



## Pakistan has the Potential to become one of the biggest markets for Telenor

**Sigve Brekke, President & CEO Telenor Group**

**Structuring the Digital Society**  
Regulations for the Digital Age



**Connecting the Unconnected**  
Mobile Phone Gender Gap in Digital Society



Device Review

**Q Mobile S8**





# HUAWEI Mate10 Series

PICTURE TAKEN BY  
HUAWEI MATE 10 Pro

AI Scene & Object Recognition

HUAWEI Mate 10 Pro  
NEW LEICA DUAL CAMERA



Taken By: *Tapu Javeri*

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Redmi Note 5A **prime**

16 MP front camera with selfie-light



Mi **A1**

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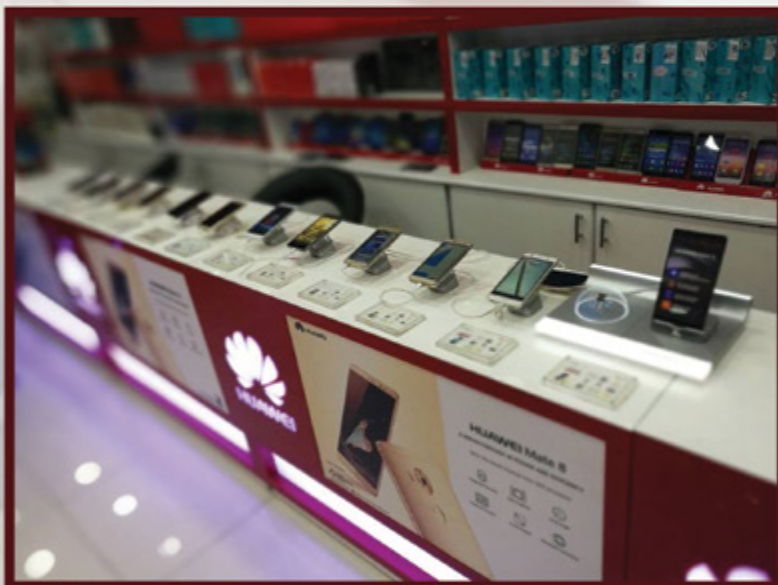


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**Adnan Khan**  
Managing Editor

Dear Readers,

Another year has come to an end, we saw many highs and lows in Pakistan's IT and Telecom industry. But all in all, it was a great year for our industry with significant growth and improvement in our IT exports, 3G/4G penetration, IoTs and regulatory front. In addition to that, the news of 5G testing in the country was also well received all stakeholders. We hope that the upcoming year will be even more promising, not only for our industry but also for the whole country.

Moving towards the content of Phoneworld's current issue, this time we have tried to highlight the need of modernized and forward looking regulations to maximize the benefits of tech revolution in the country. In our article, "Structuring the Digital Society: Regulations for the Digital Age", we have emphasized the need of bringing a regulatory framework that is not only "fit for the digital age" but also support fair competition, investment and innovation that benefits everyone.

In current times, the role of women for the development and growth of any nation has become exceedingly important. Therefore, the digital revolution will also not be fully successful unless women take part in it. This is the matter that we have tried to bring in light in our feature article, "connecting the unconnected : Mobile phone gender gap in a Digital Society". The modernization of the human world has made our lives easier but carelessness of mankind in this development has also put our planet at risk. Climate change has become a global issue and countries around the world are trying to figure out ways to minimize the environmental damage. How the telecom and IT industry can play its part in this quest is what we have discussed in our article "Lets Go Green".

Our current issue of Phone world magazine also covers an exclusive interview of Sigve Brekke, President and CEO of Telenor Group who was on a brief visit to Pakistan recently. In a candid interview he shared with our team some of his aspirations for Telenor group and Pakistani market.

Like always, our regular sections including phone reviews, Smart moves, TVC reviews, top applications and smartphone wish list. We always try to bring something new and interesting for our readers, we hope you guys will appreciate our efforts and give us your feedbacks so that we can improve further.

Happy New Year everyone. Enjoy Reading...!!!

Thank you,  
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# Contents

## Feature

12 Structuring the Digital Society Regulations for the Digital Age

## National

32 Connecting the Unconnected Mobile Phone Gender Gap in Digital Society  
38 Smart Moves for Smarter Nation

## Infocus Interview

28 Sigve Brekke, President & CEO Telenor Group

## Phone Review

20 QMobile S8  
26 Huawei Mate 10 Lite  
36 Sony Xperia XZ Premium  
44 Oppo F5

## Telecom Campaign

48 A Critical Review of the Latest Ad Campaigns

## Wishlist

50 Phone Express - New Arrivals

## App World

52 Applications and Games for Your Smartphones

## Tech Twists

19 Fun Tech Facts



Bitcoin and other  
major Crypto-  
currencies  
to watch out for

16



Lets Go Green  
Benefits of Green  
Technology for Telecom  
Operators

22



Nokia 8  
Three Firsts in One  
Precision Designed  
Flagship

25



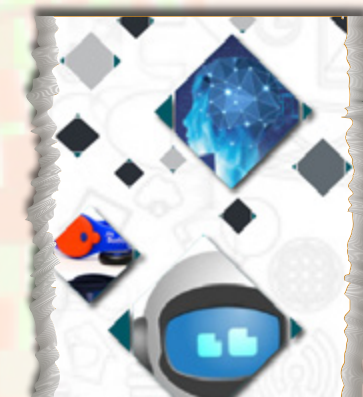
A Round up of  
Smartphone  
Brands in Pakistan

40



ICT Personality  
Elon Musk  
Reinventing Future

43



Changing Lives through  
Technology  
The Big Techs of  
2017

46

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# STRUCTURING THE DIGITAL SOCIETY

## Regulations for the Digital Age

We are living in such exciting times, where much is now done digitally. With every passing day a new invention comes, that makes our lives easier and more convenient. There are billions of smartphones packed with a number of useful apps, wearable tech with sensors, IoT, smart devices whereas; social media has become the new form

of communication. But the important thing to consider is that technology rarely stands still; it is constantly evolving.

Today we are mesmerized by smart car concept; tomorrow there will be something completely different to replace it. Therefore, policymakers should not only facilitate this change by bringing a regulatory framework that is "fit for the digital age" but also supports fair competition, investment and innovation that benefits everyone.

**Policymakers should not only facilitate this change by bringing a regulatory framework that is "fit for the digital age" but also supports fair competition, investment and innovation that benefits everyone**

Before going into any further details we first need to understand what digital society is and how it will impact our lives.

By Rizwana Khan

### What is a digital society?

Digital society is a modernized society where citizens seamlessly interact with each other and avail various government services, access important information, and control gadgets and appliances through an online gateway that works 24/7.

**Digital society is a modernized society where citizens seamlessly interact with each other and avail various government services, access important information, and control gadgets and appliances through an online gateway that works 24/7**

Stepping into the digital world has opened many avenues of incredible growth and opportunities for societies

by, encouraging businesses, innovation, and employment. It has also enhanced growth in other industries as well including transportation, governance, education and healthcare, providing connectivity between people and improving their quality of life.

Internet connectivity and smartphones are at the core of this growth and development and the key requirement for a digital society. Fortunately, Pakistan has all the ingredients to build a competitive digital society. We have a booming ICT industry and a very talented young tech-savvy populace to use and develop digital technologies and services. Although the market for digital services is still immature, there are number of favorable factors that are contributing to the overall growth. There are more than 75 million people in Pakistan who live in cities and 50% of them are under the age of 20. This just signifies the huge demand for digital services in the future.

Currently, Pakistan is home to a large number of talented

software developers. There are around 360,000 talented software developers and 1280 registered IT companies. The rollout of 3G and 4G mobile networks along with the availability of affordable smartphones has also given rise to the internet usage.

The continuing developments and innovations in Pakistan's ICT industry are quite impressive but to reap the full potential of technology modernization requires a regulatory support and assistance.

**Internet connectivity and smartphones are at the core of digital growth and development and the key requirement for a digital society**

A comprehensive policy plan and well-defined goals can not only give direction to the industry stakeholders but will also save time and resources. MoITT and PTA have worked impressively in developing policies and regulations regarding various matters.

After the delay of more than a decade, finally Telecom and IT policies were developed, first ever Cybercrime was introduced and just recently,



new competition rules were announced for the telecom industry. The government is also making it easier to register a new business, credit rules, foreign trades etc to promote new businesses and start-ups. But the need for comprehensive policies and regulations to meet the requirements of the digital age is still there.

The government plays the central role in establishing momentum for digitally empowered economy and society since it is the one responsible for policy and regulation development.

**The continuing developments and innovations in Pakistan's ICT industry are quite impressive but to reap the full potential of technology modernization also a regulatory support and assistance**

The goal of regulatory policy should be to promote innovation and create fair competition among new and existing players by providing a leveled playing field. Besides this conventional role of policy setting and regulatory design, governments also need to foster digital activities to benefit citizens and businesses. The problem with policy formulation in Pakistan is that once a policy is formulated, it is put aside and used as it is for many years whereas, regulatory approach for rapidly developing IoT industry needs to be flexible and up-to-date.

Due to absence of proactive approach, we end up making policy plans much later than required, specifically only when a conflict arises. Take the example of online ride hailing service that became a bone of contention between, online service providers, government and the conventional taxi service providers. Therefore, government should devise a comprehensive digital agenda and policy plan in order to avoid any such mishaps and also to provide facilitation to the development digital society. GSMA has laid out three key principles to establish a modern regulatory framework:

- Redesign of Regulations and Regulatory Institutions
- Regulations should be Broad-based
- Policies should be clear and forward looking

It is important to redesign regulations and regulatory institutions around the concept of functionality, rather than legacy technologies or industry sectors. This way a clear policy for every aspect of technology can be formulated with clear-cut goals.

**Due to absence of proactive approach, we end up making policy plans much later than required, or rather when a conflict arises**

Policymakers need to establish clear and forward-looking policies that address key regulatory areas with direct implications for the creation, distribution, and consumption of digital content and services.

The aim should be to modernize traditional policies and frameworks. We already have separate Telecom IT policies but they are somewhat ambiguous and not futuristic enough. What we need right now is clear-cut policies with well-defined goals and objectives. Also, the policies need to bring in to consideration all the futuristic technologies and how we plan to deal with them. In order to modernize our regulations we also need to redesign our regulatory body. The government needs to bring in more competent and energetic personnel with visionary mindset who have the ability to take our industry to the next level.

**It is important to redesign regulations and regulatory institutions around the concept of functionality, rather than legacy technologies or industry sectors**

In addition to introducing robust policy and regulations government also need to secure high-level political commitment. Digital society requires a deeper coordination across government ministries and agencies. In some countries, governments have used a separate body with an overreaching mandate to set priorities for digital agenda and a bridge between various ministries. Thailand is one such example where the Digital Economy & Society Ministry was established in 2016 with the purpose of planning, promoting, developing and implementing activities related to digital society and economy. In Pakistan where digital transition is happening

at a slower but continuous pace, a dedicated authority to facilitate such transition will be extremely beneficial.

**In Pakistan where digital transition is happening at a slower but continuous pace, a dedicated authority to facilitate such transition will be extremely beneficial**

Although the establishment of a new ministry would be a lengthy process and require a lot of paper work and resources, establishment of a dedicated department of digital agenda within MoITT or PTA would be more feasible. Information technology has become a very important ingredient in the socio-economic growth of any country. To promote digitalization in the country the government first needs to move its services online. Punjab and Khyber Pakhtoonkhwa are way ahead in this regard but such initiatives should not be limited to one or two provinces.

