INFORMATION TECHNOLOGY AND TELECOMMUNICATION

IT Exports	**2,825*** (US$ million)
Trade Surplus of IT and ITeS	**2,429*** (US$ million)
Freelancers' Remittances	**400*** (US$ million)
Telecom Revenues	**803*** (Rs billion)
Broadband Subscribers	**147.2**** (million)
Total Telecom Subscribers Mobile and Fixed	**199.9**** (million)

* : July-March FY2025
** : End March 2025

Chapter 15

INFORMATION TECHNOLOGY AND TELECOMMUNICATION

The Information Technology and Telecommunication sector is a key enabler of inclusive and sustainable economic. It fosters innovation, enhances productivity, expands export market access, generates employment opportunities, particularly for women, and improves public service delivery. The government has prioritized the expansion of the digital economy as a core component of its national development agenda. This is evident in the inclusion of E-Pakistan as one of the five pillars of the URAAN Pakistan. To build a robust and sustainable knowledge-based techno-economy, the government is implementing a comprehensive strategy aimed at strengthening IT infrastructure cybersecurity, developing human capital, fostering a startup and funding ecosystem to drive innovation and entrepreneurship. The strategy also focuses on integrating artificial intelligence into key sectors of the economy, like agriculture, health, and governance, focusing on cutting-edge technologies like quantum computing. Moreover, the government is committed to making IT services more accessible and affordable nationwide, especially in rural and underserved areas, to uplift the lower-income households and improve the overall socio-economic well-being in the country.

To enhance cooperation in the field of IT, a Joint Working Group on the IT industry (JWG-IT) has been established between China and Pakistan. Both sides have agreed to cooperate in the areas of ICT Infrastructure Development, ICT Application Innovation, Cybersecurity, Policy and Regulation, Radio Spectrum Regulation, Human Resource Development and Technology Business Forum. Building upon this strong foundation, China and Pakistan are poised to elevate their IT cooperation to new heights over the next year. JWG-IT serves as a vital engine for the envisioned "Innovation Corridor" between the two countries. It provides an ideal forum to synergize efforts and drive advancements in cutting-edge domains such as cybersecurity, Artificial Intelligence (AI), cloud computing, the semiconductor industry, and most importantly, skill development.

Information Technology Sector

According to Kearney's 2023 Global Services Location Index, Pakistan holds the World's most attractive position in IT outsourcing. Furthermore, the International Labour Organization (ILO) recognizes Pakistan as the second-largest provider of digital labor, specifically in software development and technology services. The country also ranks among the top three suppliers for a broader range of digital labor, including clerical and data entry, creative and multimedia, professional, sales and marketing support, software development and technology, and writing and translation services.

Major Tech hubs of Pakistan's IT and IT-enabled Services (ITeS) industry are located in Karachi, Lahore, and Islamabad/Rawalpindi. The IT industry in Pakistan derives the majority of its earnings from international customers and ranks among the most forward-looking and progressive sectors in the country, employing cutting-edge management, service, and product development techniques. Pakistani ICT companies demonstrate expertise ranging from high-end customized software development to diverse Business Process Outsourcing (BPO) services. Pakistan's ICT industry caters to the world's largest entities among its regular clients. Many international companies, including global enterprises such as Bentley®, Ciklum®, IBM®, Mentor Graphics®, S&P Global®, Symantec®, Teradata®, and VMware®, have established consulting service centres, research and

development facilities, and BPO support centres in Pakistan. These investments generate high-paying jobs for talented youth, enhance Pakistan's positive image, and attract foreign direct investment (FDI).

Pakistan Software Export Board (PSEB): The development of Pakistan's ICT sector can be gauged from more than 30,000 IT & ITeS companies registered with the Securities and Exchange Commission of Pakistan (SECP), as of March 2025, comprising domestic and export-oriented enterprises. ICT export of services have increased by US$ 541 million (23.7 percent) to US$ 2.825 billion (2,825 million) during FY 2025 (July - March), compared to US$ 2.284 billion (2,284 million), for the same period last year.

The IT & ITeS industry achieved a trade surplus of US$ 2.429 billion, the highest among all services was realized by the ICT industry during FY 2025 (July - March), which is an increase of 21.6 percent compared to the trade surplus of US$ 1.997 billion (1,997 million) during the same last year. Meanwhile, the overall Services sector recorded a trade deficit of US$ 2.318 billion during the same timeframe. ICT sector exports of US$ 2.825 billion (2,825 million) continue to be the highest among all Services (45.31 percent of total export of services), followed by 'Other Business Services' at US$ 1.229 billion (1,229 million). Pakistan-based freelancers contributed foreign exchange earnings to Pakistan's economy through US$ 400 million remittances during FY2025 (July-March).

