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7th IDEAL VILLAGE CONFERENCE ON
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Dr. V. Anantha Nageswaran
Chief Economic Advisor to the Government of India

Parameswaran Iyer
CEO of NITI Aayog

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Director, White House Office of National Drug Control Policy, USA

Retd Justice Giridhar Malaviya
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India can become a US$5 Trillion economy primarily through rural development. This represents a great opportunity to create new markets, develop skilled workers, manufacturing prowess, with large demands for affordable housing, healthcare, energy, education, etc. Obtain great insights from distinguished speakers, panel discussants, exhibitors, and poster presenters about Ideal Village 'best practices'.

📅 **11–13**
November 2022

📍 Swatantrata Bhavan,
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WHO SHOULD ATTEND?

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- Non-Profits & NGOs
- Foundations, Trusts
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EXPLORE

p8

COVER STORY:
SMARTPHONE BUYING GUIDE

We have entered the 5G era

EXPLORE

Sunil Rajguru

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Can UPI become a global superstar?

While the Indian IT services industry flourished, one grouse was that India lacked world beating tech products and apps. We are nowhere having an operating system for any device or something like a social media network that succeeds around the world.

We are nowhere in the list of the world's top tech products, software, apps etc. If the private sector was this bad, then would the government ever fare any better?

But curiously on the digital front, the Indian government is doing very well, and we are more digital than many countries in the world, even the West. Just think about superpower America which uses paper ballots and paper ID. That way India's Aadhaar and CoWIN are both leagues ahead.

One real surprise has been India's Unified Payments Interface or UPI, which is from the India Stack stable. Month on month it creates newer and newer records. In September 2022, it crossed 678 crore transactions with a monetary value of Rs 11 lakh crore. UPI is probably India's favourite desi app ecosystem. While Paytm became a household name after demonetization, UPI has become the one big ring that unites all other rings since then: PhonePe, Amazon Pay, Google Pay, Paytm and of course the government's own BHIM app. Hundreds of banks have also joined in the party.

This is one of the rare times we have become a global No. 1 in a digital concept: real-time payments. A report came in 2019 that Google urged for a similar system in the US. Now the Federal Reserve there may be coming out with a similar system called FedNow in 2023. Many countries are trying to follow the India model.

RuPay credit cards, UPI payments using voice in regional languages, QR codes for cardless cash withdrawals, use of UPI for IPOs, linking to recurring transactions and overdraft facilities… the innovations are many.

Dozens of countries have expressed interest in integrating UPI into their monetary system. This includes Asian countries like UAE and Western ones like France. A recent example is Oman accepting the RuPay card on the UPI platform.

In a surprise move, SWIFT (the backbone for global financial transactions) unprecedently kicked Russia out after its invasion of Ukraine. Russia formed an alternative called SPFS and is likely to be integrated with UPI. While UPI has already conquered India, it has emerged as the first mover on the global stage.

India recently overtook the UK to become the world's fifth largest economy. In the next ten years we will overtake first Germany and then Japan. The Big 3 will then be the US, China and India.

In terms of "digital governance" being a "digital economy", India has a head start over the West.

Sunil Rajguru

> *Digital India shining*

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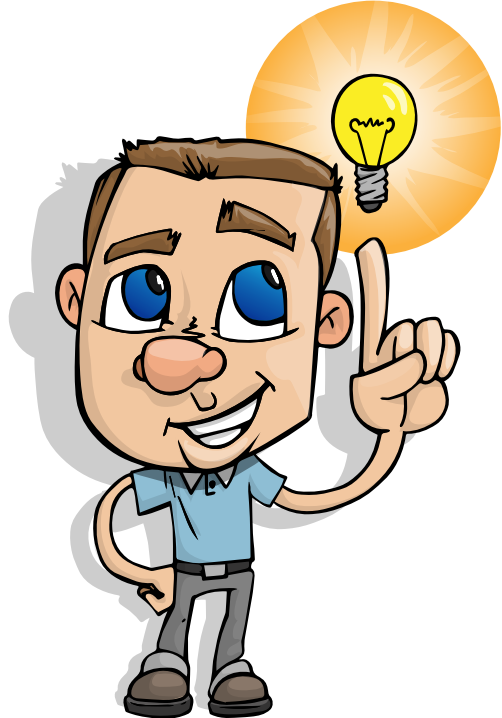
Why do games run slow on my laptop, even adding new Kingston 8GB RAM, in total 16 GB?

■ *Shailendra Kumar*

Check whether the new memory is supported by your laptop. To find out the best match you can use the CPU-Z tool. Also keep in mind not to cross the capacity limit. Most laptops come with two RAM slots and depending on model, can support up to 32 GB RAM. However, some support only 8 GB or less.

What is the best gaming laptop around 50k?

■ *Aravinda Mahali*

A good choice would be HP Pavilion Gaming Laptop 15 ec2150AX. Priced at INR 52,255, the laptop is backed by AMD Ryzen 5 processor and dedicated NVIDIA GeForce GTX 1650 (4 GB GDDR6) graphics. The laptop is equipped with a dual fan system for enhanced thermal cooling and comes with OMEN Gaming Hub for customizable performance. It has an FHD (1920 x 1080) resolution display with anti-glare, and a fast refresh rate that delivers smooth gameplay visuals.

Is it good to work with my laptop while it is charging?

■ *Sneha Kapoor*

You can use your laptop while it is plugged in and charging. It causes no hindrance to the laptop. It becomes an issue if, for some reason, charging your laptop overheats gradually. Such problems can occur due to poor battery conditioning, using third-party chargers, and low voltage supplies. If your laptop has such issues, avoid using it while charging, as your usage will push the laptop to overheat even quicker. All laptops contain Lithium-based batteries that stop drawing power once they are full, so if you are worried about overcharging or excessive electricity bills, do not worry about those.

My new laptop keeps crashing every time I try to run Sims. Is there anything I can do to fix this?

■ *Anupam Anand*

To play SIMS 4, the minimum GPU requirement is NVIDIA GeForce GTX 680, AMD Radeon RX 560 or better. So, if you have the same or better GPU on your gaming machine, then there should be no issue. If there is an issue, then it's better to visit the nearest service center to get it fixed.

But if you are playing this game on a non-gaming laptop, then you can face problems. It's always better to have a machine that is capable of handling games Like FIFA, Shadow of Mordor, etc. A non-gaming laptop won't be able to survive with most modern high-graphics intensive games.

We have entered the 5G era

Ashok Pandey
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Buying the best smartphone can be a tricky task. There have been a lot of tech developments lately leading to numerous smartphones to choose from. Here is a comprehensive guide that looks at essential factors you should consider

Based on our editorial evaluation

When it comes to choosing a perfect smartphone that fits in your budget, you need to keep a lot of factors in mind. With the continuous progression of the smartphone industry, gradually more features are continuously being added/upgraded. It could be a tricky and daunting task to find out the best one out of hundreds of choices.

We've made a simple buying guide to make it easy to decide which is the right device for you.

▾ 4G or 5G Phone?

4G — Speeds up to 1Gbps
Great for mobile internet and HD video streaming
Available on all smartphones

5G — Speeds up to 20Gbps
Designed for connected homes and cities, AI, VR and more
Only available on selected mobile devices

Let's begin with the most popular deliberation. Though 5G is yet not available in most parts of India, it was kicked off in style at the recent but you India Mobile Congress in New Delhi. We have entered the 5G era. You can buy phones with 5G capability. 5G is faster and more reliable as compared to 4G. It all depends on how you would use your phone. If you are a mobile gamer, video streamer, or spend more time online, then 5G is a must.

Lower latency – Compared to 4G, 5G offers a much lower latency rate. You can stream 4K videos without buffering. You

can download video or any content within a blink of your eye. The next-generation network lets join a video meeting without a glitch. You can play high-graphics intensive game live on the go, with far better gaming experience and without a hitch. Moreover, the higher speed will enable you play Augmented Reality (AR) and Virtual Reality (VR) games without connecting to a broadband.

Better battery life – 5G connectivity consumes less power compared to 4G.Still your battery might get drained quickly. Why? Because you will be enjoying different content, games and video calls, etc. on your phone all the time. Otherwise, if you use your phone the way you were using the 4G one, it will deliver higher battery life. So, 5G smartphone is a wise choice.

▾ Screen Size, Type and Resolution

We use our phone the entire day, beginning from our morning walk to going to bed. We use it for different things, from listening to music, clicking photographs, working, studying, online payments and games. Even when we are standing or get some free time from our busy schedules, we mostly use our phone to go through our social media feeds. That's why you need the best screen that fits perfectly in your hands and has the right resolution.

Ideal screen size: Phone screen sizes vary across different models, from 4.5 to 6.9 inches, while the foldable phone screen can go beyond 7.9 or higher. A few believe, bigger is better sometimes, it may be true. If you play a lot of games and watch videos, then a large screen would be a perfect fit. If you are not that much of a freak, then you can choose a screen size that fits in your hands easily and lets you operate the phone single-handedly. One good way to judge the screen size is to check for yourself, depending on the length of your thumb and index finger. Just seek out the most comfortable phone to hold and use.

If you use your phone with both hands, then a large screen will probably feel more comfortable. You can also try a foldable phone that offers the best of both worlds.

Display type: You must be overwhelmed with terms like LCD, OLED, AMOLED, etc. Here's a quick rundown of each to understand their differences –

LCD –In simple terms, LCD (Liquid-Crystal Display) is a flat-panel display that does not emit light directly. Instead, it uses a backlight or reflector. The LCD panel produces a wider color gamut due to blending of primary colors but wider range is not better all the time as it can produce over-saturated images and images can also look distorted at times. It produces realistic colors but does not offer a wide contrast ratio. LCD panels are not good at producing deep or clear blacks.

IPS – IPS (In-Plane Switching) technology was developed for LCDs. IPS offers wider viewing angles, more accurate colors from almost all viewing angles. One of the disadvantages of IPS panels is they consume more power.

LED –More vibrant and bright displays with better black levels. LED uses an array of light-emitting diodes as pixels to produce images, resulting in better visibility in direct sunlight.

OLED – Deeper black levels. Because they can control each pixel. It turns off the pixels when there's black in an image. Turing off pixels also helps in saving energy. But they often don't get as bright as the LED ones.

AMOLED Display –AMOLED screens have brilliant color reproduction, higher brightness levels, and good contrast ratio. It delivers higher refresh rates and consume less power.

Super AMOLED – It produces higher color gamut, resulting much more granular, clear and sharp images. Super rich color and higher brightness, making it perfect to use in any lighting conditions, even in direct sunlight.

Dynamic AMOLED – It is a SAMOLED screen

with an added HDR10+ support that offers cinema-grade color and contrast - Mobile Color Volume 100% of DCI-P3 (Digital Cinema Initiatives) coverage with a contrast ratio of 2,000,000:1. Moreover, these displays offer better eye comfort certification from TUV Rheinland.

Retina Display – Wider viewing angles, sharper images and vivid & vibrant colors, you get with the Apple's Retina display. In terms of pixel density and resolution, it's hard to beat.

LTPO Super Retina XDR OLED – LTPO (Low-temperature polycrystalline oxide) refers to a particular type of backplane technology seen in OLED displays. LTPO reduces the power consumption by varying the refresh rate.

The ideal choice depends on what you will use your screen. if you are a gaming enthusiast, then no less than AMOLED or higher screen will be a better choice giving higher contrast ratio, and rich colors. On the other hand, if while web surfing document viewing is more important to you than LED screens will do. If you are a fan of Apple devices, then you will get LTPO Super Retina XDR displays with all the latest Apple smartphones.

Display resolution: Higher is better. The more pixels you have the better, and sharper image you would get. Most of the devices come with 1080p resolution displays, which is enough for most of the users. But lower, 720p display, won't be a good choice. Better would be getting a screen with 1,440p resolution and best would be a 4K displays (around 4,000 columns of pixels).

Display refresh rate: Most users don't require higher refresh rates. This is important to consider if you are gamer, as refresh rate relates to how often the screen can create a new image per second. A 60Hz refresh rate

can create a new image 60 times per second – while a 120Hz refresh rate doubles that to 120 times.