The government should devise a national policy so that the

whole country could enjoy the benefits of digital growth. Such initiatives will also encourage other industry stakeholders to be a part of the digital revolution hence establishing an inclusive digital ecosystem that encourages greater uptake and usage of digital services.

There is a number of initiatives that government can take at the regulatory front to facilitate its digital agenda. A simplified and streamlined regulatory framework is the need of the time.

**Pakistan will become far more competitive in the global arena; and that's what we need as an industry and as a nation**

As International Monetary Fund studies show that improving the business environment of Pakistan to the average of the Middle East and North Africa could increase growth by 1.5 percentage points per year.

Futuristic policies and regulations in place will surely accelerate the development of digital ecosystem in country.

**International Monetary Fund studies show that improving the business environment of Pakistan to the average of the Middle East and North Africa could increase growth by 1.5 percent points per year**

A progressive digital ecosystem is vital, not only for boosting the economy but it can also help Pakistan in addressing important social issues like health, education, security and other public services. Moreover, Pakistan will become far more competitive in the global arena; and that's what we need as an industry as a nation.







| By Maab Durrani

# BITCOIN AND OTHER MAJOR Crypto-currencies TO WATCH OUT FOR..!!

The new form of digital currency, Crypto currency (bitcoin) was created by an anonymous identity named 'Satoshi Nakamoto' (no one knows) in the year 2009. The first crypto currency invention Bitcoin runs on a pure to pure network which means one can buy and sell items without going through a middleman, everything is done digitally. The use of modern algorithms and blockchain technology will make a huge disruption to the banking industry. It can be very beneficial for small

businesses that are looking to cut out the transaction cost and essentially, bitcoin opened a venue for global commerce.

**The value of cryptocurrencies essentially lies in what people are willing to pay and how many are accepting it as a form of currency**

The value of cryptocurrencies/ bitcoin essentially lies in what people are willing to pay and how many are accepting it as a form of currency.

Bitcoin is limited, once we've reached the 21million mark, there can't be any more transactions made so bitcoin then forks into other currencies such bitcoin dash and bitcoin gold. So are there other major cryptocurrencies other than bitcoin? Yes. According to the market cap and price, there are few other major crypto

currencies after bitcoin nowadays.

**ETHEREUM**  
Current price per coin 660 - 690 USD  
Marketing Cap \$64,943,480,302 USD

Similar to Bitcoin, ethereum run on the blockchain network system as well. It was launched in 2015 with a goal to further decentralize bitcoin.

**Ether allows developers to build and deploy decentralized applications**

Ether allows developers to build and deploy decentralized applications. Miners work here to earn ether, unlike bitcoin where miners are rewards with cryptocurrencies.

**The first crypto currency invention Bitcoin runs on a pure to pure network which means one can buy and sell items without going through a middleman, everything is done digitally**

People don't just earn tokens for donating their processing power to the blockchain; they can earn it through collecting fees from developers who plug into the blockchain.

Ethereum was later divided into ethereum (ETC) and Ethereum (ETC). The market capitalization of ether is \$41.4

billion after bitcoin number 1.

**ripple**  
Current price .40 - .55 USD  
Marketing cap \$17,773,171,004 USD

Ripple considered to be a successor of bitcoin, was launched by previous bitcoin developers back in 2012. Most banks around the world already accept this form of currency as a payment option. Unlike bitcoin, a ripple is not only a currency but also a mean through which any currency can be traded.

**Unlike bitcoin, a ripple is not only a currency but also a mean through which any currency can be traded**





Ripple does need mining which reduces the usage of computing power that minimizes network latency.

**DASH**

Current price 878 - 888 USD

Marketing cap \$7,019,154,142 USD

In January 2014, initially, Dash was launched as Xcoin. It is one of the largest peer to peer networks with its master nodes of over 4100.

**Zcash offers transparency of transactions and also offers privacy where details of the transactions are kept private on the blockchain network**

Master nodes represent a new layer of the network for the security of clusters known as qourms. Here, miners are rewarded for securing the blockchain, and serving it to other users on the network.

**CASH**

Current price 398 - 998 USD

Marketing cap \$1,153,174,384 USD

Zcash also runs through a decentralized network. It was launched in the year 2016,

**One of the largest peer to peer networks with its master nodes of over 4100**

Zcash defines itself as "If bitcoin is like HTTP for money, Zcash is https". Unlike Bitcoin, Zcash offers transparency of transactions and also offers privacy where details of the transactions are kept private on the blockchain network. Zcash provides users with greater fungibility. Some users will reject the certain transaction if the Users private key is given there, that is where Zcash comes in.

There are countless other cryptocurrencies nowadays, although bitcoin will always be seen as the industry leader. The higher the bitcoin goes, the

higher other cryptocurrencies go and vice-versa. Since most of the cryptocurrencies are new, there is a huge opportunity to make a lot of money from them by being early adaptors.

Regarding the future of cryptocurrency, I predict it's becoming one of the main ways that people do commerce, just like credit cards and internet banking has become normal. I also see Banks in the future trying to adopt the blockchain technology but it kind of defeats the pure to pure aspect of it, so I don't really think it is going to be enough to keep banks in power for the long term. The future of cryptocurrencies seems very interesting.

**Banks in the future trying to adopt the blockchain technology but it kind of defeats the pure to pure aspect of it, so I don't really think it is going to be enough to keep banks in power for the long term**

By Rizwana Khan

# TECH TWISTS



## First mail was sent in 1971

The first email was sent by a Computer engineer Ray Tomlinson in 1971 via ARPANET and that too before the invention of World Wide Web (1989)

## IBM made the first hard Disk

The first commercial storage hard disk device was IBM model 350 that was able to store only 5 MB data and was of the size of a washing machine.



## 3D Printing was invented in the 1980s

3D Printing was invented in the 1980s. Yes, it is not as new as you think. Charles Hull created a model of his Stereolithography machine in 1983 and filed for a patent in 1986.



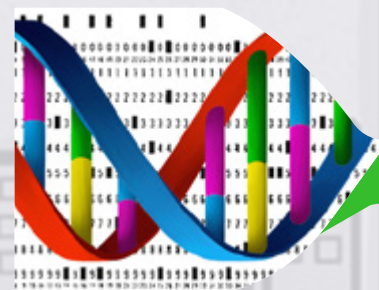
## Microsoft wants to put their cloud data center under water

Microsoft wants to put their cloud data center under water. Project Natick is aimed at building and running a data center submerged in the ocean which can make data centers efficient and eco-friendly solving the biggest problem of keeping them cool.



## Entire data of the world can be stored in 4 grams of DNA

A gram of DNA can store 455 exabytes of data. An exabyte has one billion gigabytes. The world's data is around 1.8 Zettabytes, and a Zettabyte has 1,000 exabytes. So yes, all the world's data can be stored in a DNA hard drive the size of a teaspoon.







By Shaheer Riaz

# QMobile S8

Great Mid-range Device with A Fingerprint Scanner

## Display

QMobile S8 is 5.0 inch smartphone with strong resolution of 540 x 960 pixels while the thickness per pixel (dpi) is 240 and Mali-400MP but QMobile S8 only scored 5-points.

## Design

The dimensions of QMobile S8 are 141.3 x 69.7 x 8mm while the weight is just 136 grams. Edges of the phone are solid while the back side is very simple with fingerprint scanner placed under the camera lens.

## Camera

QMobile S8 has 8MP lens for back camera while the front camera has 5MP lens. The back camera can record in full 1080 pixels while front one can record in 720p. The main modes are HDR, Panorama, Night, proficient, ultra-pixel, Pic Note, shrewd sweep and some others. We took a few pictures from the back camera of QMobile S8 and results were quite good. Shading precision and clearness of pictures were quite visible. The results of front camera of QMobile S8 are also great, even in low light.

## Memory

QMobile S8 has 16GB ROM and 2GB RAM which makes it a great mid-range device. With the help of SD card, the memory can be increased up to 32 GB.

## Battery performance

QMobile S8 comes with 2400 MAh non-removable battery.



## Connectivity

QMobile S8 is a dual SIM 3G and 4G enabled device. Additional connectivity options include Wi-Fi, Bluetooth, FM Radio, GPS and USB.

## Processor

QMobile S8 has a 1.3 GHz Quad-core processor and contains a chipset of Media Tek MT6580. This chipset has ARM Cortex-A53.

## Interface

QMobile S8 runs on Android 7.0 (Nougat). Bloat ware applications include back up and reestablish, downloads, hello informing, telephone help, QAppStore, QMobile Care and numerous others.

## Benchmarking



Multicore 1164  
Metal 812  
Chrome Browser 1803



24361

## Specs

OS: Android OS v7.0 (Nougat)



Display: 5.0 inches



Battery: Non-Removable Li-ion 2400 mAh



Weight: 136 g



Camera: 8 MP, LED flash light



Memory: 2 GB RAM + 16 GB ROM



Processor: 1.3 GHz Quad-core



Price: PKR.10,999/-



## Good

- Fingerprint scanner
- Affordable Price

## Bad

- 5 Point Multi-touch

## Final Verdict

QMobile S8 is a great mid-range device with notable specifications and performance.



# Let's GO GREEN

## Benefits of Green Technology for Telecom Operators

In our daily life, we have become quite acquainted with technology and do most of our work using different gadgets and devices. At one side technology is making our life easier, but on the other hand, it is also a reason behind some serious environmental issues i.e. global warming and pollution. It is now an open secret that our earth has started to suffocate from all the pollution we are creating. Keeping in mind the repercussions of deteriorating environmental conditions, many developed countries are adopting a way to build up such technology that does not harm the environment and reduce pollution, termed as Green Technology.

Green technology is the type of technology which is

environmental friendly. Such technology is developed and used in a way that does not come into conflict with the environment and does not destroy natural resources.

**Keeping in mind the repercussions of deteriorating environmental conditions, many developing countries are adopting a way to build up such technology that does not harm the environment**

Green technology is also known as 'environmental technology' or 'clean technology'. Many agencies are promoting standards and regulations that encourage green technology

in the industry. There are three main key drivers that are pushing businesses to go Green including:

- Improving the environment
- Reduce Waste & Decrease Costs
- Public Image & Increased Sales

With these benefits in mind, organizations opt for green technology but the reimbursements they get in return are far greater. Increasing public demand for corporate social responsibility and a genuine desire to bring positive change in the environment are also leading telecommunication service providers and their suppliers to reduce their carbon footprint.

Telecom sector is one of the most progressive industries around the world; the mobile subscription is on rise, having a large number

By Rizwana Khan

of towers and consuming great amount of energy. As per a study conducted by GSMA Intelligence in 2017, there are 8.4 billion active mobile phone connections in the world. Pakistan has been at forefront of this growth having over 139.76 million active subscribers.

**Increasing public demand for corporate social responsibility and a genuine desire to bring positive change in the environment are also leading telecommunications service providers and their suppliers to reduce their carbon footprint**

The surge in demand for telecom services has increased the sector's energy requirements, making it one of the largest consumers of diesel and consequently, one of the biggest contributors to carbon emissions in the world. This growth has been supported by a robust telecom infrastructure comprising scores of towers resulting in the need for growing Green in the telecommunication sector. Efficient power management, infrastructure sharing, use of eco-friendly renewable energy sources and cutting down carbon emission over the complete duration of the product lifecycle have been under intense consideration by telecom industry all over the world. There are a number of ways through which telecom operators can achieve that:



### Green Networks

By minimizing the energy consumption through the use of renewable energy resources like solar, wind, hydro, biomass fuel etc.

