The power of mobile to accelerate digital transformation in Pakistan

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Executive summary

Pakistan is on a national development journey, rooted in the government's commitment to national and global development goals. Several of these, including the UN Sustainable Development Goals (SDGs), will conclude by the end of the next decade. This underlines the urgent need for the government and other stakeholders to accelerate social and economic development in the country.

In recent years, digital technologies have become vital tools to drive social development and economic growth in Pakistan. Digital transformation is underway in the country, with government and public institutions as well as private and development organisations using digital platforms to increase engagement and improve service delivery to citizens. In recognition of the impact of digital technologies, the government's digital policy aims to transform Pakistan into a knowledge-based economy, while the planned National Digital Transformation Initiative aims to encourage a more consistent approach to the use of digital technologies to deliver good governance.

Mobile at the centre of transformation

Mobile technology is at the heart of digital transformation in Pakistan. At a foundational level, it is the bedrock of fast, reliable and affordable connectivity. Mobile broadband networks now cover 80% of the population, and 97% of internet connections are based on mobile connectivity. Mobile technology is also enabling the application of the Internet of Things (IoT) across areas including agriculture, clean energy and safe water solutions. Pakistan has nearly 700,000 cellular IoT connections.

Beyond connectivity, mobile services such as messaging and mobile money are enabling the effective and efficient delivery of life-enhancing services to individuals and communities across Pakistan. Today, mobile technology is the primary channel for digital financial services, digital birth registration initiatives, digital health solutions and digital learning platforms in the country. For example, mobile-enabled branchless banking services have grown significantly over the last decade, reaching 47.2 million registered accounts as of December 2018, while digital birth registration has recorded 740,000 children since 2017.

Mobile's role in growth and development

The mobile ecosystem in Pakistan plays an increasingly important role in economic growth, through its direct contribution to GDP and through driving productivity and efficiency gains across different sectors of the economy. In 2018, the total value added generated by mobile operators alone – taking into account direct, indirect and productivity effects – was around $16.7 billion, equivalent to 5.4% of GDP. Mobile operators and the ecosystem also provided direct employment to around 320,000 people in Pakistan in 2018, while economic activity in the mobile ecosystem continues to generate jobs in other sectors.

Despite this progress, Pakistan still has much to do to realise its development aspirations. The country lags behind many of its neighbours in South Asia on several key human development indicators (HDIs), including education, health and gender equality. Meanwhile, rapid population growth – at nearly double the average for South Asia – could increase the pressure on existing infrastructure and services, and undermine efforts to enhance social development.

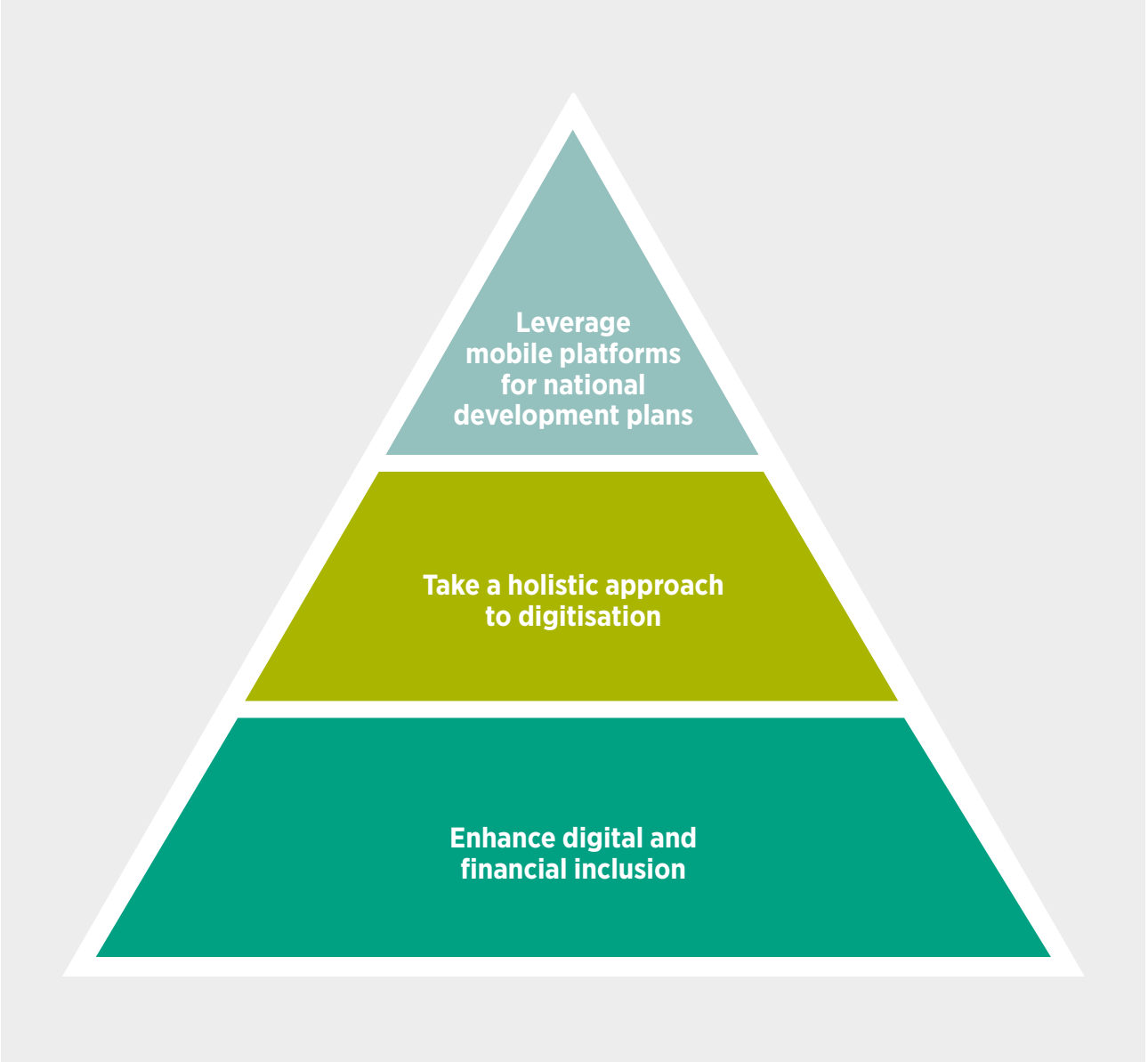
A call for further collaboration

To fully realise the opportunity mobile technology presents to achieve Pakistan's national development aspirations, there is a need for key stakeholders on the country's development journey (government, the development community, civil society organisations, the mobile ecosystem and the private sector) to collaborate on key initiatives and actions that can increase access to mobile connectivity and accelerate its impact on the lives of individuals and communities.

We have identified three distinct but interrelated actions for stakeholders to enhance the impact of mobile-enabled digital transformation on Pakistan's development aspirations. See Figure 1.

Figure 1

Key actions for stakeholders to enhance the impact of mobile-enabled digital transformation



- **Enhance digital and financial inclusion:** The majority of Pakistan's population still do not use mobile internet or have access to formal financial services, putting them at risk of missing out on the socioeconomic benefits of digital transformation. The exclusion gap cuts across gender, geographic, economic and literacy lines. For example, women are 37% less likely than men to own a mobile phone in Pakistan. Addressing the access and usage challenge to these services is essential to maximising the impact of mobile-enabled digital transformation in Pakistan.

- **Take a holistic approach to digitisation:** The fragmentation of digital services by government agencies and development organisations and donors often leads to wastage and inefficiency in the use of resources. A whole-of-government approach to the planning and implementation of digital initiatives could facilitate interoperability of digital services for citizens and increase their overall impact on society.

- **Leverage mobile platforms for national development plans:** Pakistan's 12th Five-Year Development Plan will run from 2019 to 2024. There is a significant opportunity to incorporate mobile technology into the implementation of the plan, particularly on efforts to improve key HDIs, such as gender equality, health, education and poverty reduction.

1. Pakistan: Government socioeconomic aspirations in context

The next decade will represent a pivotal stage in Pakistan's national development journey. During this period, the Pakistan Vision 2025[1] aspiration and efforts to achieve the UN Sustainable Development Goals[2] (SDGs) will reach a conclusion. The government of Pakistan will also be implementing a number of medium-term development plans, including the 12th Five-Year Plan and the Pakistan One United Nations Programme III (OP III)[3] in the first half of the decade.

Pakistan has seen some improvement in key social and economic indicators in recent years. The economy grew at an average rate of 5% between 2013 and 2017[4] on robust private consumption, rising investment (especially in energy and infrastructure projects around the China-Pakistan Economic Corridor), and improving productivity in the agricultural sector. The Pakistan Economic Survey 2017-18 shows a strong decline in the poverty headcount, with the proportion of people living below the poverty line falling from 50.4% in 2006 to 24.3% in 2016.[5] The country has also witnessed significant improvements across other key human development indicators (HDIs), including health and education since the start of this decade.

However, Pakistan still has much to do to realise its development aspirations, particularly as progress across different regions is uneven. Poverty in urban areas is 12.5% compared to 30.7% in rural areas. The country's health and education sectors, as well as access to water, energy and sanitation, are also marked by stark urban-rural disparities. Given that two-thirds of the population live in areas where the socioeconomic challenges are particularly acute, Pakistan lags many of its neighbours in South Asia[6] on several HDIs on average; the country was ranked 126th out of 156 countries in the 2018 Global SDG Index[7] and 148th out of 149 countries in the 2018 Global Gender Gap report.[8]

Meanwhile, Pakistan's annual population growth rate of 2% – nearly double the average for South Asia – could increase pressure on existing infrastructure and services, and undermine efforts to enhance social development. The country is also prone to natural disasters and susceptible to the impact of internal and external security challenges, including across the border in Afghanistan. These exert further pressure on public resources and impact the livelihoods of the most vulnerable individuals and communities. For example,

1. Ministry of Planning Development and Reform
2. United Nations
3. Pakistan One United Nations Programme III (OP III) 2018-2022
4. World Bank
5. Government of Pakistan Economic Survey 2017 – 2018
6. Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka
7. Global SDG Index 2018
8. The Global Gender Gap report 2018, World Economic Forum, 2018

the 2010 flooding in Pakistan caused damage worth $5.3 billion to the country's agriculture,[9] while Pakistan is currently home to 1.4 million Afghan refugees.[10]

Against this background, the focus of the government and its development partners in the coming years will be to accelerate progress on Pakistan's development aspirations. Digital transformation is at the heart of the government's development framework for various sectors and will play a crucial role in efforts to bring about inclusive socioeconomic development in the country.

9. "How much do natural disasters cost the world?" World Economic Forum, December 2015
10. UNHCR as of January 2019