1366x768
1600x900
1920x1080
1920x1200
2560x1440
2560x1600
4K UHD (3840x2160)
4K (4096x2160)
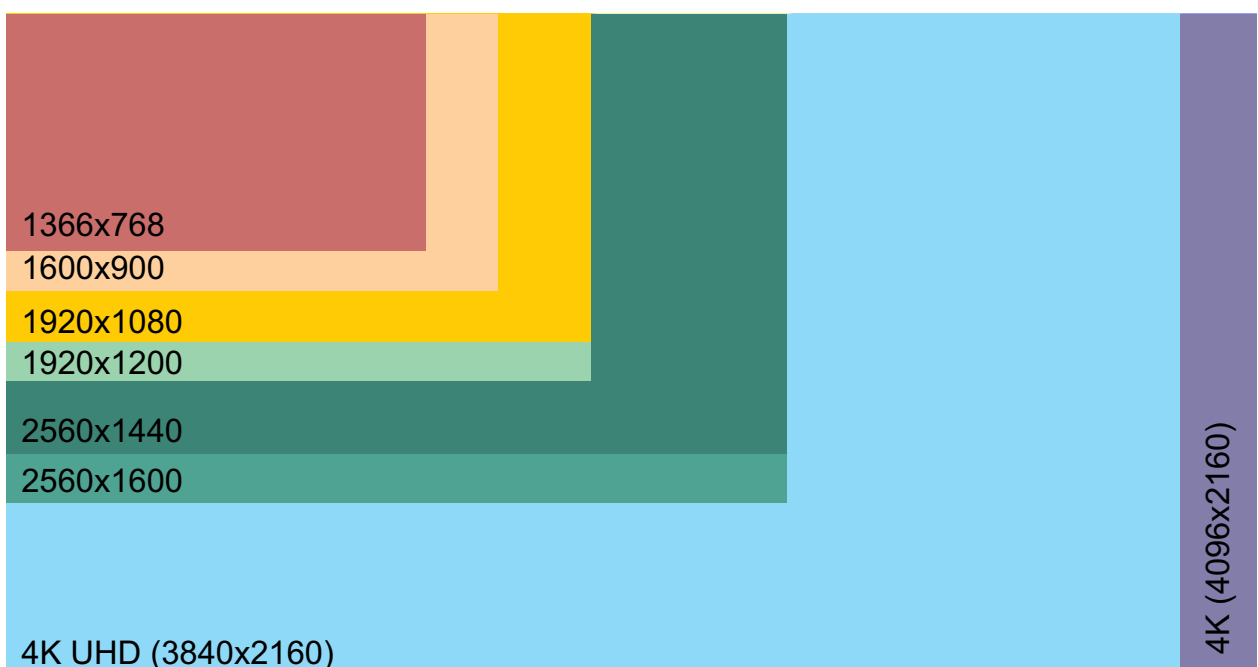
▼ Camera

If you're a photography enthusiast, don't go blindly for the idea that more megapixels will give you better pictures orby promotion like best camera phone or best selfie phone. Instead, look for phones that pack good camera optics like aperture, speed, and other relevant features. If you want to capture decent shot indoors without using the flash look for a larger aperture. Look for optical image stabilization to reduce blur and improve low-light performance. To capture long distant objects clearly, check for the higher optical zoom.

Good photos are a result of adequate megapixels, good lens, and sensor technology, as well as high-end processor chipsets.

▼ Performance – Processor, GPU, RAM and Storage

Without a competent processor, you won't be able to run apps or games you like. for internet browsing and social media scanning, you probably need a decent CPU. But when it comes to run some intensive apps and games, multitask, and so on, then you need a powerful companion that can handle their load.

The CPU speed for most of the phones fall into 1-1.8 GHz and 2.46 GHz for high-end smartphones. Higher number of cores like Octa-core and Hexa-core ensures better performance. If you want to perform high-end gaming and tasks without the CPU coming to a crawl, then go for Octa or Hexa Core.

When you buy an iPhone, you won't get choice, but surely you get a powerful process– A16 Bionic processor, It is a Hexa-core (2x3.46 GHz Everest + 4x2.02 GHz Sawtooth) with iPhone 14 Pro Max. The most popular chipmakers are Qualcomm and MediaTek. Samsung also makes its own CPU Exynos series.

There are two major GPUs–Mali or Adreno, while Apple has its own GPU. Depending on the processor, you can get graphic mate that can extend performance.

The RAM in a smartphone is closely associated as to how its performance would be. Having more RAM gives you freedom for switching between apps or frequently used app and more RAM results into better multitasking. If you want to play heavy graphics intensive games, then you should choose at least 8 GB of RAM for good performance.

When it comes to storage, now 128 GB has become the norm. The 4K camera capability consumes higher space when you capture images or video. Similarly, some high-end games take more than 2GB of space and when update arrives it can cross 5 GB, so it's better to choose higher internal storage

▼ Battery

Measured in mAH, you should always go for higher battery capacity to get more talk time, and enough juice to play games, listening to music and watch videos. Li-Ion and Li-Po are the two latest battery technologies, where Li-Po is better in terms of battery backup and life.

Now, not only battery capacity, charging time matters too these days. Charging speed is measured in watts. All OEMs are attempting to develop charging tech to charge phones faster. There are phones with hefty 120W charger, which means they can fully charge in 15 or 20 minutes.

We all have used wired charger, now there are phones supporting wireless charging. Though it is more convenient than wired

charging but generally slower, ranging up to around 50W.

▼ Operating Systems

There is two choices, Google's Android and Apple's iOS

Benefits of Android

- Most popular OS and is available on a wide price range of smartphones.
- It is an open OS, which means it's easy to customize with widgets, launchers, your choice of keyboard and more.
- Many more choices than iOS Phone when it comes to design, display size, specs, capabilities, and price.

Benefits of iOS

- The biggest reason to opt for an iOS device is its selection of apps. Apple's App Store tends to get the hottest apps and games before Android, partly because developers have an easier time targeting a smaller set of devices that have similar specs.
- Compared to Android, iOS is more secure, but that comes at a cost of some restrictions.
- iPhone users enjoy the broadest array of accessories because there's less variation in design from one model to the next. ∎

Top 10 budget smartphones

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Realme C31 (3 GB RAM, 32 GB ROM)

Beautifully designed for tech-geeks, the smartphone is powered by Octa-core processor, that delivers unmatched performance. The realme C31 brings an unmatched photographic function with an incredible performance that simply blows you away. With a 13 MP triple camera set-up powered by AI, you can create visual masterpieces seamlessly and up your photography game.

Price: ₹9,299

Moto G31 (4 GB RAM, 64 GB ROM)

Packed with AMOLED FHD screen with a Hole in the Display, it delivers amazing image details thus making your intense-gaming session and movie-watching experience enjoyable and engaging. It features a 50 MP Main Camera with Quad Pixel technology so that you can capture clear and vivid pictures under any lighting conditions. And, with the 8 MP Ultrawide angle and 8 MP Depth Sensor, you can add more clarity and perspective to everything you shoot.

Price: ₹10,499

Realme C35 (4 GB RAM, 64 GB ROM)

Upgrade to a new phone that captures stunning pictures with rear camera module which has 50+2+0.3 MP sensors. You will indulge in an immersive way while watching movies or playing games on this phone. Get ultimate performance with Octa core (2 GHz, Dual core, Cortex A75 + 1.8 GHz, Hexa Core, Cortex A55) Unisoc Tiger T616 and comes with 4 GB of RAM and 64 GB of inbuilt storage.

Price: ₹11,999

Redmi Note 11 SE (6 GB RAM, 64 GB ROM)

The smartphone is packed with Helio G95 HyperEngine Game Technology that delivers an engaging gaming experience with stunning visual quality as well as fluid and prolonged gameplay. Also offering stutter-free streaming and fluid navigation is its 16.33 cm (6.42) Super AMOLED display. Moreover, the 64 MP quad-camera setup and 13 MP selfie camera on this smartphone provide speedy image processing while capturing stunning landscapes all around you.

Price: ₹12,029

POCO M4 5G (6 GB RAM, 128 GB ROM)

Get the unmatched smartphone experience with the POCO M4 5G. It comes loaded with the Dimensity 700 processor, UFS 2.2 WriteBooster, and up to 2 GB of Turbo RAM that boosts your performance and makes multitasking a piece of cake.Furthermore, the POCO M4 5G supports seven 5G bands, guaranteeing that you are constantly connected to the world. Moreover, the dual-camera setup with a 50 MP primary camera and 8 MP front camera allows you to click masterpieces and cherish the brilliance of their imagery.

Price: ₹13,499

Samsung Galaxy F23 5G (4 GB RAM, 128 GB ROM)

The affordable 5G smartphone comes with a myriad of impeccable features, including fast operation, versatility, and flawless gaming experience. Driven by a Snapdragon 750G processor, this mobile phone turns your gaming session intense and productive. Its 50MP triple camera set up with 123-degree ultra-wide vision helps to capture stunning pictures with exceptional imagery. Moreover, the integrated Power Cool technology of this phone allows your phone to stay cool well even when used for long hours.

Price: ₹12,999

Redmi 10 Prime (6 GB RAM, 128 GB ROM)

The mobile phone is equipped with a Multi Prediction Engine 2.0, Rapid Response Engine 2.0, and Resource Management Engine 2.0 that allows you to enjoy seamless multitasking. It features a stunning Evol design to ensure eye-grabbing attention of the beholder no matter where you take it. Sporting a Adaptive FHD+ display, this mobile renders seamless gaming and entertainment visuals. Boasting a 6000 mAh battery and 18W fast charging adapter, this mobile keeps you engaged in unlimited gaming activities for extended hours.

Price: ₹13,499

POCO M3 Pro 5G (6 GB RAM, 128 GB ROM)

The POCO M3 Pro 5G features the MediaTek Dimensity 700 processor to deliver powerful performance. It comes with the UFS 2.2 WriteBooster and impressive RAM to ensure that you can enjoy top-notch performance. This mobile phone comes with a 48 MP triple camera (48 MP + 2 MP + 2 MP) setup that includes depth and macro sensors. You can also use other features, such as timed burst, night mode, and slow-motion, and more so that you can better your photography skills.

Price: ₹16,499

Vivo T1 44W (6 GB RAM, 128 GB ROM)

Enjoy gaming thrills and capture your memorable moments with the Vivo T1 smartphone. This mobile phone is driven by a Snapdragon 680 processor that utilizes a 6nm design and clock speed of up to 2.4 GHz, this smartphone lets you experience enhanced gaming performance. Also, it comes with a 50 MP high-definition camera so that you can click sharp details even in low light conditions.

Price: ₹15,999

Realme Narzo 30 Pro 5G (8 GB RAM, 128 GB ROM)

For a smooth and responsive gaming experience, you can rely on RealmeNarzo 30 Pro 5G smartphone. Thanks to its Dimensity 800U 5G processor, this can easily handle any task. Capture stunning photos wherever you are as this phone comes with a 48 MP primary camera along with an 8 MP ultra-wide-angle lens and a 4 cm macro lens triple camera setup. Furthermore, its Super Nightscape mode helps you click clear and vivid photos even in low-light conditions.

Price: ₹19,999

Top 10 mid-range smartphones

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OnePlus Nord CE 2 5G (8 GB RAM, 128 GB ROM)

Packed with 65W SUPERVOOC charger, the phone's 4500mAh battery gets charged to a day's power in 15 minutes. It is powered by Mediatek Dimensity 900 by a 5G enabled, octa-core monster delivers the "Best in class" performance. AI-infused 64 MP main sensor captures amazing shots in different lighting conditions.

Price: ₹24,999

Xiaomi 11i Hypercharge 5G (6 GB RAM, 128 GB ROM)

The phone comes loaded with mind-blowing features. This phone features a monstrous 4500 mAh battery with 67 W Turbo Charging capability that powers up the device up to 50% in about 13 minutes. Packed with MediatekDimensity 920 5G processor, this phone offers a great deal of smoothness, performance, and efficiency in operation. Furthermore, the triple camera setup which comprises a 108 MP Camera, an 8 MP Ultra Wide Sensor, and a 2 MP Macro Camera allows you to capture stunning images which seize the memorable moments.

Price: ₹24,999

Motorola Edge 30
(8 GB RAM, 128 GB ROM)

The sleek and compact design phone comes with 144 Hz of refresh rate and a unique pOLED display that empowers you to enjoy brilliant visuals. Sporting an innovative Snapdragon 778G+ 5G processor, it delivers a smooth user experience, and this phone also features 8 GB of LPDDR 5 RAM and 128 GB of internal storage, enabling you to enjoy its top-notch performance and appreciate the incredible storage capacity that helps you store all that you want.

Price: ₹26,999

Samsung Galaxy A53
(8 GB RAM, 128 GB ROM)

Featuring an FHD+ Super AMOLED display with an expanded 16.40 cm (6.5) Infinity-O display the phone ensures immersive visuals and a smooth browsing experience. Featuring a 5nm Octa-core processor, this 5G smartphone enables you to play fast-paced games and seamlessly multitask with numerous applications, thus enhancing your efficiency. It features a 64 MP main camera that ensures clear and professional shots every time.

Price: ₹31,999

OnePlus Nord 2T 5G
(12 GB RAM, 256 GB ROM)

Packed with 50 MP Main with Sony IMX766 and OIS, 8 MP Ultrawide Camera with 120 degree FOV and 2MP mono lens with Dual LED Flash, the phone lets you capture your life moments filled with colors and joy. Using different camera features such as AI Scene Enhancement, AI Highlight Video, Slow-motion captures, Dual-view Video, etc. you can click different images like a pro.

Price: ₹33,993

Google Pixel 6a
(6 GB RAM, 128 GB ROM)

Google Pixel 6a give you intuitive experience and seamless joy while operating the phone with smooth transition and a myriad of innovative features. Google Tensor, Google's made-to-order processor intended for Pixel, allows applications to open swiftly, websites and photos to load rapidly, and all of it to function seamlessly, enabling the Pixel 6a to be snappy and intuitive. Moreover, the powerful battery adapted into this phone gives enormous power to your phone allowing it to run for a prolonged period.

