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# Enhancing customer experiences with 5G

Extract from the Ericsson Mobility Report

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# Enhancing customer experiences with 5G

Leveraging its extensive deployment of high-performance 5G networks, Bharti Airtel aims to deliver a superior user experience while seizing emerging business opportunities.

## Key insights

- Airtel has invested significantly in its 4G and 5G networks as well as its digital platforms, elevating customer experience and delivering strong operating performance.
- 5G is expected to be key for Airtel to fulfill its strategic priorities, including acquiring and retaining high-value customers and scaling up digital solutions.
- Airtel collaborates with enterprises in sectors such as manufacturing, mobility, healthcare, ports, mining, logistics and advanced robotics, where 5G technology can help transform their businesses.

## India has embraced 5G

India's digital transformation vision aims to leverage technology to drive economic growth, improve governance and enhance citizens' quality of life. This vision encompasses initiatives to expand digital access and services to various segments of society, promote innovation and bridge the digital divide. Within this vision, 5G is expected to bring about transformative changes by providing faster, differentiated and more reliable connectivity. This will enable the widespread adoption of emerging technologies, support the development of smart cities and IoT ecosystems and facilitate the seamless integration of various digital services and applications.

India saw one of the world's fastest large-scale 5G network deployments following its launch in 2022. This elevated India's median mobile download speed by 259 percent between September 2022 and August 2023, resulting in its ranking rising from 119th to 47th position on the

Speedtest Global Index™.<sup>1</sup> By April 2024, India's ranking had further climbed to 15th position. The introduction of more affordable 5G-capable devices in the market has helped boost 5G adoption in the country. India's 5G smartphone shipment share crossed 52 percent in 2023,<sup>2</sup> with strong growth in the USD 100–199 price range.

Amid the rapidly growing demand for mobile services and the ongoing digital transformation, Indian service providers are implementing diverse strategies to expand digital access and provide services to a wide range of societal market segments.

## Strategic priorities

Airtel has made significant investments toward building its nationwide digital infrastructure, including a 5G network to support India's digital transformation goals. A range of connectivity and digital services are offered through its four primary business segments – mobile broadband, fixed broadband, digital TV (direct-to-home (DTH), satellite TV) and Airtel Business (enterprise services). Its consumer services portfolio includes digital banking, mobile payments and music streaming, while its enterprise offerings include IoT network-as-a-service (NaaS), communications-platform-as-a-service (CPaaS) and advertising solutions.

Over the past two years, Airtel has executed a strategy of winning high-value customers, premiumizing its portfolio with bundled offerings, enhancing customer experience through extensive use of digital tools and building a future-ready digital network. Alongside 5G, the 4G network is also being optimized to enhance customer experience. Leveraging the power of data, Airtel is unifying customer insights and channel strategies to effectively target and engage customers, maximizing the impact of its marketing efforts.



This article was written in collaboration with Airtel, a global communications solutions provider with over 500 million customers in 17 countries across South Asia and Africa. The company ranks among the top three mobile operators globally, and its networks cover over 2 billion people.

## Targeting high-value customer segments

A cornerstone of Airtel's consumer business strategy for increasing ARPU involves the premiumization of its customer base, achieved by tailoring value propositions to various market segments. This strategy aims to attract various segments of the customer base to:

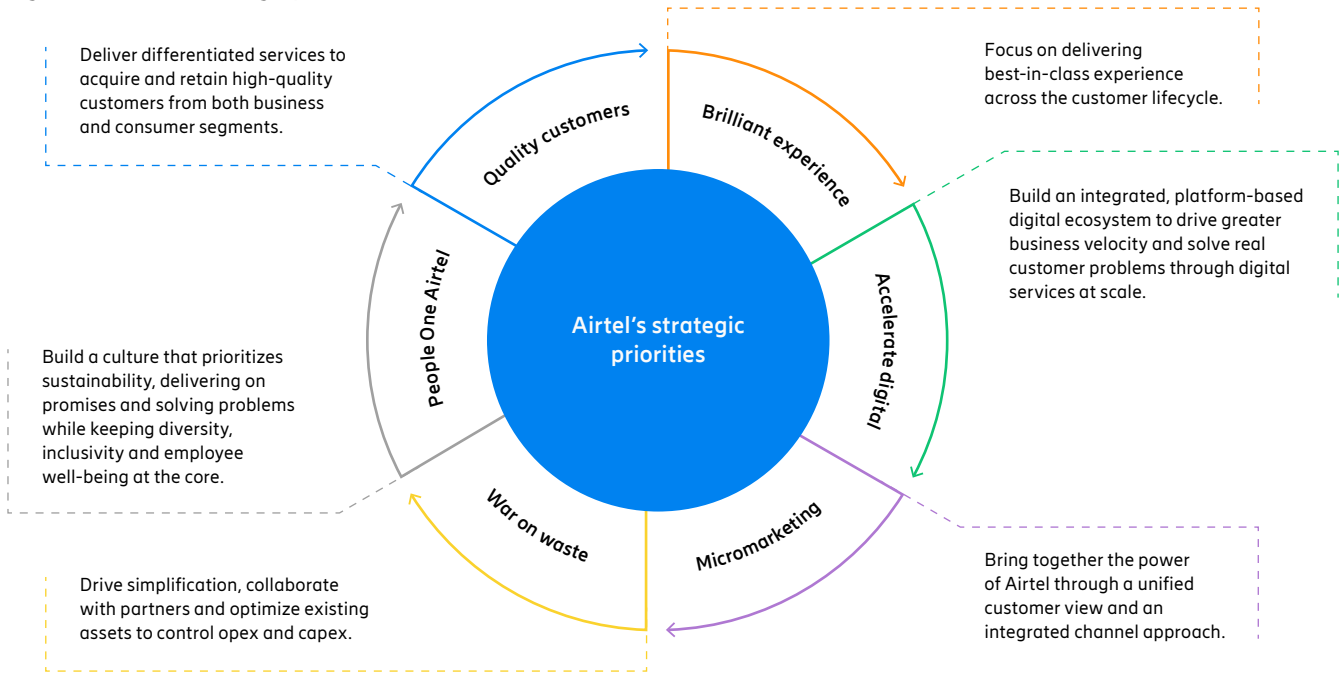
- upgrade from feature phones to smartphones
- upgrade from pre-paid to post-paid service plans
- upgrade to converged services, allowing subscribers to combine any two or more services (mobile, fiber, satellite TV) in one service plan under a single bill
- foster customer loyalty by providing tailored digital-service offerings for diverse customer segments, engaging in real-time marketing and facilitating convenient online upgrades for data plans and content bundles

High-value customers are a key target, in both consumer and enterprise segments, with emphasis on the top 150 cities. Offering upgrades to converged services, Airtel has launched an all-in-one solution for homes.

<sup>1</sup> [speedtest.net/global-index](https://www.speedtest.net/global-index).

<sup>2</sup> Counterpoint, "India Smartphone Market Remains Flat in 2023; Apple Shipments Cross 10 Million for First Time" (31 January 2024).

Figure 26: Airtel's strategic priorities



A customer can bundle two or more services (such as fiber, DTH or mobile) into one single bill, with one customer care number and a dedicated team of relationship managers, with priority resolution of faults and issues.

### Excel in delivering a superior customer experience

By focusing on customer satisfaction and loyalty – with, for example, responsive customer service, user-friendly digital interfaces and personalized offerings – Airtel aims to retain its existing customer base and attract new subscribers.

The network has been continuously optimized to ensure high performance. Curated circle-wide programs across India, aimed at optimizing the network, have reduced the customer churn rate. A high-value customer experience program was initiated to proactively identify poorly performing parts of the network, using a digital module to identify such locations based on user experience KPIs. The identified regions were prioritized for optimization and capacity augmentation, leading to a substantial reduction in customer-reported errors.