PAKISTAN AT A GLANCE

TOTAL POPULATION:
213 MILLION

CAPITAL:
ISLAMABAD

OFFICIAL LANGUAGES:
URDU & ENGLISH

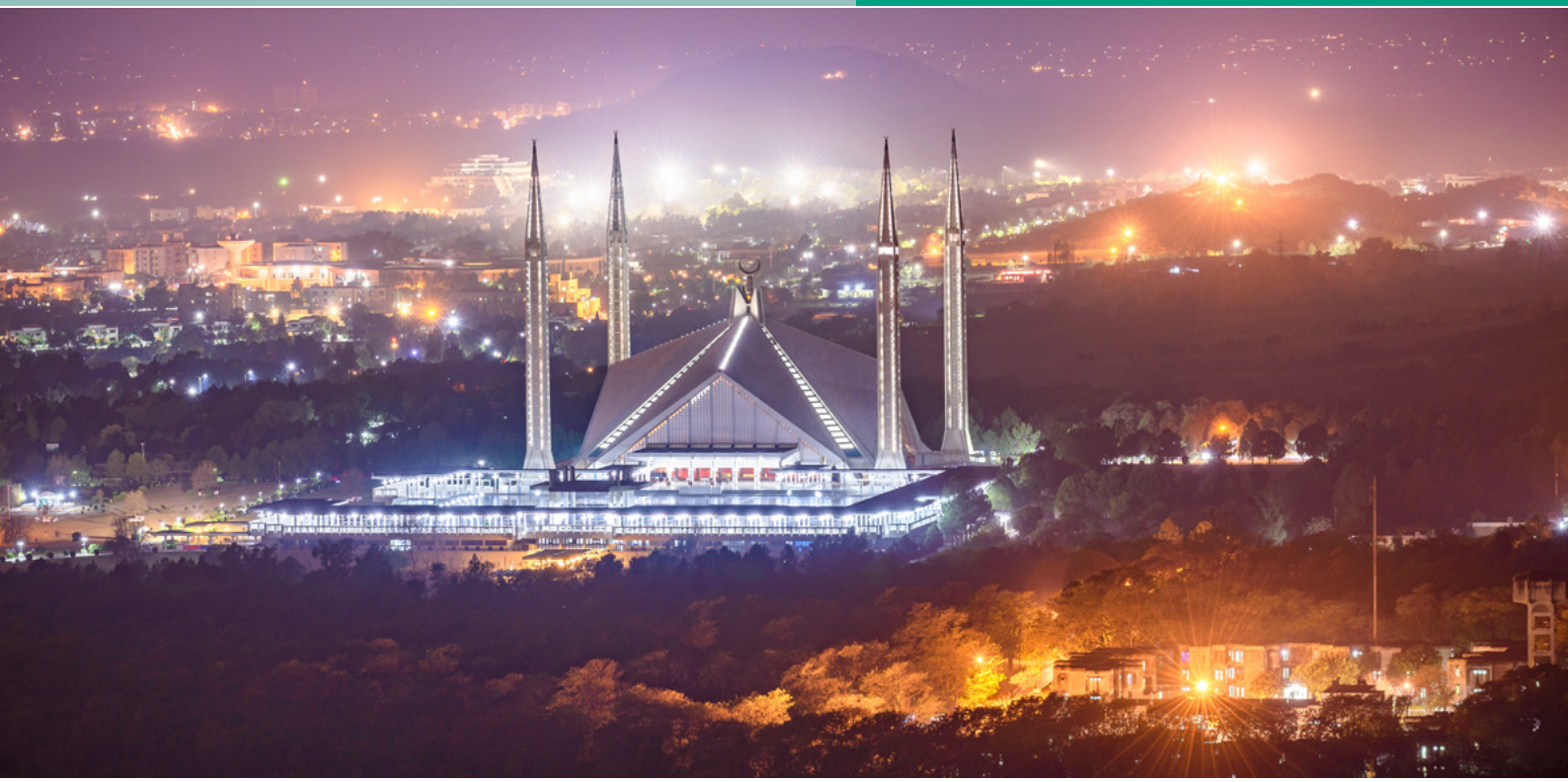
UNEMPLOYMENT RATE:
5.8%

GDP PER CAPITA (CURRENT):
$1,497.2

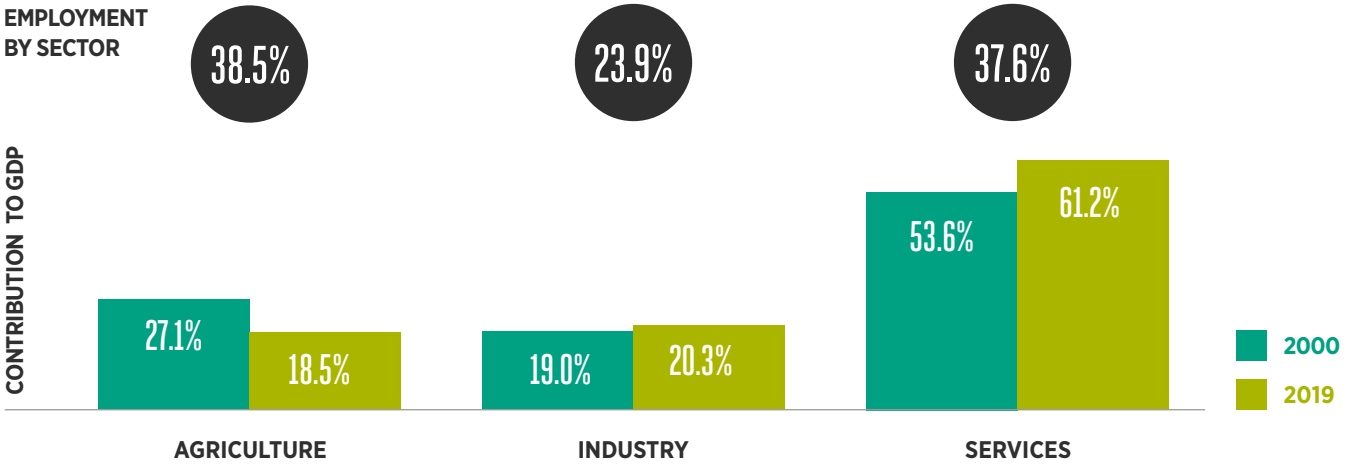
SOUTH ASIA (CURRENT):
$1,842

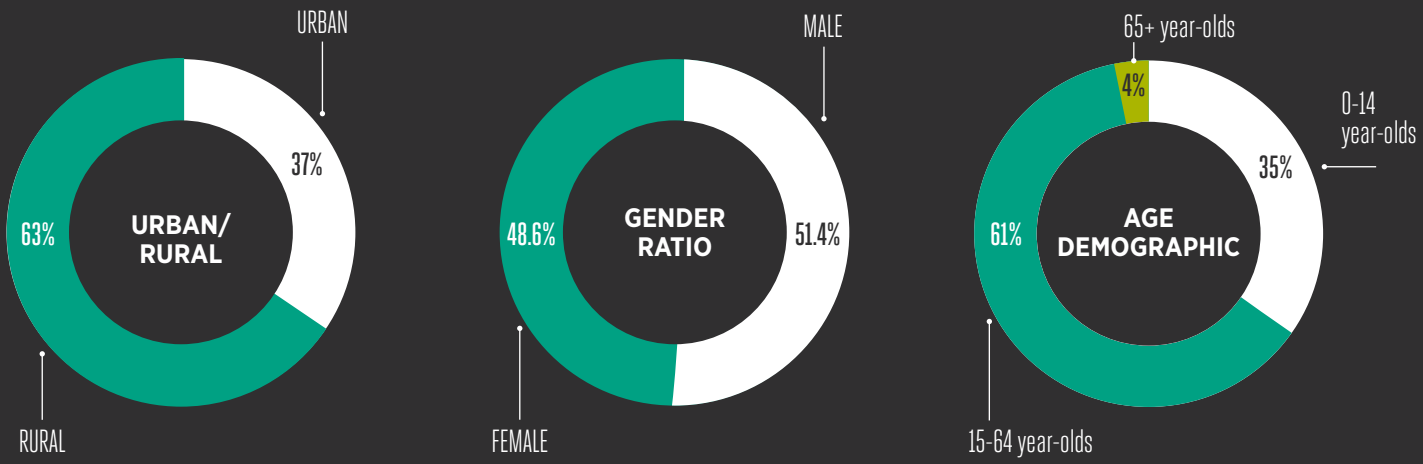
PAKISTAN IS THE FOURTH MOST POPULOUS COUNTRY IN ASIA PACIFIC AND THE 12TH LARGEST ECONOMY IN THE REGION

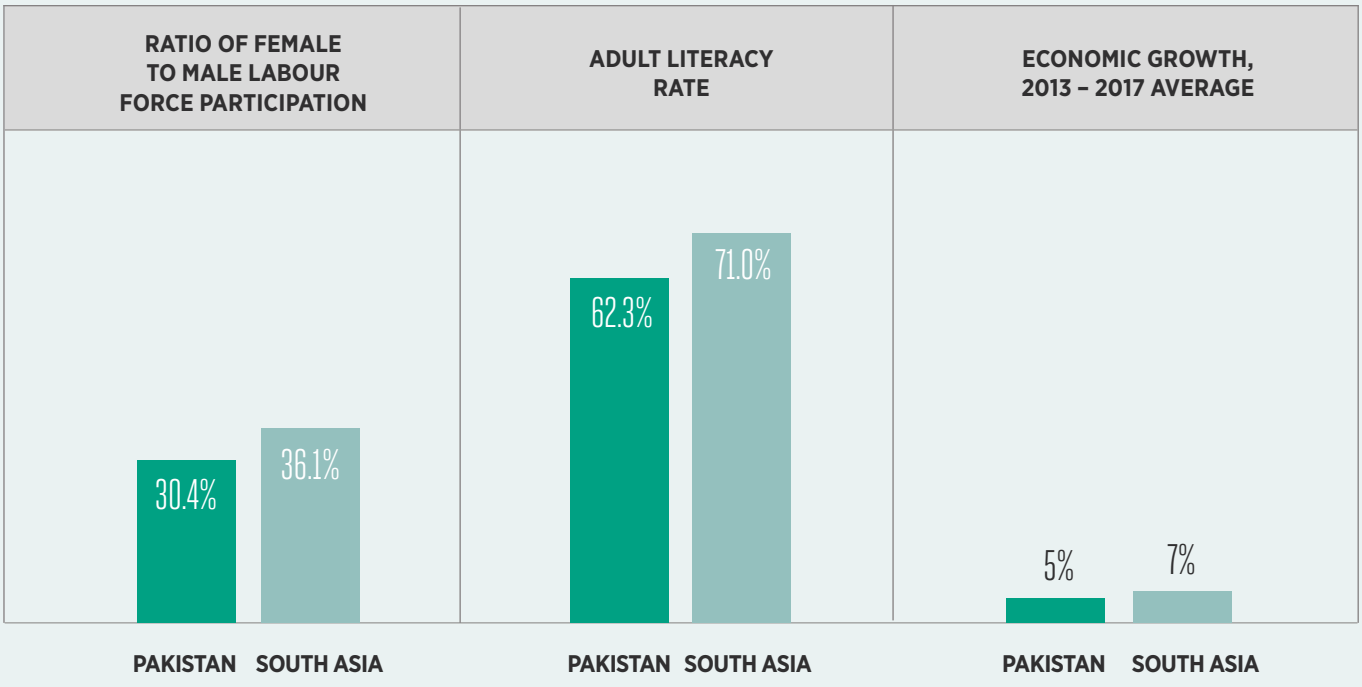
INDUSTRIAL AND SERVICES SECTORS ACCOUNT FOR A GROWING SHARE OF GDP IN PAKISTAN'S SEMI-INDUSTRIALISED ECONOMY, BUT AGRICULTURE REMAINS THE BIGGEST EMPLOYER OF LABOUR



Sources: PBS, ILO, World Bank, UN, Statista, GSMA Intelligence


EMPLOYMENT BY SECTOR
38.5%
23.9%
37.6%
CONTRIBUTION TO GDP
27.1%
18.5%
19.0%
20.3%
53.6%
61.2%
2000
2019
AGRICULTURE
INDUSTRY
SERVICES


URBAN
37%
63%
URBAN/ RURAL
RURAL
MALE
48.6%
GENDER RATIO
51.4%
FEMALE
65+ year-olds
4%
0-14 year-olds
35%
61%
AGE DEMOGRAPHIC
15-64 year-olds


RATIO OF FEMALE TO MALE LABOUR FORCE PARTICIPATION
30.4%
36.1%
PAKISTAN
SOUTH ASIA
ADULT LITERACY RATE
62.3%
71.0%
PAKISTAN
SOUTH ASIA
ECONOMIC GROWTH, 2013 – 2017 AVERAGE
5%
7%
PAKISTAN
SOUTH ASIA

2. Digital transformation in Pakistan and the role of mobile technology

Digital technologies are transforming the way people live, work and communicate. For a growing number of people, digital platforms have become the primary and preferred channel for accessing public and private services. This trend is particularly evident across key service sectors of the economy in Pakistan, notably retail and transport, as demonstrated by the rapid rise of e-commerce platforms such as Daraz and HumMart, and ride-hailing services such as Uber and Careem.

The government of Pakistan has recognised the potential of digital transformation to accelerate progress on the national development goals by driving innovation, unlocking economic competitiveness, and enhancing social and economic inclusion. It also has the potential to support evidence-driven policy making. The Pakistan Telecommunication Authority[11] (PTA) plays a key role in efforts to realise the potential of digital transformation in the country, by leading the implementation of key policy initiatives to increase access to digital services for citizens around the country. This is in line with the government's digital policy, which aims to transform Pakistan into a knowledge-based economy, and the planned National Digital Transformation Initiative, which aims to encourage a more consistent approach to the use of digital technologies to deliver good governance to citizens.

2.1 Digital transformation initiatives

The Digital Pakistan Policy[12] outlines the broad vision for digital technologies to become a strategic enabler for a knowledge-based economy and to spur socioeconomic growth in the country.

11. https://www.pta.gov.pk/en
12. Digital Pakistan Policy, Ministry of IT & Telecom, 2018

Table 1

Key objectives of the Digital Pakistan Policy

Objective	Details
Holistic digital strategy	Create a digital ecosystem with infrastructure and institutional frameworks for the rapid delivery of innovative digital services, applications and content.
Sectoral digitisation	Use of technology in education, health, agriculture and other key socioeconomic sectors.
E-commerce	Promote e-commerce by providing an enabling environment where payment service providers (PSPs) and payment service operators (PSOs) can operate.
Youth, women and girls empowerment using IT	Initiate specific ICT for Girls programmes for imparting digital skills to reduce inequalities, provide decent work and promote economic growth in line with relevant SDGs.
Promote innovation, entrepreneurship, incubators and start-ups	Generate sustainable innovation, entrepreneurship and employment opportunities for the country's rapidly growing tech-savvy and entrepreneurial youth.
Increase software exports, IT remittances and domestic market	Leverage skills in the IT sector to boost software exports and outsourcing opportunities, as well as expand the domestic market.
ICT ranking of Pakistan	Improve Pakistan's ICT ranking based on international indices and benchmarks measuring the business and innovation environment, infrastructure, affordability, skills readiness and socioeconomic impact.
Digital inclusion	Bridge the digital divide including the urban and rural divide, gender disparity, unserved and underserved areas, and inequality for persons with disabilities (PWDs), by connecting the unconnected with broadband.
E-governance	Ensure efficiency, transparency and accountability by setting up integrated government databases and applications.
Increase foreign and domestic investment	Make Pakistan an attractive destination for investment in the IT industries to create jobs and fuel economic growth.
Persons with disabilities	Reduce barriers to online access for PWDs.
Standardisation	Coordinate and support standardisation efforts, maximise reusability, create synergies and deliver cost effectiveness.

Source: Ministry of IT & Telecommunication

Some government departments have outlined policy frameworks integrating the use of digital technologies to bring public services closer to people. In November 2018, the Prime Minister of Pakistan approved a five-year plan for an enhanced National Financial Inclusion Strategy[13] (NFIS), with a focus on promoting digital payments and expanding access to digital transaction accounts (DTAs). Digital health initiatives have also been introduced at both the national and provincial levels, including the National Database and Registration Authority (NADRA) e-Health cards[14] and eVaccs, a vaccination project rolled out by the government of Punjab and Khyber Pakhtunkhwa, in collaboration with the Federal Ministry of Health and WHO (World Health Organization).[15]

In October 2018, the Prime Minister of Pakistan inaugurated the Pakistan Citizens' Portal, using digital platforms to address public complaints and implement recommendations. As of February 2019, the portal had resolved 250,000 of 420,000 complaints, with 55% satisfactory feedback from the public.

Pakistan's provincial governments have also launched digital transformation initiatives to fully capture the benefits of digital technologies for their respective provinces and boost the overall contribution of the ICT sector to the local economies. The key components of the digital policies of the governments of Punjab[16] and Khyber Pakhtunkhwa[17], launched in 2018, are summarised in Figures 2 and 3.

Figure 2

Punjab IT Policy 2018

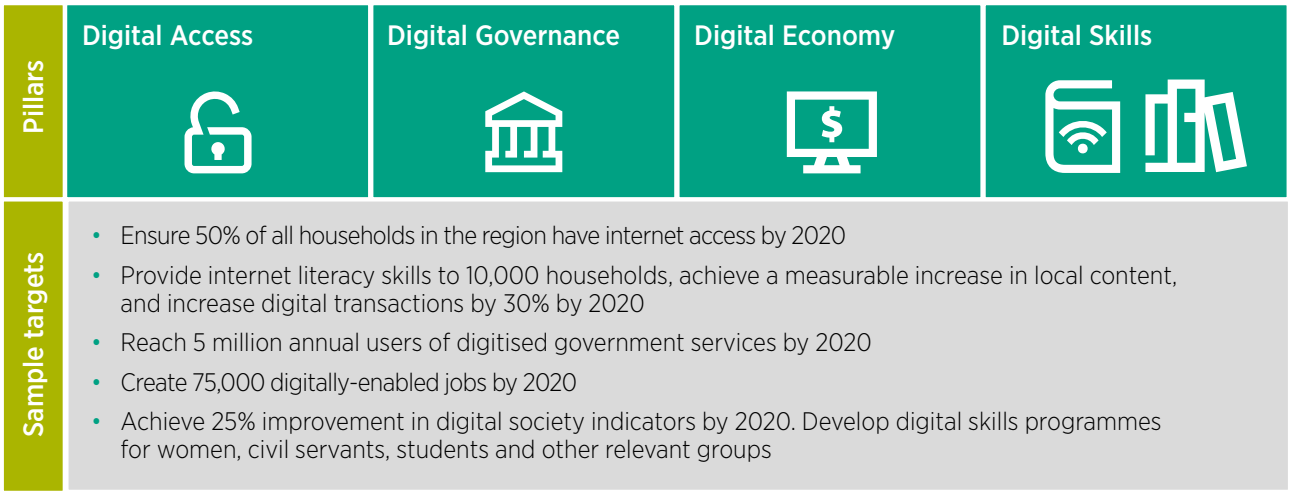
Pillars	Support to the industry	Bridging the digital divide	E-governance	Citizen-centric services	Entrepreneurship
Sample focus areas	• Introduction of e-Payment Gateway will make it easier for citizens to pay their taxes and other dues remotely • Tax exemptions for telecoms sector & IT businesses • Empowering citizens through online petitions platform to deal with social and other relevant issues • Supervision of the health, education, agriculture, livestock and irrigation field staff through mobile devices • Improvement of the vaccination coverage from 22% to 92% across Punjab under eVaccs • Compilation of real time feedback from monitoring staff for 52,394 schools in Punjab • Establishment of citizen contact centre for citizens to interact with government departments and to provide feedback on services				

Source: Punjab IT Board

13. National Financial Inclusion Strategy (NFIS), Pakistan Microfinance Network
14. https://www.nadra.gov.pk/solutions/secure-document-solutions/e-health-cards/
15. https://open.punjab.gov.pk/evaccs/
16. Punjab IT Policy 2018, Government of Punjab, 2018
17. Khyber Pakhtunkhwa Digital Policy 2018 – 2023, Khyber Pakhtunkhwa Information Technology Board, 2018

Figure 3

Khyber Pakhtunkhwa Digital Policy 2018-2023



Source: KP IT Board

2.2 Mobile technology – a key enabler of digital transformation

A knowledge-based economy is built on the foundation of common access to fast, reliable and affordable digital content and services by individuals, businesses and public institutions. In Pakistan, this is primarily enabled by mobile technology, which now provides access to digital services for more people in the country than any other communications technology; 70% of internet users in Pakistan only ever access the internet on a mobile phone.[18]

Below, we assess four key attributes of mobile technology that make it the primary enabler of digital transformation in Pakistan.