### Green Manufacturing:

Using eco-friendly inputs, energy efficient manufacturing

equipment, electronic and mechanical waste recycling techniques and reducing the use of hazardous substances like chromium, mercury.

Handset vendors are also working on a variety of "green"



handsets, with features ranging from simple reminders to unplug the phone when it is fully charged with using solar energy for charging.

### Green Office

Optimization of energy power consumption and thermal emissions reduction by using sustainable energy options. Also minimizing paper usage by opting for digitalization wherever feasible.

### Green Towers

Mobile operators and vendors are working on a number of initiatives to develop energy efficient networks and ensure that their customers use energy-efficient handsets.

**Green Technology should be an integral part of Telecom Policy, underlining broad directions and goals**

Another efficient and environmental friendly option for telecom operators is to design low energy base station sites powered by renewable energy. Implementation of infrastructure optimization and sharing also decreases financial and environmental cost.

### Green Waste Disposal

Disposal of mobile phones, network equipment in an environmental friendly way so that no toxic material is channelized into the atmosphere.

In the past decade the mobile industry has grown rapidly, not only in Pakistan but worldwide. Although this increased demand for telecom and IT services has made ICT industry the biggest contributor to environmental pollution. But at the same time, ICT also has the potential to put all the other industries in the right direction through its latest innovations and revolutions.

**Efficient power management, infrastructure sharing, use of eco-friendly renewable energy sources and cutting down carbon emission over the complete duration of the product lifecycle have been under intense consideration by telecom industry all over the world**

The developments in IoT and smart cities rely on ICT industry therefore, it is very important to first implement the environmental friendly solutions in ICT industry itself

so that its growth doesn't face any hurdles. In order to strengthen the development of green technology, the government needs to motivate and facilitate mobile operators to go for green technology. Green Technology should be an integral part of Telecom Policy, underlining broad directions and goals. The network operators should progressively induct carefully designed and optimized energy efficient radio networks that reduce overall power and energy consumptions by moving towards hybrid Renewable Energy Technologies.

**The surge in demand for telecom services has increased the sector's energy requirements, making it one of the largest consumers of diesel and consequently, one of the biggest contributors to carbon emissions in the world**

As the telecom industry moves forward in delivering seamless wide network coverage throughout the country, they should ensure that the impact on environment is minimal. Such initiatives will not only benefit the industry but also bring positive environmental impact in the long run.



## NOKIA 8: Three Firsts in One Precision Designed Flagship

**First new generation Nokia smartphone to feature ZEISS optics  
Tell both sides of the story with real-time live streaming using  
Dual-Sight mode**

**H**MD Global, the home of Nokia phones, has announced the launch of Nokia 8 in Pakistan. Nokia 8 is a high performance, beautifully crafted smartphone, designed with content creators in mind. It brings three world-firsts to Android smartphones, including debut collaboration with ZEISS optics.

**Be less Selfie, be more Bothie:** The Nokia 8 introduces a world-first in enabling Dual-Sight video to be live streamed natively and in real-time to social feeds such as Facebook and YouTube. Dual-Sight simultaneously harnesses both the front and rear cameras in a split screen visual for both photos and videos. With just one touch, this world-first live stream capability gives more immersive experiences for those who love to create and share special memories.

### A new dimension of sound with OZO Audio

Nokia 8 is also the first smartphone to feature OZO Audio, placing exclusive Hollywood technology in the palm of your hand. OZO spatial 360° audio brings a fully immersive audio experience to your 4K video. Leading-edge 360° audio capture ensures the playback lets you truly relive the moment so your memories never fade.

### Innovation and precision engineering

Powered by the Qualcomm® Snapdragon™ 835 Mobile Platform, Nokia 8 doesn't compromise on performance. The Nokia 8 has been designed from the ground up with the consumer in mind to deliver unique

content capture and sharing experiences. This requires it to be as meticulously designed on the inside as it is on the outside.

The result is a full-length graphite shielded copper cooling pipe that dissipates the heat generated by the high performing system across the full length and breadth of the handset. The Nokia 8 runs cooler in even the most demanding situations.

Nokia 8 is Qualcomm® Quick Charge™ 3.0 compatible, meaning when your battery is running low you can get back to recording your important moments sooner.

4.6mm thin at the edge and just 7.3mm slim on average, Nokia 8's seamless unibody is precision milled from a single block of 6000 series aluminium and its pure design has been refined through a 40-stage process of machining, anodizing and polishing.

### Always pure Android

With the recent update, Nokia 8 now offers fans a pure and secure version of Android 8.0 Oreo with no skins and no changes in the user interface and all the latest features to make content creation and sharing even more fun.

### Availability

Nokia 8 will be available in four colours: Polished Blue, Polished Copper, Tempered Blue and Steel and will be available in Pakistan from today at a retail price of PKR 59,900/-.



# HUAWEI Mate 10 Lite

Slaying the mid-range smartphone market

## Display & Design

Huawei Mate 10 Lite has 5.9 inch screen, not completely bezel-less but somewhat like that. It holds perfect 1080 x 2160 pixels resolution with 480 dpi that mostly comes in flagship devices. It has graphic card of Mali-G71 MP2 which works faster than other Mali cards.

## Processor

Huawei Mate 10 lite has 2.2GHz octa-core processor with the chipset of HiSilicon Kirin 659. It has 64GB ROM and 4GB RAM, making a perfect combination of the processor section. We have installed a number of applications and games on it which didn't show any lag or error.

## Camera

The camera of Huawei Mate 10 lite has dual back camera lens of 16 and 2MP while the front shooter has 13MP lens. It can record video with full 1080p quality.

Huawei Mate 10 Lite has Geo-tagging, touch focus, face/smile detection, panorama, HDR features for its back camera lens. It has a wide-aperture mode, beauty camera mode, moving picture mode and flashlight mode. We have tested all these modes and are quite impressed with the results. No need to buy any DSLR because Huawei Mate 10 Lite is the best photography companion.

Its front camera is also quite amazing. It has super advanced beauty camera which is a bit too much.



## Battery

Usually, if the device has good features then it has less power battery but that's not the case with Huawei Mate 10 Lite. It has fixed Li-ion battery of 3340 mAh which is one of the powerful batteries compared to its competitors. The handset can give us 15-20 hours of standard usage. It doesn't support fast charging which is a negative point.

## Memory

Huawei Mate 10 Lite has 64 GB RAM and 4 GB ROM. The memory can be expanded up to 256 GB with the help of external memory card.

## Connectivity

Huawei Mate 10 Lite is a dual SIM 4G enabled device. Wi-Fi supports the standards of Wi-Fi 802.11 a/b/g/n, Wi-Fi Direct, hotspot while Bluetooth version is 4.2.

## Interface

The Huawei Mate 10 Lite has Android version 7.1 (Nougat) which is based on EMUI 5.1 interface. The colors used in Huawei Mate 10 Lite are very perky and refreshing.

By Shaheer Riaz

## Benchmarking



Velamo

Multicore 2738  
Metal 1702  
Chrome Browser 3884



Antutu

62685

## Specs

OS: Android OS v7.1 (Nougat),



Display: 5.9 inches



Battery: Non-Removable Li-ion 3340 mAh



Weight: 164 grams



Camera: Dual 16 MP + 2 MP, phase detection autofocus, LED flash



Memory: 4 GB RAM + 64 GB ROM



Processor: 2.2 GHz Octa-core



Price: PKR.29,999/-

## Good

- Affordable Price
- Powerful camera setup
- Massive storage

## Bad

- Hybrid SIM Slot

## Final Verdict

Huawei Mate 10 Lite is one of the finest smartphones in the mid-range market. If you are seeking a good smartphone under 30K then you should go for Huawei Mate 10 lite, it won't disappoint you.





**Pakistan has the Potential**  
to become one of the biggest markets for Telenor  
*Sigve Brekke, President & CEO Telenor Group*



By Saima Ibrahim

**T**elenor Group is an international provider of high quality voice, data, content and communication services with presence in 13 markets across Europe and Asia. It is one of the largest mobile operators in the world with 180 million mobile subscriptions and a workforce of approximately 33,000. Telenor Pakistan, A subsidiary of Telenor Group is the second largest mobile operator of Pakistan with a subscriber base of over 36 million.

**As a global telecom operator we have to empower societies, people and communities at large and make a difference**

Sigve Brekke (SB), President and CEO of Telenor Group who was on a brief visit to Pakistan last month, shared with our Team (PW) some of his aspirations for Telenor group and specifically for Pakistani market.

**PW: Telenor Group is among one of the top mobile operators in the world, what in your opinion are the key contributors in this success?**

**SB:** Telenor Group's fundamental vision across the globe is to empower societies, it's not about money. Of course, we are part of the business world and we need to return to our shareholders but above all, we strongly believe that as a global telecom operator we have to empower societies, people and communities at large and make a difference.

**The beauty of the 850MHz spectrum is that it will allow Telenor Pakistan to offer a wider coverage, especially in rural and remote areas, where it is more efficient than 1800MHz or 2100MHz band**

And that is basically in Pakistan, Myanmar, Bangladesh and in Norway where we are working hard to connect people to the world of opportunities. These are little big words but this is our core philosophy and that is why we are focusing on Pakistan i.e. farmers particularly. Not because of the money, we are not making a lot of money on such projects but we want to connect the farmers to the internet world so they can improve their way of harvesting; this is just one example.

**PW: What was the main reason behind decision to go for unconventional spectrum of 850 MHz in Pakistan?**

**SB:** We are very happy with the 850MHz spectrum. Yes, not all handsets come with 850MHz compatibility, but all new handsets do offer 850MHz band thus offering a better proposition for us. The beauty of the 850MHz spectrum is that it will allow Telenor Pakistan to offer a wider coverage, especially in rural and remote areas, where it is more efficient than 1800MHz or 2100MHz band. And since we know that the rural market is a stronghold for Telenor, 850MHz is the perfect tool for the company.

**We see our subsidiary, Telenor Pakistan as our most innovative company, there are a lot of the things it is working on and we plan to take those innovations to other parts as well**

**PW: This is your second visit to Pakistan in a consecutive year, how important is Pakistan's telecom sector for the Telenor Group in terms of future investments?**

**SB:** Yes, Pakistan is very important part of the Telenor Group and there are three reasons for that. Firstly, the size of the market, 200 million people, where we have 40 million customers. So in that sense it is a large and growing market, it's not saturated like we have seen in other regions.



Secondly, we see our subsidiary, Telenor Pakistan is our most innovative company, there are a lot of the things it is doing here and we plan to take those innovations to other parts as well. Telenor Pakistan's agricultural products and Employee app are gaining popularity in our other Telenor markets as well.

### **Pakistan is a country where we have great tech talent and Pakistanis are greatly contributing in the overall success of Telenor Group**

Thirdly, Pakistan is the country where we have great tech talent and Pakistanis are greatly contributing in the overall success of Telenor Group.

**PW:** In line with its digitalization and connected societies agenda, Telenor Pakistan has also taken number of initiatives to go digital. Tell us something about that, how Pakistan has managed to achieve that and how this is impacting Telenor's productivity?