Price: ₹34,199

OnePlus 10R 5G
(8 GB RAM, 128 GB ROM)

Power-packed with numerous features, the phone is an absolute must-buy. It flaunts a brilliant camera combination of 58 MP (main camera), 8 MP (ultra-wide camera), and 2 MP lens. It comes with a 160W SUPERVOOC Power Adapter that charges the 5000 mAh battery so you'll get a day's power in 10 minutes. Featuring storage of 256GB, this smartphone lets you store files with ease. It runs on OxygenOS based on the Android 12 operating system.

Price: ₹38,000

Realme GT Neo 3 (150W - Thor Limited Edition) (Nitro Blue, 256 GB) (12 GB RAM)

The phone is designed for gamers, featuring an innovative Racing Stripe design, this smartphone is sure to keep the onlookers staring at your phone. This phone is powered by a magnificent Dimensity 8100 5G processor that renders a buttery-smooth gaming and elevated performance. Boasting a 50 MP Wide-angle Triple Camera, you can capture high-grade photos and videos with it.

Price: ₹42,999

Motorola Edge 30 Fusion
(8 GB RAM, 128 GB)

Designed to mesmerise you with its slender design and powered by the Qualcomm Snapdragon 888+ 5G processor, this phone is built to deliver flawless multitasking. Play graphics-heavy games on it with ease. Furthermore, thanks to the rapid refresh rate of 144 Hz, you can enjoy stutter-free visuals with immaculate imagery. Additionally, the 50 MP camera setup with 13 MP Ultrawide and Macro Vision lens allows you to capture breathtaking images with crystal clear clarity.

Price: ₹42,999

OPPO Reno8 Pro 5G (12 GB RAM, 256 GB ROM)

Want to capture amazing and beautiful images? The Oppo Reno 8 Pro mobile phone comes with an innovative Dual Sony camera sensor so that you can click striking images and preserve memories in any lighting conditions. Packed with MariSilicon X 6 nm Imaging NPU technology, the phone expresses its optimum beauty with impressive frames and precise imagery. Equipped with a 5 nm Octa-core MediaTek Dimensity 8100-MAX processor, this phone offers impeccable performance for everything you do.

Price: ₹45,999

Top 10 premium smartphones

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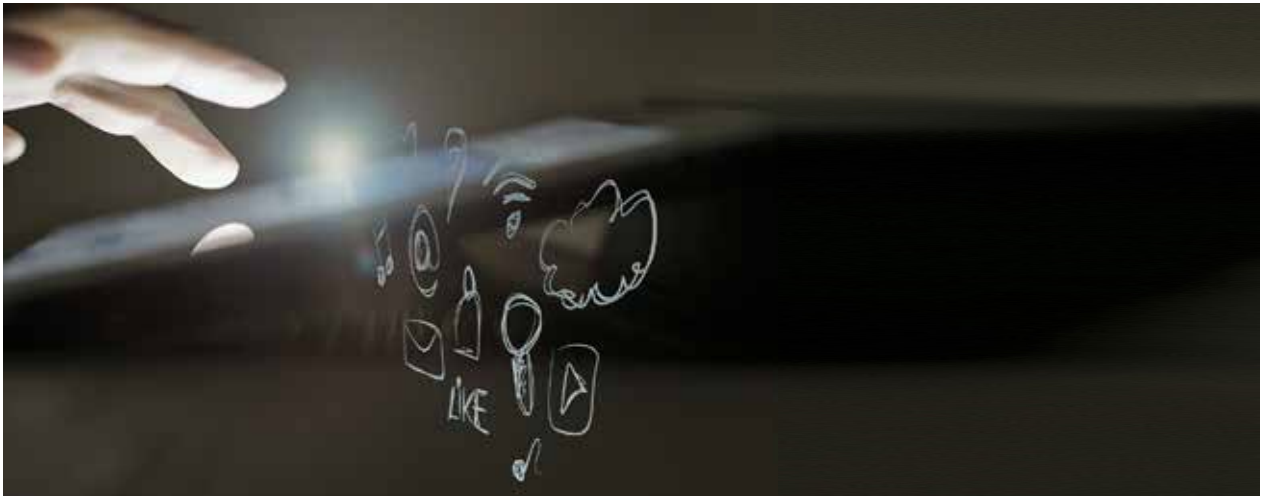
Apple iPhone 13
(4 GB RAM, 128 GB ROM)

iPhone 13 is available at a decent price with stylish design and innovative features that make it a delight to use. The phone is equipped with a Dual-camera system that adds an upgrade to the photos and videos that you take. Having the A15 Bionic chip, it loads graphics-intensive games with ease. It offers a big boost in battery so that you have enough time to watch content, game, and so on.

Price: ₹59,990

Motorola Edge 30 Ultra
(8 GB RAM, 128 GB ROM)

Equipped with astonishing 200 MP sensor and Ultra Pixel technology, the phone captures life with true colors. You can even click shots in low-light with higher details. Moreover, it can capture 4K HDR10+ video with over a billion different shades of color or 8K cinematic films directly on your phone. Powered by Qualcomm Snapdragon 8+ Gen 1 processor, it lets you multitask flawlessly and play graphically demanding games with ease.

Price: ₹59,999

iQOO 9 Pro 5G (12GB RAM, 256GB ROM)

Having the stylish and marvellous design, the mobile features a 50 MP f/1.75, wide angle, primary camera, 50 MP f/2.27, ultra-wide angle camera, 16 mp f/2.2, telephoto camera. You can capture some wonderful images and shoot high quality videos. It is equipped with Octa core Qualcomm Snapdragon 8 Gen 1 processor, which makes sure that you multitask like a pro and do not face lags while accessing multiple apps, browsing the web, and playing intense graphics games.

Price: ₹62,990

OnePlus 10 Pro 5G (12 GB RAM, 256 GB ROM)

The premium smartphone allows you to multitask, play games or run any heavy task without worrying about the operation speed. With 12 GB RAM, you can install multiple applications and run them all together without disturbing the speed of the phone. The flagship smartphone promises seamless visuals and detailed portraits.

Price: ₹67,999

Samsung Galaxy S22 Plus 5G (8 GB RAM, 128 GB ROM)

Designed specifically for photography fanatics, the phone captures realistic images. It's Auto Framerate adjusts the fps speed to the environment, and its Super Night Solution reduces noise, enabling you to take photographs with stunning detail. Powered by the sophisticated 4 nm CPU architecture and Snapdragon 8 Gen 1 processor, this phone gives you the ability to multitask efficiently.

Price: ₹69,999

Vivo X80 Pro (12 GB RAM, 256 GB)

This mobile phone runs on a 4 nm Qualcomm Snapdragon 8 Gen 1 Processor that allows you to enjoy the blazing-fast performance and lag-free gaming. Enjoy breathtaking photography with the Vivo X80 Pro Smartphone as it comes with a plethora of exciting camera features, such as AI Video Enhancement, Time Lapse, ZEISS Cinematic Video Bokeh, AI Group Portraits, and more so that you can shoot professional-grade photos as well as videos even in low-light settings.

Price: ₹79,999

Vivo X80 Pro (12 GB RAM, 256 GB ROM)

Featuring an innovative V1+ Chip technology, the phone ensures an all-rounded visual experience while shooting videos or gaming. Equipped with a 50 MP Ultra-Sensing GNV Sensor, it captures images with increased light sensitivity and reduced noise, resulting in impressive and high-grade shots. It utilises ZEISS Cinematic Video Bokeh System that enables you to recreate innovative bokeh shapes in the background while making videos, thus rendering a dreamlike effect. As a result, you can capture professional-looking and distortion-free images.

Price: ₹79,999

Samsung Galaxy S22 Ultra 5G (12 GB RAM, 256 GB ROM)

The first Galaxy S with embedded S Pen, enabling users to write comfortably like using pen on paper, turn quick notes into legible text and use Air Actions to control your phone remotely. 5G Ready phone is powered by Galaxy s first 4nm processor so you just have seamless experience not the performance lag. The Dynamic AMOLED 2x display improves outdoor visibility with up to 1750 Nits in peak brightness.

Price: ₹1,08,990

Samsung Galaxy Z Fold4 5G (12 GB RAM, 512 GB ROM)

Unfold the next level of smartphone experience, the Fold phone lets you multitask at your convenience. It comes with an impressive selection of unique apps, so you can fold your way through a challenging workday and maintain productivity. Furthermore, you can capture mesmerising photos with excellent images owing to the professional-grade camera system included in this phone.

Price: ₹1,64,999

Apple iPhone 14 Pro (6 GB RAM, 1 TB ROM)

The next-gen iPhone is designed for durability embraced with Ceramic Shield.See things big with its dynamic 6.1-inch display that comes in variants of colors to choose from. iPhone 14 Pro can detect a severe car crash and can call emergency services and notify your emergency contacts. Packed with all-new 48MP Main camera with an advanced quad-pixel sensor delivers 4x the resolution in ProRAW for mind-blowing detail in every crop.

Price: ₹1,79,900

Hundreds of options to choose from

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Excited to buy a new TV, but are confused by the numerous choices? Here we have created a detailed Smart TV buying guide to get the right TV for both your expectations and budget

Whether you go to the market or search over the Internet, you will be swamped with choices. You can be confused between technologies like LED, OLED, 4K, HDR, etc. plus different features and functionalities. Out of the hundreds of options, choosing one perfect smart TV isn't that tough, you just need to understand a few tech terms and list our features that matter the most to you. Then you can easily filter out the best smart TV for your budget.

▼ Screen types

You must have heard of terms like LED, OLED, QLED, etc. LED is the king of smart TVs,

TV Comparision
LED vs OLED vs QLED

	LED	OLED	QLED
Black Levels	GOOD	GREAT	PERFECT
Brightness	GREAT	GREAT	GOOD
Motion Blur	GOOD	GREAT	PERFECT
Viewing Angle	POOR	POOR	GREAT
Image Retention	GREAT	GREAT	POOR
Colour Volume	GOOD	GREAT	GOOD
Burn In	NO	NO	HIGH
Lifespan	GREAT	GREAT	GOOD
Power Consumption	MORE	MORE	LESS
Price & Availability	GREAT	POOR	AVERAGE

the most popular and bestselling. You can get both HD and Ultra HD TVs with LED technology. Without going deeper into the tech difference, which we have already explained.Let's have a look at what you will get with which display technology –

The future holds more for you.The next display technologies like micro-LED and mini-LED are still new and relatively rare, but soon you can expect more options with new display tech.

▼ Screen size

If you think bigger is better, you can simply try to get the biggest size within your budget. But that may not always be a great idea. You should factor in your room sizeand how many people will watch the TV at the same time. The ideal screen size, these days is between 40 to 65 inches. The common room size in India is around 10 to 15 feet.For this, anything between 40 to 55 inches will be perfect. For a bigger

room size, you should go for 65 and above.

Screen size also depends on the distance between the TV and you. The thumb rule is that you should sit at a distance from the TV that is three times more than the height of the screen for HD resolution. If you are planning to buy a 4K Ultra HD TV, then the distance must be 1.5 times the screen height.

If you are a small family, then 40 inches is enough.But for a large family, you might look for a larger screen that fits comfortably into that space and your budget. One more important factor, you should consider, is where you are going to place your TV. For the bedroom, you can go between 40 to 55 and for the living room, larger TVs are recommended.

▼ Screen resolution

Surely, higher resolution is better, FHD (1920x1080p) has become standard, in the last couple of years. However, there are higher resolution TVs like Ultra HD or 4K

TV Pixel Comparisons

ULTRA HD "4K"
3840 x 2160

HD 1080p
1920 x 1080

HD 720p
1280 x 720

DVD
720 x 480

DOLBY VISION (HDR) | STANDARD DYNAMIC RANGE

(3840x2160p), which is four times the number of pixels as current HDTV screens. Though 8K (7680x4320p) resolution TVs have also been introduced, but we won't suggest you to even consider it. Currently, we have some selected TV channels available in HD resolution, and when it comes to 4K TV channels then the list is even shorter. You need to majorly depend on the internet for 4K content. and forget about 8K, hardly you will find any 8K content.

Surely, 8K would be even better than 4K, delivering eye-popping details but there are no 8K movies available for purchase, and streaming in 4K is already more taxing than many people's Internet connection can handle.

4K is an ideal choice right now, if your budget allows. At least some 4K content is available. And when there will be more options available, you won't need to upgrade. Overall, you can enjoy richer and more life-like picture quality on your 4K TV.

Dolby Vision is a feature that you should look for when purchasing a 4K. Dolby Vision includes dynamic metadata that adjusts the HDR effect on a frame-by-frame basis, resulting in more accurate and impressive image quality. Also, it is widely supported on UHD Blu-ray at the moment but more HDR10+ UHD Blu-ray is becoming available.

▼ Refresh rate

We have explained this in our previous buying guides, refresh rate, Hertz (Hz), meaning how many images are being refreshed per second on the screen. The standard refresh rate is 60 Hz.However, to get a more solid picture, you can go for 120 Hz or up to 240 Hz.

For added support, you can look at High-Frame Rate (HFR), along with a higher refresh rate. If you watch live sports, HFR will be a good choice to enhance your experience.