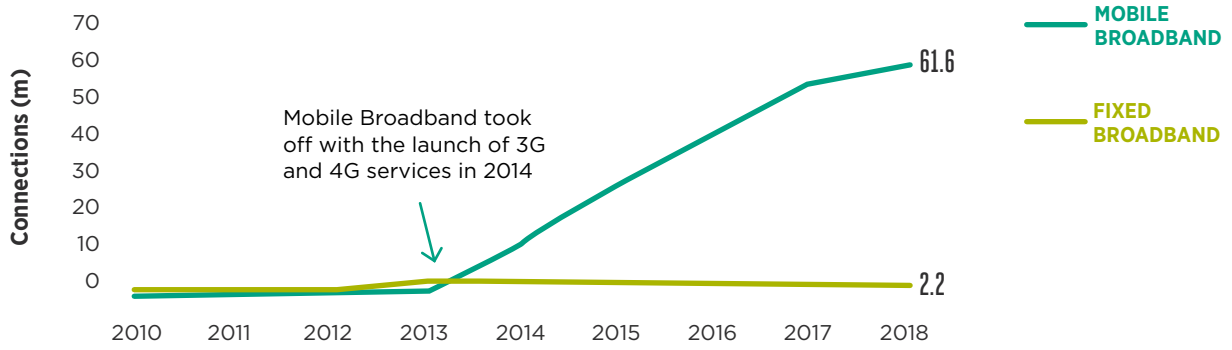
2.2.1 Connectivity

Connectivity is the basis of digital transformation. Today, mobile connectivity is the most prevalent form of digital connectivity in Pakistan; there were 154 million mobile connections[19] in Pakistan at the end of 2018.[20] Nearly 62 million, equivalent to 2 in 5, mobile connections were based on mobile broadband (3G and 4G) technologies. Mobile broadband now accounts for more than 96% of total broadband connections in Pakistan. The wide area coverage of mobile networks and the increasing adoption of smartphones are helping bring internet connectivity to people across the country, including those in more remote regions and without access to other forms of broadband connectivity.

18. GSMA Consumer Survey 2018
19. Total connections differ from unique users who have subscribed to mobile services at the end of the period. The unique subscriber number is lower than total connections given that a unique user can have multiple connections
20. Pakistan Telecommunications Authority

Figure 4

Mobile versus fixed broadband connections in Pakistan



Source: Pakistan Telecommunication Authority

The number of smartphone connections in Pakistan has doubled over the last two years to 56 million[21], more than a third of the total number of mobile connections. To close the device gap, the government of Pakistan is actively promoting efforts to manufacture handsets locally, with 26 companies obtaining permission for this purpose. Since local manufacturing formally commenced in 2016, more than 9 million devices have been produced locally.[22]

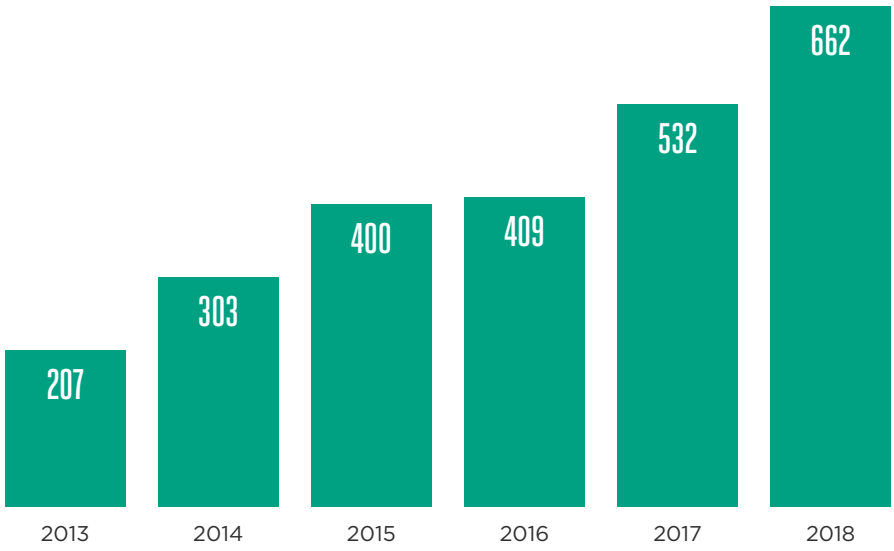
Rising smartphone adoption means more people are able to use feature-rich and IP-based digital content on their mobile devices, mitigating the challenge of much lower penetration of PCs and other data-enabled devices. The Pakistan Citizens Portal, which connects government organisations both at federal and provincial levels, is powered by smartphone apps on the Android and iOS platforms, so can be accessed by people on mobile devices.

In addition to internet connectivity, mobile technology enables cellular IoT (Internet of Things) connectivity for a variety of personal and industrial devices. Currently, IoT applications in Pakistan include solar-powered home solutions enabling off-grid rural households to power electronic devices; on-board diagnostics (OBD) devices for fleet management; and IoT solutions integrated with vehicle and motorcycle insurance products to reduce theft. In future, cellular IoT connectivity and services will play a vital role in implementing smart city solutions, which can help governments at different levels to cope with rapid urbanisation and improve security services.

21. GSMA Intelligence
22. Pakistan Telecommunication Authority

Figure 5

Cellular IoT connections (thousands) in Pakistan



Source: GSMA Intelligence

Examples of public services leveraging mobile connectivity

In March 2018, the city police in Peshawar[23] launched an Android app to allow users to report crimes including terror attacks, robberies and road accidents. The app includes free calls to the police, picture/video upload options and key contact information among its features.

In November 2018, the National Highway Authority[24] (NHA) launched a mobile app as part of a right-to-information initiative. Users can access details of the NHA's projects. Accessible information includes fiscal status of the ongoing and completed projects, source of funds, companies awarded contracts, physical/financial progress, toll rates and road safety guidelines, as well as two tools – Journey Planning and Interactive Maps – that help commuters plan trips.

In December 2018, Pakistan Post[25] launched a mobile app to allow users to track their parcels. The app allows users to register complaints, explore postal services and tariffs, locate a post office and contact Pakistan Post.

23. "Peshawar police launch mobile app service", dawn.com, March 2018
24. "NHA launches mobile app to facilitate travelers", The Nation, November 2018
25. "Pakistan Post to launch mobile application today", The News International, December 2018

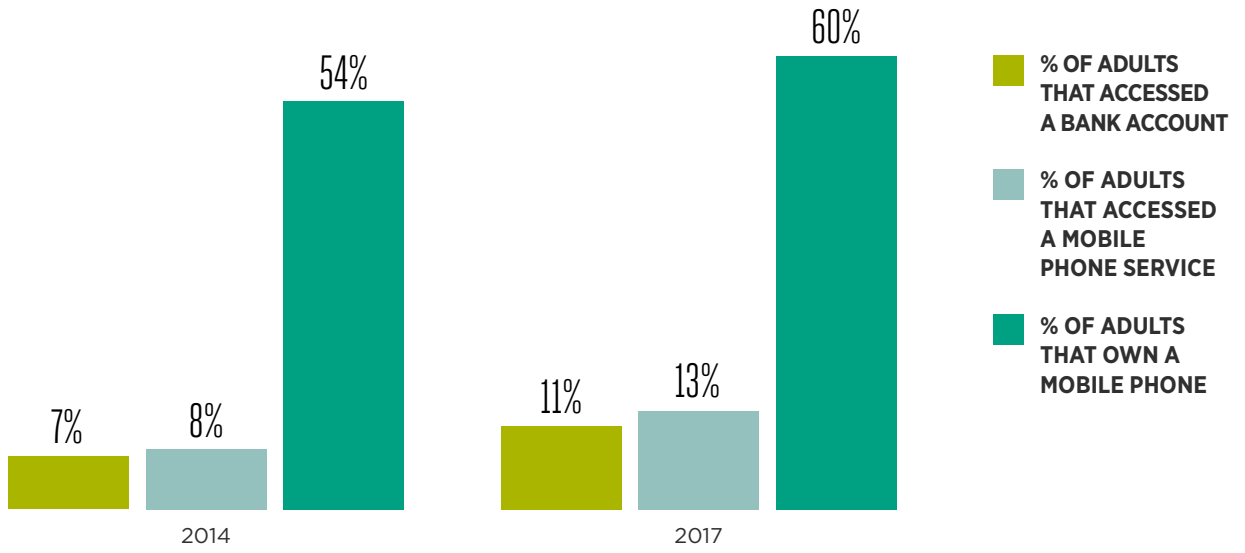
2.2.2 Digital financial services

A major reason for the low access to financial services in Pakistan has been the cost and time spent by low-income people travelling to access bank branches to carry out their small value transactions. Women in rural and remote areas face additional constraints around mobility, largely for cultural reasons. Digital technology is, however, changing the financial inclusion landscape in Pakistan, by enabling unbanked/underbanked individuals around the country to access financial services through digital platforms.

Mobile technology is an enabler of digital financial services (DFS) in Pakistan. It plays a crucial role in deepening financial inclusion, particularly in areas where banks have limited reach due to high overhead costs of physical expansion, and simplifying commercial transactions and remittances between individuals and organisations. In Pakistan, around 52% of the adult population (aged 15+) have a mobile phone but no bank account (registered in their name),[26] which translates to nearly 70 million adults or around half the adult population. The increase in mobile penetration has created opportunities to serve the unbanked using mobile-enabled DFS. In addition to enhancing financial inclusion in Pakistan, mobile-enabled DFS are well placed to help address inefficiencies in the credit and broader financial markets and increase transparency and collection rates for government taxes.

Figure 6

Mobile technology offers the opportunity to enhance financial inclusion



Source: World Bank Global Findex

26. InterMedia Pakistan FII Tracker surveys, N=6,000, 15+

Mobile-enabled DFS has become a key enabler of e-commerce, fintech and e-government services in Pakistan. The market size of e-commerce has grown significantly in the country over the last few years, transforming the way consumers interact with – and particularly pay – businesses. In 2018, e-commerce sales involving digital payments reached PKR40 billion ($287 million), nearly double the amount in 2017, with mobile money a key growth driver. In August 2019, the Ministry of Commerce & Textile published a draft E-commerce Policy Framework[27] as part of a wider government plan to encourage business to go online and foster holistic growth of e-commerce in Pakistan. One of the 10 goals of the policy framework, which aims to provide an efficient e-payment infrastructure for smooth and quick local and cross border transactions, will be facilitated by mobile-enabled DFS.

Mobile operators are already playing a key role in driving e-commerce growth. For example, Telenor Microfinance Bank (TMB) serves more than 20 million active customers through over-the-counter (OTC) and mobile wallet service Easypaisa and its online payment gateway. In March 2018, Ant Financial invested in $184.5 million in TMB for a 45% stake, and in May 2018 Alibaba acquired a 100% stake in e-commerce platform Daraz Group. Such developments highlight the potential for Pakistan's emerging fintech and e-commerce ecosystems, underpinned by mobile-enabled DFS, to attract much needed foreign direct investment (FDI) into the country.

Annual remittances to Pakistan are around $20 billion. This is equivalent to more than 6% of GDP, making cross-border payments an important part of Pakistan's international capital flow. Mobile-enabled DFS plays an increasingly important role in facilitating overseas remittances by offering fast, convenient and often cheaper solutions for senders and recipients. In January 2019, TMB launched a remittance service for the Malaysia-Pakistan corridor using blockchain technology, in collaboration with Alipay and Telenor Group's Malaysian fintech subsidiary Valyou.[28] Pakistan currently receives around $1 billion in remittances from Malaysia; the blockchain solution could reduce transaction costs for end users.

The State Bank of Pakistan (SBP) has played a proactive role in the development of DFS in the country, starting with the introduction of branchless banking (BB) services in 2008. Leveraging the expansion of mobile networks and the rapid adoption of mobile services, BB has grown considerably over the last decade. By December 2018, there were 47.2 million registered BB accounts in Pakistan, served by a network of more than 425,000 agents.[29] Around 33% of the total value of transactions in Pakistan is carried out over-the-counter (a transaction is considered over the counter when conducted by an agent's account on behalf of the customer).[30] The OTC model has significant constraints; without a stored value account there are limitations to the product offering and an inability to build a robust financial digital ecosystem.

However, results from SBP reports show there has been a decline in the share of OTC transactions in 2018, helped by a combination of regulatory and commercial developments – notably, the rollout of biometric SIM registration, which can be considered an enabler for a rise in branchless bank account adoption given that this allows for easier remote registration.[31] In April 2019, the SBP released the Electronic Money Institutions (EMI) regulations[32], aimed at fostering innovation in the payments industry and promoting financial inclusion in the country.