**SB:** Telenor Pakistan is going digital; it is accomplishing this by transforming the most resource hungry functions of telecom business by digitizing them.

Sales, marketing and customer care consume the majority of operating expenditures for any telecom business and this is exactly why Telenor Pakistan is digitizing all such functions to cut down its costs and improve performance of these departments.

Most of the contact we used to have with customers was physical – ranging from buying a SIM card to topping up mobile account – which was very costly. We changed this and introduced digital platforms to perform all such tasks digitally and without any human interaction.

We have the 'My Telenor' mobile application. We also have self-care kiosks where you can get your SIM card, duplicate SIM cards and do a lot of other things yourself. This is how we are digitizing our operating functions to not only save costs but also to keep track of every single interaction we have with our customers. It also helps us identify, track and serve our customers better at a more personalized level.

**PW:** Any suggestions for the government that can benefit the overall telecom sector in the country and more specially can help increase the 3/4G penetration rate?

**SB:** Definitely I would like to recommend two things. The Pakistani government should consider rationalizing taxes for the telecom sector as the current taxes for telecom services in Pakistan is way too high. We are paying almost 40% tax for telecom services, at a rate that's one of the highest in the world.

### **We are digitizing our operating functions not only to save costs but also to keep track of every single interaction we have with our customers**

Our proposal behind levying a reasonable tax is not because we want to make more money. On the contrary, this will in fact make our services more affordable. We believe that consumers would be the ultimate beneficiaries if taxes were brought to more reasonable levels. Secondly, the government has to make the spectrum more accessible and at a better price too. Because a broader and better spectrum for telecom operators will mean that the market will move on to more advanced data services, where more and more individuals will be able to consume data at affordable prices.

Pricing matters a lot for telecom operators as currently we are exiting the Indian market due to the unsustainable spectrum policies there. Additionally, we have also consciously

stayed away from some spectrum auctions in Pakistan. This is just the beginning of data and digital revolution in Pakistan as internet penetration is still not high and masses are yet to be connected to the internet.

### **Unlike other operators, Telenor intends to keep its focus on remaining as an access provider**

The Pakistani government must strike the right balance between getting paid for a national resource and the cost it would have to pay by keeping its citizens away from faster and better internet.

**PW:** What are the future plans of Telenor Group, especially for Pakistani market?

**SB:** Unlike other operators, Telenor intends to keep its focus on remaining as an access provider. While we offer digital services, especially in financial, health and education sectors, we will focus on services that are close to our core business.

### **A broader and better spectrum for telecom operators will mean that the market will move on to more advanced data services, where more and more individuals will be able to consume data at affordable prices**

We will stick to our core approach which ofcourse is "Consumer Centric". Telenor Group, is more than just a business that wants to be commercially successful. Telenor is also about making a difference by empowering societies. Since Pakistan is one of our most important markets, it will be our priority for every plan and innovation.







# Connecting the Unconnected MOBILE PHONE GENDER GAP IN DIGITAL SOCIETY

There is a saying, "Behind every successful man, there is a woman". In today's modern times the role of woman has expanded many folds and now she is not only behind the success of a man but she also plays an important role in the success of a nation. Around half the population of the world comprises of women. In Pakistan also, out of total 207 million people, 101 million are females. Women are an integral part of any society who plays an important role in the development of a country. Therefore, they should be provided with platforms to utilize their talents and bring revolutionary changes in the country. The advent of technology has opened many

such venues but unfortunately, large portion of female population lags behind in internet use and access.

**Number of unconnected women is much higher as compared to unconnected men, gender gap in mobile ownership is also quite high**

According to GSMA, after the launch of next-generation mobile services, mobile phone

By Fizza Atique

ownership has considerably increased but still 21% women are less likely to own a mobile phone as compared to men in the USA. This figure increases to 23% for women living in Africa and 24 % for women in the Middle East and 37%, if she lives in South Asia. These stats show a significant gender gap in mobile ownership around the world and require great attention of all industry stakeholders.

**According to PEW research center's 2016 report, only 9% of women own smartphones vs. 22% of men in Pakistan**

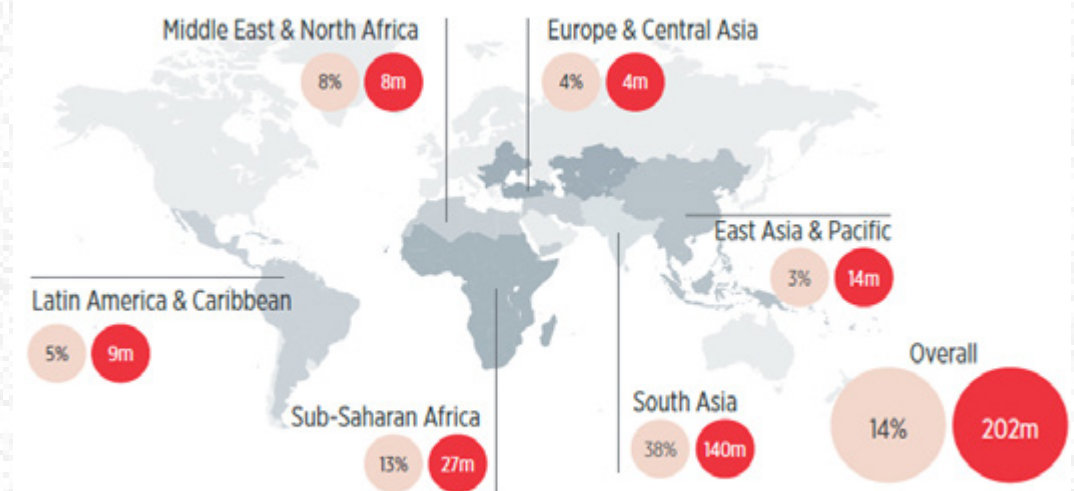
The benefits of mobile phones for women are countless; it gives access to educational, health business and entrepreneurship opportunities. Mobile Phones not only empower women but also contribute to economic growth and productivity. It empowers women to take charge of their lives by doing things themselves and lessening dependence on their male counterparts. But due to various reasons not only the number of unconnected women is much higher as compared to unconnected men, but gender gap in mobile ownership is also quite high.

Pakistan is one of the countries where unconnected population and the gender gap in mobile ownership is very high. According to PEW research center's 2016 report, only 9% of women own smartphones vs. 22% of men in Pakistan. There are a number of reasons that have contributed to this huge gender gap including:

- High cost of mobile handsets
- Limited network coverage
- Security concerns & harassment over mobile phones
- Cultural barriers
- Low technical literacy & confidence
- Dependence on male family members
- Expensive mobile broadband
- Lack of awareness

These barriers have not created gender gap in Pakistan only, rather have created impact around the world, especially in developing countries. The South Asian region has the highest gender gap of 38% in mobile ownership since the socio-economic situation of most of the countries here is same.

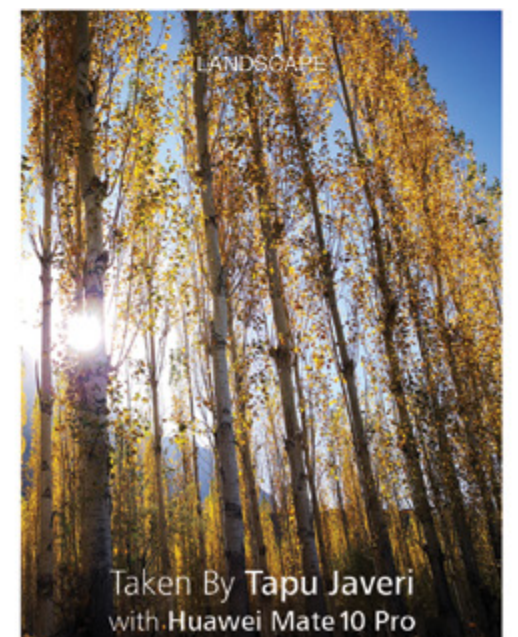
Gender gap in mobile phone ownership in low- and middle-income countries  
Gender gap in ownership by region (% absolute number of females)



GENDER GAP # FEMALES

Sources: GSMA Intelligence and World Bank data, Altai Consulting analysis





## Scenes, Beauty & Expertise

come together for an unforgettable journey

The vales and hills of Skardu came to life as Tapu Javeri, one of Pakistan's most celebrated photographers chose it to conduct the first-ever adventure & fashion shoot from a smartphone. The scenic landscape – with sun-dappled plains, snow-capped mountains and trees dyed in autumnal hues wore an eclectic mix of colour. Tapu captured stunning shots from the HUAWEI Mate 10 Pro – the world's most-advanced smartphone!

The camera features a 12-megapixel RGB sensor and a 20-megapixel Monochrome sensor that captured some vivid imagery in its truest form. The Shigar Cold Desert's vast expanse was mottled with a touch of colour as Tapu's muse Mahi, posed stunningly for HUAWEI Mate 10 Pro. At Upper Kachura Lake, Mahi looked beautiful among flowers on a boat while Tapu took some captivating shots on the serene waters of the lake.

Skardu's beautiful people were wonderfully embalmed in monochrome portraits, as they bonded with each other over tea. All in all, HUAWEI Mate 10 Pro became the perfect companion for Tapu on his journey through Skardu.

In today's world where 5G, IoT, and smart cities concepts have become a new reality, unconnected population and mobile gender gap creates interference in the digital revolution. Therefore, the Government needs to focus on accelerating digital and financial inclusion for women.

## In today's world where 5G, IoT, and smart cities concepts have become a new reality, unconnected population and mobile gender gap creates interference in the digital revolution

Closing the Gender Gap in mobile phone ownership has the potential to unlock substantial benefits, not just for women but also for the entire mobile industry and the broader economy. Mobile can help in women empowerment by making them safer and more connected while also opening access to information and life-enhancing opportunities such as health information, financial services, and employment opportunities.

## In a society where social norms restrict women's access and use of the smartphone, we need to sell the idea to men in order to reach women

Government and other stakeholders should collaborate in order to create awareness about the importance of mobile phone ownership and motivate women to master the mobile technology without relying on other members of the house. In a society where social norms restrict women's access and use of the smartphone, we need to sell the idea to men in order to reach women because no matter how

aware a woman is, if she doesn't have the support of his male family members, she can't do much.

Availability of affordable smartphones, mobile data, and improved network coverage also hold great importance to connect the unconnected. This is only possible when the government will show support to MNOs and OEMs by providing the supportive business environment. Operators and internet companies should work together to develop an understanding of digital gender gap and its negative impact on the society. Mobile Operators and device OEMs can easily change the mindset of people by their message oriented marketing and advertising. Many women in Pakistan do not own smartphone due to security and privacy reasons, therefore, mobile services should be built that increase women safety. Women-focused content should also be produced to increase their involvement and improve their technical skills, literacy, confidence and digital skills.

## Availability of affordable smartphones, mobile data, and improved network coverage also hold great importance to connect the unconnected

Above all, the collection of gender-disaggregated data on access and usage needs to be collected and analyzed as it is essential to design appropriate policies and strategies to overcome mobile gender gap.

Smartphone has gone way beyond basic calling and texting; it is transforming the way we communicate with each other and our environment. People can use mobile to access health information, banking and commerce, education, agriculture and employment opportunities. All of this pools up into social and economic growth and productivity. The mobile gender gap around the world is an alarming situation which needs to be tackled on priority to reap full benefits mobile revolution.