Activities undertaken to Enhance ICT Industry Exports during FY2025 (July-March):

i. Marketing and Branding

During the period FY2025 (July - March), PSEB subsidized the participation of 256 IT companies in fifteen international events and two local events, resulting in these efforts generating over US$ 48 million in business. Strategic marketing initiatives remained a core focus during this period, with the reinforcement of the TechdestiNation Pakistan campaign to rebrand the country as a leading IT hub, including the launch of the TechdestiNation Podcast by PSEB to provide industry leaders a platform for sharing inspiring stories and insights to drive IT sector growth. To boost IT exports, the Technology Export Marketing Programme was initiated to develop tailored strategies for key markets, including the UAE, the USA, and the UK, with an overarching goal of annual exports reaching US$ 15 billion.

ii. Infrastructure Development

PSEB manages over 50 STPs and e-Rozgar centres providing state-of-the-art facilities to the ICT Industry established under the project "Establishment of 25 Software Technology Parks" and "Prime Minister's Initiative-Support to IT Startups, Specialized IT Trainings and Venture Capital". These have been established in primary and secondary cities including Islamabad, Lahore, Karachi, Gilgit, Rahim Yar Khan, Faisalabad, Swat, Quetta, Gujranwala, Sialkot, Abbottabad, Mansehra, Gujrat, Jamshoro, Nawabshah, Gakuch, Bahawalpur and Khuzdar. Currently, these STPs working in public private partnerships are providing 24/7 ICT facilitating to more than 350 companies across Pakistan with 4,600 IT professionals, out of which 21 percent are females. To further support ICT Industry PSEB has undertaken an ambitious mission to establish 250 e-Rozgaar centres across Pakistan up to FY 2027 under PSDP project titled "Prime Minister's Initiatives - Support for IT Startups, Specialized IT Trainings and Venture Capital, Component-2" These centres are intended towards promoting freelancers and entrepreneurship with a target of 20,000 job creations. There shall be 50 e-Rozgaar centres operational during FY 2025.

iii. Human Resource and Skill Development

During FY 2025, significant strides were made in building Pakistan's IT human capital and industry capacity. A total of 6,400 professionals were trained in advanced technologies, with certification ongoing for 3,400 more. Over 2,700 interns were placed in IT firms, achieving a 70 percent retention rate, while soft skills and technical bootcamps trained thousands more. Industry-academia collaboration led to the training of more than 1,600 graduates and the skill assessment of 9,300 students. Furthermore,

15 IT/ITeS companies received support for international certifications for ISO27001, ISO27701, and 20 call centres to achieve ISO18295 certifications, enhancing global competitiveness and service quality.

IGNITE-National Technology Fund (NTF)

IGNITE-NTF is focused on funding and promoting technology innovation and entrepreneurship in Pakistan. For this purpose, IGNITE offers the following funding programme:

a. Innovation and Entrepreneurship in ICTs

The government has a vision to accelerate digitization and to transform Pakistan into a knowledge-based economy, promoting economic growth through innovation and entrepreneurship. Over the past few years, the National Incubation Centres (NICs) have incubated more than 1,900 startups, with more than 960 graduating successfully. These startups have generated over 185,000 jobs, received a total investment of Rs 30.8 billion, and have combined revenue of more than Rs 27.3 billion. To date, more than 12,000 women entrepreneurs have been empowered through the programme.

b. Digiskills.pk 2.0 Training Programme for Freelancing

To date, the overall number of trainings that DigiSkills.pk has conducted is more than 4.55 million. The total trainees comprise 72 percent males and 28 percent females. The number of overseas Pakistanis trained in the programme is more than 50,000. Furthermore, Digiskill.pk freelancers have earned US$ 1.65 billion till December 2024.

c. Digital Pakistan Speed Programming Competition 2025

In its ongoing commitment to foster technical excellence and problem-solving acumen among the youth, Ignite, under the auspices of the Ministry of IT & Telecom, launched the Digital Pakistan Speed Programming Competition 2025. This nationwide initiative targets students, professionals, and startups, providing a dynamic platform to test programming skills in high-pressure, time-bound scenarios. The competition, held over six hours and open to JAVA, C/C++/.Net, and Python programmers, aims to sharpen analytical thinking, encourage teamwork, and nurture computational creativity.