27. "E-commerce Policy Framework of Pakistan", Ministry of Commerce & Textile, August 2019
28. "Pakistani Bank Teams With Alipay for Blockchain Remittances", Coindesk, January 2019
29. Branchless Banking, Oct-Dec 2018, State Bank of Pakistan, 2018
30 Branchless Banking, Oct-Dec 2018, State Bank of Pakistan, 2018
31. Overcoming the Know Your Customer hurdle: Innovative solutions for the mobile money sector, GSMA, 2019
32. Regulations for Electronic Money Institutions, State Bank of Pakistan, 2019

Easypaisa[33]

In 2009, Telenor, in collaboration with Tameer Microfinance Bank, launched Easypaisa, which quickly revolutionised DFS in Pakistan. By 2018, Easypaisa had 177 branches, of which 29% are located in rural areas. Easypaisa now offers a range of financial services, including loans, with a growing proportion of people from underserved population groups benefitting from the services. Around 30% of Easypaisa customers are from rural areas, while 36% of borrowers on the Easypaisa loan service are female.

JazzCash[34]

JazzCash was launched in 2012 and now has more than 15 million users, served by a network of 78,000 agents. Some 40% of JazzCash users live in rural areas, while 14% of them are female. JazzCash's range of financial services for individual customers and businesses come under three broad categories: mobile accounts (deposits, savings, remittances, bill payments, VISA debit card, QR payments, insurance products, loans), digital payments (online payments, ticket payments, passport fee payment, internet bill payments, motorway m-tag recharge, school fee payment, traffic challan fee) and corporate (disbursements, collections, payment gateway).

2.2.3 Tech innovation

In 2018, Pakistan had 35 active tech hubs, up from 26 two years earlier, positioning the country as the largest tech ecosystem in South Asia after India.[35] Most of the tech hubs are spread around the country's three biggest cities – Islamabad, Karachi and Lahore. In April 2019, Facebook, in collaboration with the government and the National Technology Fund (Ignite), launched the first Facebook Innovation Lab in Pakistan to provide infrastructure access to developers, entrepreneurs and community groups. Mobile technology has been instrumental in the evolution of the tech landscape; mobile platforms and assets, such as mobile money, cellular IoT and APIs, are increasingly used to create and distribute new content and services, as well as develop innovative and sustainable business models for tech-based solutions that address local challenges.

Mobile operators play a key role in the tech innovation ecosystem. Operators can mitigate the route-to-market challenges for start-ups by providing the platform, customer relationship, and resources to drive their mobile innovation to scale. Specifically, such resources can include: mobile operators providing financial support through investments; customer acquisition and market insights; brand exposure and trust-building; advisory and mentoring services; access to customer touchpoints; and mass communication and payment channels.

In Pakistan, Jazz xlr8 and Velocity, backed by Jazz and Telenor respectively, are among the most active tech accelerators in the country. The Jazz xlr8 programme offers start-ups access to Jazz's user base, a global network of mentors, and its digital platforms. Since 2017, the Jazz xlr8 programme has inducted 19 start-ups, which raised PKR210 million ($1.2 million) and created 600 jobs. Velocity began its operations in 2016 and has since graduated 17 start-ups which have raised $2.2 million, with a total valuation of $20 million.

In August 2018, Telenor Pakistan launched a new initiative to widen the scope of its flagship accelerator programme, Telenor Velocity. The initiative enables other incubators, accelerators, co-working spaces and investors to partner with Telenor Velocity and gain access to a suite of tools and services that can help accelerate the growth of local start-ups in Pakistan. Local tech hubs, such as NIC Peshawar and NIC Karachi, Plan X, Plan9, NSPIRE, 10xC, GIKI and Daftarkhwan, have joined the Velocity Partnership Program, and their start-ups now have access to the Velocity Suite. The Velocity Suite includes access to Telenor's customer base, APIs, payment integration,

33. Source: Telenor Pakistan
34. Source: Jazz
35. Asia Pacific Tech Hub Landscape 2018, GSMA Ecosystem Accelerator Programme, 2018

expert mentoring and outreach to investors. Start-ups can gain access to the Velocity Suite virtually from their co-working spaces.

In 2019, Telenor Velocity launched the country's first thematic cohort, focusing on the agriculture domain. As part of the initiative, start-ups with digital agricultural solutions are onboarded for the Velocity programme, which offers the opportunity to scale their solution by promoting their products and services on the interactive voice response (IVR) digital audio platform and the Khushaal Zamindaar app. The programme also provides access to Telenor's more than 8 million farmer base. Telenor's second thematic domain is gaming. The operator has partnered with Google Game Launcher to have a thematic cohort for game developers, starting from mid-2019.

The development community and government agencies increasingly use mobile platforms and partner with mobile operators on efforts to support Pakistan's budding start-up community. For example, the World Bank and Khyber Pakhtunkhwa Information Technology Board (KPITB) have partnered with Jazz on the Digital Youth Summit,[36] an initiative to train the next generation of tech innovators in Pakistan. Similarly, the UNDP and social enterprise organisation Viamo have partnered with Telenor to deliver entrepreneurship training over mobile phones using IVR messages. The pilot covers three provinces – Punjab, Sindh and Khyber Pakhtunkhwa – with a target audience of 80,000 mobile subscribers.[37]

36. http://www.jazzfoundation.com.pk/our-program/make-your-mark-program/#1528794088413-029e8f3b-71ac
37. "Using mobile technology to reach budding entrepreneurs in rural communities – can we do it?", UNDP in Pakistan, January 2019

NIC in Numbers

The National Incubation Centre (NIC) was founded in May 2016 as a public-private partnership between the Ministry of Information Technology and Telecommunication, ICT R&D Fund, Mobilink (Jazz Xlr8) and Teamup. NIC connects Pakistani entrepreneurs with industry experts and investors, and provides modern, rent-free co-working space, mentorship, training, and networking opportunities for entrepreneurs and tech start-ups. In March 2019, NIC welcomed its fifth cohort of entrepreneurs, with tech solutions addressing challenges across a variety of sectors, including agriculture and health.

START-UPS INCUBATED
121

42
WOMEN ENTREPRENEURS

1,200+
hours of curriculum

JOBS CREATED
1,700+

PKR 370m+
Investment raised

See www.nicpakistan.pk

Figure 7

Telenor support for tech innovators and start-ups

Access to Customers

Provision of data analytics via BI systems. Target SMS campaign based on selective traits

Online Payments & API Integration

Registration of start-up as a Easypaisa merchant. Ease of using our easy pay module as online payments partner

Advertisement on Telenor Digital Channels

Access to 13.2 million+ loyal base of customers using Digital Apps and IVR Platform

Product Development

Action planning to reach target customers and achieve competitive advantage

Revenue Modelling

Helps in identifying which revenue source to pursue

Mentorship from Telenor Pakistan Experts

Learn from the experts in the realm of product development and scaling

Source: Telenor Pakistan

Insights from Jazz SDG Hackathon 2018[38]

The GSMA Ecosystem Accelerator programme participated in Jazz SDG Hackathon in Islamabad in December 2018. The aim of the event was to use mobile platforms to design solutions that address five SDGs – SDG 3 Good Health and Well Being; SDG 4 Quality Education; SDG 5 Gender Equality; SDG 9 Industry, Innovation and Infrastructure; and SDG 11 Sustainable Cities and Communities. Through the hackathon, Jazz enabled the use of key assets, such as location APIs, carrier billing, payment services, IVR and USSD, to create innovative solutions and business models. Solutions that emerged from the hackathon include:

- Smart Bra, an undergarment equipped with sensors to detect symptoms of breast cancer at early stages
- FideTech, a water impurity testing solution
- Dost, a data-driven community awareness and support platform geared towards improved mental health
- JASONS, a smartphone application which utilises excess food from restaurants, hotels and homes to feed the hungry and provide to those in need

38. Key takeaways from Jazz SDG Hackathon 2018 Islamabad, GSMA Ecosystem Accelerator Programme, 2018

PAKISTAN MOBILE SECTOR AT A GLANCE, DECEMBER 2018

MOBILE NETWORK OPERATORS

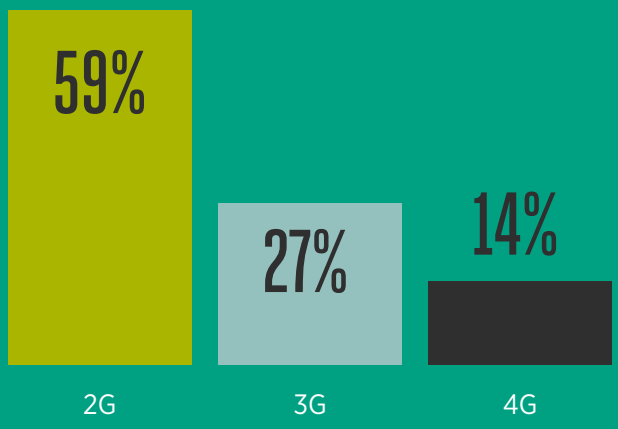
Jazz · telenor · ZONG · ptcl · ufone · SCO · QUBEE · wateen · wi-tribe

TOTAL CONNECTIONS

154 MILLION

62 MILLION OF THESE ARE BASED ON MOBILE BROADBAND TECHNOLOGIES

% CONNECTIONS (EXC CELLULAR IOT)



SMARTPHONE ADOPTION[39]

37%

compared to

48%

for South Asia

AVERAGE REVENUE PER SUBSCRIBER

$3.3

compared to

$3 for South Asia

39. Smartphone connections as a percentage of total connections (not population)

3. Mobile technology contribution to social and economic progress in Pakistan

The government of Pakistan has set an ambitious average GDP growth target of 5.4% over the next five years as part of the 12th Five-Year Development Plan.[40] Realising this target is essential to cope with the country's rapid population growth of 2% annually. Other targets in the plan centre on achieving the SDGs, tackling climate change and other environmental issues, and reducing poverty, with a strong focus on less developed areas, such as South Punjab, rural Sindh and Baluchistan.[41]

The mobile industry in Pakistan is a key partner for the government in its efforts to realise the SDGs and achieve its socioeconomic targets. Primarily, the mobile ecosystem contributes significantly to GDP growth and job creation. In addition, mobile operators and other ecosystem players use mobile platforms to deploy innovative solutions that directly address the SDGs and support the Pakistan Vision 2025 aspirations.

3.1 Contribution to economic growth

Over the last five years, Pakistan has recorded an average annual GDP growth rate of 5%. The government has set a target of average growth of 5.8% during 2018-2023, as part of the 12th Five-Year Plan. Although the government's main interventions to realise this target focus on further industrialisation and the expansion of trade, the mobile ecosystem (and particularly mobile operators) plays an increasingly important role in economic growth, through its direct contribution to GDP and through driving productivity and efficiency gains across sectors of the economy.

The mobile ecosystem consists of mobile operators, infrastructure service providers, retailers and distributors of mobile products and services, handset manufacturers and mobile content, application and service providers. The direct economic contribution to GDP of these firms is estimated by measuring their

40. https://www.pc.gov.pk/web/press/get_press/285
41. https://www.pc.gov.pk/web/press/get_press/286

value added to the economy, including employee compensation, business operating surplus and taxes. In 2018, the total value added generated by the mobile operators alone – taking into account direct, indirect and productivity effects – in Pakistan was around $16.7 billion, equivalent to 5.4% of GDP.

Figure 8

Total economic contribution of the mobile ecosystem in Pakistan

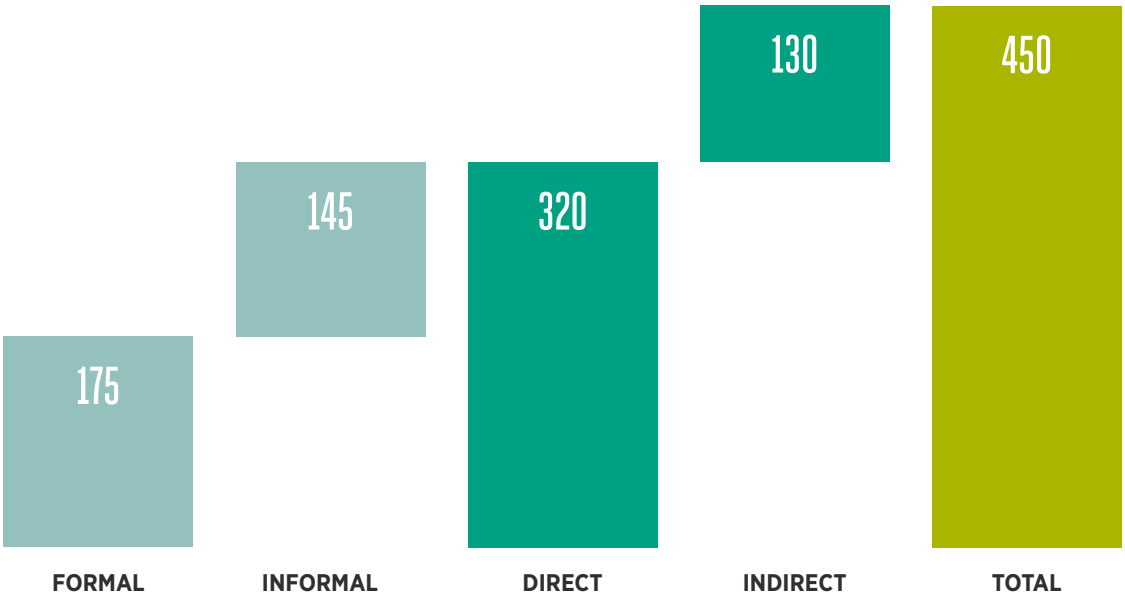
Source: GSMA Intelligence

Going forward, the economic contribution of the mobile industry will increase in both absolute and relative terms, reaching $24 billion in 2023, and accounting for 6.6% of GDP. The majority of this increase will be driven by improved productivity, particularly from the increasing adoption of mobile internet services. Wider network coverage and the rapid adoption of new 4G services could further accelerate growth and, subsequently, the mobile industry's contribution to economic growth.

Mobile technology is also contributing to employment in Pakistan, through direct and indirect employment in the sector and more effective recruitment channels. Mobile operators and the ecosystem provided direct employment (formal and informal) to around 320,000 people in 2018. Economic activity in the mobile ecosystem also generates jobs in other sectors; firms that provide goods and services as production inputs for the mobile ecosystem will employ more individuals as a result of the demand generated by the mobile sector. Furthermore, the wages, public funding contributions and profits paid by the industry are spent in other sectors, which provide additional jobs.

Figure 9

Employment impact (jobs, thousands), 2018



Source: GSMA Intelligence

3.2 Contribution to national development aspirations in Pakistan

Table 2

Mapping the impact of mobile on Pakistan Vision 2025 and the SDGs

Pakistan Vision 2025	Aligned SDGs	Impact of mobile	
People first: developing human and social capital		• Enables mobile health, mobile education and digital identity for underserved population groups, such as women and rural dwellers. • Facilitates efficient and effective transfer of social protection payments to vulnerable citizens.	• Generates employment opportunities across the value chain in various economic sectors.
Achieving sustained, indigenous and inclusive growth		• Cellular IoT technologies help to monitor water quality and marine pollution, and enable provision of mobile agricultural services to small-scale farmers. • Provides essential humanitarian assistance during epidemics and natural or climate-related disasters.	• Mobile money and connectivity increase productivity and the efficiency of resource utilisation.
Governance, institutional reform and public sector modernisation		• Enables e-government services, which: - increase trust in public services among citizens - enable digital identity for underserved populations - improve transparency and accountability	- enhance the communication of government activities and expenditure - enable citizens' participation in governance through solutions that allow them to express their opinions on various public and private services.