# SONY XPERIA XZ Premium

Capture a new world of unseen motion

## Display

The XZ Premium is definitely a looker, with a glass on glass design making it a shiny and sleek device. However, the glass-all-over design is something that has been tried and true in the Xperia line, making this phone all too familiar especially to Sony fans.

The Sony Xperia Z5 Premium is the only smartphone that currently gives a 4K show with HDR display. The Gorilla Glass 5 front and rear provides some tough protection. Another positive with the Xperia XZ Premium is its IP68 dust and water resistance, which means it'll survive a dip in the bath and heavy rain. By far, the best part of the Xperia XZ Premium design is the dedicated camera button that is nestled in the bottom right corner of the phone.

## Design

The dimensions of Sony Xperia XZ Premium are 156 x 77 x 7.9 mm while the weight is 195 grams with 5.46 inch screen size. Its weight is a little heavy because it is packed with a fixed battery of 3230 mAh.

The back body of Sony Xperia XZ Premium has a very simple body. It has back camera lens of 13MP at its top side with LED flash light while the rest of the body has the name of Sony Xperia XZ on it. The body is little slippery because it is ceramic otherwise it is totally perfect.

## Memory

Sony Xperia XZ Premium comes with 4GB RAM and 64GB ROM, which is outstanding. You can further increase the memory upto 256GB with the inclusion of microSD card.

## Camera

Sony packs in a 19MP sensor that can capture 4K video. Whereas, the front camera on the Sony Xperia XZ Premium has a 13-megapixel sensor with a relatively wide f/2.0 aperture, which produces decent results even indoors. Unlike the Xperia XZs, the XZ Premium doesn't overheat when recording 4K videos.

The Sony Xperia XZ Premium has an excellent front camera. It comes with a 19MP Sony-made rear sensor which features HDR, face detection, EIS



(electronic image stabilization), predictive phase detection and laser autofocus.

The super slow motion can capture footage at a staggering 960fps. In comparison, the slow motion modes on the iPhone 7 (and 7 Plus) and Samsung Galaxy S8 (and S8 Plus) record at 240fps. That means the XZ Premium gives you even slower footage, and if you can capture the right moment in slow motion the results are seriously impressive.

## Processor

The Sony Xperia XZ Premium is among the primary gadgets to have a Snapdragon 835 processor. The chipset offers an octa-core Kryo 280 processor (4x2.46GHz and 4x1.9GHz), the most recent Adreno 540 GPU, and 4GB of RAM.

## Battery

Sony Xperia XZ Premium has a big battery of 3230 mAh that gives up-to 9 to 10 hours of talk time and 14 to 15 standby hours. Sony Xperia XZ premium has fast charging tech that will charge the battery in 2 hours.

## Interface

Sony Xperia XZ Premium runs on Android version of 7.0(Nougat) that is up-gradable to v 8.0(Oreo). Bloat ware applications include Amazon, Kobo and AVG Apps, but you can delete them if you need more space. The interface of Sony Xperia XZ Premium looks little smoother than other previous Xperias.

By Shaheer Riaz

## Benchmarking



Velamo

Multicore 3342  
Metal 3496  
Chrome Browser 5235



Antutu

158221

## Specs

Dimensions: 156 x 77 x 7.9 mm

Display: 5.46" LCD

Battery: Non-removable Li-Ion 3230 mAh

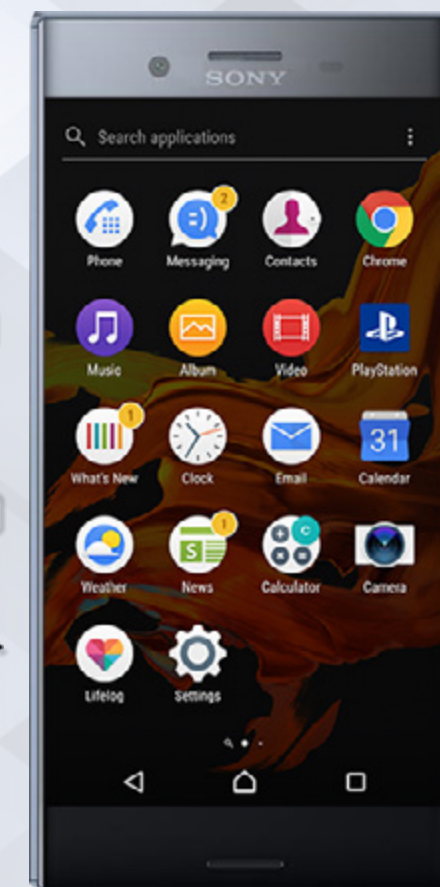
Network: GSM/3G/LTE

Camera: 19 MP, Predictive Phase Detection and Laser Autofocus, LED flash

Memory: 4 GB RAM, 64 GB ROM

Processor: 2.0 GHz Octa-core

Price: PKR.77,999/-



## Good

- Excellent 4K display
- Snapdragon 835 SoC
- Exceptional camera
- Smart battery technology

## Bad

- Old Xperia Design

## Final Verdict

A great smartphone with top-notch features....!!!



# Smart Moves for smarter Nation

## PTA, ISOC, And COMSATS Join Hands For Online Interactive Remote Education

Pakistan Telecommunication Authority (PTA) has joined hands with Internet Society (ISOC) Asia-Pacific Bureau and COMSATS Internet Services Limited to provide online interactive remote education to 6th grade students of a Government Girls High School in rural Multan; connected last year as part of ISOC's Wireless for Communities (W4C) program.



This pilot project aims to provide free extra academic help to students, for better understanding of their study material. This supplement education will be delivered by imparting a unique learning experience that is essentially different from their general text books.

## PTCL and KP Govt to Establish Incubator and Tech Park in Peshawar

Pakistan Telecommunication Company Limited (PTCL) has inked a strategic agreement with the Khyber Pakhtunkhwa Information Technology Board for provision of ICT services and a facility to establish a state-of-the-art Incubation Center (Innovation Lab) and Software Technology Park (STP) in Peshawar. The Incubation center and STP will have fully managed IT & Telecom services such as high speed internet,

international connectivity, voice and WiFi for the young start up entrepreneurs and IT companies.

PTCL will be extending Cloud services and surveillance solutions to companies in the incubation center and in the STP. The telecom giant will also provide mentorship to tech startups enrolled in the incubation center.



## PITB-developed Smart Food Licensing System Launched for PFA

Punjab Information Technology Board (PITB) and Punjab Food Authority have collaborated to launch the Smart Food Licensing System.

The system was envisioned by the DG PFA, Mr. Noor-ul-Amin Mengal who was ably assisted by the Additional DG and GM-IT PFA. Salient features include:



- Public mobile application for Complaint Registration & new Food Business License requests
- PFA officials' mobile application for logging field visits
- Smart monitoring of all field activities through centralized dashboard
- Smart tracking of license fees/fine collection

## VIVO SMARTPHONE V7 Comparison with V7+

Processor	Qualcomm Octa-core	Qualcomm Octa-core
RAM	4GB RAM	4GB RAM
Storage	32GB (supports microSD Card up to 256GB)	64GB ROM (Supports microSD Card up to 256GB)
Battery	3000mAh (Typical Capacity)	3225mAh
Fingerprint Sensor	Supported	Supported
Operating System	Funtouch OS 3.2 (based on Android 7.1)	Funtouch OS 3.2 ( Based on Android 7.1 )
Display Size	5.7" (144.9mm)	5.99"
Display Resolution	1440 x 720 HD	1440 x 720
Display Type	IPS	IPS Capacitive Touch Screen/Incell
Touch Screen	Capacitive Touch Screen	Gorilla Glass 3/2.5D
Camera	Front 24MP / Rear 16MP	Front: 24MP / Rear: 16MP
Aperture	Front f2.0 / Rear f2.0	Front: f2.0 / Rear: f2.0
Flash	Supports Selfie Softlight and Rear.Flash.	Supports Selfie Softlight and Rear.Flash.
SIM Slot Type	4G LTE, 2 nano SIMs + 1 microSD Card	4G LTE, 2 Nano SIM and 1 microSD Card
Face Access	Supported	Supported
	<b>Rs. 29,999</b>	<b>Rs. 35,999</b>





By Zainab Saeed

# BATTLE OF THE BRANDS

## A Round up of SMARTPHONE BRANDS in Pakistan

Since the rollout of 3G and 4G technology in 2014, the mobile phone and MBB adoption in Pakistan has increased rapidly which created a huge demand for smartphones. IDC's report of Q1 2017 showed massive year on year growth of 27.6%. A senior analyst at IDC even compared this growth with developed markets. Pakistan has also managed to catch up with the international tech revolution. Pakistani market mainly comprises of a younger generation who is well-aware of all the modern technological trends. This market segment

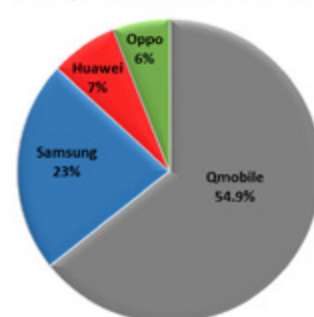
wants smartphones with 3G and 4G connectivity with all the other latest features at an affordable price. To use all the latest features and applications, consumers' are moving towards 4G-enabled handsets; shipments of these devices has grown to 189% year on year in Q1 2017.

Due to such encouraging growth trends, many new smartphone brands have entered the Pakistani market over the years. According to IDC, currently, Qmobile continues to dominate the overall smartphones market

with 54.9% in Q1 2017, while Samsung came second with a market share of 19.1%.

Huawei with 6.1%, and Oppo with 5.2% market share also secured a place in top brands list.

Smartphone Marketshare Q1 2017



The newly emerging brands such as Xiaomi, Vivo, Infinix, and OPPO are offering smartphones with great specs at more affordable prices to customers in Pakistan. Since Pakistan is a price sensitive market, the proportion of low-cost smartphones in Pakistan continues to grow. It has been estimated that almost 50% of all smartphones shipped to the market priced below \$100 earlier this year.

**Pakistani market mainly comprises of a younger generation who is well-aware of all the modern technological trends**

Here is the list of hot favorite five smartphone brands in Pakistan.

### Samsung

Samsung is the world's top smartphone brand that is also quite popular in Pakistan. It has launched devices for all market segments and all of them were appreciated by the people, whether it is the Galaxy range, Note, or J series.

Samsung has not only expertise in smartphones but has also explored the market for tablets, wearable tech, security and monitoring devices, TVs and Home Appliances.

Following are the Samsung's most popular devices in different categories.

### Best mid-range Smartphone

The Galaxy A family is considered Samsung's flagship mid-range line. Galaxy A7 and A5 are the mid-range phones from A family. On the other hand, the smartphones from J family like Galaxy J7, J7 Prime, and J7 are also good mid-range smartphones by Samsung.

### Best high-range Smartphone

The Samsung has released some of its flagship devices in 2017, which became hot favorite devices among Users. The Galaxy S8 has been marked as best smartphone device of the year 2017. On the other hand, Samsung Galaxy Note Edge also gained popularity among the people of Pakistan because of its premium feature and cutting-edge technology. While Galaxy Note 8 is also the hottest flagship device by Samsung.

**Almost 50% of all smartphones shipped to the market priced below \$100 earlier this year**

### Distinctive factor of Samsung

Excellence in Camera, design quality and AMOLED screens.