Universal Service Fund (USF) Initiatives: The USF, working under the Ministry of Information Technology and Telecommunication, has continued its mission to bring telecommunication services to the farthest and most underserved parts of Pakistan. The USF focused on projects that support key national goals and global commitments under the Sustainable Development Goals (SDGs). The initiatives helped expand affordable voice and high-speed internet services to remote communities, improving lives and opportunities for many. To ensure sustainability, all projects were powered primarily by solar energy. These efforts ensure universal access to ICT services, contributing to socio-economic development across the country.

USF programmes can be categorized into two broad categories:

a. Voice and High-speed Broadband Data Services: The initiative's aim is to bring modern communication facilities to unserved and underserved village areas across the country. Through this programme, USF is helping communities connect by building the necessary infrastructure to provide voice and high-speed internet services. In addition to rural areas, coverage is also being expanded to remote road segments along National Highways and Motorways (NH&MW), as well as to key tourist destinations, making travel safer and more connected.

b. Backhaul Services: This initiative focuses on strengthening the digital backbone of the country by laying Optical Fiber Cable (OFC) to tehsil headquarters, union councils, and major towns, the programme creates new connection points that telecom companies can use to expand their services further, helping bridge the digital divide and support future growth.

The province-wise breakup of initiatives undertaken under different categories is described in the following:

a. Voice Broadband Data Services Projects (3G/4G)

i. Balochistan: During July-March FY 2025, the USF has successfully provided coverage to a population of 108,367, residing in 125 mauzas across the province, along with 84.17 km of unserved road segments on NH&MW M-8. An approximate subsidy of Rs 2,562.8 million has been disbursed on the achievement of different project milestones.

ii. Khyber Pakhtunkhwa: During July-March FY 2025, the USF has successfully provided coverage to a population of 24,647, residing in 33 mauzas across the province, along with 37.43 km of unserved road segments on NH&MW N-35. An approximate subsidy of Rs 625.24 million has been disbursed on achieving different project milestones.

iii. Sindh: During July-March FY 2025, the USF has successfully provided coverage to a population of 141,632, residing in 139 mauzas across the province. An approximate subsidy of Rs 1,744.12 million has been disbursed on the achievement of different project milestones.

iv. Punjab: During July-March FY 2025, the USF has successfully provided coverage to a population of 250,805, residing in 127 mauzas across the province. An approximate subsidy of Rs 250.5 million has been disbursed on achieving of different project milestones.

b. Backhauls Projects

i. Balochistan: During July-March FY 2025, 132 km of OFC has been deployed, 10 nodes have been established, and backhaul connectivity to 4x BTS sites has been provided. An approximate subsidy of Rs 726.01 million has been disbursed on the achievement of different project milestones.

ii. Khyber Pakhtunkhwa: During July-March FY 2025, 577 km of OFC has been deployed and 76 nodes have been established, whereas an approximate subsidy of Rs 1,050.08 million has been disbursed on the achievement of different project milestones.

iii. Sindh: During July-March FY 2025, 366 km of OFC has been deployed and 26 nodes have been established, whereas an approximate subsidy of Rs 265.87 million has been disbursed on the achievement of different project milestones.

iv. Punjab: During July-March FY 2025, 46 km of OFC has been deployed and 4 nodes have been established, whereas an approximate subsidy of Rs 6.3 million has been disbursed on the achievement of different project milestones.

National Telecommunication Corporation (NTC)

NTC has started planning for the establishment of high performance Cloud-based, AI-enabled Data Centre at Karachi with a cost of Rs 786.4 million, which will not only serve the data centre requirements of the South Region, but will also facilitate digitization of the country, which will increase transparency, Government efficiency, and effective service delivery to the public. NTC's Annual Development Plan (ADP) consists of 14 Development projects, amounting to Rs 980 million, which were planned besides completion of 80 Small Development Works amounting to Rs 62.9 million, from NTC's funding in FY 2024. The outcome of ADP projects will increase the ICT footprint or capacity by approximately 10,153 telephone, 3,776 DSL, and 51 CIR connections, and provide cloud-based data services through data centres in Islamabad, Lahore, and Karachi. During FY 2025 (July-December), NTC earned a profit of Rs 196.78 million, before tax.