Airtel has invested in digitizing its operations using automation and artificial intelligence/machine learning (AI/ML) practices. This has helped improve customer experience through faster resolution of customer complaints and queries and has brought efficiencies to the network. An in-house tool has also been developed, Airtel Self Optimization Network (A-SON) to predict degradation and proactively make changes in the network to enhance customer experience. Advanced AI/ML use

cases were introduced for intelligent network troubleshooting, including auto-correction of cell-neighbor relations, ducting mitigation (4G), load balancing and sleeping-cell detection and correction.

### Approach to 5G deployment

In October 2022, Airtel launched 5G in India and rapidly expanded coverage to more than 3,500 cities/towns and about 20,000 villages within a year. The approach to 5G coverage expansion mirrors the strategy for 4G, namely prioritizing areas with significant 5G device penetration. As of March 2024, Airtel had attained 5G coverage across most of the nation's urban centers and garnered a 5G subscriber base of roughly 72 million, representing approximately a 20 percent share of its customer base.

Airtel's strategic selection of technologies was instrumental in the swift rollout of 5G. Choosing globally adopted and mature 5G non-standalone (NSA) architecture enabled a faster time to market and enhanced capex efficiency. 5G NSA uses the existing 4G layer as an anchor and capitalizes on the existing evolved packet core (EPC) to expand 5G coverage in the specified service region, resulting in reduced capital investment. In addition, the company made the strategic decision to exclusively implement Massive Multiple Input, Multiple Output (MIMO) radios for its 5G network. The capabilities of Massive MIMO – including beamforming, spatial multiplexing and spatial diversity – were leveraged to bolster network capacity, extend coverage and enhance the overall user experience.

Carrier aggregation in the 4G network further supplemented the New Radio (NR) carrier. The network parameters were optimized to accommodate cell edge users, along with dedicated measures to reduce uplink interference.

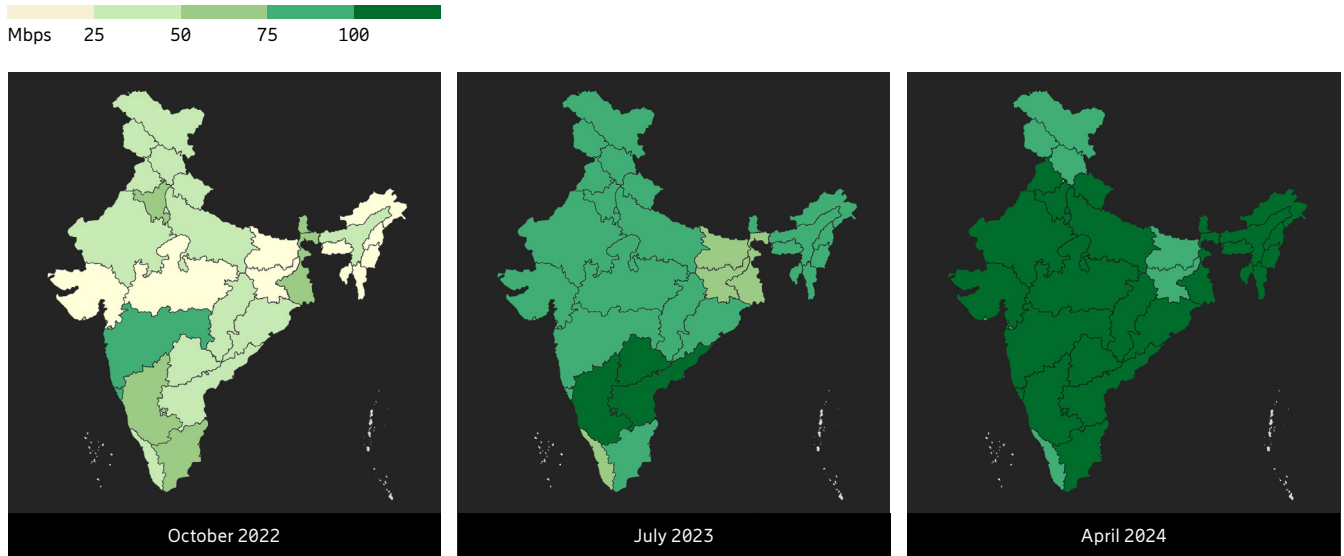
By coupling the technological advantages of Massive MIMO radios with the ease of deployment, a high-performing 5G network has led to improved user experience and higher customer satisfaction. 5G customers in Airtel's network are experiencing 20–30 times higher speeds and a significantly improved user experience compared to the legacy network.

