand the degree of support required for their existence, and make the necessary change in the mindset of creative technologists. For me, the need of the day is to comprehend application domain needs, the technology diversity, and the competition in the industry for monetising decades of R&D efforts.

Deploying new technologies is a simpler task than changing the approach to make it happen. For example, "Make in India" means competing with advanced societies that are ready to dump technology on us even free of cost. In a safety-critical industry like the rail transport industry, field-proven technologies that meet safety standards and have safety certifications are preferred over experimental stuff. Using home-grown technology products becomes difficult in these industries, even in the ICT domain.

Thus, ICT system integration skills, specific to the application domain, need to be further developed in the country. For this, my suggestion would be for organisations in the transport services business to have a focused ICT R&D department, well budgeted and patronised during the incubation period. The focus area for this department should be application-oriented experimentation and products/solutions development.

Gururaj Rao

Organisations need the ability to leverage the benefits of a new technology and its partner ecosystem. Apart from this, there are challenges associated with new technologies. These include their impact on systems performance parameters, interoperability with existing tech stack and security concerns. The most critical factor is access to skills for handling the technology, whether within the organisation or with partners. The government's utilisation of these technologies will drive their uptake.

Siddhartha Roy

For any digital service, data and network consistency are key. In spite of increasing internet penetration, there are pockets in the country with patchy networks and irregular data connectivity. Enabling infrastructural development would help the digital industry further.

What are the key emerging ICT trends that will shape the future of enterprises in India?

Manish Amin

The year 2019 has been a year of technological advancements, with every brand trying to meet the traveller's idea of ease and convenience in booking and enquiring across platforms. Over the next year, the focus will be on refining these offerings and making technology available for all customer needs.

Padmanabhan Iyer

Some of the trends that are likely to shape the future of enterprises are:

- Faster network ecosystem based on 5G technology
- Decentralised and distributed trust using blockchain technology
- Data generated from connected devices will pave the way for new solutions and innovative business models
- AI, cloud and deep learning will evolve with new possibilities
- Last but not least, cybersecurity, data protection and privacy will become important as we will need to plug the gaps that the new technology integrations may create before they negatively impact the ecosystem.

C.V. Ramdas

The key emerging trends that will shape the future of enterprises in India will not be very different from those in other countries. From the ICT technology perspective, some of the future trends will be:

- E-office, e-procurement, e-commerce, e-governance, digital project management and digital asset management will be well established in Indian enterprises. There will be more demand for software systems and tools required for this digital transformation to happen. Growth in business related to annual subscription of licences for tools and maintenance contracts will be inevitable.
- There will be less demand for run-of-the-mill skill sets in enterprises.
- Some creative start-ups will emerge as the next leaders in the ICT industry while infrastructure-intensive businesses will still be held by the big brands.
- I see a major transformation in the way the banking industry will be operated in the country. Manned bank premises will become scarce.
- There will be tremendous focus on data security, and this industry will thrive.
- Distance learning, home office automation, e-banking, e-shopping, etc. will reduce the need for commute.

Gururaj Rao

With the formalisation of the economy and the digitalisation of governance, more and more information is available for analytics and decision-making. This will lead to increased focus on data lakes and analytical tools. Biometrics and identity solutions may also be expected to grow. The increasing focus on a wide set of users will also necessitate multilingual capabilities and audio-based UX. A large country like India could also see further growth in GPS-based solutions. Owing to the increasing adoption of technology, we could also see increased deployment of security solutions in consumer segments.

Siddhartha Roy

Big data, AI and ML are expected to be deployed across different aspects of various digital enterprises. Their utility and role in empowering organisations is crucial. As a streaming platform, we also see VR and AR playing a significant role in advancing storytelling on digital platforms and even in films. ▲