

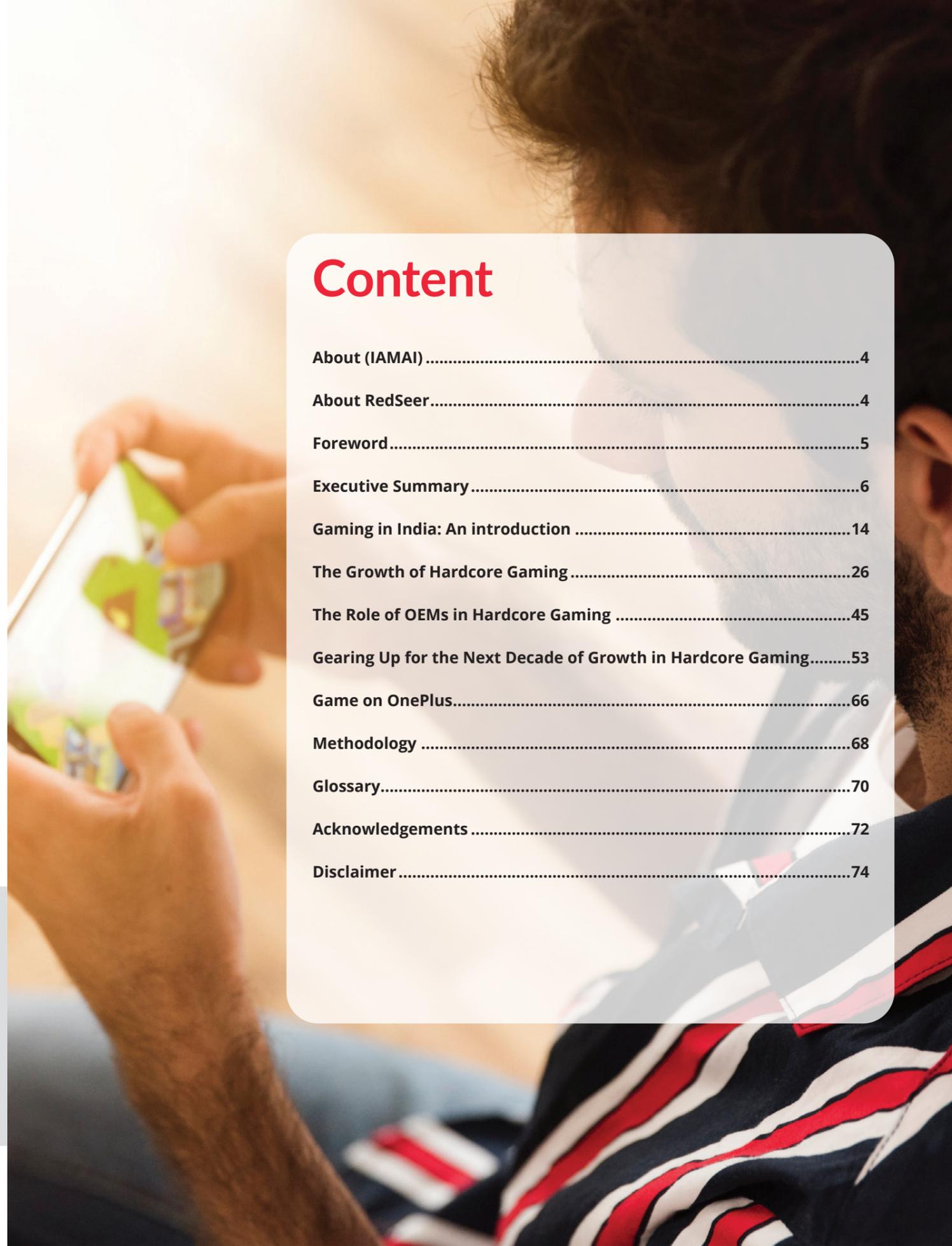
Building up the e-gaming ecosystem of India and the influence of smartphones

September 2021



Knowledge Partner

redseer



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About



The Internet & Mobile Association of India (IAMAI) is a young and vibrant association representing the entire gamut of digital businesses in India. It was established in 2004 by the leading publishers but, in the last 16 years, has come to effectively address the challenges facing the digital and online industry including mobile content and services, online publishing, mobile advertising, online advertising, ecommerce and mobile and digital payments among others.

Sixteen years after its establishment, the association is still the only professional body representing the online industry. The association is registered under the Societies Act and is a recognized charity in Maharashtra. With a membership of nearly 350 Indian & overseas companies, the association is well placed to work towards charting a growth path for the digital industry in India.

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About redseer

RedSeer is a leader in internet and new age advisory. Over the last 12 years of its operations, we have advised 200+ clients across the breadth of internet and investment industry in India, Middle East, and Southeast Asia. Our advisory is differentiated through our high-quality IP of market insights and research, which is unparalleled in the industry. With more than 200 consultants across 5 offices, we have emerged as the largest home-grown regional consulting firm in India.

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Foreword



During the Covid lockdown, more than half of the smartphone users looked at their screens every 10 minutes, spending more than 4 hours daily. Therefore, it is no surprise that India is one of the hottest destinations globally for grabbing a share of these trillions of minutes.