Major Initiatives of NTC

i. Public Private Partnership Initiatives: NTC is seeking local and foreign investment in several projects, including the establishment of Internet/Cloud Exchange Points at Karachi, deployment of DWDM Core Transmission Equipment and Optical Fiber Cable Network, deployment of Submarine Cable between Karachi & Gwadar, and transformation to FTTH.

ii. Establishment of Data NTC Centre at Karachi: NTC's new Data Centre will improve the overall efficiency and performance of NTC Data Centre infrastructure, through the addition of a dedicated site for latency-conscious service in the south region, besides an addition of GPU,

AI, and Micro services from the new platform. This facility will support NTC's future growth and expansion plans, as well as meet the growing demand for data centre services in the government sector.

iii. Revamping of NTC Cloud at Islamabad & Lahore: NTC's cloud and virtualization services, crucial for government digitization across Pakistan and currently offering IaaS, are slated for a significant upgrade. This revamping initiative will introduce modern service flavors, such as micro services and bolster automation capabilities. Furthermore, the enhanced platform will incorporate additional robust object and file storage solutions. The revamped services will adhere to stringent security and compliance standards designed specifically for the public sector.

iv. Establishment of Cyber Security Department at NTC HQ Islamabad: A Cyber Security Department is critical to protect data and infrastructure from cyber threats like ransomware and data breaches. It enables proactive risk management, compliance with regulatory standards, and real-time threat mitigation. This initiative builds public trust by prioritizing security and aligning with national strategies. Investing in this department ensures long-term operational resilience.

v. APN Service: NTC, partnering with Cellular Mobile Operators (CMOs), launched the APN service, providing 4G-based Intranet access for the Government of Pakistan, which promotes efficient and digitally-driven governance. Its significant growth highlights its effectiveness and widespread adoption across government departments.

vi. Network Architecture Enhancement Plan: NTC is enhancing its network with a robust and redundant core infrastructure, implementing 3 x NGN core routers in a 1+1 high availability configuration. This design ensures 24/7 service availability and minimizes service outages. This upgrade will enhance reliability, improve performance, increase capacity, and simplify management. NTC's investment demonstrates its commitment to high-quality, secure network services and customer satisfaction.

vii. Call Centre Services: NTC has established a cloud-based multitenant call centre platform for centralized complaint management and services to other Government departments. This solution, deployed at NTC National Data Centre (NDC) Islamabad and Disaster Recovery Centre (DRC) Lahore, aligns with the Digital Pakistan Vision by providing accessible communication channels. These services enhance citizen engagement, streamline information, and improve public service delivery, fostering transparency and trust. NTC's Call Centre supports its own helpline and various government departments.

The Electronic Certification Accreditation Council (ECAC) has several important aims to create a secure digital environment. A primary initiative is the establishment of a legal framework to recognize and facilitate electronic transactions, enabling the use of digital signatures with the same legal standing as handwritten signatures. ECAC is mandated to grant accreditation to Certificate Service Providers (CSPs), ensuring that electronic services maintain security, integrity, and authenticity. This accreditation process contributes to making electronic transactions more secure and reliable.

Public Key Infrastructure (PKI) for the National Root Certification Authority is crucial for the effective implementation and management of electronic transactions. ECAC also focuses on monitoring compliance of Accredited Certificate Service Providers (ACSPs) and managing the repository for certificates. The council plays an advisory role, guiding regulators and authorities on using digital identity for secure electronic transactions. ECAC's commitment to security and trustworthiness is further demonstrated by its completion of the 2ndWebTrust Audit and the acquisition of renewed WebTrust seals. These initiatives collectively underscore ECAC's efforts to establish trust, security, and legal validity in Pakistan's digital transactions, aligning with national regulations and international best practices.

Special Communication Organization (SCO) is an entity that executed various telecommunication projects, including the extension of GPON-III FTTH services in Azad Jammu & Kashmir (AJ&K) and Gilgit Baltistan (GB), which added 15,000 subscribers and covered major areas of Muzafarabad, Mirpur, and Gilgit. Furthermore, GPON-IV FTTH services were extended to two locations in AJ&K and nine locations in GB to provide high-speed internet for tourism, education, and freelancers, and have created 300 direct and indirect job opportunities during FY 2025 (July - April).

Telecommunication Sector

Pakistan Telecommunication Authority (PTA) has been at the helm of driving innovation to create a vibrant telecom sector. Despite economic challenges, the past year has been marked by significant advancements in meeting increasing consumer demands for connectivity and reliability. Prioritizing affordable, high-quality telecom services for all, PTA has implemented progressive regulatory frameworks that optimize digital infrastructure, stimulate investment, promote cyber security, and enhance service delivery. Our initiatives aim to foster technological advancements, adopt online safety measures, safeguard consumer rights, and encourage fair competition.