▼ Connectivity

A smart TV must offer multiple connectivity options, most importantly, ports like HDMI. Manufacturers can save costs by adding only one HDMI port. You should look for at least two HDMI ports. You need plenty of ports to connect your devices to your TV like a sound bar, game console, etc. The latest HDMI 2.1 format offers the benefits of delivering 8K content, but there are still plenty of goodies coming to 4K sets.

Check for wireless connectivity as well like Bluetooth 5 or higher, Wi-Fi with 2.5 and 5 GHz, and USB ports.

▼ Operating System

The latest OS is Android TV 12, while selecting your smart TV, you can look for the newest version. The Android TV OS offers numerous smart features. It lets you fetch content from the internet directly, and access endless apps and games. It comes with different built-in apps to stream content on your TV through the Internet. And many other features to explore. ■

Top 10 budget TVs — Under 25K

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Acer N Series HD Ready (AR32NSV53HD) 32-Inches

The budget friendly smart TV from Acer offers HD Ready (1366x768) resolution that delivers amazing colors. Having 60Hz refresh rate, you can enjoy different contents on it. Enjoy your TV from any angle, it has 178 degree wide viewing angle means, clear image from any angle without losing the color or sharpness. The 32 inch TV comes with 20w sound output so you can hear ever detail

Price: ₹7,999 on Amazon

OnePlus Y Series HD Ready 32Y1 32-Inches

The affordable TV delivers vivid images with a high color range of DCI-P3 93% featuring a 20% wider colour gamut. It comes with Gamma Engine that produces unmatched visual quality with real-time optimization of your video content. Packed with 20W box speakers and Dolby Audio enhancement, the OnePlus TV Y Series delivers crystal clear sound quality that you will enjoy. Having the bezel-less design, the smart TV offers a new viewing experience.

Price: ₹11,999

Samsung Wondertainment Series HD Ready (UA32T4340BKXXL) 32-Inches

What if you can use your TV as PC? Samsung added a mode in this TV that lets you convert your TV into a quintessential PC. You can do things such as working from the cloud, mirroring your laptop onto the big screen for added convenience and remotely accessing your office computer. Enjoy HD TV in Digital era. Once you see high definition of TV with vivid and crisp details, you'll never look back to standard definition or analog TVs.

Price: ₹13,490

LG HD Ready Smart LED TV (32LQ576BPSA) 32-Inches

The smart TV delivers rich color, displaying your favorite content more vivid and natural. It comes packed with α5 Gen5 AI Processor that provides immersive experience. Built with AI, it can manage the brightness levels automatically to deliver best images every time. Its ThinQ AI makes LG Smart TV a smarter experience, from voice control to personalized content.

Price: ₹15,990

Acer P Series FHD LED TV (AR40AR2841FD) 40-inches

With wide color gamut and HDR10, the FHD TV delivers stunning highlights, and visible textures to offer you a true-to-life entertainment experience.The Intelligent Frame Stabilization Engine of this TV analyses as well as augments the transition of frames to offer smooth, clear, and sharp visuals. Packed with 24W high-fidelity speakers of this TV with Dolby Sound offer a rich and immersive aural experience.

Price: ₹16,999

Sansui FHD LED TV (JSW40ASFHD) 40 inches

The Sansui's FHD Smart TV comes with some of the best features, including a Built-in Chromecast for flawless smartphone-to-TV streaming, one-button Google Assistance and unlimited OTT platforms like Netflix, Amazon Prime Video and Disney + Hotstar. Having the 1920x1080p resolution and 16:09 display scale, it delivers the finest details on screen offering larger than life viewing experience along with rich and enhanced colour quality.

Price: ₹17,490

Toshiba V Series FHD LED TV (43V35KP) 43-inches

Powered by REGZA High-grade Engine and a Full HD (1080P) display, the Toshiba LED TV offers spectacular visuals for every content you watch.This TV analyses signals to reduce noise and distortion, thus ensuring that you get vivid and detailed visuals for a high-quality viewing experience. Experience the theatrical surround sound, with its supports DTS Virtual X technology that accurately extracts and places audio cues.

Price: ₹19,990

OnePlus Y Series FHD LED TV 43 Y1S 43-inches

This Full HD smart TV produces clear and vivid visuals with excellent color range on the screen. Packed with Gamma Engine, along with the noise reduction feature, delivers lifelike visuals with dynamic contrast and anti-aliasing to enhance your viewing experience.Its 20 W box speakers and Dolby Audio produce high-quality sound, ensuring an immersive aural experience.

Price: ₹21,999

Mi 5A Series FHD LED TV (L43M7-EAIN) 43 inches

Xiaomi has added an elegant metal frame to the FHD Smart TV that enhances its overall look and feel. Featuring a FHD display, the TV lets you enjoy vivid visuals and deep colors with a rich color gamut. It comes with an exclusive picture engine that TV fine-tunes contrast, colors, and depth with every visual, bringing visuals to life.Featuring Dolby Audio that offers 20 W high-fidelity sound, it enhances your aural experience.

Price: ₹22,999

Redmi 4K Ultra HD LED TV X43 (L43R7-7AIN) 43-inches

The UHD TV delivers impeccable visual clarity with over 8 million pixels. Equipped with Dolby Vision, it brings colors and details onscreen to life, just as the creators intended. Powered by Redmi's proprietary engine, it creates life-like display with great depth, saturation and contrast. Having a strong, 30W speakers, it gives you an impressive, XL Audio Experience allowing you to enjoy your favourite content in high-quality audio.

Price: ₹24,999

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Contact: 9667399811, 9311950702 & 0120-2322025-27

Top 10 budget TVs — From 25k to 50K

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TCL 4K Ultra HD LED TV (50P615) 50-inches

With the TCL 4KTV, you can enjoy an immersive entertainment with stunning visuals, 4K clarity, and rich surround sound. It reproduces natural colours, different shades of light, and accurate details. The Micro Dimming function of this Smart TV intelligently adjusts the dark and bright areas of the visual content by analysing it in approximately 1,296 zones. This feature adjusts the picture quality, so that dark or less bright scenes appear rich and clear.

Price: ₹27,990

Croma 4K Ultra HD LED TV (CREL050USA024601) 50-Inches

Experience the crisper, brighter, and higher in contrast with this UHD TV. It features the WebOS operating system. Packed with powerful quad-core processor, it produces more realistic colors and contrast. Sharper, more vivid images are reproduced from low-resolution images.Dolby audio produces a truly cinematic audio experience, where the sound seems to flow around you, offering high fidelity, rich sound. With in-built 20-Watt dual speakers, this Croma Smart TV produces a powerful sound output.

Price: ₹27,990

LG 4K Ultra HD LED TV (43UQ7500PSF) 43-inches

This UHD TV renders true-to-life visuals and vibrant colours while watching movies, TV shows, or playing games. Powered by an α5 Gen5 AI Processor, this LG UHD TV offers you a fascinating and cinematic audio visual experience, without significant interruptions. The AI Brightness Control feature helps to ensure contrast and visibility in low-light situations by automatically adjusting the brightness level from the surrounding environment. It also comes with a Filmmaker Mode that disables motion smoothing of the ongoing movie so that you can enjoy the film as it is intended to show and appreciate its elements of originality.

Price: ₹28,990

Samsung Crystal 4K Series Ultra HD LED TV (UA43AUE60AKLXL) 43-inches

The smart TV from Samsung delivers crisp, detailed, and sharp visuals to make your viewing experience impressive and exciting. Packed with PurColor technology, it unveils a wide range of shades to ensure optimal picture performance and to offer an immersive entertainment experience. It features the Motion Xcelerator technology that automatically estimates as well as compensates frames from the content source to deliver clear images and impressive performance.

Price: ₹29,511

Blaupunkt Cybersound Ultra HD 4K LED TV (55CSA7090) 55-inches
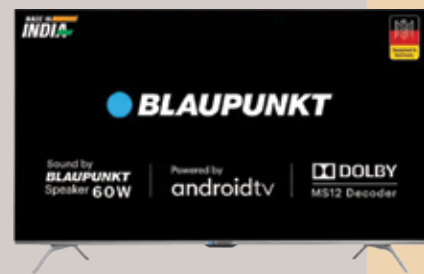
The 4K TV comes HDR10+ technology helps enhance your visual experience by offering a large spectrum of colors, microscopic details, and improved contrast between different shades of light and dark. The Motion Estimation, Motion Compensation (MEMC) technology helps provide clear pictures and smoother frames, especially in high-speed sequences. Packed with powerful 60W speaker that supports Dolby Digital and Dolby TruSurround technologies to offer an immersive aural experience.

Price: ₹32,999

Vu GloLED Series 4K LED TV (50GloLED) 50-inches

The Vu GloLED TV panel is manufactured by depositing inorganic nanoscale materials (Glo material) on a 4K LED panel that dramatically enriches the colour reproduction almost to the level of an OLED panel. Powered by Vu Glo AI Quad-core processor, it lets you explore content across all of your installed apps, play games, and more. This 4K TV comes with inbuilt DJ class subwoofer that amplifies bottom frequencies and creates a surround sound experience, allowing you to groove into the content and get into the mood of the scenes playing on the TV.

Price: ₹33,999

Redmi 4K Ultra HD LED TV X55 (L55M6-RA) 55-inches

Enjoy the impeccable visual clarity with over 8 million pixels for ultra-high definition viewing experience. Equipped with the 4K Ultra HD (3840 x 2160) Resolution HDR LED display with 60 Hz refresh rate and reality flow, it ensures to deliver vivid and blur-free optical rendition. The Dolby Vision and HDR 10 permit to never miss a detail. This amazing visualization is accompanied by Dolby Atmos Audio with 30W speakers for optimal theatre-like adventure.

Price: ₹38,999

Samsung Crystal 4K Neo Series Ultra HD LED TV (UA55AUE65AKXXL) 55-inches

This Crystal 4K TV produces one billion true color, that brings reality to your TV screen with colors represented in their true state. Powerful 4K upscaling ensures you get up to 4K resolution for the content you love. You'll also experience more lifelike color expressions due to its sophisticated color mapping technology. Q Symphony uniquely allows TV and soundbar speakers to operate simultaneously for better surround effect without muting TV speakers.

Price: ₹46,990

Toshiba 4K Ultra HD QLED TV (55M550LP) 55-inches

Packed with Quantum Dot Technology that offers over a billion shades of realistic colour to transform your TV watching experience into a highly vibrant, impressive, and stellar one.Powered by a REGZA Engine 4K PRO processor, this TV allows you to experience an enhanced image quality that surpasses Full HD capacity, thereby delivering unmatched image resolution and breath-taking viewing experience. Equipped with a REGZA Power Audio PRO with 25 W "Power Bass Booster" and two 12 W "clear direct speakers", this TV allows you to witness authentic sound that makes you feel close to the visuals.

Price: ₹46,990

Mi Q1 Series 4K Ultra HD QLED TV (L55M6-EQG) 55-inches

The QLED Display with 4K resolution TV can revamp your home entertainment experience. It comes with a plethora of cutting-end technologies and a stunning design. This home appliance features the Dolby Vision technology for stunning visuals, DTS-HD Audio for immersive sound, and a 96% Screen-to-Body Ratio for distraction-free visuals. It offerblur-free visuals, thanks for its fluid display and low-frame rate.Dolby Audio offers a life-like aural experience.
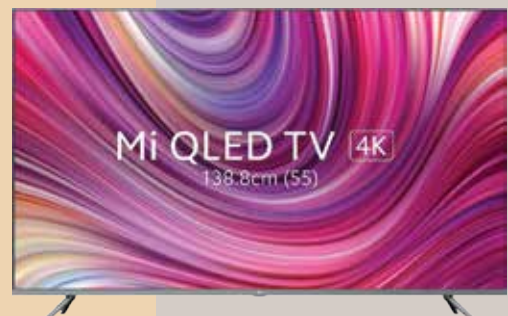
Price: ₹49,999

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Top 10 premium smart TVs

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Motorola Revou Ultra HD (4K) LED TV (65UHDADMRS7P) 65-inches

The Motorola UHD TV comes with AutoTuneX+ technology, that automatically adjusts its picture settings to deliver an optimal viewing experience. Also, Dolby Vision and HDR10 further enhance the pictures and render life-like scenes and images. Also, this TV is powered by Dolby Atmos and DTS Studio Sound and comes with a 50W AmphiSoundX Pro soundbar for a surround sound experience.

Price: ₹51,999 on Flipkart

Sony Bravia 4K Ultra HD TV (KD-55X75K) 55-inches

You can experience magnificent 4K pictures with rich detail and clarity thanks to the 4K processor X1 included with this TV. Furthermore, the innovative 4K X-Reality PRO uses a 4K database to upscale photos captured in 2K and Full HD, allowing you to experience up to 4K resolution. With this TV's Motionflow XR 100 you can enjoy faultless and crisp graphics even in fast-moving sequences and intensive gameplay.