### Apple

Currently, Apple is world's second-leading mobile phone brand after Samsung. It is considered a status symbol in Pakistan. The new flagship iPhone 8 and iPhone 8Plus are big hits from Apple. Both of these flagship devices have become quite popular these

days. Apple is not only famous for high-end smartphones but the company has also captured a large portion of the market with iPad, iPod and Smart watches.

**Qmobile continues to dominate the overall smartphones market with 54.9% in Q1 2017, while Samsung came second with a market share of 19.1%. Huawei with 6.1%, and Oppo with 5.2% market share also secured a place in top brands list**

### Best high-range Smartphone

As we all know that Apple is a high-end luxury brand that has expensive product range. Its new iPhone X has gained tremendous popularity among the iPhone users but it is also the most expensive Apple smartphone till date with the price tag of PKR 133,000.

### Distinctive Factor

Upgraded chipset called A11 Bionic and iOS software.

### Huawei

The company introduces different smartphones from time to time with great features and reasonable price range, making it one of the most popular brands in Pakistani market. The company is also in manufacturing of Tablets, wearables, Broadband devices, accessories and network equipment business.



### Huawei's most popular devices in different categories

#### Best low-range smartphones

Huawei Y3, Huawei Y5, and Huawei Y3II are among some of the best low-range smartphones available in the market.

### Apple's distinctive factor is its Upgraded chipset called A11, Bionic and iOS software

#### Best mid-range Smartphone

Mate 10 Lite, P10 Lite, G8 and Y7 Prime are Huawei's best mid-range smartphones that are quite popular among Pakistani consumers.

#### Best high-range Smartphone

The Huawei P10 plus and Huawei Nexus 6P are some of its hottest flagship devices. Recently launched, Mate 10 and Mate 10 Plus have become the center of attention in Pakistan.

#### Distinctive Factor

Battery timings and solid fit body.

#### QMobile

QMobile is the largest smartphone company in Pakistan. It is the first local mobile phone brand and is famous for low and mid-range

smartphones. it is also one of the few brands that are still in feature phone business.

### QMobile's most popular devices in different categories

Best low-range smartphones: QMobile Dual One, QMobile Block Two, Noir i9i, Noir LT550 and Evok Power Lite are some of the best low-range QMobile devices available in the market.

#### Best mid-range Smartphones

Noir A1 comes with super selfie front camera with a massive battery of 4010mAh at an affordable price. Demand in the market for Noir A1 is high these days. On other hand, Noir A1 Lite is also getting a very positive response from the consumers. Noir X1s, Noir E8, and Noir J7 Pro are also the hottest flagship devices of Qmobile.

### Oppo Distinctive Factor Excellence in Camera

#### Distinctive Factor

Affordable Price.

#### OPPO

After getting popularity in the international markets such as China, Myanmar, and the Philippines, OPPO entered Pakistani smartphone market a few years back. It mainly targets the young audience

especially the selfie lovers. OPPO also has Disc Player and Magnetic headphones in its product portfolio.

#### Best mid-range Smartphones

OPPO's mid-range smartphones have made a prominent mark in the smartphone industry. OPPO's F5, F3, F3 Plus are some of the most popular smartphones among Pakistani consumers these days.

### Many new brands have entered the smartphone market, pushing OEMs to come up with the innovative features to make their mark

#### Distinctive Factor

Excellence in Camera.

The smartphone market has witnessed an increased level of competition in the recent past. Many new brands have entered the smartphone market, pushing OEMs to come up with the innovative features to make their mark. Since Pakistan is a price sensitive market where a large portion of the population belongs to 18-30 years of age bracket, the OEMs that offer great specs at an affordable price will be the ultimate winners.



# Elon Musk Reinventing Future

Elon Musk is not your average billionaire. He co-founded PayPal, leads SpaceX, released plans for a crazy Hyperloop transportation system, and runs Tesla, the electric car company that is taking the automotive market by storm. By using his wealth to build companies that are working to change the world, Musk has become one of the most influential businessmen alive today.

**"I came to the conclusion that we should aspire to increase the scope and scale of human consciousness in order to better understand what questions to ask. Really, the only thing that makes sense is to strive for greater collective enlightenment"**

Musk was born to a South African father and a Canadian mother. He displayed an early talent for computers and entrepreneurship. At age 12 he created a video game and sold it to a computer magazine. In 1988, after obtaining a Canadian passport, Musk left South Africa because he was unwilling to support apartheid through compulsory military service and because he sought the greater economic opportunities available in the United States.

Elon Musk became a multimillionaire in his late 20s when he sold his start-up company, Zip2, to a division of Compaq Computers. He achieved more success by founding X.com in 1999, SpaceX in 2002 and Tesla Motors in 2003. Musk made headlines in May 2012, when SpaceX launched a rocket that would send the first commercial vehicle to the International Space Station. He bolstered his portfolio with the purchase of SolarCity in 2016, and cemented his standing as a leader of industry by taking on an advisory role in the early days of President Donald Trump's administration.





By Shaheer Riaz

# oppo F5 Capture the Real You

## Display & Design

The Oppo F5 is a 6.0 inch device with the supportive resolution display of 1080 x 2160 pixels while Density Per Pixel (dpi) is 480 and 18:9 screen. The dimensions are 156.5 x 76 x 7.5 mm and weight is only 152 grams, which is great. Oppo always provides the best multi-touch experience as compare to many of the other brands. It has scored full 10-points in multi touch. Oppo F5 comes with Mali-G71 which is specifically used in gaming and graphic display.

Back body of Oppo F5 is very simple with a fingerprint scanner; it has a lot of resemblance with iPhone 6 Plus or iPhone 7 plus.

## Camera

Oppo F5 has 16MP back camera lens with LED flash light. It can record videos in full 2160 pixels and 1080 pixels with 30 frames per second. The best feature of Oppo F5 back camera is its adjustable lighting. It is easy to use and it has very quick focus in dark room or sun shadows.

Front camera of Oppo F5 is loaded with 20MP lens. The Front camera with 20MP lens is like a dream come true for selfie lovers. It can record videos in full 1080p quality. The results for front camera are just remarkable. Beauty mode enhances face beauty in terms of smoothness, slimness and brightness. The OPPO F5 does not come with a front-facing LED flash, which is odd given that this is marketed as a selfie-centric phone.

## Memory

Oppo F5 is perfect in memory section because it has 64GB ROM and 6GB RAM that make an awesome combination. It is also available in 128GB edition. 64GB version supports expandable memory up to 128GB while 128GB version supports up to 256GB expandable memory.



## Processor

Oppo F5 has octa-core processor of 2.0 GHz with the chip set of MediaTek MT6763T. It has 64 bit-type processor that is based on the architecture of ARM Cortex-A57. This chip set is designed to support brilliant graphics and multimedia.

## Battery

Oppo F5 has big Li-ion battery of 3200 mAh. Battery gives 9-10 consecutive hours of usage and it has very good travel charger which can charge the device in almost one hour and 15 minutes.

## Connectivity

Oppo F5 is a dual SIM 4G enabled device. Wi-Fi supports the standards of Wi-Fi 802.11 a/b/g/n, WiFi Direct, hotspot while Bluetooth version is 4.2.

## Interface

The OPPO F5 has Android version 7.1 (Nougat) which is based on Color OS interface. The colors used in OPPO are very fresh but with little bit tint. The interface has white color more than any other color.

## Benchmarking



Velamo

Multicore 2330  
Metal 1685  
Chrome Browser 3155



Antutu

65094

## Specs

Dimensions: 156.5 x 76 x 7.5 mm

Display: LTPS IPS LCD

Battery: Non-Removable Li-ion 3200 mAh

Network: GSM/3G/LTE

Camera: 16 MP, face detection autofocus, LED Flash

Memory: 4/6 GB RAM, 32/64 GB ROM

Processor: 2.0 GHz Octa-core

Price: PKR.31,899/-



## Good

- 64GB ROM and 6GB RAM
- 20MP front camera lens
- Facial recognition

## Bad

- No front facing flash light

## Final Verdict

If you're looking for a phone that can take awesome selfies, then oppo F5 is definitely the one for you...!!!!!!



# Changing Lives through Technology

# The BIG 2017 Techs of

## A Robot You can relate to

Personal robots, such as Amazon Echo and Google Home, have come a long way in recent years. But Jibo is different and far more evolved than its predecessors.



Jibo not only swivels while he speaks but also giggles, dances and turns to face you whenever you say "Hey Jibo". Jibo still has a lot to learn. Although he can help users in basic ways, like by summarizing news stories and taking photos, he can't yet play music requests or work with third-party apps but Matt Revis, the company's vice president of product management, is confident Jibo will evolve. "There was a threshold we had to reach in order to launch," says Revis. "Now it's part of the journey."

## Glasses That Give Sight to the Blind

eSight 3 is the world's most powerful pair of glasses: once users put on eSight, it records HD video and uses magnification, contrast and proprietary algorithms to enhance that imagery into something the legally blind can see.



At \$9,995, the device, which launched in February, is not accessible to everyone (though

By Rizwana Khan



the company does help connect would-be buyers with funding sources, including grants). To date, the company estimates it has been used by more than 1,000 patients.

## Cars That Could Make Electric Mainstream

Electric cars typically have one of two problems: they're either too expensive, or they have a too-limited range.

Tesla's Model 3 aims to render both issues moot: it's the buzziest in a series of \$35,000-and-up electric cars offering more than 200 miles of driving distance on a single charge (alongside the Chevrolet Bolt).



Demand for the Model 3 is so high—as many as 1,800 orders each day, per company estimates—that Tesla is struggling to keep up. Vehicles like the Model 3, which runs on batteries rather than gasoline, are likely to play a major role in combating climate change.

## Drones That Put Selfie Sticks to Shame

Airborne drones have become quite popular over the years for

mapmaking, search-and-rescue operations and many other things but DJI Spark has a different agenda.



It helps take better photos, videos and dronies a.k.a drone selfies; it is much easier to operate too.

## A Wi-Fi Router That Safeguards Your Smart Home

In today's connected world, almost any appliance we own, from toasters to washing machines, can be targeted by hackers.



The Norton Core aims to neutralize that threat. Unlike most wi-fi routers, which merely enable connectivity, the Core is designed to detect abnormalities; if one device is showing signs of a virus, the Core cuts it off from the rest of your home network. It also regularly updates its software to stay on top of new

threats and "keep homeowners safe and secure".

## Wristbands That Help Babies Get a Better Start

In areas with few resources, where the numbers of premature or low-weight births are highest, most hospitals and clinics can't afford incubators to keep babies warm, and most parents don't know their babies are in danger until it's too late. Bempu is a \$28 light-up temperature-monitoring bracelet that fits on a baby's wrist; it sounds an alarm and flashes orange if babies are too cold, so mothers can warm them against their skin or swaddle them.



So far, the device has helped an estimated 10,000 newborns, mostly in India but also in 25 other countries. And earlier this year, it won a \$2 million grant from Saving Lives at Birth to scale its distribution even wider.