Our research suggests that about a fifth of this time today is spent on mobile gaming.

From Wolf 3D to BGI (earlier PUBG), digital gaming has come a long way, the audience changed to young adults from kids and so did the digital games. Games that once required high-end gaming computers, now run comfortably on smartphones. Gaming consoles could never achieve the reach made possible by OEMs packaging immense computing power, rich display, and network connectivity even in budget smartphones. With better hardware available to gamers, developers will have to offer more or risk losing their attention. Most of the games today in India are casual games. Games of the future are going to be elaborate, visually attractive, and narrative driven.

India is one of the world's largest and fastest growing gaming markets, with a lot more appetite to grow multifold. A key enabler for this growth lies within the mobile phone OEM ecosystem. The richer the experience that can be provided to the user for gaming, the longer the user keeps the kid in himself/herself alive.

A 500 million strong, digitally native population between the ages of 15-35 is consuming internet products and services like never before, laying the groundwork for hyper-growth well into the next decade. With a digital first public policy built over accessibility of affordable device and internet access, the Indian gaming market is set to double over the next 4 years.

Such an emerging and strong ecosystem around the Indian gaming industry requires urgent thought leadership to encourage growth.

Anil Kumar
Founder & CEO
RedSeer

Executive Summary



Gaming in India

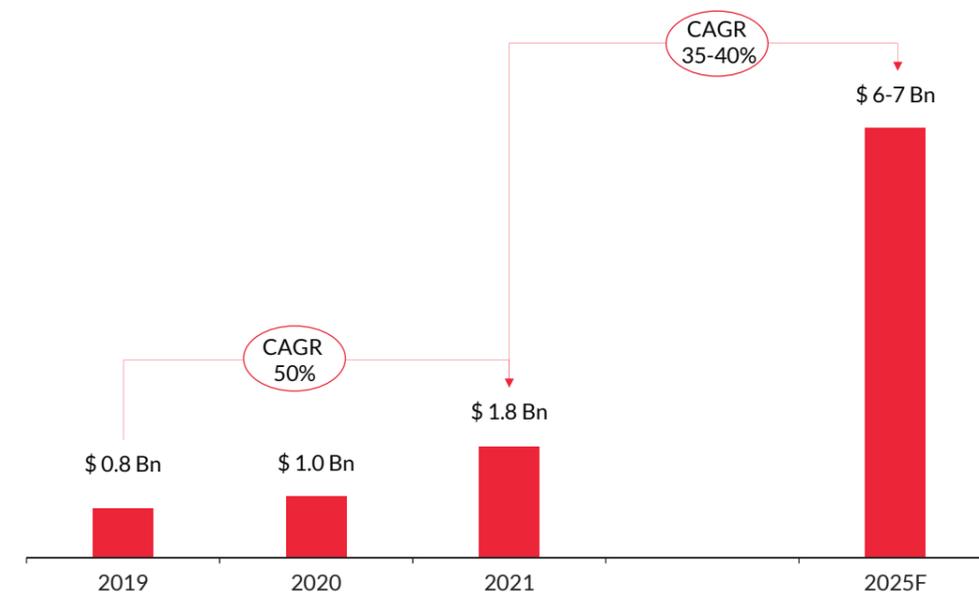
India has a rich culture of promoting leisure in daily life. There have been several descriptions of leisure activities in Indian epics such as Kalidasa's Abhijnanam Sakuntalam. A recent MOSPI report suggests that the average Indian dedicates up to 4 hours every day on leisure and entertainment. Rise of affordable high-speed internet and increase in smartphone penetration has changed the way the consumers spend their leisure time which in turn has led to explosion in consumption of games and other media.

Gaming in India has undergone a paradigm shift in the last decade. New-

age technology and its integration into all aspects of the smartphone experience have catapulted mobile gaming into hypergrowth phase. Government imposed lockdown accelerated organic growth of digital games as mobile app downloads increased by 50% and consequently user engagement went up by 20%.

Today, India is the largest mobile gaming market by number of app downloads, contributing up to 12% of the world total and future India offers a massive opportunity for mobile gaming and is going to be \$ 6-7 USD Bn market by 2025.

Exhibit 1s - Growth in India gaming market (2019 to 2025 forecast). India is among the fastest growing gaming markets in the world.