Price: ₹68,390

Samsung Frame Series 4K Ultra HD QLED TV (QA55L-S03AAKLXL) 55-inches

Build on Samsung's Quantum Dot technology, it has nano-sized Quantum dots that convert lights into about one billion colors. As a result, you can watch lifelike shades and images on this TV. Packed with Quantum Processor 4k, it delivers impressive performance by optimising images, sound, and more, intelligently. Experience the optimised audio that is aligned with the installation environment. So, whether you put it on a table or mount it on a wall, you can enjoy an optimal and immersive audio experience.

Price: ₹83,990

OnePlus Q1 Series Ultra HD 4K QLED TV (55Q1IN)55-inches

Enjoy true-to-life visuals and colors with OnePlus QLED 4K TV that delivers a high color range so that you can enjoy saturated visuals. Equipped with the Gamma Color Magic chip, this TV delivers optimized and lifelike visuals as the chip enhances the quality of the images in real-time.This TV comes equipped with an 8 speaker system that delivers up to 50 W of output to ensure that you can enjoy lifelike sound.

Price: ₹84,990

Sony Bravia 4K Ultra (KD-65X75K) 65-inches

See glorious 4K pictures, rich with real-world detail and texture, exclusively powered by our 4K Processor X1. Images filmed in 2K and even Full HD are upscaled to close-to-4K resolution by 4K X-Reality PRO using a unique 4K database. Enjoy smooth and sharp details even in fast-moving sequences & gaming, Dolby Audio delivers rich, clear, powerful sound. Experience entertainment like never before.

Price: ₹90,240

Mi Q1 Series UHD 4K QLED TV (L75M6-ESG) 75-inches

With massive 75-inches screen, the TV is perfect for king-sized entertainment. This 4K QLED display, equipped with Quantum Dot nanocrystals, helps take entertainment up a notch as it delivers visuals in rich and vivid clarity.Thanks to the refresh rate of 120 Hz, coupled with Reality Flow, you will never miss out on any details, be it while playing a racing game or watching an action-packed movie.

Price: ₹1,29,999

LG C9 138 cm (55 inch) OLED Ultra HD (4K) Smart WebOS TV (OLED55C9PTA)

Equipped with the LG ThinQ AI feature, you can link your TV with voice assistants like Google Assistant so that you can enhance your viewing experience. Apple users can line the TV using Apple Airplay 2 to easily share their favourite pictures, videos, and music. Packed with AI picture and Sound feature, the TV offers you an immersive viewing experience and optimizes the sound quality by analysing the source as well as type of content you are viewing.

Price: ₹1,49,999

Sony Bravia XR Series 4K UHD OLED (XR-77A80K) 77 Inches

Paired with Sony's OLED panel with XR OLED Contrast Pro, this TV boosts color and contrast in bright areas so you can enjoy unprecedented pure blacks and peak brightness. Combined with Cognitive Processor XR, it enhances pictures in the same way as your eyes focus so you won't miss a single detail in dazzling light or deep. Sound comes directly from the screen with Acoustic Surface Audio+. Large actuators vibrate, uniquely turning the entire screen into a speaker to create powerful acoustics.

Price: ₹5,31,990

LG NanoCell 8K UHD QNED TV (86QNED99TPZ) 86 Inches

The pioneering QNED display combines a mini LED panel with NanoCell Technology to deliver an all-new TV experience. Enhanced brightness, near-perfect black, and brilliant color are showcased on a stunning ultra-big screen. It delivers a more stunning picture with the combined power of both NanoCell and Mini LED. The 8K TV delivers a breathtakingly cinematic performance.

Price: ₹7,20,990

Samsung 8K UHD Smart Neo QLED TV (QA85QN900AKXXL) 85-inches

The 8K UHD TV delivers an outstanding visual experience. It comes loaded with Motion Xcelerator Turbo+, offering exceptional motion enhancements up to 4K 120 Hz, you can enjoy gameplay with ultra-smooth action without lag and motion blur. It provides rich, accurate color and deeper contrast let you notice crisp detail and nuance coming with Adaptive Picture mode.

Price: ₹11,47,491

https://TWS BUYING GUIDE

COVER STORY

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Making life simple with wireless

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TWS offers convenience. But choosing the right one for you could be a little tricky. You need to do some research and comparison of essential features to choose the best one

We are already surrounded by numerous wireless things. Wireless technology has helped us to reduce wire clutter. Since the first TWS (true wireless stereo) was introduced, it was immediately in demand. People were waiting for something like this.

In the past couple of years, TWS technology has improved. We have witnessed numerous designs. Nowadays, smartphones are seen without a 3.5mm jack. Seems like OEMs are also pushing users to use wireless audio devices and TWS earbuds are thriving.

Though, it can be quite confusing to choose out of numerous options, if you are someone buying TWS for the first time or planning to upgrade, here's a handy set of things to keep in mind.

▼ Earbud Design

The earbuds come in multiple shares and designs, but majorly there are two basic designs – Stemmed and Stem-less. The 'Stem' design would remind you of wired earbuds' shape, hanging outside your ear. While 'Stem-less' as the name suggests, there would be no stem.

The shape makes a huge difference, stemmed designed TWS usually comes with a primary microphone at the end of the stem. Resulting in better calling experience, as mics are closer to your mouth. Also, you would find them comfortable to wear over a prolonged period of time. But due to their design feature, they might not sit tight and fall out very easily.

The stem-less in-ear piece is usually bigger in size. It sits deeper into your ears or comes with ear support. A few buds can hurt your ears if used for long intervals but won't fall out easily.

While purchasing TWS, you must keep comfort on the top, it must fit snuggly in your ears. It's better to try them first before purchasing.

▼ Call Quality – Sound and Mic

It fits perfectly but what if the other person can't hear me properly? The primary quality of your TWS should be offering great call quality,

and it should be both ways – speaker and microphone. The tiny driver sitting inside the earbud is responsible for how you would hear others. And the mic takes care of your voice quality that the other person would listen to. There are six different types of drivers, but usually, we see a Dynamic driver in TWS, as others are better for larger headphones. Typically, tiny earbuds come with a 6 to 10mm driver. Sometimes, you get surprised with budget TWS as their sound quality is great. You should choose a balanced sound signature to enjoy both call and music across genres.

The cheaper TWS may come with only two mics, while a decent one would carry four or more mics for a better calling experience. You can also look for features like ENC (environmental noise cancellation) to minimize external noises during phone calls. ANC (Active Noise Cancellation) could be a good feature to look at, but it's not made for everyone. Having ANC can increase the price of TWS, plus it will drain the battery. As most in-ear fits snuggly, they block out most ambient noise, so you can listen to

music or take calls. But if you want to block them completely, then ANC would help.

▾ Case

Nobody would like to carry an ugly or heavy TWS case in their pocket. The ideal case should look pretty and small in size, so it can slip easily into your pocket. You should also check the shape, as the beautiful case might

have a rounded design that won't sit properly on most surfaces, it should have a flat bottom.

▾ Connectivity

You need stable and reliable connectivity to maintain an uninterrupted connection to your phone. Also, a device that can seamlessly connect and disconnect every time, when in use and when not. Bluetooth connectivity is improving every time. The latest Bluetooth 5.3 is the most reliable connectivity option. However, Bluetooth 5 or higher is a good choice, as there are some minor improvements. But recommended would be the latest one.

▾ Charging

These days most phones come with a USB Type-C port and if your TWS case also has the same port then one charge will be enough for both. Meaning no need to carry an extra cable for your TWS.

▾ Battery Life and charging

As per your call flow or habits like listening to music, games, entertainment, etc. you need an earbud with an ample amount of battery. There is no point in having a TWS that runs out of juice quickly. You should check out both – earbuds and case, battery capacity. Higher is better, you will get longer playtime in one

2200mAh
use as a powerbank

pairing as it's made to offer convenience. Once you paired the device, it must connect automatically to your smartphone every time you take it out of the case. Some of the earbuds have a master-slave relationship where the master gives orders and the slave just follows its lead. In such cases, you should check how well they communicate with each other.

Being a tiny device, they might have a small button or gesture control. The gesture control feature would come at some extra buck but that will be more convenient to use (swiping, tapping, etc.).

Though you might use the earbud App only once while setting-up but having one with intuitive UI and options to manage or customize the overall experience would be best. ■

charge. Check for the earbud's battery, 60 mAh, and case battery min 500 mAh.

Also, fast charging would be useful when you have no time. Just plug in for a couple of minutes and you are ready to use them for hours.

▼ Dust and water resistance

If you think you are not going to sweat that much, drop them in water, or visit a dusty place, then what is the use of such features? It's not about you doing this deliberately, but accidentally. Your earbuds can fall in water or on any surface. Having a TWS that can handle dust, water, and shocks, would be great. Else, they might get damaged, leaving no other choice than to purchase new ones.

▼ Pairing, Gestures, and UI

Your TWS must offer easy

WATER-RESISTANT & SWEATPROOF

Recharge your workout without stressing about sweat.

IPX4

Top 10 TWS

Ashok Pandey
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LG Tone Free FP9

LG added a unique UVnano charging cradle that kills 99.9% of bacteria on the speaker mesh of the earbuds in just 5 mins while charging. Using its case, you can convert any device in to wireless. Just connect the charging case into devices, and enjoy every device wirelessly. Built-in high performance upper microphone detects external noise, inner microphone cancels out unwanted noise. The ultimate earbuds deliver Hi-Fi sound with a realistic sense of space with impressive bass and treble tones.
24 hours play time.

Price: ₹19,312 on Amazon

JBL C115 True Wireless

Get crystal clear calls and sound quality with expert acoustic room construction & precise tuning. The JBL's TWS offers pristine sound quality via 5.8mm drivers. Captures the full bandwidth of audio with no distortion even at full volume. Enjoy hands free calls, single touch operations enable you to receive/end calls or activate Voice Assistance on your mobile device with touch of a finger. Having a large battery, you get juice for 21 hours of playtime (6 hours on earbuds and 15 hours on charging case) and fast charging delivers upto 1Hr of playback with 15mins of charging.

Price: ₹2,699 on Amazon

Sony WF-1000XM3

This TWS comes with industry leading noise canceling technology that cancels all the environmental noise. It comes with dual microphones—one feed-forward and one feed-back—on the surface of the headphones catch more of the ambient sounds of your surroundings, whether it's in-flight noise, city traffic or office chatter. With an amazing 24 hours of battery life.

Price: ₹9,880 on Amazon

Sennheiser MOMENTUM True Wireless 3

The next gen TWS, delivers superior sound quality powered by the TrueResponse transducer and aptX Adaptive for the highest resolution audio. It lets you customized your audio experience via built-in equalizer and pre-sets, including Bass Boost, and Sound Personalization for bespoke audio. Having three advanced noise-cancelling microphones on each earbud, it picks up high quality voice and ensures clear speech, not surrounding noise. The compact TWS is IPX4 splash resistance for trouble-free use while travelling, commuting or exercising. Up to 28 hours play time.

Price: ₹15,990 on Amazon

JBL Tune 230NC TWS

JBL's smartly designed 6.0mm drivers enhanced by the stick form factor deliver JBL's Pure Bass Sound. Offering up to 40 hours playtime, while the ergonomic and water-resistant design gives you all-day comfort in any weather. Packed with 4 mics, you can connect with your loved ones over calls without fearing of any noisy environment. It has Active Noise Cancelling and Smart Ambient technology to take care of noise coming from surroundings. 40 hours play time.

Price: ₹4,899 on Amazon

Bose QuietComfort Earbuds

Packed with one of the world most effective noise cancelling and high-fidelity audio, the compact TWS lets you enjoy music, podcasts, & videos without distractions. Theearbuds now feature Aware Mode with ActiveSense technology, which allows you to hear your music and your surroundings at the same time. And if those surroundings get too loud, ActiveSense automatically adjusts the amount of noise cancellation to turn the sounds around you down to a more comfortable level. Up to 12 hours play time.

Price: ₹17,999 on Amazon

OPPO Enco Buds2

Having the large 10mm Titanized driver, the Enco buds2 delivers clear, deep, powerful and rhythmic bass. The specially designed sound chambers combined with the powerful, high-flux magnetic circuit, makes the bass deeper, punchier, and more elastic. You can customized sound effects for all different music styles. Choose your favorite Bass Boost to feel the incredible music tuned by OPPO's professional acoustic team. Switch to Clear Vocals, and the clear treble sound can be heard in a second. Up to 28 hours of listening time.

Price: ₹1,799 on Flipkart

pTron Bassbuds Wave ENC

The Bassbuds Wave ENC offers 40Hrs of total playtime, and powerful sound with its 8mm drivers for the immersive audio experience. It comes with Environmental Noise Cancellation (ENC) for Noise-free calling experience. Packed with latest Bluetooth 5.3, it lets you connect seamlessly with your device. Along with dedicated movie mode, the lightweight earbuds are IPX4 water/sweat resistance and has integrated touch controls to manage calls, music, and to awake your phone's voice assistant. Up to 24 hours play time.

Price: ₹999 on Amazon

Noise Buds VS201 V2

Equipped with dual equalizer, this TWS gives you a choice to switch between extra bass or normal sound as per your mood. It comes with touch control for easier management of your music and calls. These earbuds are ergonomically designed for continuous usage with ease.With 14 hours of playtime to back you up, you don't have to stop your music and binge watching sessions for anything. 14 hours total playtime.