Airtel is currently conducting trials for running 5G standalone (SA) in addition to 5G NSA technology. The aim is to implement dual-mode 5G SA and NSA, harnessing the capabilities of both architectures to enhance its service portfolio. Airtel is collaborating with device manufacturers to enable NSA and SA combined and carrier aggregation functionality in smartphones. As traffic increasingly transitions from 4G to 5G networks, mid-band spectrum is being refarmed from 4G to 5G, which contributes to enhanced 5G indoor coverage as a result. The company holds spectrum in the 850/900 MHz, 1.8 GHz, 2.1 GHz, 2.3 GHz, 3.3 GHz and 26 GHz bands.

### Digital tools for fast 5G deployment

Airtel has harnessed a range of digital tools and data-science methodologies for 5G deployment in India. During the planning phase, it employed a comprehensive multi-technology radio planning and optimization solution to design an appropriate site solution for potential markets.

Figure 27: Network performance, Airtel India



Note: Airtel 4G/5G access. The regions are colored based on downlink throughput (0→100 Mbps).  
Source: Based on Airtel's analysis of crowdsourced data. India: Oct 2022, July 2023 and April 2024.

By iterating various implementation scenarios and simulating projected coverage areas and traffic patterns, this solution empowered Airtel to swiftly craft an optimal network plan, expediting the deployment process.

Additionally, during the deployment phase, an in-house tool was developed and extensively used to streamline the entire process. Tracking the site integration process from the initial stages of raising a service request, to infrastructure readiness and finally to site installation, the tool seamlessly provides an easy-to-use management platform for each stakeholder to oversee the process. Further, the site acceptance process was also streamlined through digital transformation.

A customized, self-designed, advanced network test solution was deployed for this. The solution automated single-cell functionality testing (SCFT), cluster drive log processing and report generation, facilitating auto-acceptance and significantly enhancing the efficiency of the deployment and site integration processes. Additionally, it also automated drive route generation based on the predicted coverage of the newly integrated sites and provided real-time monitoring of the on-ground drive test teams.

### Seizing the 5G FWA opportunity

The demand for home internet has surged in India, driven by the changes brought by the COVID-19 pandemic, such as remote work, higher data consumption and more available devices. With fiber-to-the-home connecting only 34 million residential homes, there is an opportunity to bridge the digital divide with 5G FWA services.

Airtel aims to tackle the last-mile connectivity challenge in both rural and urban India where fiber infrastructure is lacking. 5G FWA is regarded as an important use case with significant potential for monetization. Once SA is implemented in the network, this will also be among the first use cases to use the newly evolved architecture. Currently FWA has been implemented using outdoor customer premises equipment (CPE) in 25 cities across India. Airtel is preparing to expand and accelerate the FWA deployment pace in Q2 2024.

5G services are delivered to consumer homes and business premises through CPE, providing consistent network availability and high throughput capacity. Airtel offers affordable plans with speeds of up to 100 Mbps.

Solutions for multi-dwelling units are also being explored, allowing multiple customers to connect through a single CPE device. Ongoing innovations include testing in the mmWave spectrum. Airtel has successfully demonstrated mmWave 5G functionality for FWA on its network, achieving peak speeds of 4.7 Gbps during testing, showcasing that it is future proof and can meet high-capacity network requirements.