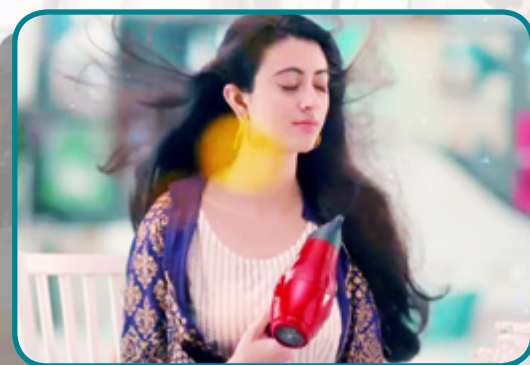


# TELECOM CAMPAIGNS

**4.5** **Nokia** **Nokia-Unite for Love**  
**Nokia's** new TVC "Unite for Love" is an example of today's busy lifestyle where people don't have enough time for their families anymore. Nokia, keeping its traditional, "Connecting People" tagline alive has featured its new Phones in an emotional yet message oriented advert. The background music also goes well with the theme and acting is also perfect.  
**Verdict:** Message Oriented Advert!



**4.5** **Huawei** **Huawei Mate 10 Lite - Perfect Selfie**  
**Huawei** Mate 10 Lite is a perfect selfie camera which is why its latest TVC is focused on its camera features. The concept of the TVC is little different from other conventional tvcs. Urwa Hocane, the brand ambassador of Huawei shows the viewer how to take a perfect selfie with Huawei mate 10 lite. It's a simple TVC with beautiful colors and background music. Also, Urwa did justice with her performance.  
**Verdict:** Super Dooper TVC

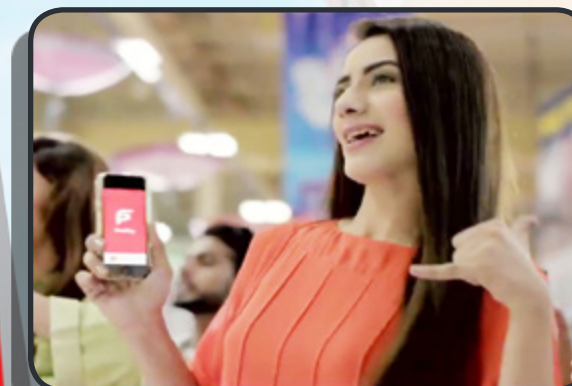


**4.5** **Telenor** **Telenor- Jo har Pakistani Chahay**  
**The** new TVC launched by Telenor shows its new brand philosophy with the tagline "Jo har Pakistani Chahay" that clearly goes with the theme of advert and bundle offer. This TVC also sheds light on the efforts of Telenor Pakistan, to make 4G accessible in rural areas of Pakistan. Through this new brand Philosophy, Telenor shows that each and every Pakistani is important for them. This advert is very creative and overall music blends well with the theme of Jo Har Pakistani Chahay.  
**Verdict:** Mehfil Loot Lia!

Fizza Atique

The advertising campaigns play a vital role in promoting a brand/product. A truly memorable campaign creates a visceral response – but one bad campaign can ruin it all. PhoneWorld keeps a close eye on the latest ad releases in telecom industry. Here is a critical review of the latest telecom campaigns.

**4** **FonePay** **FonePay Masterpass QR**  
**FonePay** Masterpass QR TVC is based on a musical plot amalgamated with catchy jingle, "FonePay, FonePay sari dunya". It shows delighted customers at different places who are rejoicing this payment service greatly. This TVC conveys the message that world is shrinking down to the screen of your phone. FonePay TVC is funny, musical and entertaining that easily catches audience's attention.  
**Verdict:** Refreshing hay bhael!



**3.7** **PTCL** **PTCL-Baara Atharaa**  
**PTCL** has launched a new awareness TVC for its latest service aimed to increase customer interaction and customer feedback. With 1218 Helpline users will be able to get timely solutions for their PTCL related issues. This campaign highlights the use of word 'Baara Atharaa' to establish the number in the minds of the customers. The campaign is well executed and the overall music and script is normal. The theme and tagline punch, "Barra Atharaa" is very effective.  
**Verdict:** Better TVC than previous ones!

**2.5** **Jazz** **Jazz Super Dooper Monthly offer**  
**This** time Jazz has released an average TVC for its Super Dooper monthly offer. There is no theme of this advert however, the company has just announced the perks of these offers in a TVC. The overall font used in TVC is annoying as it's very large and pictorial. Users have to dial \*706# to subscribe this offer. The music is also very bad.  
**Verdict:** Jazz you need to change your Creative Agency!

**SUPER DUPER MONTHLY OFFER**



**QMobile Dual One**

**OS:** Android v7.0 (Nougat)  
**Display:** 5.0"  
**CPU:** Quad-Core 1.3GHz  
**Camera:** 6 MP, LED Flash Light  
**Memory:** 8 GB ROM , 1 GB RAM

**Sony Xperia Xa1 Ultra**

**OS:** Android v7.1 (Nougat)  
**Display:** 6.0"  
**CPU:** Octa-Core 2.0GHz  
**Camera:** 19 MP, LED Flash, Autofocus  
**Memory:** 64 GB ROM, 4 GB RAM

**Nokia 2**

**OS:** Android v7.0 (Nougat)  
**Display:** 5.0"  
**CPU:** Quad-Core 1.2GHz  
**Camera:** 8 MP, LED flash  
**Memory:** 8 GB ROM, 1 GB RAM

**Vivo V7 Plus**

**OS:** Android v7.1 (Nougat)  
**Display:** 5.99"  
**CPU:** Octa-Core 1.8GHz  
**Camera:** 16MP, LED Flash  
**Memory:** 64 GB ROM, 4 GB RAM

**Oppo F5**

**OS:** Android v7.1 (Nougat)  
**Display:** 6.0"  
**CPU:** Octa-Core 2.0GHz  
**Camera:** 16 MP, LED Flash  
**Memory:** 32/64 GB ROM, 4/6 GB RAM

**Xiaomi Redmi Note 5A**

**OS:** Android v7.0 (Nougat)  
**Display:** 5.5"  
**CPU:** Quad-Core, 1.4GHz  
**Camera:** 13 MP, LED Flash, Autofocus,  
**Memory:** 16 GB ROM, 2 GB RAM

**Huawei Mate 10 Lite**

**OS:** Android v7.1 (Nougat)  
**Display:** 5.9"  
**CPU:** Octa-Core 2.2GHz  
**Camera:** Dual 16 MP + 2 MP, LED flash  
**Memory:** 64 GB ROM, 4 GB RAM

**QMobile S8**

**OS:** Android v7.0 (Nougat)  
**Display:** 5.0"  
**CPU:** Quad-Core 1.3GHz  
**Camera:** 8 MP, LED Flash  
**Memory:** 16 GB ROM, 2 GB RAM

**Sony Xperia XA1**

**OS:** Android v7.0 (Nougat)  
**Display:** 5.0"  
**CPU:** Octa-Core 1.6GHz  
**Camera:** 23 MP, LED flash  
**Memory:** 32 GB ROM, 3 GB RAM

**QMobile i9i**

**OS:** Android v7.0, (Nougat)  
**Display:** 5.0"  
**CPU:** Quad-core 1.3 GHz  
**Camera:** 5 MP, LED flash  
**Memory:** 16 GB ROM, 1 GB RAM

**Sony Xperia XZ**

**OS:** Android v7.1 (Nougat)  
**Display:** 5.2"  
**CPU:** Quad-Core 2.4GHz  
**Camera:** 23 MP, LED flash  
**Memory:** 32/64 GB ROM, 3 GB RAM

**Xiaomi Mi Max 2**

**OS:** Android v7.1 (Nougat)  
**Display:** 6.44"  
**CPU:** Octa-Core 2.0GHz  
**Camera:** 12 MP, LED Flash  
**Memory:** 64 GB ROM, 4 GB RAM

**Lenovo Moto E4**

**OS:** Android v7.1 (Nougat)  
**Display:** 5.0"  
**CPU:** Quad-Core 1.25 GHz  
**Camera:** 8 MP, LED flash  
**Memory:** 16 GB ROM, 2 GB RAM

**Sony Xperia XZ Premium**

**OS:** Android v7.1 (Nougat)  
**Display:** 5.46"  
**CPU:** Octa-Core 2.0GHz  
**Camera:** 19 MP, LED Flash  
**Memory:** 64 GB ROM, 4 GB RAM

**Xiaomi Mi Mix 2**

**OS:** Android v7.1 (Nougat)  
**Display:** 5.99"  
**CPU:** Octa-Core 2.4GHz  
**Camera:** 12MP, LED flash  
**Memory:** 64 GB ROM, 6 GB RAM

**QMobile LT550**

**OS:** Android v7.0 (Nougat)  
**Display:** 5.0"  
**CPU:** Quad-core, 1.3 GHz  
**Camera:** 5 MP, LED flash  
**Memory:** 8 GB ROM, 1 MB RAM

Please Visit Our Website

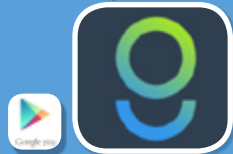
[www.phoneexpress.pk](http://www.phoneexpress.pk)
 Flat No.306, 3rd Floor Dossul Arcade, Jinnah  
 Avenue, Blue Area, Islamabad



# TOP MUST HAVE APPLICATIONS & GAMES FOR YOUR SMARTPHONE

## Goonj: new Pocket TV Live TV News & Cricket

Rating : 4.1 Price: Free



Goonj – Khabar Hui Mobile!  
Goonj is Pakistan's fastest video news, Live TV and Cricket streaming app. Designed for smartphones, Goonj offers the best live streaming of Pakistani TV channels, consumes low amount of mobile data and works on all networks and Wi-Fi connections. (Goonj was formerly called Pocket TV)

Pakistani Software Developer Application

## Line VS Circle New 2017: Beat Bounce & Wire Up

Rating : 4.6 Price: Free



Voted best trend game among new games 2017. Line vs Circle 2017 new is a surprisingly fun and addictive reflex game with electronic music that lets you color jump, circle rush and leap your way to the top.

## New Year GIF 2018

Rating : 4.6 Price: Free



New Year GIF 2018, Happy New Year 2018 GIF, Animated Greeting Cards. New Year GIF animated images and quotes. Beautiful Collection of New Year wishes using this GIF New Year app, wish your friend, family, and loved ones.

## ∞ Infinity Loop

Rating : 4.5 Price: Free



Simple, relaxing, endless game. People love it!  
∞ Infinity Loop is the most trending game in 2017. It can be considered a puzzle game about creating intricate looping patterns or just the application of using a simple concept: „connecting multiple things“ and make fun out of it.

## Name Art

Rating : 4.6 Price: Free



Write your name on photos using Name art(2017) application. Name art(2017) app provide 100+ famous unique font style and emojis to make your name on different social media Profile Picture that are the latest trend to make you unique on different social media platforms like Instagram, Facebook, WhatsApp, Twitter and many more.

## VEON

Rating : 4.0 Price: Free



A new way to keep in touch with anyone, anytime. VEON app uses your phone's mobile network or Wi-Fi (where available) to let you call, chat, send pictures and videos for free\*, so you don't have to pay for every message or call. You can also discover new content from VEON, from interesting news articles and videos to the latest music, VEON provides you with a world of content within the VEON app.

By Maryam Arshad

## Gaari

Rating : 4.7 Price: Free



Gaari is a ride-hailing app for fast, reliable rides in minutes—day or night. Gaari provides services while focusing on a user-friendly experience through our app. With Gaari, requesting a ride is just a tap away, and it's easy to pay with Gaari Paisa, debit & credit cards or cash. Whether you are commuting to work or it's night out with friends & family, there's a Gaari for every occasion. Gaari is available in twin cities—download the app and take your first quality ride today.