Source: RedSeer analysis



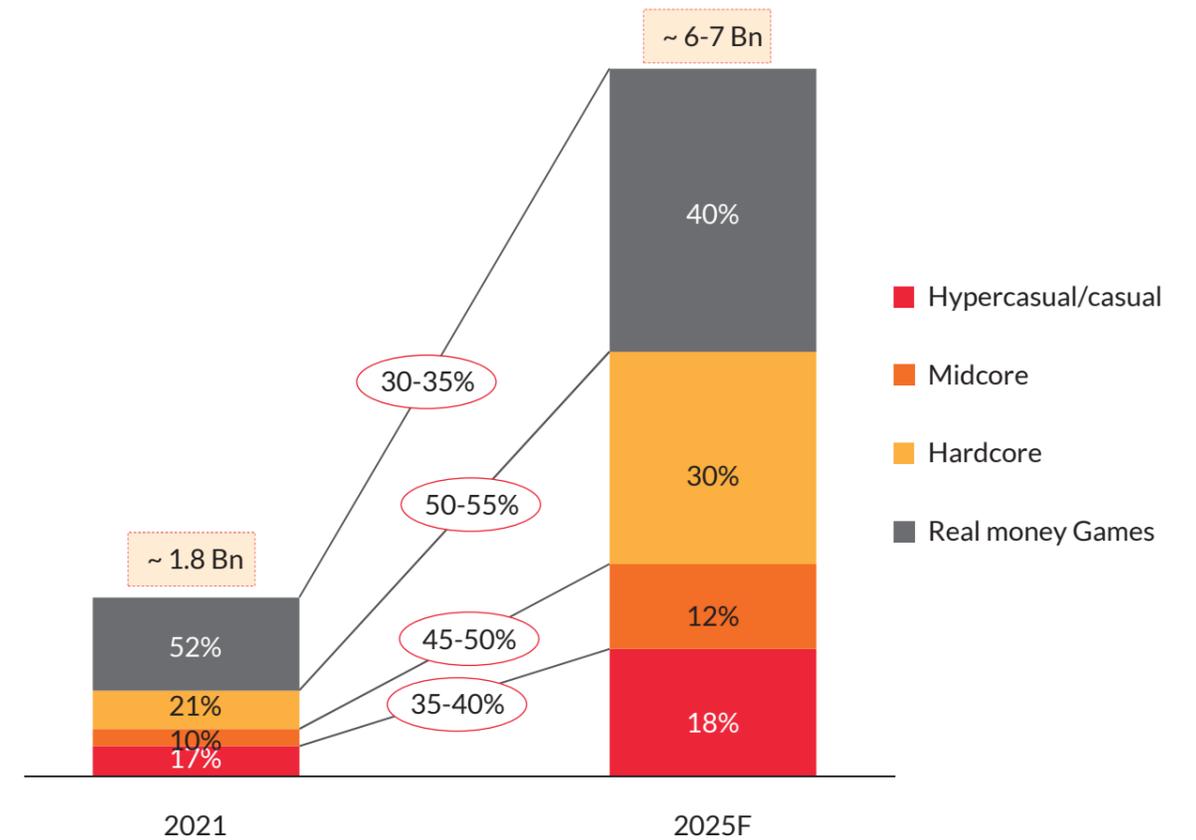
Hardcore gaming is the fastest growing category in mobile gaming

Hardcore games are complex and multifaceted, detailed like BMI (earlier PUBG) and Free Fire. Although casual games (e.g., Angry birds, Ludo king) are the most popular genre in India, it is hardcore games that generate more revenue.

Hardcore gamers are the most engaged cohort, often spending 4X more time and money on gaming, compared to the casual gamer. In a survey conducted over 500 hardcore gamers, ~70% of the

respondents said they play 2-5 games in parallel and spend significant money (~INR 230 per month) on gaming. Penetration of higher-end phones is also considerably higher amongst surveyed hardcore games in comparison to number of units of phone sold by category. The growth of hardcore gaming subsegment is projected to outpace all the other subsegments of Indian mobile gaming industry.

Exhibit 2s – Split of India mobile gaming market by type of games (2021 to 2025 forecast). Hardcore is the second biggest subsegment after Real money games. There are multiple sub-genres catering to niche tastes. Some crafting games such as Roblox are so flexible that they allow users to develop their own games within the virtual world.



Source: RedSeer analysis, desk research

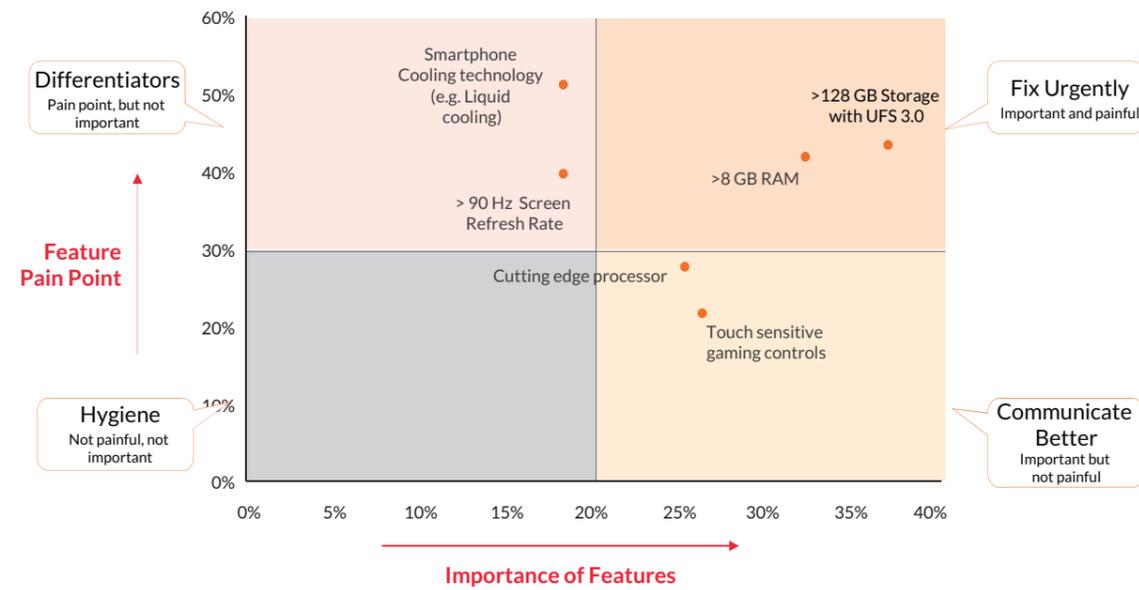
Hardcore gamers not only play games but also spend time spectating esports – already a USD 30 Mn Market. And all this has been possible because of availability of budget smartphones capable of running high end games.