Pakistan Vision 2025	Aligned SDGs	Impact of mobile	
Energy, water and food security		• Enables innovation and new business models such as the sharing economy, mobile savings and credit, and pay-as-you-go solar models to access clean energy. • Increases productivity and the efficient use of resources in industry – for example via industrial IoT and smart energy grids.	• Improves water and sanitation service delivery by enabling new business models that rely on mobile technologies for payment collection, remote monitoring, improved planning and effective communications
Private sector and entrepreneurship-led growth		• Supports a vibrant tech start-up ecosystem and a new generation of tech entrepreneurs using mobile platforms to create innovative solutions.	• Mobile operators drive private investment in much-needed telecoms infrastructure which, in turn, enables growth across multiple sectors that rely on improved connectivity. In the last decade, mobile operators in Pakistan have invested a combined $6.5 billion in telecoms infrastructure.
Developing a competitive knowledge economy through value addition		• Enables students and teachers to access learning materials, school curricula, tests and online courses and certifications, especially in underserved and remote areas.	• Gives teachers easier access to the training and professional development courses they need to better meet the needs of students.
Modernising transport infrastructure and regional connectivity		• Enables sharing economy solutions in the transport sector for greater efficiency and asset utilisation. • Key feature of emerging smart city solutions to cope with increasing urbanisation.	• Mobile broadband facilitates communication across regions, reducing unnecessary journeys, contributing to the sustainability of existing infrastructure and the environment. • Mobile infrastructure can provide platforms to enhance disaster response and recovery.

3.3 Assessing the impact of mobile across key sectors in Pakistan

Agriculture[42]

3.81%

GROWTH IN FY17/18, THE HIGHEST ANNUAL GROWTH IN 13 YEARS

18.9%

OF CONTRIBUTION TO GDP IN FY18

38.5%

Of the labour force, the highest of the three major sectors of the economy

Mobile-enabled solutions: Agriculture

PAKISTAN VISION 2025

- Food security
- Private sector led growth
- Sustained indigenous and inclusive growth
- Developing human and social capital

Farmer information services

BACKGROUND

Agriculture accounts for 18.9% of Pakistan's GDP and 42% of the labour force. However, agricultural yields do not meet demand, mostly due to local farmers' lack of access to relevant farming and market information. Meanwhile, the activities of middlemen at each stage of the distribution network mean farmers are unable to get the right price for their produce.

SOLUTION

Jazz created Bakhabar Kissan (BKK), a mobile-based platform that offers information services across the agricultural value chain, from planning and growing to harvesting and selling. BKK uses multiple conventional and digital communication platforms to engage stakeholders in the agri ecosystem. Key platforms include SMS, IVR, call centre, voice messaging service, Facebook, and WhatsApp Business. BKK services are available in seven languages.

IMPACT

The BKK service sends more than 70 million SMS messages per month regarding market prices and weather forecasts to farmers, and responds to more than 600,000 SMS queries. The Jazz BKK Call centre receives approximately 1,500 calls per day, addressing farming, weather, market rates and crop/livestock disease issues. The IVR feature receives approximately 850,000 calls per month, mostly related to crops, weather, market rates, livestock and agriculture inputs.

42. Source: Pakistan Economic Survey, 2017-2018

Mobile-enabled solutions: Agriculture continued

Weather and advisory information for farmers

BACKGROUND

The productivity levels of farmers are often stymied by poor access to relevant market and weather information, and the continued use of inefficient farming techniques. According to the World Bank, cereal yield in Pakistan was 3,064 kg/hectare in 2016, compared to the South Asia average of 3,128 kg/hectare.

SOLUTION

In 2015, Telenor launched Khushaal Zamindar, a digital audio platform providing hyper-localised weather forecasts and actionable agronomic advisory to farmers. The service, currently available in Punjab, Gilgit Balitistan, Chitral and Sindh, offers a three-layered value proposition to farmers: improve yields, mitigate risk from disasters and encourage greater social recognition. Weather is localised to the level of the tehsil.[43] Each farmer can personalise the service to suit their own needs.

IMPACT

Khushaal Zamindar has a base of 6 million monthly active users with around 1.5 million daily active users. A survey to understand the benefits of the services found that 'power users' were almost twice as likely to report increased income, compared to the previous season, than non-users, as well as higher yields from their farms.

Last-mile digitisation in the dairy value chain

BACKGROUND

Agribusinesses in Pakistan face challenges around manual processes in the agri value chain, such as onboarding for farmers, tracking and traceability of produce, and making cash payments to farmers.

SOLUTION

In 2017, mobile operator Jazz collaborated with the GSMA and Farmerline, a Ghana-based agri-tech company, to deploy agribusiness digitisation solutions to support the financial inclusion of smallholder farmers selling outputs to selected agribusinesses. A solution was designed for Haleeb – an agribusiness in the dairy value chain – to digitise the dairy value chain and help improve productivity of dairy farmers, with the following functions:

- **Farmer registration**: enables a unique ID for keeping records of suppliers, yield, animal cycles and sales history
- **Milk procurement record**: improves traceability of milk collection, source of procurement, quality checks at different stages in the value chain, and visibility of transport logistics
- **Digital payment**: avoids the dependency on cash payments to farmers and ensures prompt payment to them.

IMPACT

Following a pilot in 2018, the following results were recorded:

- An internal business-reporting tool allows Haleeb to capture data in line with the agribusiness requirements.
- The farmer registration module was enhanced to capture key information points, such as potential volumes, resulting in improved production forecasting. Haleeb was able to capture quality parameters of milk at transfer points within the supply chain.
- Disbursement of payments via JazzCash improved traceability of payments from agribusiness to farmers.

Supporting agri start-ups

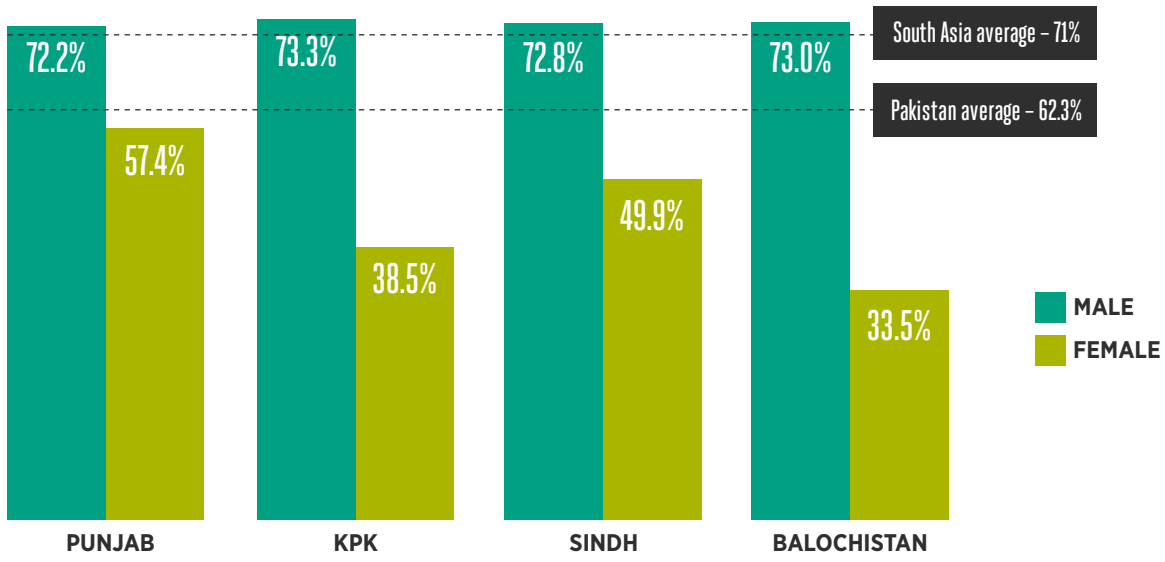
As a demonstration of the potential of digital technologies to drive growth and productivity in the agricultural sector, Telenor Velocity has launched an agri-tech cohort – the first sectoral stream of the accelerator programme. The aim is to digitise the agricultural ecosystem by automating agri processes, incorporating digital communication at every level of interaction, and capture & utilise data generated during the process to drive innovative solutions. Start-ups will receive support for go-to-market strategies, access to Telenor assets, including Telenor Bank APIs, mentors and experts, SMS and IVR platforms, and payment platforms, to reach more than 5 million smallholder farmers across Punjab, Sindh and Gilgit Baltistan.[44]

43. An administrative division in Pakistan and parts of South Asia
44. See https://telenorvelocity.com.pk/agri-tech/

Education

Figure 10

Pakistan: literacy rates by region



Source: Pakistan Economy Survey, 2018-19

Mobile-enabled solutions: Education

PAKISTAN VISION 2025

- Developing human and social capital
- Developing a competitive knowledge economy
- Industry innovation

Improving learning and closing the gender gap in literacy levels

BACKGROUND

In Pakistan, 22.84 million school-age children are out of school. Meanwhile, 38% (10.89 million) of students who are in schools are not learning, based on the tests of student achievement at various levels. More than 60% (1.46 million) of students enrolled in Class 6 do not possess the basic numeracy and literacy skills they should have acquired in Class 2.[45]

SOLUTION

In 2017, Jazz launched the Jazz Smart School (JSS) Programme, which uses mobile technology to help improve student learning outcomes and teaching methodology. Mobile apps and web portals allow teachers to identify student learning gaps; principals to see development of a class by evaluating the performance of teachers; parents to track progress of their children; and education administrators to see progress at various levels (per student, class, school or geographical zone).

JSS has been implemented in collaboration with Singapore-based Knowledge Platform and local and federal education departments. To bridge the gender gap, JSS has been designed to increase student learning outcomes of 20,000+ female students and improve the teaching methodologies of 600+ female teachers, through a digital learning platform across 75 public-sector schools for females in Islamabad.

IMPACT

After a two-year pilot, pre-tests were organised for all 20,000 students in the programme to evaluate their current learning levels based on subjects they studied in the previous grades. The internal mid-term evaluation results recorded an improvement of up to 30% in student learning outcomes. The average age of JSS teachers is 40 years, and 70% of them had never used a computer before. With the introduction of the digital blended learning platform, all 600+ teachers are actively using technology in planning and delivering their daily lectures.

Improving digital literacy

BACKGROUND

Lack of digital literacy and skills is a key reason for many people in developing countries to not use the internet. This is a particular concern in Pakistan, where around 38% of mobile phone owners who do not use the mobile internet state they have difficulty understanding how to use their mobile handset.[46]

SOLUTION

Telenor launched its first Internet Champion (iChamp) programme in 2014 to equip Pakistani students with basic knowledge of mobile and data technology and to help them advance and educate themselves for better future prospects. The second iteration, iChamp2, was launched in 2017 in collaboration with Free Basics by Facebook to provide students free access to an online information portal featuring 17 educational websites, through a Telenor 4G data connection. The programme also trains children on staying safe online.

IMPACT

iChamp2 has trained more than 630,000 students across 1,800 schools nationwide, teaching them how to make effective use of mobile technology to advance their learning skills. It covered schools from Gilgit to Karachi. More than 4 in 5 of the participating schools were under-privileged and often lacked access to digital technologies.

45. Pakistan Education Statistics 2016-2017, Ministry of Federal Education and Professional Training, 2018
46. GSMA Intelligence Consumer Survey 2018 – a face-to-face survey of a sample of 1,000 respondents in Pakistan across a representative mix of age, gender, location and social class

Identity

67%

OF CHILDREN UNDER THE AGE OF 5 ARE UNREGISTERED (AS OF 2013) – ALMOST DOUBLE THE AVERAGE FOR SOUTH ASIA

2/3

children remain unregistered at birth, with registration rates lowest among girls

RATE OF REGISTRATION:

59% URBAN AREAS

23% RURAL AREAS

5% HOUSEHOLDS IN THE POOREST QUINTILE OF THE POPULATION

Mobile-enabled solutions: Birth registration

PAKISTAN VISION 2025

- Developing human and social capital
- Institutional reform and public sector modernisation

10 REDUCED INEQUALITIES

5 GENDER EQUALITY

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

BACKGROUND

Only a third of new births in Pakistan are registered. This is due to several social and economic factors, including insufficient resources, weak governance structures, and high costs in time and money required for registering the birth of a child, particularly in rural areas. These factors are then exacerbated by a general lack of awareness regarding the benefits of birth registration.

SOLUTION

In 2014, UNICEF, in partnership with Telenor Pakistan and the provincial governments of Sindh and Punjab provinces, commissioned a new pilot to test how mobile technology could effectively augment the traditional, paper-based birth registration process. Punjab and Sindh were identified as the priority locations for the project, as they are the largest and most populous provinces of Pakistan and contribute the largest caseload of unregistered births.

Telenor provided a cross-functional team to support the technical development of the platform and input into maintenance and training. Female health workers and traditional marriage registrars (nikah), alongside Telenor agents, all served as birth registration "gatekeepers" and received training on the new platform so they were able to register children. Telenor also provided handsets and devices to support registration (with the application pre-loaded). The operator also provided digital connectivity for data collection and the EasyPaisa platform, which was used by UNICEF to provide timely and transparent disbursements of incentive stipends to registrars.

IMPACT

Following the success of an initial four-month pilot (during which the targeted districts saw registration rates increase by an average of 200%), a second pilot was launched. Since digital birth registration activities commenced in late 2017, the project has successfully registered 740,000 children through the scaled-up system. Approximately 48% of the children registered on the new system are girls.

Health[47]

66.5%

Out-of-pocket expenditure as a % of current health expenditure

HEALTH WORKERS (PHYSICIANS, NURSES AND MIDWIVES) PER 1,000 PEOPLE

1.2

UNDER-FIVE MORTALITY RATE OF

74.9

OUT OF 1,000 BIRTHS

Mobile-enabled solutions: Health

PAKISTAN VISION 2025

- Developing human and social capital
- Industry innovation

Enabling access to health insurance

BACKGROUND

Only 0.8% of the population in Pakistan have health insurance. This means the vast majority rely on out-of-pocket cash payments for healthcare services and drug purchases. Quality health service providers and hospitals are concentrated in bigger cities, meaning people have to travel long distances to access quality healthcare services at a much higher cost.

SOLUTION

In 2018, JazzCash collaborated with Medicount, a financial and advisory service provider in consumer health management, to launch Healthpass. The mobile-enabled service allows customers to receive discounts of up to 20% on healthcare expenses by paying through JazzCash Quick Response (QR).