Pakistani Software Developer Application

## Launcher New 2017 Version

Rating : 4.4 Price: Free



Transform your phone with this creative theme for Android and change the way your phone looks with the Launcher New 2017 Version which was designed to combine a lot of unique features: special icons for most popular apps, HD backgrounds and more!

## New Uber Promo Codes

Rating : 4.1 Price: Free



Update the latest Uber promo coupon info for Uber Moto or Uber Taxi. By using this New Uber Promo Codes, you will get more affordable price when ordering Uber. Online vehicle transport system such as online taxi or ojek online very easy for you when traveling. Compared to using a train or bus, using an online taxi like Uber is much more fun.

Pakistani Software Developer Application

## OnTrack Diabetes

Rating : 4.3 Price: Free



October 2017: A major update to the Android OnTrack App (and released the first ever IOS version). The new version of the App has a more modern interface and streamlined user experience. We have many more updates planned for the near future to better serve the needs of users.

## Latest Video Status 2017

Rating : 4.4 Price: Free



Huge & unique collection of latest Video status app serves variety of short videos suitable to post on WhatsApp directly. Whatsapp Video Song Status app has large collection of best video songs to share on your WhatsApp status.

## Blapp Friday - Black Friday Deals 2017

Rating : 4.5 Price: Free



Blapp Friday is one of the best Black Friday shopping app to get the best deals for the most important sales event of the world. Get the 2017 best deals from top companies like Amazon, Apple or Walmart totally FREE.

## Christmas Countdown 2017

Rating : 4.7 Price: Free



Choose from five beautiful themes, featuring Santa and his reindeer, many Christmas trees, and even a snowman. Enjoy classic Christmas music including Deck the Halls and We Wish You a Merry Christmas. Watch the falling snow on the countdown screen. Open a new gift every day of December in your advent calendar! You'll get a beautiful Christmas themed HD image which you can set as your wallpaper, as well some other ideas to help you get in the Christmas mood.



# HOW TO SET UP A VPN (and Why You Should)

No matter how secure you believe your internet connection is, hackers are becoming more and more sophisticated in the ways they access people's personal information.

Only through encryption, hiding your traffic and obfuscating your IP address can you stop those trying to sneak on to your network. That's why many users are using VPNs to protect their privacy.

## What's a VPN?

### VPN - Virtual Private Network

A network service that creates a secure network connection over a public or private network. This private network connection is owned by a group or an individual and made inaccessible to other users. You can use this network to connect your computer with others anonymously over the internet.

## What does a VPN do?



When you connect to a VPN service, your computer exchanges trusted keys with a server.



Once both computers have been authenticated, all your internet communication is securely encrypted.



Simply put, a VPN secures your computer's internet connection so that any data you send or receive is protected from anyone trying to access it.

## Why should you get one?



It means you can remain anonymous online, keeping your browsing habits and data away from prying eyes.



You can watch videos and stream content from countries where access is usually limited.



It allows 'geoblocking' - i.e. you can stop websites collecting location data.

## Which VPN should you use?

	Price per month (\$)	Price per annum (\$)	Country	Compatible Platforms	Payment Methods
Private Internet Access	6.95	39.95	USA	Windows, iOS	Debit/credit cards, PayPal, brand-name gift cards, Bitcoin
Norton Hotspot Privacy	19.99	49.99	USA	Windows, iOS	Debit/credit cards
Hotspot Shield Elite	3.00 (Paid by phone)	29.95	USA	Windows, iOS	Debit/credit cards, PayPal, Google Wallet, iTunes, mobile phone
Hotspot Shield (Basic)	Free	Free	USA	Windows, iOS	N/A
proVPN 2.5.0.	6.25 (Premium)	Free (Basic)	USA	Windows, iOS	Paypal, Google Wallet and Amazon Payments
CyberGhost	6.99 (Premium)	39.99	Romania	Windows, iOS	Bitcoin and cash (Germany, Austria and Switzerland only)
HideMyAss	11.52	99.98	UK	Windows, iOS	Debit/credit cards, PayPal, Bitcoin, mobile phone, bank wire transfer, WebMoney, IDEAL Banking

Remember - not all VPN services are created equal.

When choosing a VPN, it's important to consider the price, connectivity protocols, features, the number of servers and their location before making a decision.



A VPN is only as secure as the provider that you choose.

## How to get started



1 Select a VPN from the list.

2 Sign up to the VPN, either through subscription or free sign-up.

3 Set it up following the steps below.

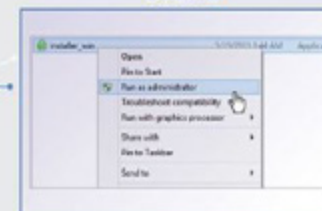
## How to set up a third-party VPN

### STEP 1



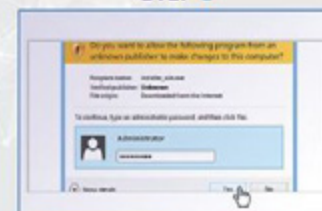
Download the VPN installer.

### STEP 2



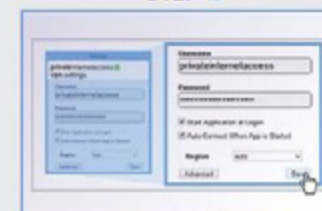
Right-click the downloaded installer file and select 'Run as administrator' to start the installation.

### STEP 3



The Windows User Account Control (UAC) prompt may ask for the administrator password. Type in the password and select 'Yes' to continue.

### STEP 4



Once the installation has completed, you'll be asked to log in with your VPN details. Tinker with the options if desired, and then press 'save'.

## How to connect to a VPN manually



### Windows 7

#### STEP 1



Find a VPN address to connect to. Sites like vpngate.net offer a host of IP addresses.

#### STEP 2



Go to 'Start' button.

#### STEP 3



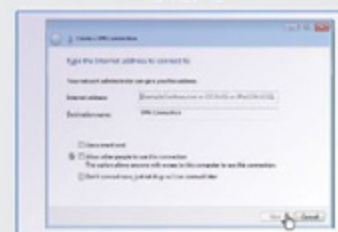
In the search bar, type VPN.

#### STEP 4



Select 'Set up a virtual private network (VPN) connection'.

#### STEP 5



Enter IP address or domain name of your chosen VPN server. Click 'Next'.

#### STEP 6



Enter 'vpn' for both the user name and password.

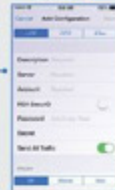


### STEP 1



Go to 'Settings', 'General' and then 'VPN'.

### STEP 2



Click on 'Add VPN Configuration'. Enter the server address and the account name for the VPN connection.



### STEP 1



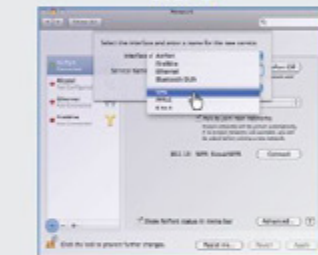
Find a VPN address to connect to. Sites like vpngate.net offer a host of IP addresses.

### STEP 2



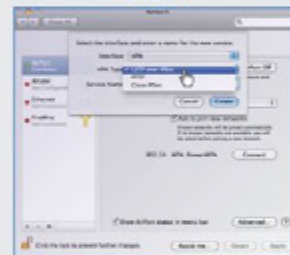
In the Apple menu, go to 'System Preferences' and click 'Network'.

### STEP 3



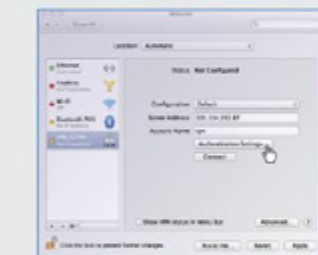
Click 'Add (+)' at the bottom of the list and choose 'VPN' from the pop-up menu.

### STEP 4



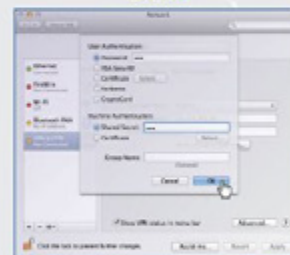
In the 'VPN Type' pop-up menu, click on the kind of VPN connection you're setting up.

### STEP 5



Enter the account name 'vpn' and go to Authentication Settings.

### STEP 6



Enter 'vpn' for both the password and shared secret. Click 'OK' and then click 'Connect'.

In the time it takes a hacker to infiltrate your network and take data from your personal computer, you could set up your own VPN. It's that simple!

### Sources

Norton Hotspot Privacy - [norton.com](http://norton.com)  
 Hotspot Shield Elite - [hotspotshield.com](http://hotspotshield.com)  
 Getting Started - [itap.purdue.edu](http://itap.purdue.edu)  
 Cisco AnyConnect - [anyconnect.cisco.com](http://anyconnect.cisco.com)  
 What is a VPN, and Why Should You Get One? - [nerdwallet.com](http://nerdwallet.com)  
 How to Set Up a VPN in Windows 7 - [pcmag.com](http://pcmag.com)  
 VPN Direct (Premium) Review - [pcomag.com](http://pcomag.com)  
 How and Why to Set Up a VPN Today - [pworld.com](http://pworld.com)  
 Private Internet Access - [privateinternetaccess.com](http://privateinternetaccess.com)  
 proVPN 2.5.0 - [provpn.com](http://provpn.com)  
 What is a VPN? - [oil.uosb.edu](http://oil.uosb.edu)  
 OS X Mountain Lion: Set up a Connection to a Virtual Private Network - [support.apple.com](http://support.apple.com)  
 Setting Up VPN - [support.apple.com](http://support.apple.com)

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## VIVO Signs Cooperation Deal with Qualcomm worth 4 billion U.S. Dollars

Vivo, a leading young brand in the global mobile phone market and one of Qualcomm's key partners, has signed a memorandum of understanding worth 4 billion U.S. Dollars with Qualcomm. The signing of this memorandum of understanding signifies Vivo and Qualcomm's technical partnership and patent sharing. It will also ensure Vivo's leading position in mobile-related technologies.

Catering the needs of more than two hundred million users, Vivo is committed to providing innovative and cutting-edge technologies in mobile photography, gaming, smart power saving and many other aspects in collaboration with Qualcomm's optimized platforms.

### Vivo to accelerate the formulation of 5G standards:

With the advent of 5G, Vivo understands the importance of human-computer interaction and has planned a series of collaborative initiatives to accelerate the formulation of 5G standards. In terms of the 5G SoC (System on Chip), Vivo will also share its many years of consumer market experience with Qualcomm to provide consumers with a better and more customized user experience.

### Vivo Biometrics and 3D Technology:

Vivo is also working with Qualcomm on research and development in the biometrics space. At MWC Shanghai this July, Vivo unveiled the Under Display Fingerprint Scanning Solution based on Qualcomm fingerprint sensors and drew the industry's spotlight. Vivo will continue to work with Qualcomm on other core technologies, particularly 3D facial identification, palm prints, fingerprints, iris scanning and other biometric technologies, to improve the ease-of-use and security of mobile phone biometrics.

Ranking among the top five mobile phone brands in the world, Vivo continues to lead in technology application and consumer insights and aims to stay at the forefront of technology by working with global partners.

This month, Vivo announced expansion plans into the European and African markets in 2018 to increase market share and brand leadership. With this 4 billion U.S dollar memorandum of understanding, this partnership with Qualcomm will help to strengthen its leading position in the industry.



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