Price: ₹1,249 on Amazon

Jabra Elite 3

The ergonomically designed wireless earphones offer class-leading customization options, high-quality sound with powerful bass. It comes with intelligent noise control for optimal on the go listening. It also offers unique noise isolation whilst providing on demand external noise pickup with HearThrough technology. Enjoy impeccable call quality with four microphones for crystal-clear conversations. Having the 'Danish design', the earbuds look and feel almost as good as they sound.
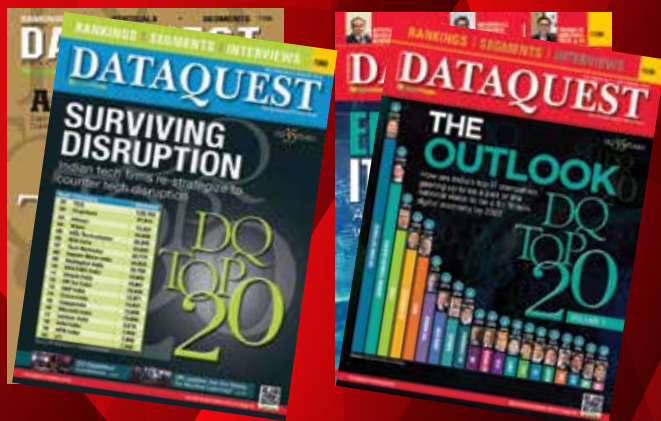
Price: ₹2,999 on Amazon

Is Google's pilot project on fantasy sports likely to alter the course Of online gaming?

Kumar Saurav
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In the past few years, the online gaming industry has grown exponentially. It is forecasted to grow at a CAGR of 30% to reach USD7 billion by 2026 and the Global Fantasy Sports Market is anticipated to reach USD 34.66 billion by 2027, rising at a CAGR of 11.47%

Fantasy sports began in 1962 with a Football fantasy league. Since then, its popularity has skyrocketed, mainly due to superior connectivity, dynamic needs for social interaction, availability of avant-garde smartphones, enhanced demographics, a spike in disposable income and an expansion in the youth population base. The Global Fantasy Sports Market is anticipated to reach USD 34.66 billion by 2027, rising at a CAGR of 11.47%.

However, the Indian Fantasy Sports Market gained popularity around two decades back in 2001, when ESPN Star Sports launched the 'Super Selector Fantasy Game. The game's popularity grew exponentially and garnered over 500,000 participants in 2003. The game was the brainchild of the current Director General of Fantasy Sports (FIFS), Joy Bhattacharjya.

Fantasy sports participation has surged by 2,500% over the last decade. The number alone demonstrates the enormous fan base of the niche domain in India.Fantasy sports are undoubtedly becoming a forum for crafting gaming strategies and boosting virtual sportsmanship. By the end of 2022, India will have over 829 million smartphone users, increasing the number of sports enthusiasts participating in fantasy sports. The present count of mobile gamers in India is 430 million. It is anticipated to grow to 650 million by 2025.

With the advent of television, digital, and online gaming models leading to an increase in online gaming sites over the last several years, the gaming sector has undergone a radical transformation.According to an EY report, online gaming is the leading category in the entertainment sector, with a penetration rate of 55%.

▾ What Are Fantasy Sports?

Fantasy sports are digital sports engagement platforms enabling users to strategically build virtual teams with proxies of actual sports players participating in a forthcoming match (or match-day). The competition in these DFS (Daily Fantasy Sports) platforms is based on real-world statistical performances of these players in one full officially sanctioned sports match. The users act as the coach or manager, possessing

KUMAR SAURAV, Global Mobile Business Head, AdCounty Media

the authority to drop, recruit, or trade a player they desire.

Proper knowledge of the sport, an adept understanding of the weather and ground conditions, and a cognisance of the real-life sportsperson's strengths and weaknesses are crucial to selecting the fantasy squad.

▾ "Games Of Skill" Vs "Games Of Chance"

The gaming industry in India is segmented into the offline gaming sector (gaming clubs, casinos) and the online gaming sector (gaming websites). Corporate entities constitute almost the entire chunk of operators in the abovementioned segments. These entities are registered as private limited companies in India.

Furthermore, the Indian legislation has bifurcated the gaming industry into two broad divisions, viz. 'games of skill' and 'games of chance',to regulate the sector's monetary offering.

A skill-based game is one wherein the outcome primarily depends on the players' skills and not on a chance event. They are, hence considered legal in social settings, clubs, casinos and online. The popular online games in India recognised as games of skill

include Horse Racing, Rummy and Fantasy Sports.

On the contrary, 'Games of Chance' depend on luck and advocate gambling. Thus, they are prohibited, and the practice can lead to legal repercussions.

But Google has now decided to run a "limited-time application-only pilot program permitting Real Money Games (RMG) like DFS (Daily Fantasy Sports) and Rummy apps by developers incorporated in India to be distributed to users on Google Play Store in India. The pilot run will start on September 28, 2022, and through September 28 2023.

All applicants must complete the application process successfully to be accepted to participate in the Pilot programme and will be eligible to distribute their apps on Google Play for the duration mentioned earlier.

The reason Google cited for making this significant move is bearing in mind the rapid evolution of the fantasy gaming sector and gathering sufficient data about any potential user damages and the security of such apps. The unpredictable nature of the regulatory landscape in the online gaming industry has been very evident in the past. Several states, including Telangana, Andhra Pradesh, and Odisha, among others, have outlawed fantasy gaming apps despite favourable rulings by the Supreme Court and other high courts that they are games of skill and are, therefore, legitimate.

Developers mustensure that users dwelling in jurisdictions where DFS and rummy apps are not allowed are refrained from accessing their apps.

▾ Will Google's Temporary Nod To RMG Games On Play Store Be A GameChanger?

Kumar Saurav, Global Mobile Business Head, AdCounty Media, firmly believes that the introduction of Fantasy games on Google play can be a revolutionary move impactingapp developers and users. He said, "It would unequivocally help the industry grow much faster, increasing awareness about these games and consequently boosting user participation. The move would also expand Play Store's user base by reaching out to gamers who were previously unable to access these games on the store."

However, it will be an arduous task for Google to retain its user base and developers and simultaneously adhere to government and other internal policies.

The developers chosen for the test programme won't be able to leverage Google's in-app paying system; instead, they will need to provide substitute third-party billing options within their apps.Google would adhere to its service fee policy for similar apps globally and will not add a commission to transactions done on these apps.

Earlier this week, Google released a statement mentioning that as part of a pilot initiative, it will permit developers of non-gaming Android apps from several nations, including India, to provide third-party payment choices,reducing the service fee of 15-30 per cent by 4 per cent.

▼ Current Scenario And The Way Forward

India is the fastest-growing FS market with the most extensive user base at 13 crores, expected to grow at a CAGR of 32 per cent in the coming years. In other terms, the industry is projected to grow from INR 34,600 crore in FY21 to an estimated INR 1,65,000 crore by FY25, per FIFS estimates. 50% of transactions on FS platforms are initiated from Tier-2 and Tier-3 cities.

Cricket as a sport captured the most significant chunk in the fantasy gaming universe with a whopping 85% market share, followed by soccer, hockey and others. Cricket is anticipated to generate INR 73,000 crore of CEA for FSPs by FY25, up from INR 25,000 crore in FY21.The critical user demographic falls in the 25-40-year bracket (59% of the total user base). One of the key findings is that 80% of Fantasy Sports users participate in free contests.

Skill-gaming operators must adopt and enforce a high degree of governance and self-regulation in light of the current regulatory environment. The industry has taken/proposed several steps, such as interacting with stakeholders and users to get a clear picture of the needs and expectations after identifying the necessity for self-regulation.

The trailblazing growth of fantasy sports with every passing day has attracted investments of over $ 112 million in the past five years.The sector has garnered Foreign Direct Investment of INR 10,000 crore so far and is expected to attract over INR 15,000 crore over the next three years.

The introduction of 5G would alleviate technical disruptions and eliminate latency and low concurrency problems, enabling a broader user base to participate in a tighter-knit gaming community.Transition to 5G alongside the incorporation of AR and VR into sports and cloud gaming will pave the way for the next big wave.

Additionally, the sector has significantly contributed to generating employment in the nation.By 2023, it is anticipated that the potential of growth in creating jobs would increase to more than 5,000 in direct employment and more than 7,000 ancillary jobs. ■

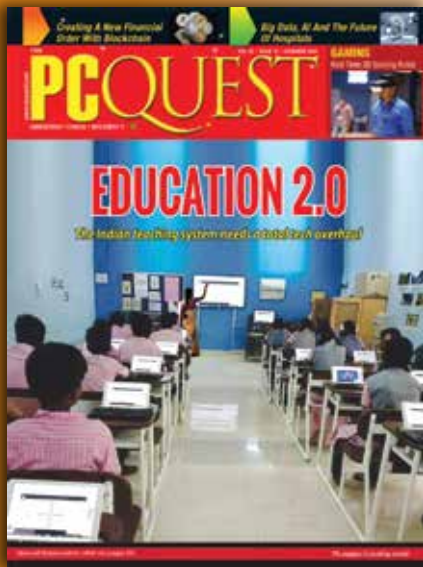**The author is Global Mobile Business Head, AdCounty Media**

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Building cyber resilience: India's integrated cybersecurity approach

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The scale of cyberattacks will continue to break records. Organizations should remain aware of the risks and ensure to have the appropriate solutions in place

Cybercrime has shifted from trivial online crimes to election meddling orchestrated by state-sponsored actors, large-scale ransomware attacks, and cyber espionage campaigns. Current cyberattacks can cripple business operations. In addition, there has been a rise in cybercriminal activity targeting critical national infrastructure, such as power grids and hospitals, which often puts people's lives in danger.

Raj Sivaraju, President, APAC, Arete shared his thoughts around breaches, cyber threat evolution, and future.

▼ Significant data breaches

Last year, data breach allegations surrounding a leading Indian platform that allegedly resulted in the worst cases of data leaks (though the company denied the claim) came under the Reserve Bank of India's (RBI's) scanner. The mere thought of approximately 9.9 crores consumer data breach sent the nation into an unprecedented frenzy. However, this isn't the first instance India's cybersecurity vulnerability has been exploited, nor will it be the last. Below are some significant data breaches seen from last year till June 2022.

▼ Oil India Ltd. – Ransom of ₹58 Crore

Between October 2021 and April 2022, the government-owned oil ₹ gas extraction company Oil India Ltd. reported cases of cyberattacks. It also found a ransom note on one of the infected computers, demanding $7,500,000 (approximately ₹58 crores).

▼ Razorpay – Lost ₹7.3 Crores

Online payment gateway Razorpay said hackers stole ₹7.3 crores worth of funds in 831 transactions over three months. According to media reports, "an unauthorized actor(s) with malicious intent" manipulated the authorization process of the gateway to authenticate these transactions.

▼ PNB - 180 Mn PNB customers exposed

In November last year, a cybersecurity firm alleged that the personal and financial information of nearly 180 Mn PNB customers was exposed for seven months.

RAJ SIVARAJU, President, APAC, Arete

Air India – 45 Lac Passengers Data Hacked

A sophisticated hacking attack on Air India's passenger service system provider SITA resulted in the theft of the personal data of around 4.5 million passengers in February 2021. Frequent flyer data and credit card data were affected due to the breach.

Similarly, a Cisco report last year stated that Some Indian SMEs lost up to INR 7 Cr in cyber-attacks between September 2020-September 2021.

▼ How Have Cyber Threat Actors Evolved Over the Years?

Frequent cyberattacks on companies with enough resources to have adequate cybersecurity measures in place prove that, over time, cyberattacks have magnified not only in size and scale but also in sophistication. In addition, threat actors are becoming more creative and resourceful in carrying out such attacks. According to the India Ransomware Report by Cert-In, there is a 51% increase in ransomware incidents reported in 2022-H1 compared to the previous year [2021].

- CERT-In reported that 14,02,809 and 6,74,021 cybersecurity incidents were observed during the years 2021 ₹ 2022 (up to June), respectively.
- CERT-In has conducted 67 mock cybersecurity drills to assess system vulnerabilities and ascertain critical sectors' preparedness.
- The government, via the National Critical Information Infrastructure

Protection Centre, is aware of all critical information infrastructure that requires protection.

Companies should focus on excelling at cyber resilience in alignment with business objectives/strategies to achieve better/profitable outcomes and desired return on cybersecurity investments. Businesses also need to adopt cooperative cybersecurity approaches to make headways in the cyber resilience future.

▼ What Is the True Essence of Cyber Resilience?

As security professionals and regulators, it might be entirely out of our hands to stop cyberattacks altogether, but we can take measures to mitigate the impacts of such breaches. While the first goal of cybersecurity is to prevent attacks from happening, at the same time, it is crucial to identify such violations on time. If identified, steps can be taken in time to stop the breach from escalating and ensure that the enterprise can recover quickly, with minimal loss. This is where cyber resilience culture in an enterprise plays an essential role. The aim is to ensure that even in the face of a cyberattack, a cyber-resilient security perimeter ensures that the subsequent damages are inconsequential.