IMPACT

Healthpass was launched in Islamabad, but has since been extended to Rawalpindi, Lahore and Peshawar. The services will be launched in Karachi in 2019. More than 260 health service providers are on board, with discounts of up to 25%. Around 4,000 transactions, worth PKR9.8 million ($70,000), have also been processed since launch, with patients saving an estimated PKR3 million on medical services.

47. https://data.unicef.org/country/pak; https://www.who.int/workforcealliance/countries/Pakistan_En.pdf?ua=1

Mobile-enabled solutions: Health continued

Bringing health advice closer to people

BACKGROUND

Pakistan is experiencing a shortage of physicians working in the health system, which in turn has created a shortage of doctors in a growing population. Pakistan educates 150,000 doctors every year. Some 63% of medical students are female, but only 23% of the country's doctors are female, according to the Pakistan Medical and Dental Council.[48]

SOLUTION

Sehat Kahani[49] launched affordable healthcare solutions to underserved communities across Pakistan in 2017. The start-up created a network of e-Hubs (walk-in clinics) that use telemedicine to connect users to qualified women doctors online, while qualified nurses or health workers act as intermediaries in selected communities. Sehat Kahani has also developed a mobile and web-based telemedicine solution that gives users direct access to virtual consultations, as well as general preventive and mental health information.

In December 2018, Sehat Kahani began a partnership with Jazz. Under the partnership, Jazz's mobile money service JazzCash is integrated with the Sehat Kahani app, allowing patients to pay for services, including a consultation with a Sehat Kahani doctor. Jazz also provides Sehat Kahani with subsidised data rates for e-Hubs across Pakistan.

IMPACT

Sehat Kahani received a grant from the GSMA Ecosystem Accelerator Innovation Fund[50] in February 2018 to deploy the health technology in six clinics that support 120 community health workers. Each of the six clinics acts as a referral point for patients who need further consultation and treatment. As of December 2018, Sehat Kahani had treated more than 30,000 patients, 78% of which are women, under a GSMA-funded project. Some 95% of these consultations were online using the web platform and mobile application.

48. http://www.pmdc.org.pk/statistics/tabid/103/default.aspx
49. "Meet our portfolio start-ups: Sehat Kahani, Pakistan", GSMA, March 2019; "Sehat Kahani Employing mobile technology to connect women doctors to underserved communities in Pakistan", GSMA, May 2019
50. Ecosystem Accelerator Innovation Fund Start-up Portfolio, GSMA, 2019

Utilities[51]

22M

PEOPLE DO NOT HAVE ACCESS TO CLEAN WATER

50%

OF THE RURAL POPULATION STILL LACK ACCESS TO ELECTRICITY AND RELY ON TRADITIONAL BIOMASS USE (SOURCE: IREA)

$2.3B

Spent each year on poor-quality lighting solutions, such as diesel generators and battery-powered torches

Mobile-enabled solutions: Safe water and clean energy

PAKISTAN VISION 2025

- Energy and water security
- Developing human and social capital
- Industry innovation

Enabling access to improved water sources

BACKGROUND

In Pakistan, water utilities – Water and Sanitation Agencies (WASAs) – only partially cover the urban population and do not have the capacity to provide a fully reliable service. This situation leads to unsatisfied customers and high levels of non-revenue water (water that is not paid for, due to leakages, theft or inefficient billing). As the population grows and people continue to migrate to urban areas, poor service delivery of water to customers and utilities' revenue losses will worsen if utilities do not improve their operations.

SOLUTION

Mobile technology can help address some of the WASAs' operational and financial challenges and improve the delivery of water services to customers. The WASA of Faisalabad is leading these efforts by developing a metering strategy. The efforts will be supported by the development of a strong ecosystem of innovators who leverage mobile technology – from basic mobile communication (SMS, voice) to mobile payment and cellular IoT – for improved water service delivery to urban areas of Pakistan.

IMPACT

Faisalabad is the third biggest city of Pakistan and the fastest growing economically. The WASA is planning to meter all its customers – currently 100,000 residential, 20,000 commercial and 1,000 industrial customers – and is interested in GSM-enabled M2M for metering, mobile payment and communication services to improve efficiency. Beyond activities in the urban centre of Faisalabad, the WASA has also created the Changa Pani Programme to improve affordable water access in the outskirts of Faisalabad, where the service is often deficient. With the support of the Government of Punjab, the Programme is being developed to provide safe drinking water to the underserved community through metering services.

51. See https://www.wateraid.org/pk/; "Renewable Energy Can Build Prosperity and Improve Energy Security in Pakistan" IRENA, April 2018; https://www.lightingglobal.org/where-we-work/lighting-asia/pakistan/

Mobile-enabled solutions: Safe water and clean energy continued

Enabling access to clean energy

BACKGROUND

In 2012, Pakistan had an electrification rate of 69%, with 57% access in rural areas and 88% in urban areas. Meanwhile, about 85% of the country's 182 million people have access to GSM networks. Pakistan's addressable energy market, defined as the number of people with access to GSM networks but not to electricity, is therefore estimated at 29 million people, or 16% of the population.

SOLUTION

EcoEnergy delivers solar home systems (SHSs) on a PAYG basis to remote and off-grid customers in Pakistan through its integrated sales and service network. In February 2014, EcoEnergy received a grant from the GSMA M4D Utilities Innovation Fund[52] to sell 50 SHSs with GSM-based M2M connectivity and 750 solar lanterns on a PAYG basis in partnership with mobile wallet provider UBL OMNI in Sindh, Pakistan.

IMPACT

EcoEnergy has been selling lanterns with PAYG technology on cash or credit since 2013. Around 60% of EcoEnergy customers cited time saving as the major benefit of its services. Other perceived benefits of the service were improved health (40%), entertainment (39%) and money saving (29%).

Reducing electricity line losses

BACKGROUND

Key challenges with local power distribution are line losses and electricity theft. The Pakistani Senate Committee on Circular Debt estimates the cost of power theft during 2017–18 was more than PKR53 billion ($312 million).

SOLUTION

In May 2018, Jazz received a grant from the GSMA M4D Utilities Innovation Fund[53] to develop and implement a reduction solution for a mainstream grid distributor. Jazz, along with its technology partner CISNR and grid distributor PESCO, is designing, developing and implementing the solution.

IMPACT

Successful execution and scale can enable other distribution companies to address on-grid power distribution issues in Pakistan.

52. Mobile for Development Utilities Annual Report, GSMA, 2019
53. Mobile for Development Utilities Annual Report, GSMA, 2019

Disaster risk reduction[54]

Reconstruction costs for the 2005 high-magnitude earthquake in Pakistan

$5.2B

3–4%

OF THE FEDERAL BUDGET IS THE ESTIMATED ANNUAL ECONOMIC IMPACT OF FLOODING

$245m

INVESTMENT COMMITMENT BY THE GOVERNMENT OF PAKISTAN IN DISASTER RESILIENCE FOLLOWING A 2015 FISCAL DISASTER ASSESSMENT REPORT FROM THE WORLD BANK

Mobile-enabled solution: Emergency coordination and disaster risk reduction

PAKISTAN VISION 2025

- Governance, institutional reform and public sector modernisation
- Developing human and social capital
- Sustained, indigenous and inclusive growth

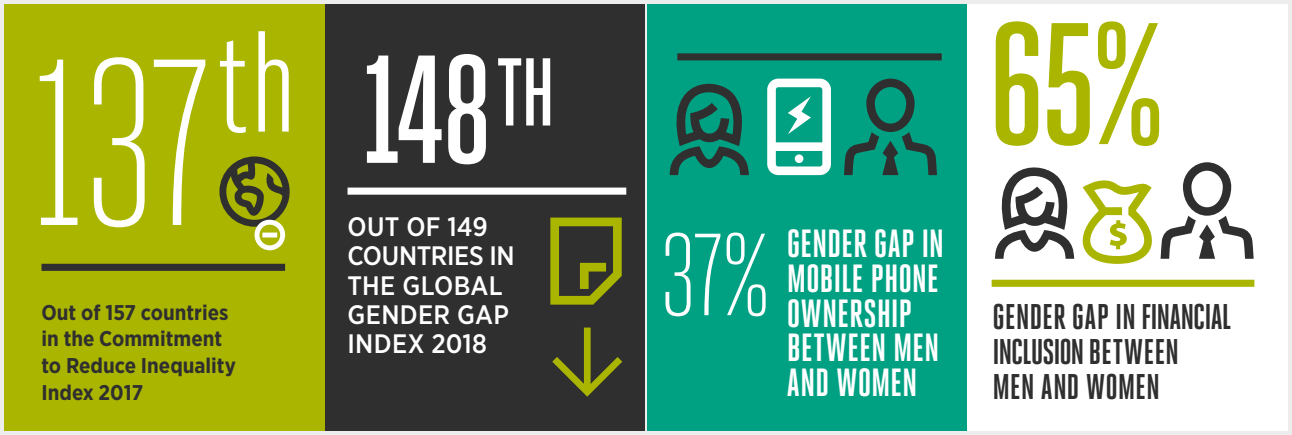
Pakistan is exposed to natural hazards including cyclones, droughts, earthquakes, floods and landslides. Resilient communications are vital to ensure that early warnings can be disseminated in a timely manner, humanitarian responders can effectively communicate, and people in the community can stay in touch when faced with disasters.

Under the GSMA National Dialogue, powered by Mobile for Development, the GSMA is working with mobile operators, the Ministry of Information Technology and Telecommunications (MOITT), Pakistan Telecommunications Authority (PTA) and Pakistan National Disaster Management Authority (NDMA) to develop a framework to increase overall network resilience and establish the Pakistan Emergency Telecommunications Coordination Committee (PETCC). PETCC is expected to perform the following activities:

- **Industry collaboration**: Formulate and standardise outage reporting mechanisms, business continuity plans, information sharing, and prioritising network restoration within the PETCC membership.
- **National and regional stakeholder collaboration**: Engage with parties involved with early warning dissemination in Pakistan to formulate and customise a national early warning system.
- **International partnerships**: Engage relevant stakeholders to determine training and capacity needs (ITU, Emergency Telecommunications Cluster).

54. https://www.gfdrr.org/en/pakistan; Fiscal Disaster Risk Assessment Options for Consideration, World Bank, 2015

Reducing inequalities across sectors[55]



Mobile-enabled solutions: Women empowerment and digital inclusion

PAKISTAN VISION 2025

- Developing human and social capital
- Sustained, indigenous and inclusive growth
- Modernising transport infrastructure and regional connectivity
- Competitive knowledge economy through value addition

Farmer information services

HAMARA INTERNET

Hamara Internet is an initiative supporting women's rights to use the internet free from harassment, surveillance or other digital threats.[56] A project of the Digital Rights Foundation and driven by Night Dad, it aims to empower women and girls to thrive in the digital space and learn how to defend themselves in an increasingly connected world. The Hamara Internet team of digital defenders routinely holds digital security training workshops throughout Pakistan. The team also develops online safety tools and resources for women.

UNITED BANK LIMITED AND THE BENAZIR INCOME SUPPORT PROGRAMME

The digitisation of social transfers and government payments where the majority of beneficiaries are women can help reach more women with mobile services. In 2010 United Bank Limited (UBL) launched the mobile money service Omni Bank to process social transfers, including part of the Benazir Income Support Programme. Through its mobile money service, UBL has allowed 1.3 million previously unbanked and underbanked women to open a mobile money account and to access convenient, reliable and cost-effective financial services. The long term national planning framework VISION 2025 commits to pursue women empowerment as a key priority area across all sectors of planning and development.[57]

ESTABLISHMENT OF HELPLINE FOR SINDH MENTAL HEALTH AUTHORITY

PTCL and Sindh government have established a helpline service for the Mental Health Authority. The facility is available in two cities (Karachi and Hyderabad), with PTCL providing three PSTNs at each location. This facility provides free online assistance for mental health issues.

REDUCING THE GENDER GAP IN MOBILE OWNERSHIP AND FINANCIAL INCLUSION

In 2015 Telenor Pakistan successfully helped millions of female customers re-register their SIM cards against their Computerised National Identity Cards (CNICs), providing Telenor with an opportunity to increase women's access to life-enhancing mobile financial services.[58] Importantly, Telenor recognised the registration drive as a key opportunity to introduce women to new value-adding mobile services, including the mobile money platform Easypaisa. Because women were registering their SIMs against their CNIC number,

55. http://inequalityindex.org/; The Global Gender Gap Report 2018, WEF, 2018; Pakistan Wave 5 Report Fifth Annual FII Tracker Survey, InterMedia, 2018; The Mobile Gender Gap Report 2018, GSMA, 2018
56. https://hamarainternet.org/
57. http://bisp.gov.pk/service/women-empowerment-story/
58. Understanding the Identity Gender Gap: Insights and opportunities for mobile operators to help close the divide, GSMA, 2017

Mobile-enabled solutions: Women empowerment and digital inclusion continued

the KYC rules for the Bank of Pakistan were adhered to and Telenor was allowed to open Easypaisa accounts as soon as biometric details were taken.

The value Easypaisa could bring to women was clear: through partnerships with the BISP and CARE International, Easypaisa helped them overcome cultural and logistical barriers by bringing financial services to local shops, enabling women to register and receive their cash disbursements without having to travel to a bank.[59]

CONNECTING THE UNCONNECTED

In addition to the instrumental work mobile operators have undertaken in rolling out digital networks, the government and other key stakeholders have taken steps to accelerate digital and financial inclusion in Pakistan. For example, the Federal Ministry for Information Technology and Telecommunication (MoITT), through the Universal Service Fund (USF), has spent around PKR57 billion ($407 million) over the last decade to support the expansion of telecoms infrastructure and services to underserved areas of the country[60] In November 2018, the ministry revealed that 834 Mauzas[61] across Awaran, Khuzdar, Kohistan, Kharan, Chitral, North Waziristan and parts of KPK, with a total population of around 650,000, were provided with broadband services within the first 100 days in office of the government.[62]

The USF aims to provide, among other programmes and services, support for the deployment of voice and data services to remote areas of Pakistan, characterised by mountainous terrains and sparsely populated communities, under its Broadband for Sustainable Development programme, with infrastructure deployment executed in partnership with mobile operators. Recent developments include the following:

- December 2018: The USF awarded a project worth PKR759 million ($5.4 million) to Ufone for mobile broadband coverage in underserved areas of Balochistan.
- February 2019: The USF awarded a PKR258 million ($1.8 million) contract to Jazz for the rollout of mobile broadband services in North Waziristan frontier regions of Bannu and Lakki Marwat.
- March 2019: Ufone launched mobile services in Miranshah and Mir Ali, also in North Waziristan, with support from the USF.