### Capturing the enterprise opportunity

Airtel deployed India's first 5G private network at a manufacturing facility in Bangalore, implementing two industrial-grade use cases for quality improvement and operational efficiency. Airtel is collaborating with enterprises engaged in sectors such as manufacturing, mobility, healthcare, ports, mining, logistics and advanced robotics,

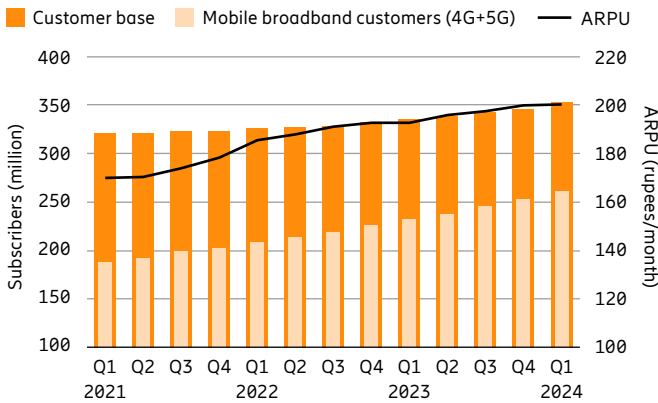
where 5G technology can help transform their businesses and generate new revenue streams. Trials have taken place for use cases such as smart inventory and anomaly detection in warehouses and also for manufacturing sites, connected factories, connected frontline workers and connected ambulances, all of which stand to benefit from the advancement of 5G technologies. Airtel has chosen to primarily deploy SA in private 5G networks for enterprises which offers businesses the opportunity to enhance their on-site operations with reliable, secure and agile connectivity.

Currently, Airtel has multiple projects in different stages for both proofs-of-concept as well as commercial deployment across India – steel manufacturing plants in the north, automobile manufacturing plants and warehouses in the south and the mining industry in the west – channeling the unique advantages of 5G in its solutions for enterprises.

In addition, Airtel aims to provide an extensive array of value-added enterprise solutions, utilizing its portfolio of CPaaS, NaaS, IoT, cloud and security solutions offerings. It is also leveraging macro 5G networks to provide a high-speed wireless connectivity option for enterprises across diverse locations in India, along with its multiprotocol label switching (MPLS) and SD-WAN offering.

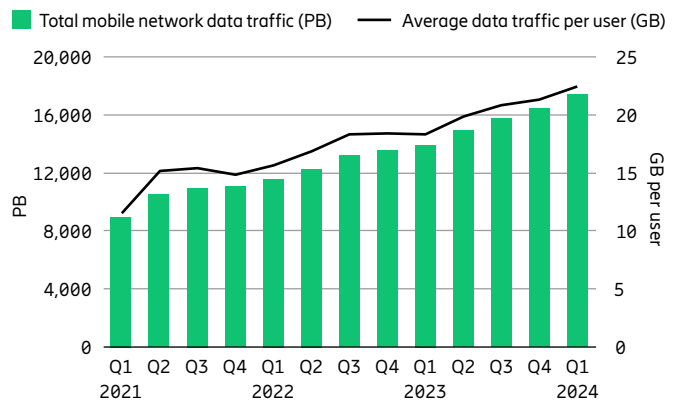
Numerous initiatives are in progress to establish a more extensive ecosystem for the development of 5G use cases and applications catering to both consumers and enterprises. This includes collaborating with various academic institutions to co-create 5G solutions and use cases as part of the Government of India's initiative to establish 100 5G labs in academic institutions.

Figure 28: Airtel’s subscriber and ARPU growth 2021–2024



Note: Mobile subscriber numbers, blended ARPU and traffic metrics are as reported by the company in financial reports.

Figure 29: Airtel’s mobile network data traffic growth 2021–2024



These labs aim to foster the development of applications utilizing 5G services in smart classrooms, precision farming, intelligent transport systems and healthcare.