▼ Smart Investments Today, Safer Tomorrow

The global pandemic forced companies worldwide to move their offline base to online platforms overnight. Naturally, this left a massive number of security issues unaddressed. If cyber criminals identify even a whiff of some vulnerability, they want to exploit it. On the other hand, as the race for shifting workload on cloud is picking up pace, companies are working strenuously to have the edge over competitors. But, given that the cybersecurity process forces them to pause and mull over questions like, "who will have access to the data?" businesses are inclining towards skipping it entirely as it delays their progress.

However, security measures must be built-in from the beginning while migrating to a cloud network. If not, the relevant business is open to exposure and thus can be attacked by cybercriminals, resulting in massive losses. According to an IBM report, the average per capita data breach cost has increased by 10.3% from 2020 to 2021.

▼ Plan To Achieve Cyber Resilience? Collaboration Is the Key

As an organization, if you value cyber resilience, a collaboration between security, business, and project teams has to be in tandem to provide best-in-class information security. In a company, if the business team faces cybersecurity-related challenges, the concerns should be immediately conveyed to the security team within the organization. There should not be any hesitation or competition regarding cybersecurity measures. The focus should be on ensuring complete transparency.

Moreover, company leaders should be in constant communication without any barriers. The CISOs should have direct access to CEOs and CFOs and vice-versa. Apart from the steps mentioned earlier, organizations must ensure that cybersecurity measures are extended beyond the concrete walls of a company. According to several reports, though 67% of businesses believe that their company ecosystem is secure, they are susceptible to indirect (supply chain) attacks, which continue to grow. This proves that to attain 100% security against cyber threat actors, companies need to cover all their bases, internal and external.

▼ Future Prospects: At a Glance

As the world is moving towards complete digital transformation, companies must take absolute cybersecurity measures to ensure there aren't any breaches or loss of customers' trust. Therefore, building a cyber-resilient workplace is of utmost importance. As an entity, your goal should be to protect the company's sensitive information, detect potential malicious activities, and evolve pertaining to ever-changing industry demands.

Remember, cybersecurity is no longer a 'good to have' thing. It has reached absolute necessity. It is your responsibility to ensure that the trust consumers have in your enterprise is not compromised. As a company, you must work together to reach a cyber-resilient place, as cybersecurity is no longer the responsibility of just the security department but every single player in the organization. ■

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Virtual tools set to supersize the smart home

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Homes have gone from idyllic low-tech spaces to 24X7 Wi-Fi zones to virtual assistant enabled smart homes. But now the Metaverse promises to take the smart home to an ever greater "techified" territory

A decade ago, the home was seen as a space where people would feel safe and comfortable from excessive intrusive tech. However, the evolution of technology has played a significant role in home dynamics. Wi-Fi has become an integral part of today's homes and home connectivity is simply indispensable.

Today's Indian home has grown beyond just a place of offline comfort to an automated smart home which can be monitored, controlled and scheduled. This smart home is also seen as a place where a family can enjoy immersive entertainment with "entertainment areas" and "designing scenes" being common.

Now technologies like Metaverse are revolutionising the space. We spoke to *Pranesh Chaudhary, Founder and CEO, zunpulse* to understand how this new tech would impact our homes, future and more.

What does the Metaverse mean for smart homes?

Metaverse has the potential to truly revolutionise the smart homes of today simply because it is an extension of the real world into virtual reality. Those words often fail to project the scope of possibilities that open up with the intertwining of IoT and virtual reality. So just to put it in perspective, if I let my imagination run wild for a brief moment, I can easily imagine 'Jarvis' coming to life and being a part of our daily routine. Since virtual assistants are already prevalent, their expansion into full-fledged avatars talking to us through a VR headset and scheduling smart devices as per our routine is not far-fetched.

How can Metaverse be used to create smart homes in the future?

House mapping is an interesting prospect which promises a lot for the future of smart homes in a world dominated by Metaverse. With Metaverse your physical home could be replicated in the virtual space. This will assist in designing smart experiences within a smart home or in a regular home when looking for an upgrade. Based on your lifestyle preferences, how you experience your home in a day could be replicated in the Metaverse. This is key to understanding what smart devices you need and how your smart home could help

PRANESH CHAUDHARY,
Founder and CEO, zunpulse

in making your daily life more efficient and effortless. In the future, Metaverse could help customize a smart home precisely to the daily routine of the residents.

Why do home-tech players find the age of Metaverse so promising?

Metaverse is basically a virtual space, a hosting server of sorts, where the real world can be projected as a virtual image. Simply put, it enables you to be on the internet instead of being on the internet. The same internet is the basis of smart home tech. Today's virtual assistants are the connectivity hub for IoT devices like smart cameras, smart sensors and smart speakers with inbuilt mics. These devices could literally act as the eyes, ears and other senses of the virtual assistant replicated in the Metaverse. From detecting an intrusion to a medical emergency, the combination of Metaverse and smart home tech will definitely enable virtual assistants to understand and do much more. No wonder home automation brands all over the globe

find Metaverse a promising prospect.

How are smart home products and Metaverse tech interrelated?

Metaverse is all about replicating the world around us in virtual space to deliver experiences that are designed to blur the boundaries of real and virtual worlds. Smart home products are based on IoT which essentially aims to connect real-life devices with each other using the internet. The integrated devices gather and interpret data to take actions as inferred or instructed. This gathered data and decision-making process will help the creation and enhancement of real-time simulations in the Metaverse.

With Metaverse becoming such an anticipated technology, what is the future of home-tech brands?

Home tech has allowed us to interact with the devices around us with the goal of making life easy and efficient. Metaverse promises to enhance the efficiency of smart devices and take smart living to another level. The way I see it, you could be within the virtual world enjoying a stroll on the beach and suddenly a widget pops up indicating the daily energy consumption limit being reached. Using simple hand gestures, you could pull out a list of all the active devices and switch off the ones that are not needed. Home tech brands should be planning how they can make these experiences smooth and effortless in the Metaverse. Of course, all of this is hypothetical and might seem a bit deviant from the ground reality, but so did the thought of smart devices, voice-controlled virtual assistants and a virtual world delivering real experiences. With the right vision and in-depth understanding of their role in the Metaverse, the future of home tech brands is full of promise and possibilities. ■

Implementing blockchain in your business: The pros outweigh the cons

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Blockchain technology offers a superior level of data quality. It has created newer avenues of growth for various businesses. However, it also has some pros and cons.Therefore, managers are advised to track blockchain technologies to assess their effectiveness and leverage their benefits for new value creation

The launch of Bitcoin in 2009 introduced blockchain technology to the real world, highlighting the use and functionality of a digital distributed ledger technology. Today, the disruptive implications of its features are far-reaching. Blockchain technology can displace intermediaries, such as brokers, notaries, and banks, whose business models rest largely on providing independent third-party verification. Several renowned companies, government agencies, and nonprofit entities are relying on blockchain technology to improve existing operations and enable new business models.

▾ What is blockchain technology?

Blockchain technology is a decentralised ledger system where there are blocks with unique characteristics. Every block is connected to another block to form a chain-like structure. These blocks contain information, and the connections in a chain-like structure indicate the linking process. Participants authorised to access the network can view and add information but not make alterations to existing records. All information within a block is cryptographically secured.

▾ What makes the technology special?

The value of blockchain lies in its ability to share data quickly and securely without a single entity having the burden of safeguarding the data or facilitating the transactions. Blockchain eliminates the role of a central authority controlling all data stored in a given database and creates a single source of truth wherein parties can read and write to a common database.

Currently, many enterprises are willing to adopt blockchain technology. However, every technology carries a host of pros and cons, and blockchain is no different. While most enterprises try to unlock the technology's value, they neglect the challenges and issues. Consequently, they make errors and lose out on resources and time.

When managers and executives evaluate a business case for blockchain adoption, they should focus on the following questions:

▾ What are the sources of value that blockchain can deliver?

There are four primary sources of value that

MILAN GANATRA, Founder & CEO, 1Silverbullet

blockchain use cases can deliver. Businesses can mix and match these sources in different ways.

▾ New Business Models

With the help of blockchain-supported innovation, businesses can generate new revenue streams. For instance, in the energy sector, blockchain platforms empower entities to trade excess energy stores autonomously over the grid.

▾ Operational Efficiency

Blockchain automates processes, eliminating unnecessary intermediaries to enable organisations to enhance productivity and performance. For instance, the technology enables smart contracts that require no human interaction for enforcing contractual obligations and instead utilise predefined software.

▾ Risk Mitigation

Blockchain-related applications help companies improve tracing and authentication across the supply chain. The effects of better transparency throughout the supply and distribution chain reduce the chances of health and safety issues due to counterfeiting and fraudulent parts. As a result, financial and reputational damage is mitigated.

▾ Social Impact

Companies can use blockchain applications

to support a wide range of initiatives, such as election management, voting, and ethical sourcing.

▾ How will using blockchain align with the organisation's goals and strategies?

Blockchain has the potential to become a game-changing force in all industries. Towards the fulfilment of the organisation's goals and strategies, the adoption of blockchain helps in cost reduction. Blockchain eliminates the need for third-party assistance, and when businesses transact data without an intermediary, they save huge costs.

Additionally, delivering a satisfactory customer experience is an organisational goal businesses can fulfil with the help of blockchain. The technology can track goods throughout the supply chain, offering clear and instant visibility to industrial companies. Leveraging this feature of the technology, companies can create greater transparency with their customers, who are increasingly demanding it.

▾ Will blockchain enable the organisation to compete more effectively?

With blockchain gaining more acceptance worldwide, it can help businesses get ahead of the competition in different ways. Blockchain is kickstarting the next automation revolution. Task automation will cut down on costs and boost productivity, thereby increasing revenue. That in itself is the core ingredient to compete more effectively.

Moreover, blockchain adoption allows businesses to include various cryptocurrencies in the payment gateway. The more payment options an organisation offers to the customers, the higher the chances of success. Speed is also of crucial importance in e-commerce. Sales through decentralised blockchain are comparatively faster than traditional systems. As a result, businesses can speed up high-volume transactions.

▾ Pros of implementing blockchain in your business model

Blockchain and its characteristics can provide a multitude of benefits to businesses, regardless of whether they are adopting a public blockchain network or a private blockchain-based application. Blockchain's capabilities support end-to-end automation and easy data sharing across organisations. It establishes trust between different entities willing to engage in business dealings. It significantly reduces manual reconciliation efforts. Moreover, it provides anywhere, anytime accesses to previous transaction records, which can tremendously improve regulatory and audit compliance. As a result, associated costs reduce, and response times improve.

Another leading benefit of this emerging technology is security and privacy. Due to end-to-end encryption, the record of transactions is unalterable, shutting out fraud and unauthorised activity.

▾ Cons of implementing blockchain in your business model

For the successful implementation of blockchain technologies, everyone within the process ecosystem needs to adopt the system. Many companies are sceptical about investing in the technology and don't believe it is ready to deliver high enough returns to cover the costs of replacing existing systems.

Another major con pertains to uncertain regulations. Due to the lack of central control, there is no clarity on who will address breaches in trust and protocols. Moreover, the lack of regulation results in the concept of ICO scams.

▾ The Bottom Line

Blockchain can create benefits in all sectors of the economy, not just the financial services sector. The impact of blockchain technology extends to any business that serves as an intermediary between two parties, for instance, a buyer and a seller, and earns economic rents from a brokerage position in the value chain. Therefore, managers are advised to track blockchain technologies to assess their effectiveness and leverage their benefits for new value creation. If they fail to do so, they will lose their competitive edge to managers of firms who understand blockchain and are willing to marshal its capabilities into tangible and sustainable sources of value. ■

The author is Founder & CEO, 1Silverbullet

Top 5 assistive technologies aiding people with disabilities

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The rise of smartphones and the advent of smart homes, have changed the world vividly. Technologies like Machine Learning, Artificial Intelligence, Voice Assistants, etc. now empowering people who need its support the most

I n the past couple of years, technology and healthcare evolved rapidly. The pandemic also pushed innovators to work around tech to help billions of lives. But some special humans need our support the most. Assistive Technology aims to make the day-to-day lives of disabled people easier.

▾ What is Assistive Technology (AT)?

Assistive technology (AT) is a combination of products, equipment, and systems that enhance learning, working, and daily living for persons with disabilities.

Within the AT, we have witnessed some incredible inventions which are enabling people to live healthy, productive, independent, and dignified lives. The technology is reducing the need of formal health and support services, long-term care, and the work of caregivers. With the support of assistive technology, anyone who has some form of disability can enjoy increased independence and a better quality of life.

▾ Voice assistants

We all have one voice assistant on our smartphones – Google Assistant and Apple's Siri. but they can help disabled people with some limits. Empowered by assistive technology, products like Amazon Echo can perform multiple tasks by just speaking. It can help to call people, send texts, update their schedules, make to-do lists, set alarms, play music, provide news and weather updates, buy things online, manage their smart devices, and many more.

▾ Smart cane

Millions of people are visually impaired, they seek some help to move around. Assistive technology is transforming their liver with AI-powered smart canes. The smart cane comes with a built-in speech assistant that can start taking commands for several different functions. Users can get voice alerts to locate if they misplace their cane or phone.