59. "Bringing financial services to Pakistani women", Telenor, May 2014
60. "Rs 57 billion spent: USF fails to provide telecom services, Senate panel told", Business Recorder, August 2018
61. Type of administrative district, corresponding to a specific land area within which there may be one or more settlements
62. "Pakistan : Ministry of ITs accomplishments during first 100 days of current Government", MarketWatch, November 2018

4. Opportunities ahead to accelerate the impact of mobile-enabled digital transformation on socioeconomic progress

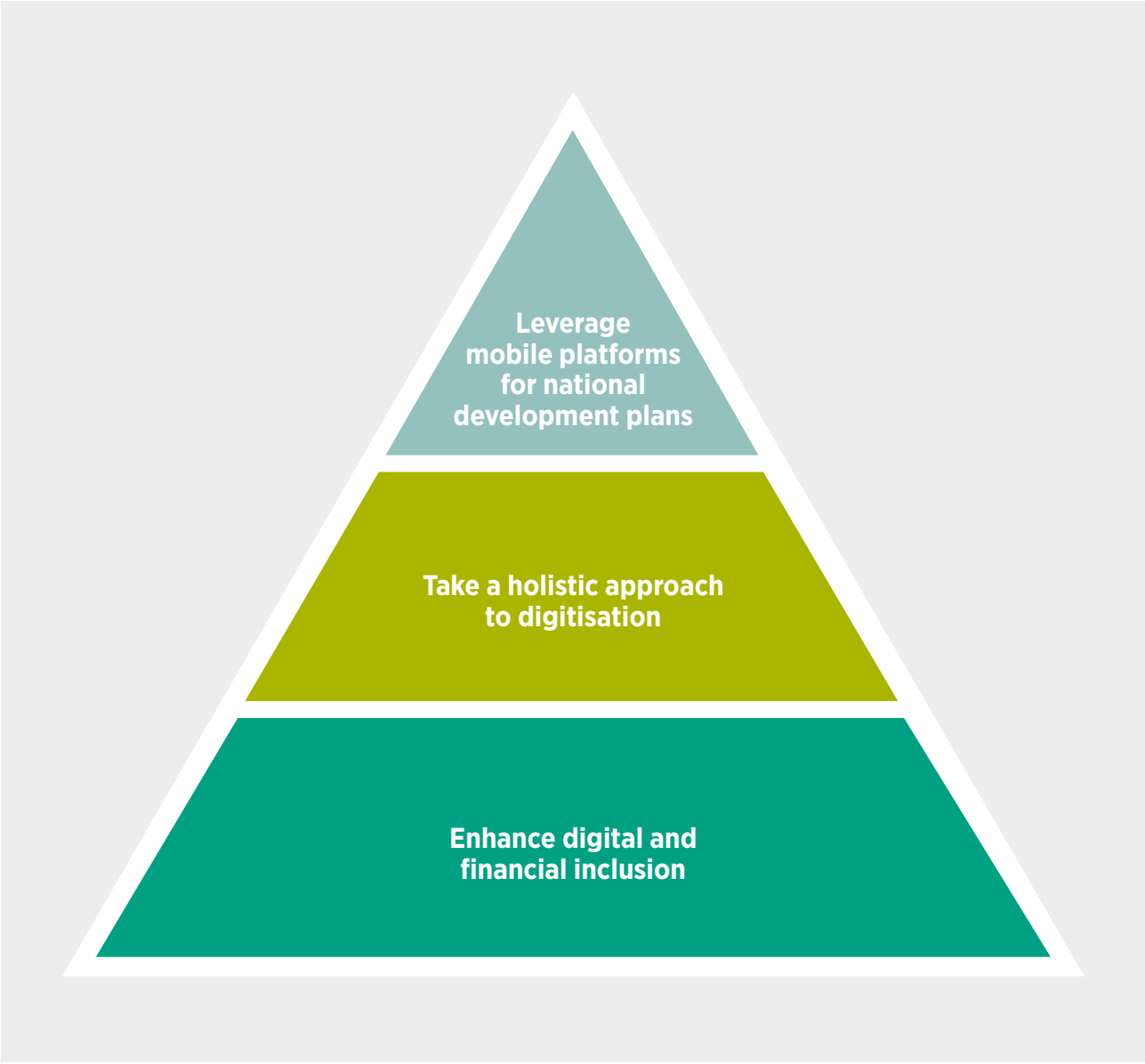
The next decade will be pivotal for Pakistan on its national development journey. During this period, the Pakistan Vision 2025 and the SDGs will reach their conclusion. Pakistan will also be implementing a number of medium-term development plans, including the 12th Five-Year Plan and the OP III. Achieving the key targets of these national development aspirations and driving overall economic growth and social inclusion are a priority for the government of Pakistan and its development partners.

The government of Pakistan has recognised the potential for digital technologies to drive inclusive growth and social development, and has positioned digital transformation at the heart of its national development strategy. As mobile technology is the foremost connectivity technology in Pakistan and the preferred platform to create, distribute and consume digital content and services in the country, it will be vital in driving digital transformation.

To fully exploit the opportunity that mobile technology presents to achieve Pakistan's national development aspirations, key stakeholders on this journey (the government, the development community, civil society organisations, the mobile ecosystem, and the private sector) need to collaborate to accelerate the impact of mobile-enabled digital transformation on socioeconomic progress in Pakistan.

Figure 11

Three distinct but interrelated actions to realise mobile-enabled progress on development goals



Source: GSMA

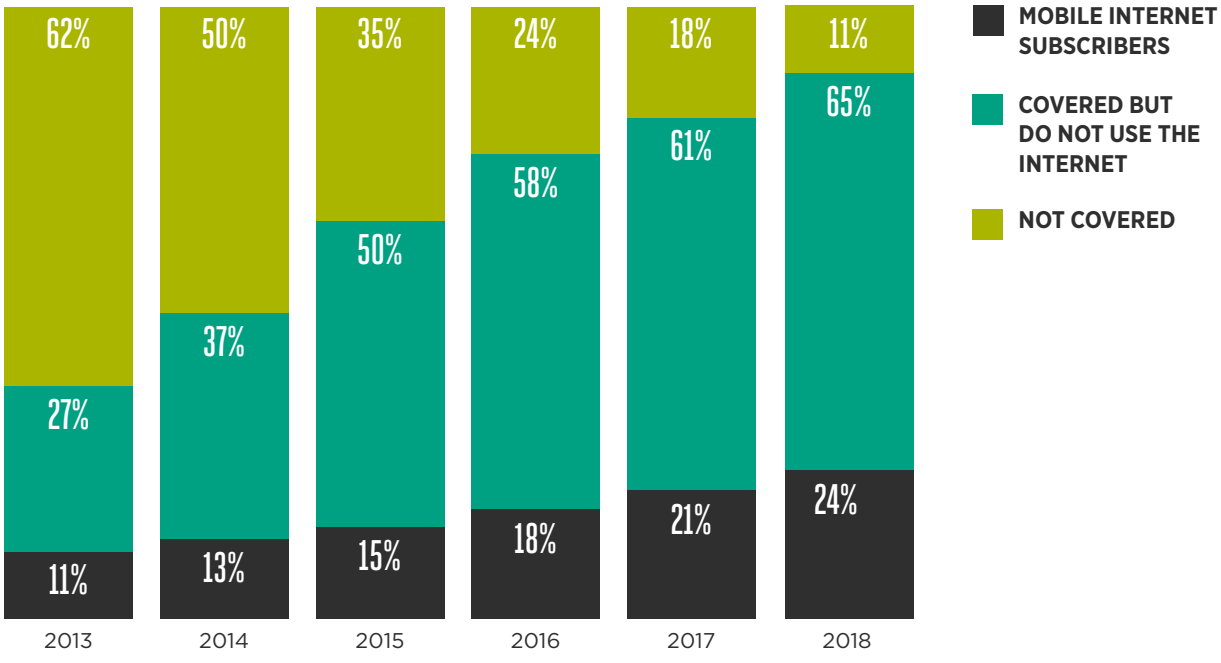
4.1 Enhance digital and financial inclusion

Digital connectivity is the cornerstone for enabling the formal economy, enhancing transparency in government services, and improving service delivery to citizens. Enhancing access to connectivity and DFS for excluded people is a foundational step in realising mobile-enabled progress with the development aspirations. Pakistan has made remarkable progress in improving digital and financial inclusion since the start of this decade, driven by increased access to mobile connectivity and mobile financial services. However, large swathes of the population remain excluded and at risk of missing out on the socioeconomic benefits of digitisation.

Unconnected and financially excluded people are mostly part of more vulnerable population groups, including women, rural populations and low-income households, and are often held back by a combination of access, affordability and usability barriers. While mobile ownership is relatively high among men, Pakistan has one of the largest mobile ownership and mobile internet usage gender gaps in the world, which limits overall penetration of mobile subscriptions. Pakistan significantly lags other countries in the region in terms of mobile internet adoption; addressing this challenge is essential to maximising the potential of digital transformation to accelerate progress with the development objectives.

Figure 12

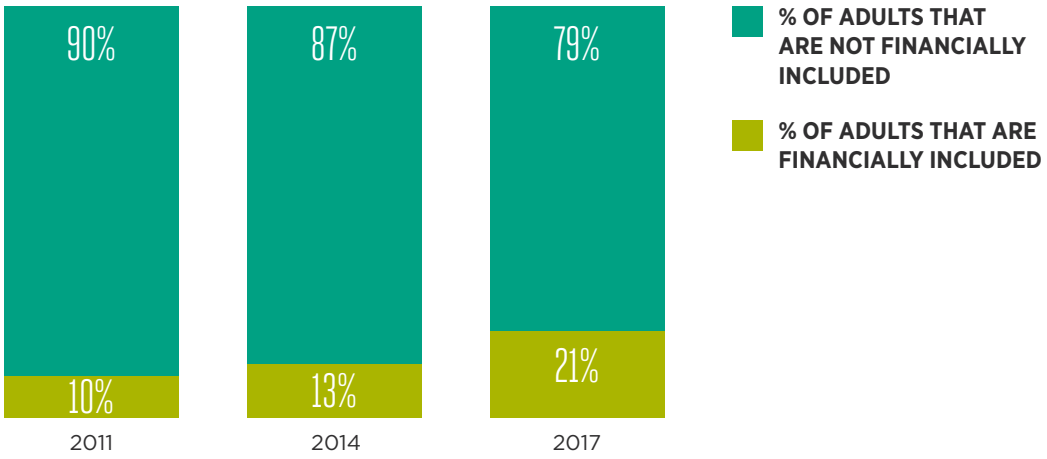
Mobile broadband network coverage has increased significantly since 2013, but adoption has been held back by non-infrastructure barriers



Source: GSMA Intelligence

Figure 13

Rising financial inclusion in Pakistan, but 4 in 5 adults are financially excluded

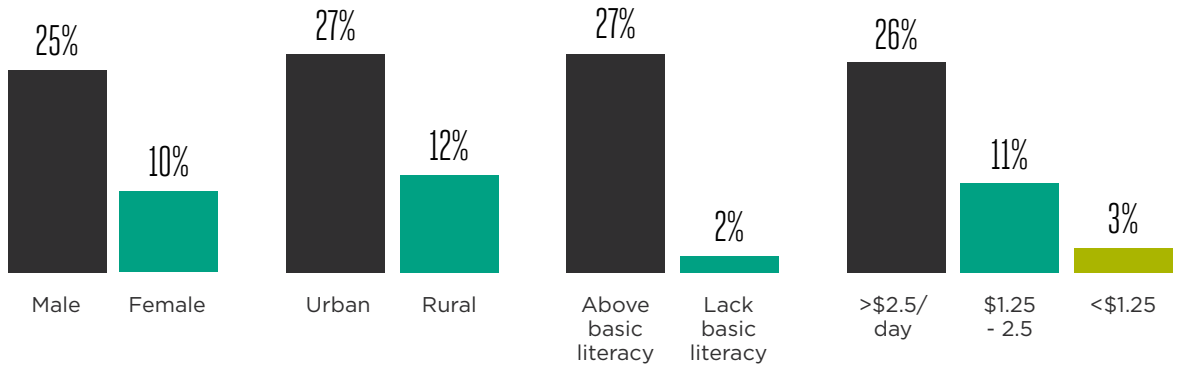


Source: World Bank Global Findex

Even when access exists via available network connectivity, mobile adoption still lags behind. Only a fraction of the 89% of the population covered by mobile broadband networks subscribe to a mobile internet service. Lack of relevant local content and basic and digital literacy skills are key issues in mobile internet adoption.[63] Another factor that limits mobile internet usage is that mobile subscribers in Pakistan are affected by taxes that apply to devices, SIM cards and usage charges. These taxes are particularly likely to affect the prices ultimately paid by consumers and may have a strong impact on the poorest consumers, reducing their ability to subscribe to a mobile broadband service.

Figure 14

Percentage of the adult population in Pakistan that have used mobile internet in the last 90 days



Source: The Financial Inclusion Insights, InterMedia, Wave 5 2017, age 15+, Pakistan N=6,000

63. GSMA Mobile Connectivity Index https://www.mobileconnectivityindex.com/#year=2017&zoneIsocode=PAK&analysisView=PAK

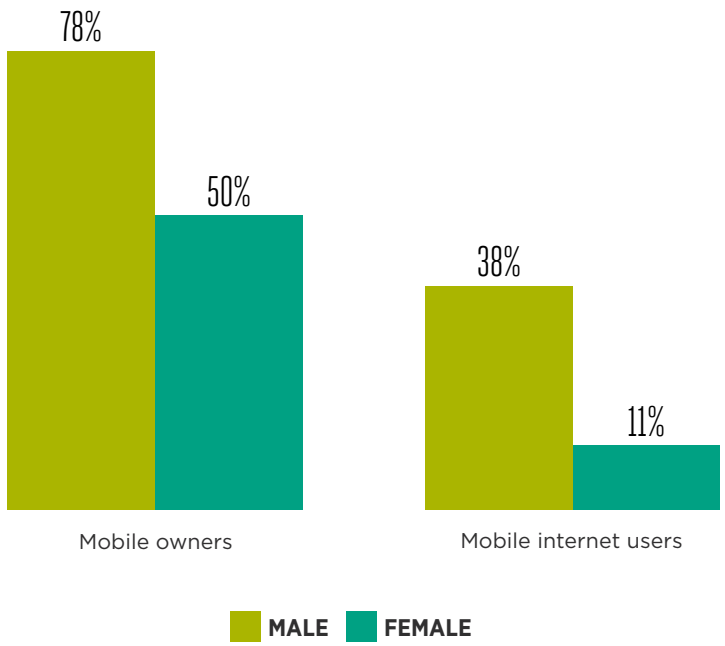
The gender gap in Pakistan

The size of the gender gap in mobile ownership and mobile internet use varies considerably between regions, within regions and even within countries. South Asia has the largest average gender gap in both mobile ownership and mobile internet use: the mobile ownership gender gap is 26%, while the gender gap in mobile internet use stands at 70%, highlighting the region's dramatic gender inequality in access to mobile technology. By contrast, across European and Central Asian low- and middle-income countries, slightly more women than men own mobiles, although they are still less likely than men to use mobile internet.