**Business growth momentum**

Airtel’s business performance has improved over the last three financial years, with a CAGR of 12 percent for its wireless service revenues between 2021 and 2024. The improvement in ARPU is mainly driven by three factors: feature phone to smartphone upgrades, prepaid to postpaid upgrades and wallet share increases through a combination of data monetization and international roaming. The strategy is to acquire higher-value post-paid subscribers, as well as upgrade existing customers to higher value plans. In the last two quarters, 44 percent of incremental ARPU growth came from customers converting from prepaid to postpaid, 2G to 4G transition and increased data usage.

Currently, 5G connectivity is offered within 4G data plans at no additional cost. The initial 5G deployments, resulting in enhanced customer network experience, are a lever to retain the existing customer base, attract new subscribers and monetize increased data usage. Airtel believes that 5G FWA services and 5G private networks for enterprises will contribute to revenue growth in the future.

Enhancing user experience is a pillar in Airtel’s strategy to acquire high-value subscribers, contributing to an increase in its mobile broadband customer base of 12 percent and an ARPU growth of 8 percent in financial year 2024. Total mobile network data traffic has grown by 93 percent in the last 3 years with consumption per subscriber jumping from 16.4 GB per month in March 2021 to 22.6 GB per month in March 2024.<sup>3</sup>

**New opportunities with slicing and RedCap**

In India, various industries such as manufacturing, healthcare, agriculture and smart cities are increasingly deploying IoT solutions to improve efficiency, productivity and customer experience. Government initiatives and investments in smart cities and digital infrastructure are further driving the growth of the IoT market.

IoT is one of the fastest-growing business segments for Airtel. Deployment of smart meters to 20 million homes has already been initiated in cooperation with a power transmission company.

At present, IoT applications mainly rely on NB-IoT as well as 4G LTE devices. However, the scope of potential use cases is broadening with the evolution of 5G SA network architecture and the emergence of reduced capability (RedCap) 5G NR devices. RedCap offers improved latency and lower energy consumption, while enabling a wide range of use cases for consumers and enterprises. Airtel is also testing end-to-end network slicing that enables new business model innovation and use cases across verticals, creating new revenue opportunities. 5G network slicing allows the creation of multiple virtual networks within a physical 5G network infrastructure, each tailored to specific use cases and requirements of different industries like healthcare, transportation and manufacturing. It provides service flexibility and the ability to deliver services faster with high security, isolation and the applicable characteristics to meet the contracted service level agreement (SLA). These technology advancements are important building blocks for future communications networks and will play a crucial role in the Industry 4.0 transformation. Airtel continues to explore new avenues to enhance network performance, drive digital inclusion, enable enterprises to digitalize their operations and build a strong 5G ecosystem in the country.

**Case study: Private 5G network deployment in a manufacturing unit**

A leading group in India’s engineering sector – known for pioneering technology adoption, including SAP implementation and digital factory projects – faced multiple challenges deploying industrial automation and digitization use cases within their plant due to coverage and latency issues with their existing Wi-Fi network. Adding to the challenges were the poor control and visibility of the network, which made the overall productivity sub-optimal.

In essence, network infrastructure became a bottleneck, throttling their day-to-day manufacturing operations. A private 5G network was therefore deployed to enhance

their operations, with a plan to deploy the solution across their 165-acre manufacturing plant to alleviate the challenges.

The implementation has delivered significant benefits to the organization. With a remarkable 99.9 percent uptime guarantee and redundant coverage, the company now enjoys uninterrupted connectivity. Additionally, the reduction in latency to 20–25 ms has improved network responsiveness, facilitating real-time communication. Moreover, the advanced connectivity of the 5G network ensures reliable, long-lasting connectivity for a wide variety of devices, setting a solid foundation for future growth and innovation.

<sup>3</sup> Airtel reports GB per month per user figures, while the average monthly data consumption for the India region on page 39 is GB per active smartphone.

## About Ericsson

Ericsson's high-performing, programmable networks provide connectivity for billions of people every day. For nearly 150 years, we've been pioneers in creating technology for communication. We offer mobile communication and connectivity solutions for service providers and enterprises. Together with our customers and partners, we make the digital world of tomorrow a reality.

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