PTA achieved remarkable progress vis-à-vis the nationwide expansion of telecom coverage, improving accessibility and connectivity for millions. Cellular mobile services now reach 91 percent of Pakistan's population, with 3G/4G signals reaching over 81 percent. By December 2024, there were 57,063 operational cell sites, 96.2 percent supporting 4G. These efforts drove a surge in the number of broadband subscribers, which reached 147.2 million by March 2025. Broadband penetration increased to 59.8percent, up from 32.6 percent in 2019. Telecom revenues reached Rs 803 billion in FY 2025 (July-March). Investments in the sector totaled US$ 621 million and contributed a substantial Rs 271 billion to the national exchequer in terms of taxes and duties during FY 2025 (July-March).

Table 15.1: Telecom Industry Financials

	2020-21 (R)	2021-22 (R)	2022-23 (R)	2023-24 (R)	2024-25 (Jul-Mar) P
Telecom Revenues (Rs billion)	641	717	817	955	803
Telecom Contribution (Rs billion)	222	329	341	335	271
Telecom Investment (US$ million)	1,214	1,657	770	765	621

P : Provisional, R : Revised.

Source: Pakistan Telecommunication Authority

Regulatory Activities

a. Enablement of Next-Generation Wi-Fi

PTA took significant strides in enhancing wireless connectivity by unlocking the 6 GHz spectrum band (5,925-6,425 MHz) for unlicensed use, enabling faster speeds, lower latency, and improved network reliability. With this step, Pakistan has become the 10th country in Asia to adopt next-generation Wi-Fi technology. PTA is proactively collaborating with industry stakeholders for the proliferation of Wi-Fi 6E and beyond.

b. Improved Ranking in Global Cybersecurity Index

In September 2024, Pakistan achieved the Tier-1 (Role Modeling) rating and is now among the top 40 countries in the Global Cybersecurity Index 2024, issued by ITU, marking a notable improvement from its previous 79th position. This advancement reflects Pakistan's dedication to strengthening cybersecurity nationwide, particularly in the IT and telecom sectors. PTA, MoITT, and other stakeholders have been key drivers in this success. Major initiatives that have enhanced cybersecurity include the

Cybersecurity Policy, CERT Rules, CTDISR, Cybersecurity Strategy and regular cybersecurity audits across the telecom sector. The establishment of National Telecom CERT has further enhanced the country's security framework through information sharing, incident management, and rapid response coordination. Together with local telecom operators adhering to international cybersecurity standards, these efforts have strengthened Pakistan's defense against cyber threats.

c. National Roaming

PTA launched national roaming services along the Makran Coastal Highway through a collaborative effort involving MoITT, Universal Service Fund (USF), Jazz, and Ufone. National roaming enables subscribers to access services from any available network in areas where their primary service provider lacks coverage, eliminating connectivity black-spots. The facility improves user connectivity and increases the coverage footprint of operators through the efficient use of existing infrastructure, without the need for additional capital expenditure in active and passive networks. The service is not just a technological upgrade but a key step in improving public safety and access to essential services. The expanded network will also enhance coordination for emergency services and assure travelers of reliable communication in case of any unexpected situations. The launching of mobile roaming services along the Coastal Highway is just the beginning. PTA is committed to further expanding connectivity across Balochistan and other remote regions so that all Pakistanis have equal access to reliable mobile communication services.

d. Ease of Doing Business

PTA launched Online Application Submission and Information System (OASIS), a cutting-edge platform that streamlines the licensing process for telecom companies and applicants, significantly enhancing the ease of doing business. OASIS provides a comprehensive solution, enabling applicants to navigate the entire application process easily and efficiently. Its key features include automated CNIC verification through NADRA, real-time company registration verification checks by the SECP, seamless online payments integrated with the National Bank of Pakistan (NBP), and a simplified application process. The platform enables users to complete the entire process online, benefiting from secure steps like biometric verification at NADRA e-Sahulat outlets and automated fee payment confirmations, making the process faster and more efficient.

Through a collaboration between PTA, NADRA, SECP, and NBP, this strategic initiative is expected to revolutionize the licensing process for telecom services nationwide. By integrating these critical systems, PTA is fostering a more robust telecom infrastructure, thereby supporting the growth of Pakistan's digital economy.

e. Readiness for 5G

The telecom sector is rapidly advancing towards 5G launch. PTA initiated the process aiming at a mid-2025 rollout. Substantial infrastructure upgrades are underway to support 5G rollout, with PTA developing regulatory frameworks to attract investment and simplify operations. In parallel, telecom operators are upgrading systems, expanding fiber optic networks for high-capacity backhaul, and conducting trials for smooth transition. PTA has allocated suitable backhaul frequency spectrum (E-band) to Cellular Mobile Operators (CMOs) to assess backhaul readiness for 5G's high data rate and low latency requirements. To improve next-generation mobile broadband services, the government formed an advisory committee to oversee the release of International Mobile Telecommunication spectrum. The Frequency Allocation Board (FAB) approved spectrum for future auctions, and PTA hired an international consultant to provide expert recommendations on the auction process and 5G implementation model. The advisory committee will review these recommendations to steer Pakistan into the 5G era.