OEMs: Key driver for hardcore gaming boost

Device manufacturers have led the growth of hardcore gaming in India. Increasingly OEMs have been focusing on features that keep gaming and

media at the center. Hardcore gamers are demanding next generation features from smartphones.

Exhibit 3s – Comparison of gaming related pain points and priority features among hardcore gamers. Features such as fast refresh screens and smartphone cooling are differentiating features. “Gaming smartphones need to deliver on superior technical aspects rather than focus on gimmicky lights and speakers,” as per a hardcore gamer.



Source: RedSeer analysis on surveys conducted in September 2021, desk research



OEMs have been responded to the growing demand for gaming with exclusive launches (OnePlus 9R 5G and

Asus ROG Phone 5 are few examples) and gaming features well integrated into the smartphone experience.

Exhibit 4s – Non-exhaustive list of OEM-added gaming features integrated within the OS. After market mods enable advanced features such as hardware overclocking.

OEM	OS	Gaming Features at OS
 Apple	iOS	<ul style="list-style-type: none"> • Apple Arcade • Unified on-screen gamepad
 OnePlus	Oxygen OS	<ul style="list-style-type: none"> • OnePlus Games • Pro Gaming Mode

Source: RedSeer analysis, desk research

Way Forward

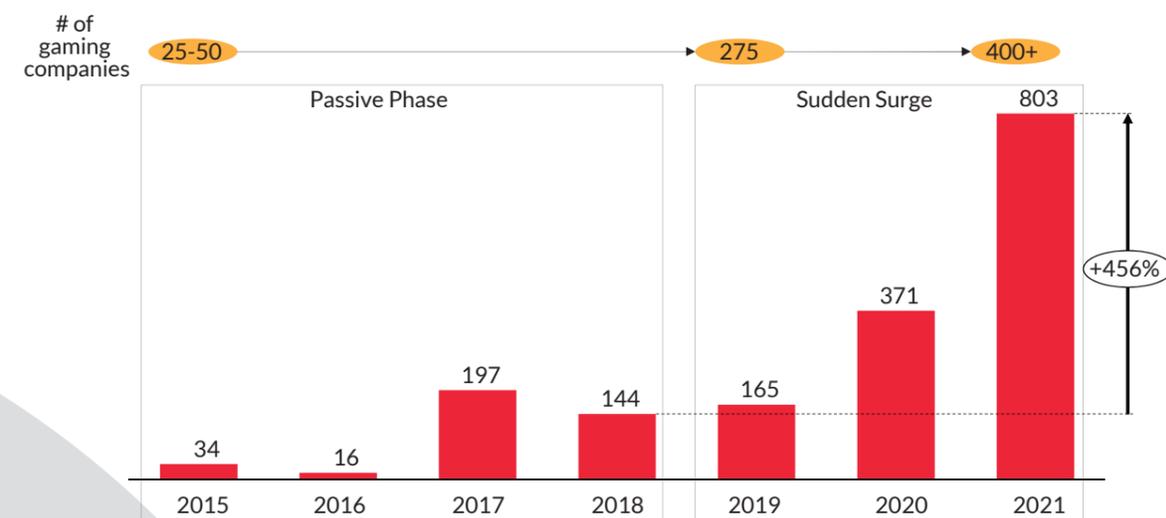
Mobile gaming has the potential to create value beyond leisure and entertainment. The next phase of growth in gaming will be driven by identifying challenges faced by various stakeholders and developing solutions for current and future expected scenarios.

India needs to focus on creating a favorable investment environment to nurture the gaming ecosystem. There have been several indirect initiatives (policies such as Digital India and Digital Literacy are creating the backbone for a

booming internet economy) and direct initiatives (such as STPI and National Centre of Excellence for Animation, Visual Effects, Gaming and Comics) that have already laid the foundation for a fertile mobile gaming ecosystem.

VC/PE have already recognized its potential as Indian gaming market has attracted nearly USD 1 Bn in investment in the last 6 months. There are two Indian gaming unicorns: Dream11 and MPL already.

Exhibit 5s – Investments in Indian digital gaming (in millions of USD).