In Pakistan, barriers to mobile ownership and mobile internet use disproportionately affect women. For example, only 11% of women in Pakistan use mobile internet compared to 38% of men.[64] Some 31% of women who do not own a mobile phone in Pakistan report that disapproval from their family is the top barrier to owning a mobile phone, while only 4% of men in Pakistan reported this as a barrier at all. Studies[65] also show that women's access to digital technologies and the internet is often actively resisted by men. Husbands will only allow supervised access for their wives, and retailers will sometimes refuse to sell data to women. This is further evidence that for women in Pakistan, access to mobile and mobile services remains severely curtailed.

Figure 15

Mobile and mobile internet penetration (percentage of total adult population by gender)



Source: The Mobile Gender Gap 2019, GSMA, age 18+, n= from 508 to 1,118 for women and n= from 438 to 1,228 for men

64. As a share of the population
65. Triggering mobile internet use among men and women in South Asia, GSMA, 2017

Closing the gender gap in mobile ownership and mobile internet use in Pakistan requires a multi-stakeholder approach, with specific targets and strategies to stimulate digital inclusion among women. For example, Telenor has committed to increasing the proportion of women in its mobile internet customer base from 40% to 48%, and mobile money customer base from 10% to 15% by 2020. In April 2019, the government of Pakistan launched a policy on support programmes for the most vulnerable people in society, including 'Kifalat', which is intended to ensure digital and financial inclusion of around 6 million women through the "one woman, one bank account" policy.[66] In addition, stakeholders can involve women users in product, service and policy design and implementation, as well as in marketing and distribution to drive adoption among women.

66. "All you need to know about Pakistan Prime Minister Imran Khan's poverty alleviation plan", Gulf News, April 2019

Supporting the Tech Ecosystem in Pakistan

Ensuring there are locally developed solutions to market gaps is a key way to ensuring there are the locally relevant content and services to make being digitally included immediately valuable to citizens. Supporting start-ups to develop and bring to market such solutions drives a virtuous circle of economic growth and expertise. Pakistan has a vibrant, emerging tech ecosystem, actively supported by mobile operators and a range of other stakeholders. Meanwhile, the business environment has seen recent improvement, with Pakistan rising from 146th to 136th out of 190 on the World Bank's Ease of Doing Business Index in just one year.

However, this ranking also indicates that there is work to be done and highlights the need to accelerate momentum. One of the key challenges that the Pakistan start-up ecosystem still faces is the shortage of venture capital. In 2018, overall disclosed investment raised by start-ups was $147 million, compared to $247 million in Indonesia (excluding unicorns). While there are some VC investors present in the market, for example 47 Ventures, Acumen, Arpatech Ventures, DotZero Ventures, Planet N and Sarmayacar, there is need for more early-stage investment and a more investor-friendly legal framework that would strengthen the ecosystem.

Call to action:
Stakeholder steps to enhance digital and financial inclusion in Pakistan

- Government should ensure that spectrum in lower bands, such as 600 MHz, 700 MHz and 850 MHz, is available for deployment of mobile broadband networks in rural areas. The propagation qualities of sub-1 GHz spectrum make them suitable for cost-effective coverage of rural areas with low population density. Additionally, spectrum should be offered at affordable prices, with technology neutrality, and with predictable licence durations and renewal terms conducive to investment certainty (i.e. licences 20 years or longer, renewed under first right of refusal to incumbents).

- To address the affordability barrier for low-income individuals and families, governments at all levels should consider reducing or eliminating sector-specific taxes on devices and services, to make them more affordable to users. By equipping people with the skills and tools that support digital and financial inclusion, this can help bring more people into the formal economy and, by extension, expand the tax base. Pakistan has a narrow tax base with only 3.6 million taxpayers, equivalent to only 2% of the total population.

- The USF should take a more targeted approach towards specific population groups using disaggregated indicators, such as age, gender, religion and disability, to help bridge the digital divide among people in these groups.

- Stakeholders should work together on initiatives to address the barriers to mobile internet adoption among women, including affordability, accessibility, usability, skills and relevance, as well as the social norms and disparities between men and women in terms of education and income that often contribute to women experiencing these barriers more acutely than men. This should include:

  - improving the quality and availability of gender-disaggregated data to set targets, create strategies and track progress

  - ensuring considerations of women and gender equality are integrated in strategies and plans, including setting specific gender-equity targets for reaching women and tracking their progress

  - consulting and involving women users from a range of backgrounds in product, service and policy design and implementation, including testing and piloting, marketing and distribution

  - investing in public education initiatives that increase females' mobile digital literacy and confidence, including for girls and women across all levels of education, income and familiarity with mobile and the internet

- Governments at all levels should consider a regulatory and fiscal framework that is supportive of tech start-ups to drive innovation and the creation of relevant digital content and services for local consumers.

4.2 A holistic approach to digitisation

A key feature of the emerging digital landscape in many developing countries, including Pakistan, is the fragmentation and duplication of digital initiatives by government agencies and departments. This is further exacerbated by the implementation of standalone and often sector-specific solutions by development organisations and donors, who work within limited timeframes and parameters, and some private sector players. Fragmentation can lead to wastage and inefficiency in the utilisation of resources. Conversely, more integrated and effective digital-enabled development programmes can drive greater socioeconomic inclusion among a wider range of citizens.

Call to action:
Implement a whole-of-government approach to digitisation

- Government leadership is essential to establish the environment and develop the momentum for greater stakeholder collaboration. As a first step, the federal and devolved governments should define a holistic digitisation agenda, encompassing government agencies and relevant stakeholders.
- The digitisation agenda should streamline the digital initiatives of various departments in line with overarching digital transformation objectives. For example, there is room for improvement in collaboration between financial and non-financial authorities to boost branchless banking/digital financial inclusion efforts.
- Government should actively engage relevant stakeholders, including mobile operators, tech start-ups and development partners, in the development and implementation of its digitisation agenda to avoid the duplication of efforts.
- Public services on digital platforms should be interoperable to improve efficiency in service delivery and drive use among citizens.
- Donors and development partners should consider the long-term sustainability of digital solutions and partner with relevant stakeholders to achieve this, given their defined project execution parameters.
- Beyond providing connectivity, mobile operators have assets and capabilities that can enable a wide range of digital solutions and service delivery, including digital tax collection which can help expand the tax base. Government, development partners and civil society should engage with mobile operators in the design and implementation of digital initiatives for greater efficiency and cost effectiveness.
- The emerging technologies of artificial intelligence (AI), blockchain and IoT show promise for digitised tax collection to boost the revenues that governments such as that of Pakistan need to fund the UN's Sustainable Development Goals (SDGs). A shift from paper-based value-added tax (VAT), goods and services tax (GSTs) and customs duties will widen the tax base and reduce fraud. The three technologies have advantages and disadvantages that governments will need to consider when thinking about their deployment.

4.3 Leveraging mobile technology in implementing national development plans

In January 2019, the Ministry of Planning, Development and Reform disclosed key social and economic targets of the 12th Five-Year Development Plan, to be implemented from 2018/19 – 2023/24. Mobile technology can accelerate efforts to achieve some of these targets.

Target	The role of mobile
Improve tax administration by making the system taxpayer-friendly, innovative and modern	Mobile-enabled digital and financial inclusion, and the implementation of P2G solutions can help expand the tax base.
Encourage financial institutions to expand the range of savings products and revitalise industry to ensure maximum GDP and job growth	Beyond basic use cases such as remittances and bill payments, mobile money providers can enable a wide range of sophisticated financial products, including savings, credit and insurance, which require partnerships with third parties, particularly banks. This will further empower the underserved and enable them to weather financial shocks.
Increase agriculture productivity and reduce cost of production	Mobile platforms, such as mobile money and cellular IoT, can help digitise the agricultural value chain, while SMS and USSD can be used to transmit valuable weather, cultivation and market information to farmers.
Targeted subsidies for smallholder farmers	Mobile money can improve efficiency and transparency in the disbursement of government subsidy to smallholder farmers.
Reduce population growth rate to less than 1.9%	Mobile platforms can help disseminate relevant information on female health and family planning.
Improve governance to ensure transparency	Mobile technology can enable e-government solutions to increase transparency and accountability in governance.
Improve key HDIs, including health, education and poverty reduction	Mobile-enabled solutions on key HDIs can help deliver life-enhancing services to previously excluded people, especially in rural areas and among vulnerable groups, such as women and PWDs.
Tackle climate change and other environmental issues	Mobile technology can be used to provide rescue and other life-saving services to vulnerable people during natural disasters.

In March 2019, the World Bank published a long-term framework for social and economic progress in Pakistan as the country approaches its centenary in 2047.[67] The report highlights eight areas where reform is required and the immediate steps to realise the expected outcomes. The government and its development partners have an opportunity to leverage mobile platforms in the implementation of the proposed action plans over the next three decades. Key areas where mobile can have a significant impact include the following.

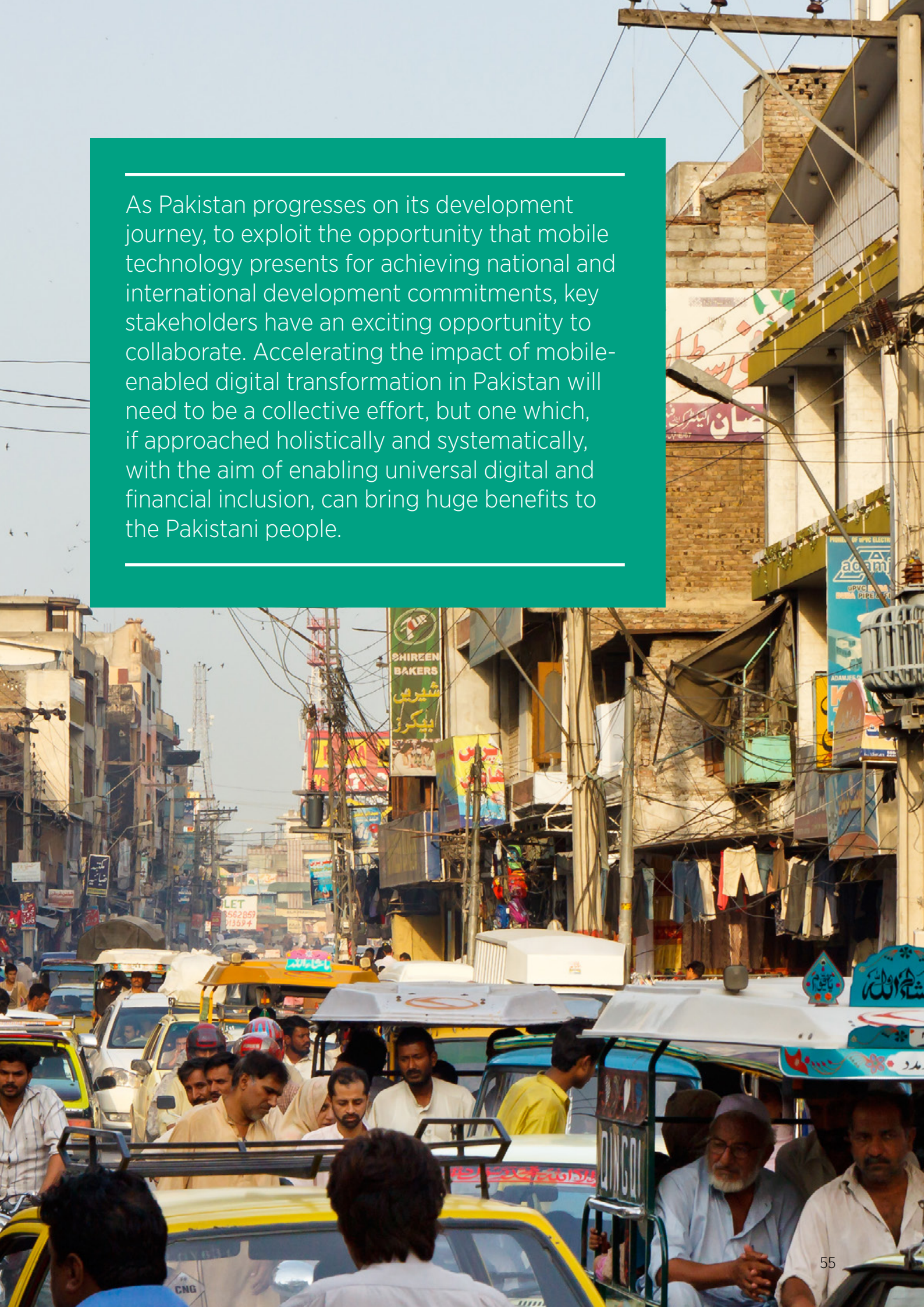
Focus area	Immediate steps
Fertility	• Implement programmes to support informed parenthood, and provide education on reproductive health and child development. • Develop provincial safety net programmes that aim to empower women, and increase spend on female education and health.
Early childhood development	• Develop and implement integrated health and nutrition programmes for the first 1,000 days (covering child birth, immunisations and malnutrition, among others). • Provide conditional cash transfer programmes to the poor and vulnerable.
Business environment	• Paperless online approvals, web-based regulatory governance.
Water management	• Increase water productivity and availability.
Transparency	• E-procurement, SMS-based feedback on service delivery.
Accountability	• Modernise HR management systems, build skills, generate and efficiently utilise information.

Call to action:
Leverage mobile technology to implement national development plans

- In view of the role that mobile can play in realising key targets of the 12th Five-Year Development Plan and Pakistan@100, the Ministry of Planning, Development and Reform and other relevant government ministries and agencies should purposefully engage with mobile operators and other mobile ecosystem players on the deployment of mobile-enabled solutions to accelerate progress on the plan.
- Government at all levels should consider a regulatory and fiscal framework that is supportive of tech start-ups to drive innovation and the creation of relevant digital content and services that address key development targets.
- Government should progress with the implementation of the PETCC to support multi-stakeholder collaboration to strengthen disaster preparedness and response using mobile technology.
- There is also a need for capacity building among public workers to equip them with the requisite skills to maximise the opportunity that mobile presents in the implementation of key actions and programmes.

67. https://openknowledge.worldbank.org/bitstream/handle/10986/31335/Pakistanat100Overview.pdf?sequence=3&isAllowed=y

As Pakistan progresses on its development journey, to exploit the opportunity that mobile technology presents for achieving national and international development commitments, key stakeholders have an exciting opportunity to collaborate. Accelerating the impact of mobile-enabled digital transformation in Pakistan will need to be a collective effort, but one which, if approached holistically and systematically, with the aim of enabling universal digital and financial inclusion, can bring huge benefits to the Pakistani people.



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