f. Global Recognition for Child Online Protection Initiatives

In 2024, ITU recognized PTA's exemplary performance in the domain of Child Online Protection (COP) by appointing it to the prestigious ITU Council Working Group on

Child Online Protection (CWG-COP). Furthermore, PTA solidified its leadership by winning the LEAD Award for two consecutive years—it was honored in 2023 for 'Ensuring Child and Youth Safety Online' and in 2024 for 'Enabling Digital Safety of Children.' These accolades demonstrate PTA's commitment to protecting children and youth in the digital landscape.

g. Licensing for Satellite Communication Services

The National Space Policy was approved by the Cabinet in December 2023, shaping the future of space activities and regulations in Pakistan. In line with this policy, the development framework for licensing Satellite Communication Services is underway. Moreover, the framework is designed to facilitate the entry of Satellite Broadband players, particularly Next-Generation Satellite Orbits (NGSO) providers, into the market, fostering competition, expanding connectivity options, and driving advancements in satellite technology to meet the growing demands of modern communication networks.

h. Digital Gender Inclusion Strategy

In collaboration with MoITT, PTA successfully launched Pakistan's first-ever Digital Gender Inclusion Strategy and its implementation at the Digital Nation Summit. The strategy addresses the barriers hindering women's access to mobile and ICT services and sets forth an accelerated action plan with an implementation roadmap, timelines, and measurable outcomes. The development of this strategy by Pakistan represents a targeted approach to addressing gender disparities in ICTs. Its unique, methodical framework has earned widespread recognition on international platforms as one of the first of its kind. The strategy has been appreciated as an exemplary model, fit for replication by other developing countries.

i. National Fiberization Plan

A key component of the telecom infrastructure, Optical Fiber Cable (OFC), is essential for closing the digital divide and supporting 5G networks. With the rise in demand for OFC to connect base stations, the government initiated the development of a National Fiberization Plan to boost OFC footprint and Fiber-To-The-Site (FTTS) penetration across the country. The plan is expected to facilitate private networks, including long-haul and networks, as well as FTTS deployment, in a timely and cost- effective manner. The World Bank is collaborating with MoIT and PTA to conduct the feasibility study for the National Fiberization Plan, which will be financed through the Digital Economy Enhancement Project.

j. Online Safeguards

PTA, under the Prevention of Electronic Crimes Act, actively handles complaints from public and government organizations concerning unlawful online content. To date, 1.43 million URLs linked to unlawful activities have been processed for blocking.

k. Quality of Service Surveys

PTA conducts nationwide, independent QoS surveys to assess the performance of CMOs against licensed KPIs for voice, data, and SMS services, and to assess the network performance of fixed broadband service providers. During FY 2024, PTA surveyed 83 cities for CMOs' assessment, conducting an average of 5,000 voice and 5,000 SMS tests per quarter, along with 10,000 auto-mode and 10,000 third-party data sessions, covering around 3,200 km each quarter. Approximately 400,000 tests were resultantly measured over the year, ensuring compliance with defined baselines and benchmarks. For fixed broadband services, PTA completed QoS surveys across 36 major cities during January to June 2024, assessing essential KPIs including network availability and latency to ensure the delivery of high-quality internet services to users.

Telecom Development

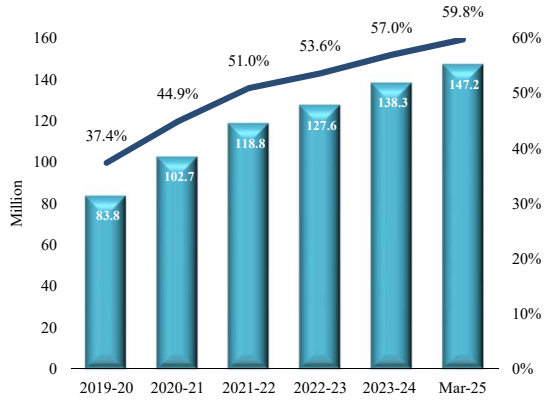
a. Broadband Proliferation

Both the government and PTA recognize the importance of broadband connectivity in fostering economic development and digital inclusion. Broadband expansion is at the heart of the 'Digital Pakistan' vision, aimed at modernizing various sectors of the economy and providing digital services to the entire population. Given Pakistan's relatively low GDP growth in recent years, the productivity gains

stemming from digital connectivity have become indispensable for sustained economic growth.