Source: RedSeer analysis



As gaming attracts capital, the industry is expected to generate 60,000 to 80,000 new jobs. The sector needs a combination of policy, capability building and thought leadership to drive sustainable growth. Currently some aspects of gaming in India face regulatory uncertainty. Laws defining skill, gambling, data protection, and taxing gaming earnings are still under discussion.

The gaming community is evolving to develop for Bharat. Events such as GATO are bringing industry stakeholders together and creating thought leadership that is driving innovation across various aspects of gaming.

The stage is set for the next decade to be a watershed moment for gaming.

1 Gaming in India: An introduction



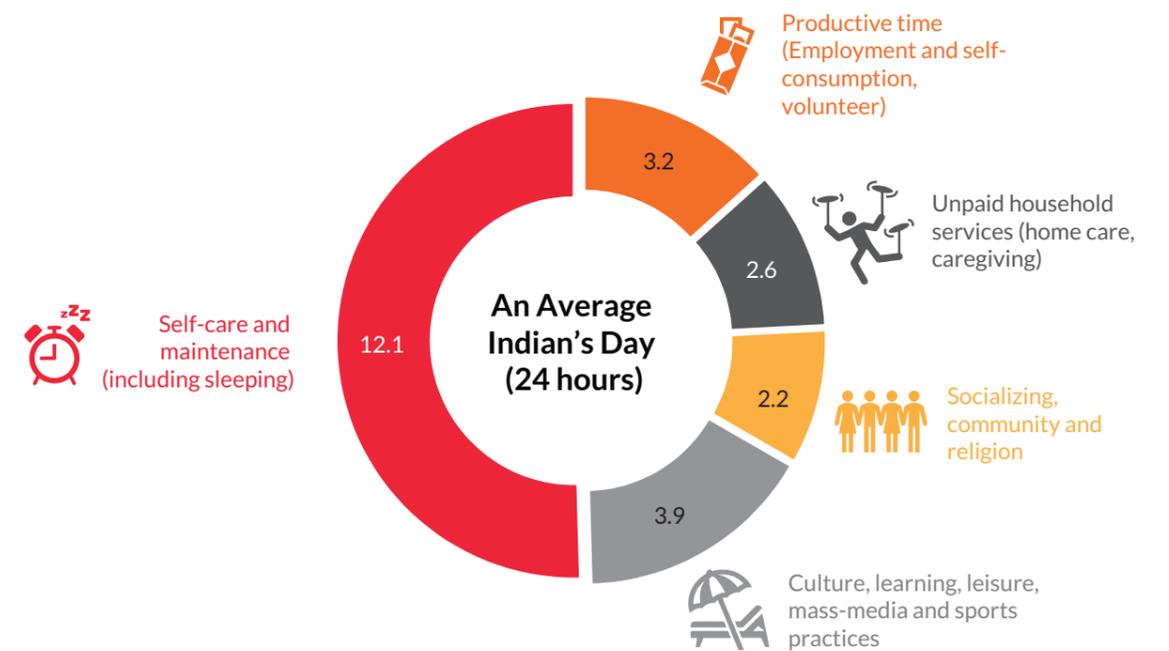
Indians take leisure very seriously

Leisure has always been an important part of communities in India. Indian classics such as Kalidasa's *Abhijnanam Sakuntalam* and *Meghdootam*, and *Banbhatta's Kadamvari* provide various descriptions of leisure pastimes. Today, the rapid advancement of technology

has resulted in new leisure alternatives for Indians.

A recent study reported that Indians spend up to 4 hours on Culture, leisure, mass-media, and sports practices.

Exhibit 1 - Time Use Survey as a % of 24-hours at an all-India level (2019). This looks very different for men and women.



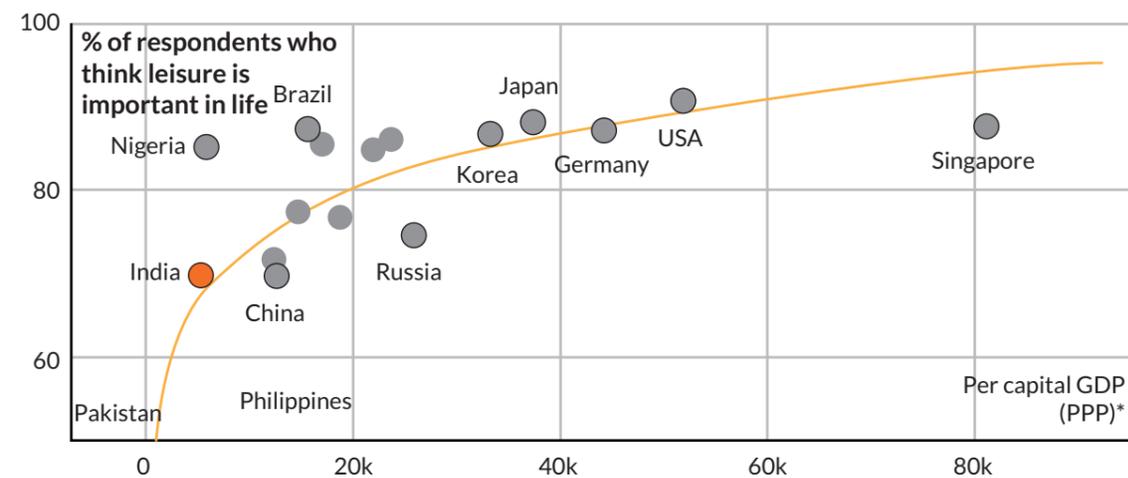
Source: MOSPI (2020)



Residents of poorer nations are less likely to prioritize leisure. As disposable income rises in India, there will be an increased demand for leisure activities

in the years ahead, leading to an increased demand for professionals in this field.