▾ Text to speech

There are software and tools capable of reading texts. The technology is beneficial for people with different disabilities to access information. Many websites have added a listening feature to their content, so people with disabilities can get all the info in just one click. There are apps available to install on a PC or phone, to convert any text into speech. The AI-powered text-to-speech tools come with multitudes of flexible customization of tone, speed, and audio conversion into multiple languages.

▾ Braille Smartwatches

Braille smartwatches can help visually impaired people to know the time. But a watch only to know the time isn't enough. Assistive technology is taking it to next level. The braille smartwatches can be connected with smart devices to receive messages, calls, notifications, etc. Additionally, we can see braille dictionary, reminders, alarms, alerts, timers, and many other smart functionalities with the next-generation braille smartwatches.

▾ Smart glasses

You must have heard of or experienced Google Glass. Assistive Technology powered smart glasses have the capability of navigation by just head movements. These glasses are designed for electric wheelchair users to control and use a wheelchair. You can simply connect your glass to your smart device to receive alarms, messages, calls, and notifications. Utilizing the head gesture, the smart glasses help you control the wheelchair. Additionally, it can navigate the user to the desired location.

Top 4 products to keep you fit and healthy

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We are living in 21st century, where technology is everywhere. Though, it has both, pros and cons, yet if utilized smartly would surely enhance your life

Whether you live in a metropolitan area or other towns, your health should be your priority. We have just survived through a pandemic that shows us, how incapable we are. Though technology helped us a lot, but our own mistakes made us to suffer.

HealthTech has progressed rapidly, there are numerous products that can help you to make your life better. Adopting a fit and healthy lifestyle is the only wat to prevent yourself from various diseases and boost the immunity to stay strong in situations like COVID.

Here are five HealthTech products that you need to have to stay fit and healthy in the next decade.

▼ Wearable

It's important to track your Heart Rate, Blood pressure, Blood oxygen, etc. thankfully these features are now available with smartwatches. Capturing the vital data, the smartwatch notify you about your health. A smartwatch like FoxinFoxFit Prime comes with various health and fitness monitoring feature in the watch helps you keep track of heartbeat rate and blood oxygen levels while the daily activity tracker helps in keeping track of daily steps taken, calories burnt and distances covered.

▼ Air Purifier

Air pollution is a major issue affecting millions of Indians. We should try to reduce the carbon footprint plus to safeguard ourselves from dangerous pollution elements get a air purifier. Though we can't carry a air purifier along with us, but having one at home, office or in the car would be a great idea. The purifier ensures that you breathe clean fresh air, delivering long term healthcare benefits.
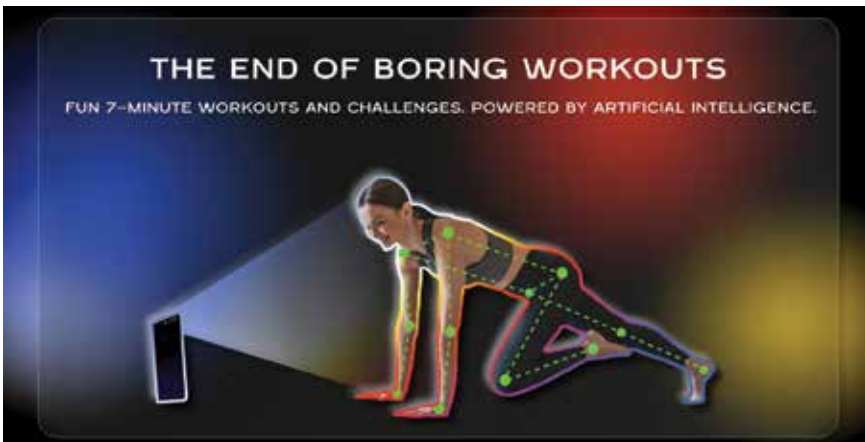
▼ Massage device

Your muscles also needs some attentions. We sit for longer time in offer or car while driving, this can cause muscle pain. Even fitness freaks can face muscle pain, doesn't matter your age or fitness level, anyone can face this problem and solution is a massager device. You can find a portable massager like Hypervolt Go that gives percussion massage to relax, recover, and keep going.

▼ Fitness Workouts

Most of us don't get hours to spend in a gym, but that doesn't matter you can compromise on your fitness. There are exercises which you can perform at home and be fit. Your smartphone has a amazing solution for this. You can download a fitness app like Insane AI which has fusion of games with workouts to develop new age fitness solutions. ■

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LG
TONE FREE FP9
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Price: **₹ 29,990**

EAR BUDS

Previously we reviewed LG TONE FREE FN7 and today we have its next version with a more refined design. As like FN₵, FP9 also has UV technology to keep your earbuds free from germs, claimed to kill 99.9% of Bacteria. With the UVnano, the earbuds can be cleaned in just five minutes when you put it in the case to charge. Moreover, the earbuds have comfortable, medical-grade ear gels made from non-toxic, hypoallergenic silicone that allows you to have fewer worries about all-day use.

▼ Build quality

The TONE Free FP9 comes with a compact and sleek case which can easily slip into your pocket. It has a small circular design, with a premium matte black colour scheme. The light case holds a pair of earbuds that have matching colours and a glossy silver black finish. The Tone Fre FP9 comes with an additional Ganesha case to add beauty on top of the charging case. The case has magnetic placement to hold buds in place. Beneath you can see a UV light which briefly shines and keep the buds bacteria-free.

Plucking the buds out and putting them back is quite easy. You can find a button on the side of the case that let you switch from wireless to semi-wireless function. This means you can wirelessly connect to devices without Bluetooth. You need to simply use the USB to 3.5 mm jack cable, sent along with FP9, and insert the USB to the case and 3,5 mm jack to the device. The case will work as the hotspot for your earbuds and you can have a wireless experience.

The LED lights on the front, indicate battery level, where red means less than 20 per cent, yellow indicates between 20 to 80 per cent and green means means above 80 per cent.

The earbuds have a Concha-Shaped in-ear design and include a single pair of replaceable silicone ear tips. It fits perfectly in my ears, so while listening to the music or talking to someone while walking there was no issue,

Overall: **9/10**

SCORE

PRICE: **7/10**
PERFORMANCE: **9/10**
FEATURES: **9/10**

KEY SPECS
Three mics with noise reduction/echo cancellation, Each earbud 68 mAh battery and 390 mAh case, IPx4 rating water resistance, quick charging case, Bluetooth 5.2

PROS:
Great sound quality, perfect for bass enthusiasts, quick charging, battery life, intuitive app, UVnano, snug fit

CONS:
Could have been priced better

even you can jog comfortably with these earbuds. There was no discomfort while wearing them for hours. The earbuds have IPX4 certification meaning they are protected against sweat and some water spills.

▼ Features

The TONE Free comes with touch sensors which let you control all the basic functionalities of the earbuds. Both buds have different touch functions – a single tap on either earbud will play/pause the music or answer the call. When you touch twice it will end the call or can control volume. When you touch for three time you can play the next song and a long press lets you switch modes. The best part of these buds is wear detection allows earbuds to automatically pause music when removed and when you wear again, it resumes the music.

The LG TWS earbuds come with ANC and it works fairly well. It seals the external noise plus the external microphones enhance the

experience by muting incoming noise. You can customize Ambient Mode to your situation, so you're fully aware of your surroundings and can use chat mode to have a quick conversations without taking out your earbuds.

▾ UVnano

LG earbuds come with UVnano functionality which is claimed to disinfect your earbuds in 10 minutes using UV lights. The company claims a 99.9 per cent removal of germs, I don't have any medical equipment to verify the same, however different studies about UV disinfection says it can kill germs and reduces infection.

This function works when you plug the buds in the case for charging. One thing to keep in mind that it can disinfect the buds but there is no claim or mention of the effectiveness against Coronavirus. Though, surely it will reduce the risk of COVID.

▾ The app

LG has developed a dedicated app for the LG TONE Free. The app lets you access more functionalities of the TWS earbuds. It has a very user-friendly interface and instantly detects when the TONE FP9 is removed from the case. You can check the battery percentage of the earbuds and find user instructions.

The app lets you customize your listening experience, you can use equalizer options which have been custom made via the collaboration with Meridian, a renowned British brand.

You get options to toggle between ANC and Ambient Sound modes, a touchpad lock to prevent accidental touches, customization of the touchpad as well as a toggle to read out your phone's notifications. In case you are unable to find your earbuds, then you can use Find my earbuds feature which will play "loud chirping sounds" to locate lost earbuds.

▾ Performance

The premium earbuds come with dynamic drivers combined with Meridian's audio. It produces a fairly balanced and rich sound. It handled the lows, mids and highs perfectly. While listening to heavy bass songs, the amount of bass it produces is really commendable, however, can disappoint the Hip-hop enthusiasts. Overall it delivers great sound and vocal at different volumes. I played songs of various genres in different file formats like FLAC, mp3, ALAC, and WAV. Therefore, we can say, TONE Free earbuds produce detailed and crisp vocals.

While using them to take calls, the TONE FP9 was excellent. The three mics work really well to block unwanted noise. Even in a crowded place, my voice sounded crisp to the person at the other end. The earbuds support the SBC and AAC enhancing the connectivity between the two earbuds and with the phone.

The LG TONE FP9 has 390 mAh cell inside the case while each earbud has 68 mAh batteries. The earbuds can go beyond 3 hours of battery life in one charge, when on full volume. With moderate usage, this can last for more than 4 hours. The charging case can give it juice for three times of usage, meaning it can stand for over 15+ hours. The case takes more than two hours to charge fully from 0-100 per cent. ▪

3-Mic Design
Clear Calls Virtually Anywhere

3-MIC
Outer Mic
Inner Mic
Voice Mic

Bottomline: LG TONE Free FP9 is a better successor of FN7 that comes with premium features and great vibrant sound quality. The UVnano is quite effective, and medical grade ear gels are added advantage. The only thing which pinched last time and this time as well is price, which could be lower.

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MACMERISE

BLUETOOTH SPEAKER

MELODY HEX SHIELD BLUETOOTH SPEAKER

Price: ₹ 1,299

Have you got bored with regular design wireless speakers? Macmerise, an Indian brand, has introduced a range of wireless speakers with unique designs. These designer Bluetooth speakers are not only portable as well as stylish. The Macmerise Melody Speakers come with a variety of funky designs.

▼ Build quality

The compact wireless speaker has a durable rubberised shell that holds the battery, speaker drivers and other components. The shell is solid enough to handle accidental drops. The water and dust-resistant speaker is perfect for outdoor parties. The front has all the attractions, depending on your choice you can buy your preferred design. The one I got for review is called "Hex Shield" having Captain America's shield printed at the front.

The top panel has all the control buttons – volume, modes, play/pause and power on/off. At the back, it has multiple ports including USB Port, a Micro TF, AUX and a micro-USB port. Having the Bluetooth v5, the speaker lets you enjoy a hands-free experience with a 10m transmission distance. The wireless speaker comes with a 52mm driver with 5W power.

The stylish speaker is backed by a 1200 mAh battery that can power it for up to 3 hours or more. It is compatible with iOS, Android & Windows. One can pair their phone with a speaker and easily answer phone calls with a built-in microphone, change tracks or adjust volume and you don't need to use your phone. It also has an FM Receiver, so you can enjoy the FM radio of your choice.

▼ Performance

The Macmerise Melody Hex Shield speaker is easy to pair with any device. Having the latest Bluetooth v5, you can pair it with multiple devices and switch easily. The wireless range is also good

Overall: **8/10**

SCORE
PRICE: **8**/10
PERFORMANCE: **8**/10
FEATURES: **8**/10

KEY SPECS
52mm Driver unit; 5W Power; 1200 mAh Battery; Bluetooth V5; Aux connection; TF Card slot; In-built Radio; Water & dust resistant

PROS:
Good Sound with a decent balance of bass and treble, water and dust resistance, Wireless connectivity

CONS:
Audio cranks at high volume

enough around 10 m, compared to the previous gen. You can stream music at a distance of up to 10 meters. There was no connectivity issue till 7 to 8 meters, without any obstacle, however over that there was a little drop in the connectivity.

Hex Shield speaker has a 5w, 52 mm driver which produces an ample amount of sound. It can easily fill a small. The speaker handled the lows, mids and highs quite well. Just at high volume, there was cranky sound and sometimes the sound was floundering. I played songs of various genres in different file formats like FLAC, mp3, ALAC, and WAV. It sounds well on low, mid and just high are not that great. It has maintained the balance between bass and treble, which you can notice at low and mid.

▼ Battery

Hex Shield has a 1200 mAh rechargeable battery that has a battery life of about up to 3 hours. I played various genres of songs in the loop; the volume was 100 per cent. The battery was capable to handle the load for around 2 hours 42 minutes, which is decent for such a loud speaker. ■

Bottomline: If you need a speaker that looks cool and delivers good audio, Macmerise Melody Hex Shield is one of the perfect choices. Though at the higher volume you can notice cranks and compare to Ubon SP-40, it is a bit expensive.

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