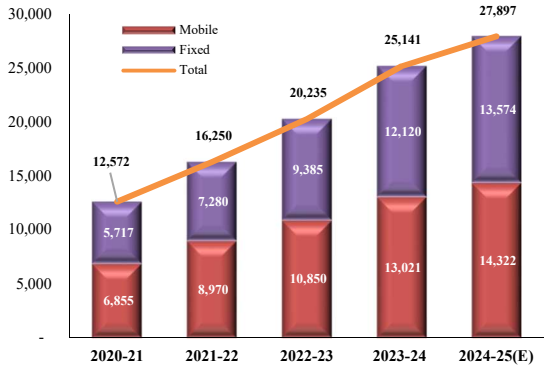
Ever since the launch of 3G and 4G services in 2014, the broadband landscape in Pakistan has undergone a significant transformation. PTA has played a vital role in initiating strategic initiatives such as spectrum auctions, renewals (spanning from 2016 to 2021), spectrum reframing, and additional rollout obligations. These actions have stimulated the expansion and adoption of 4G services. Over the past years, the telecommunications sector has experienced remarkable growth in broadband subscriptions, encompassing both mobile and fixed services. Broadband subscriptions surged an impressive 151 percent, increasing from 58.7 million in FY 2018 to an outstanding 147.2 million as of March 2025. These statistics emphasize the growing significance of broadband services in Pakistan's digitally connected society.

Fig-15.1: Broadband Subscribers & Penetration



Source: PTA

Fig-15.2: Data Usage (Peta Byte)



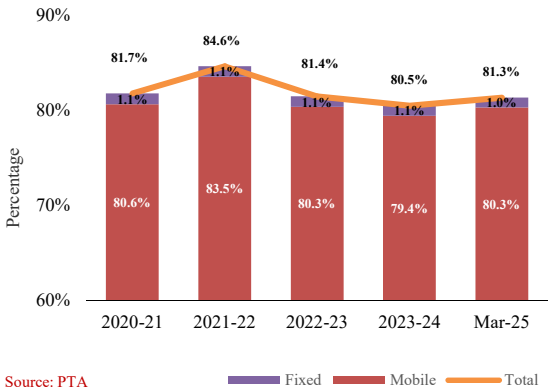
Source: PTA
Note: 2024-25 Figures are estimated

Data usage in the telecom sector has seen a significant surge. The combined data consumption from mobile and fixed broadband services in FY 2025 amounted to a substantial 27,897 petabytes (estimated), emphasizing the pivotal role of broadband in Pakistan's digitally connected society and the need for infrastructure expansion.

b. Telecom Subscribers and Teledensity

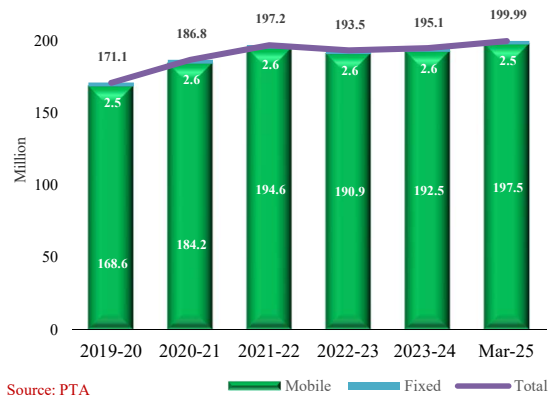
At the end of March 2025, the total telecom subscriptions (Mobile and Fixed) reached 199.99 million, and total teledensity in the country reached 81.3 percent. The cellular mobile segment was the primary contributor towards overall growth in subscribers and teledensity.

Fig-15.3: Teledensity (Percentage)



Source: PTA

Fig-15.4: Telecom Subscribers (Mobile and Fixed)



Source: PTA

c. Cellular Cell Sites Network International Connectivity

The growing demand for broadband expansion and upgradation of technology, particularly with the launch of 3G and 4G networks, has been pivotal in shaping Pakistan's telecom landscape. At the end of December 2024, a total number of cell sites reached 57,063. CMOs have deployed 8,972 cell sites from June 2021 to December 2024. Apart from cell site additions, they have made multi-billion-dollar investments in upgrading existing 2G sites to 4G. Currently, 96.2 percent of cell sites are 4G-enabled, with more upgrades coming up.