Exhibit 2 - Data on perception on leisure is from World Values Survey (2010-14). Survey respondents were asked how "important in life" is leisure time. Results for India are based on more than 4,000 respondents. *GDP per capita is expressed in 2011 purchasing power parity (PPP) dollars, for the year 2014.



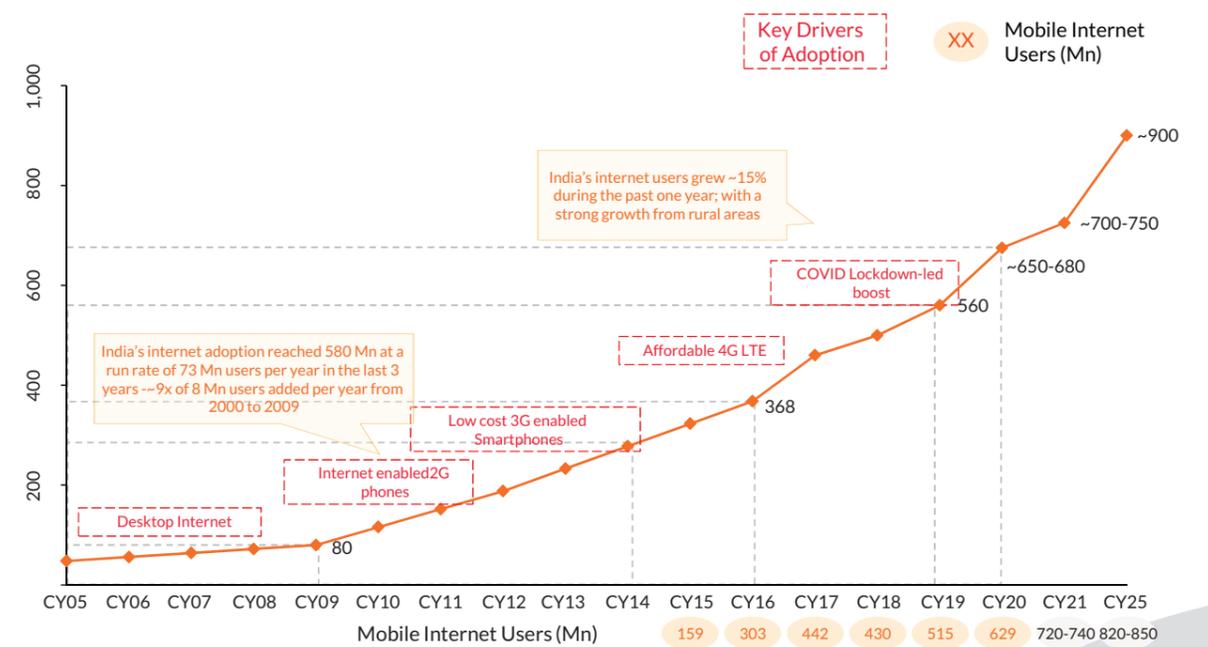
Source: Livemint, World Values Survey, IMF World Economic Outlook database

The rise of Internet changed the definition of leisure time in India

The India internet story has been nothing short of amazing over the last decade. Fueled by a combination of providence, strong policy, and a massive appetite for data, we project that by

2025 more than 95% of India will be accessing the internet in one way or another. India will be home to ~1Bn internet users over the next 10 years.

Exhibit 3 - Growth in internet subscribers in India (in millions of users). There have been a number of seminal events in the last decade that have led to spikes in digital access.

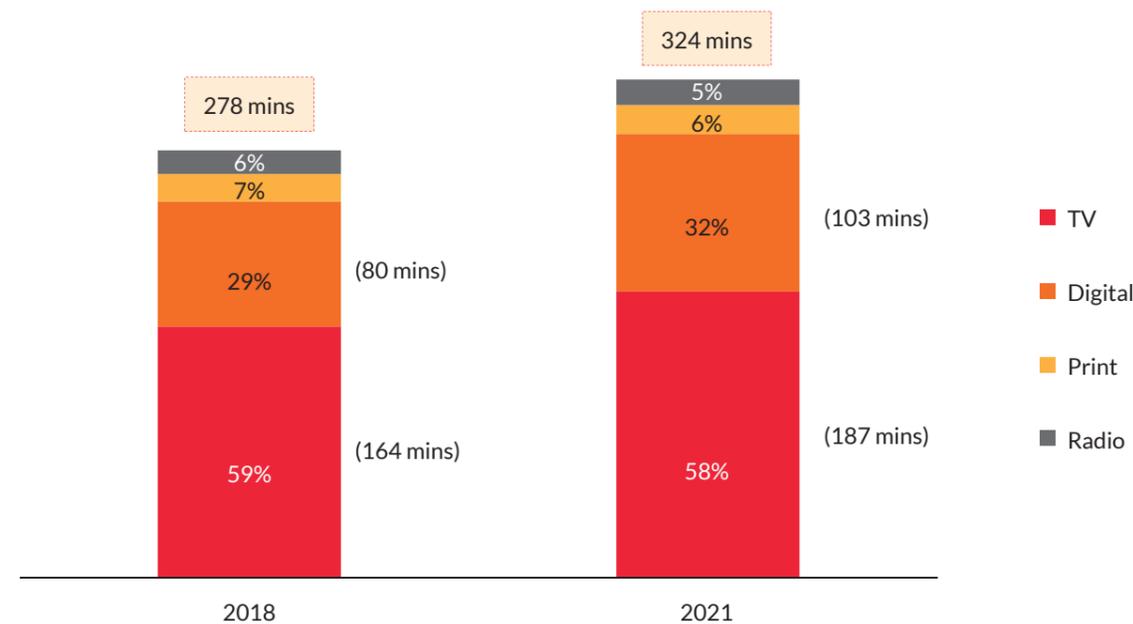


Source: RedSeer IP



More and more leisure time is now being spent on the digital medium

Exhibit 4 - Growth in time spent on different medium (in minutes). Digital includes time spent on smartphones, tablet, desktop/laptop.



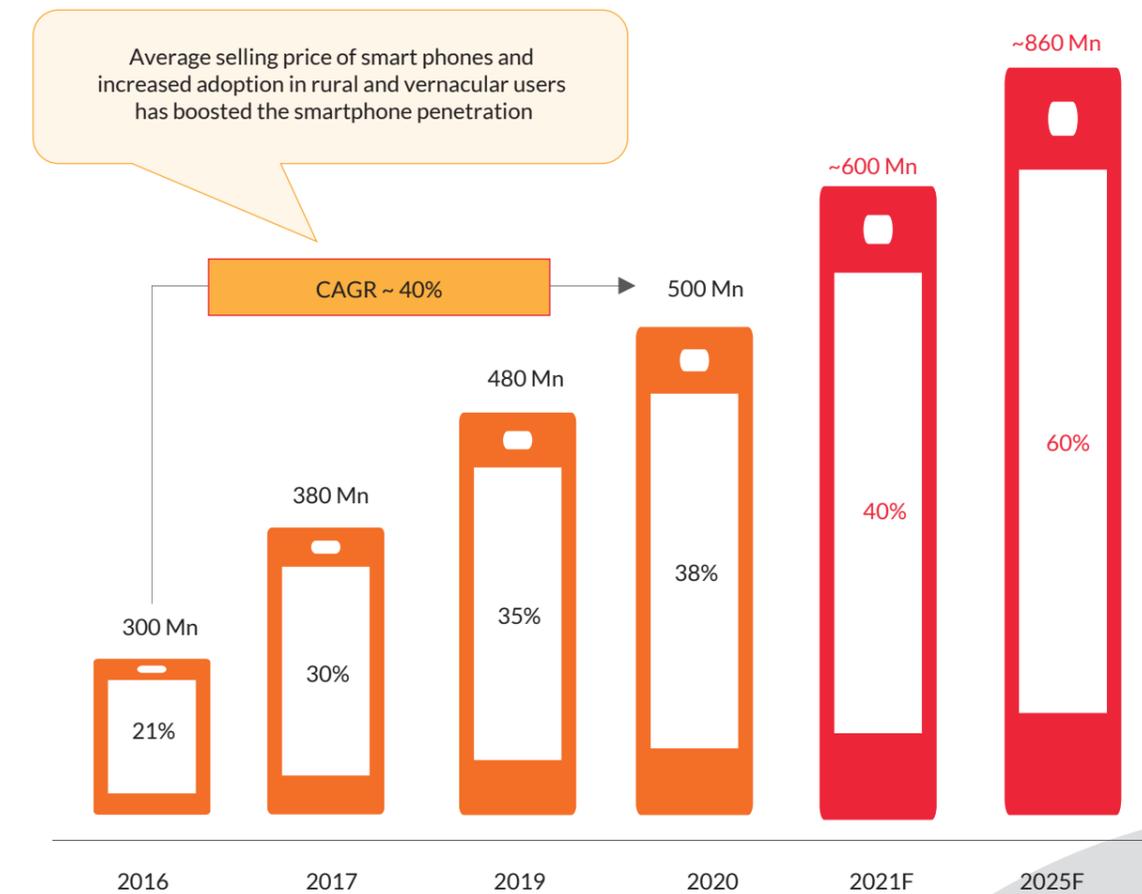
Source: eMarketer, desk research

Smartphone penetration has changed the size of the screen people consume content on

Smartphone penetration in India has increased significantly driven by affordable, high-quality smartphones.

Today ~38% Indians own a smartphone and can access digital games from app stores.

Exhibit 5 - Smartphone Penetration in India (# of Smartphones, % of Population, CY15-20). The next wave of smartphone adoption is happening in rural India which will change the way content is consumed across the internet.