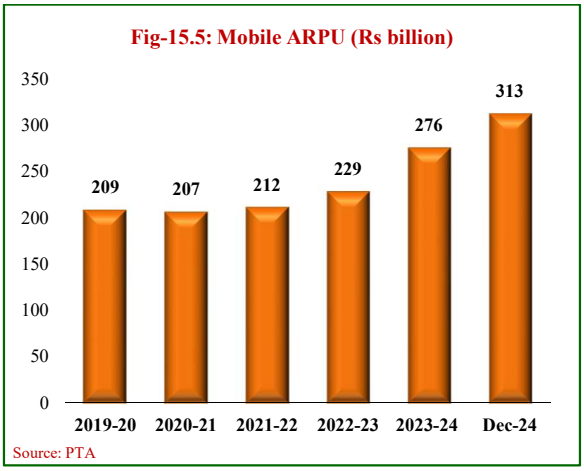
Table 15.2: Cellular Mobile Cell Sites

Year	Cell Sites	4G%
2020-21	48,091	84.7%
2021-22	51,768	92.3%
2022-23	53,581	94.0%
2023-24	55,777	95.5%
Dec-24	57,063	96.2%

Source: PTA

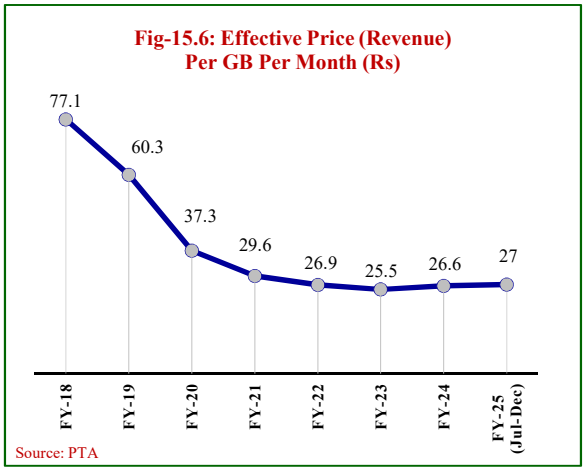
d. Mobile Average Revenue Per User (ARPU)

Pakistan's Competitive telecom environment and its reputation for offering some of the most affordable rates in the region. The country traditionally maintained a relatively low ARPU, compared to its neighbors. However, recent developments such as the expansion of broadband services, flexible pricing regulations for telecom operators amidst rising inflation, and a decline in the multi-SIM phenomenon have led to a noteworthy increase in ARPU. In Dec-2024 ARPU reached Rs 313 per month.



e. Affordable Broadband Services

One of PTA's strategic objectives is to provide affordable, high-quality services while ensuring that investors and operators receive a reasonable return on their investments. Thanks to proactive regulatory practices and a competitive broadband market, Pakistan offers some of the world's lowest and most budget-friendly telecom prices to its citizens. The cost of 1 GB of data in Pakistan is a mere US$ 0.10, making it the lowest in the region and sixth lowest in the world. An analysis of the effective price of 1GB data over the years reveals a consistently declining trend, with data costs per GB registering a 65 percent decline since FY 2018, decreasing from Rs 77.1 per GB to Rs 27.0 per GB during FY 2025 (July-December).



f. Telecom Device Manufacturing

PTA has provided a level playing field for foreign investments in the mobile device manufacturing industry in Pakistan. PTA introduced the Mobile Device Manufacturing (MDM) Regulations in 2021, leading to the establishment of local manufacturing plants by 36 local and foreign companies. These companies, both stand-alone and joint ventures, secured a 10-year MDM authorization for the purpose. From January 2019 to March 2025, Pakistan manufactured a whopping 131.26 million mobile handsets (including 51.07 million smartphones), creating numerous job opportunities. Accordingly, an uptake of smartphones to 67 percent of devices on the network can be seen in the table.

Table 15.3: Uptake of 3G/4G Devices (Percentage of IMEIs on Mobile Networks)

2019	56%	44%
2020	52%	48%
2021	48%	52%
2022	54%	55%
2023	43%	57%
2024	35%	65%
2025 (Mar)	33%	67%

Source: PTA

Concluding Remarks

The government's commitment to fostering innovation, expanding digital infrastructure, and ensuring inclusive access to digital tools and services lays the foundation for a resilient, globally competitive, and export-oriented IT ecosystem. With a substantial young demographic and tech-savvy and professional talent base, Pakistan is set to become a regional hub for digital services, tech entrepreneurship, and high-value software exports. Continued focus on skill development, investment facilitation, and international collaboration will be instrumental to unlocking new opportunities for growth, job creation, and inclusive socio-economic progress. As Pakistan transitions to a knowledge-based, techno-economy, the IT and telecommunication sector will remain the leading driver of this transformation.