Source: RedSeer analysis, TRAI, desk research



Exhibit 6 - Time spent by Indians on different digital media. More than 60% of digital time is being spent on smartphones.



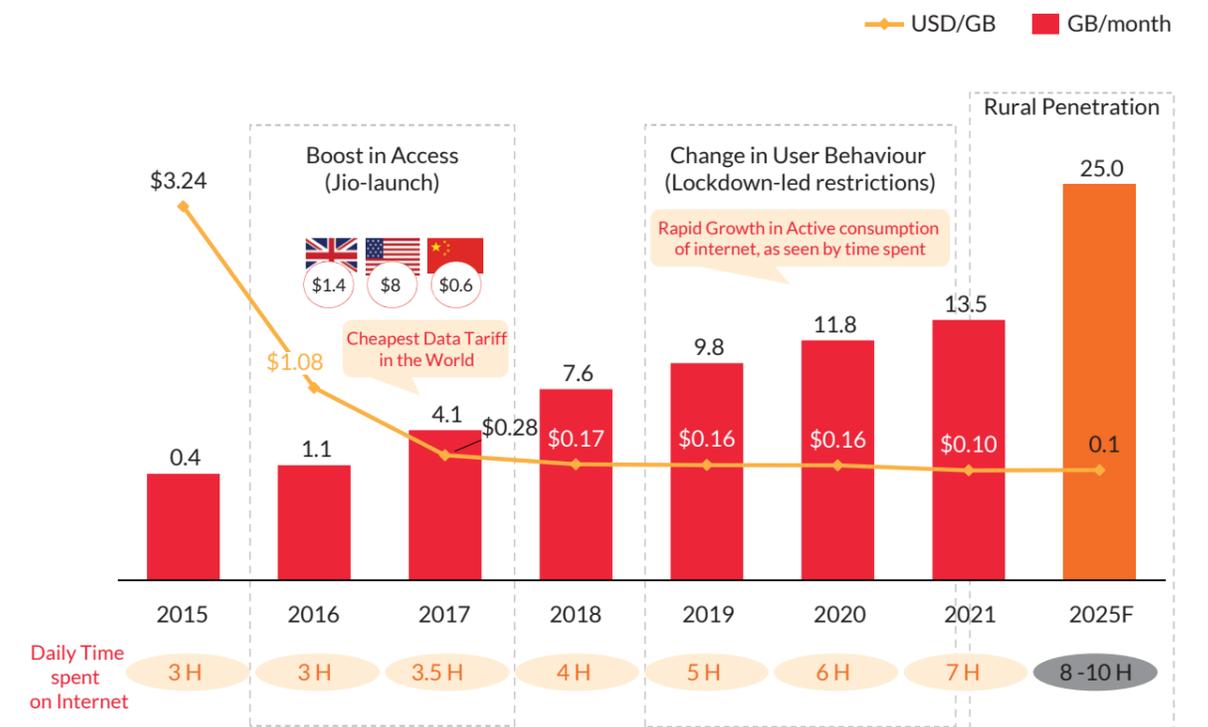
Source: eMarketer, desk research

Affordable high-speed internet has led to heavy data consumption in video and gaming

Data consumption has been driven by reduction in tariff over years. Post 2016, Indian market has consistently

had the lowest data-tariffs in the world, which enabled a 400% rise in data consumption.

Exhibit 7 - Average data consumption and tariff (USD per GB, GB per month, 2015 to 2025 at current dollar prices). Time spent active consuming media, surfing or playing games (Active screen time). Indians have access to most affordable internet in the world.



Source: RedSeer analysis, TRAI, desk research

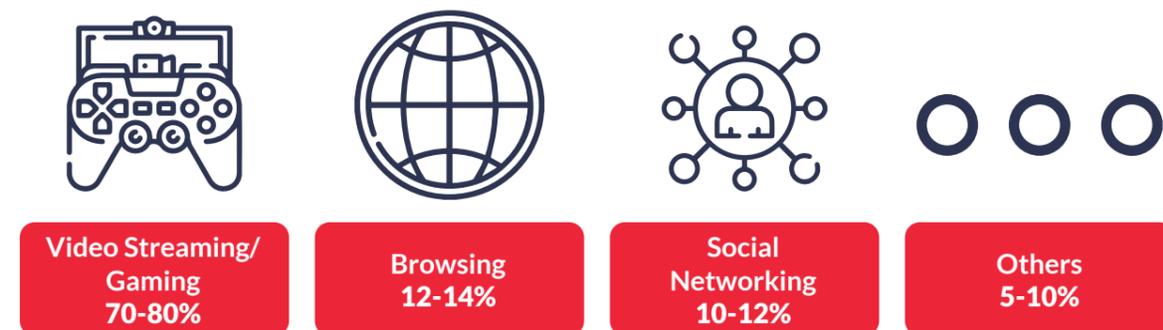


This in turn has led to an explosion in consumption of games and other media.

Currently, the data consumption is around 13.5 GB/month. The average

monthly consumption is expected to nearly double by 2025, as rural penetration grows.

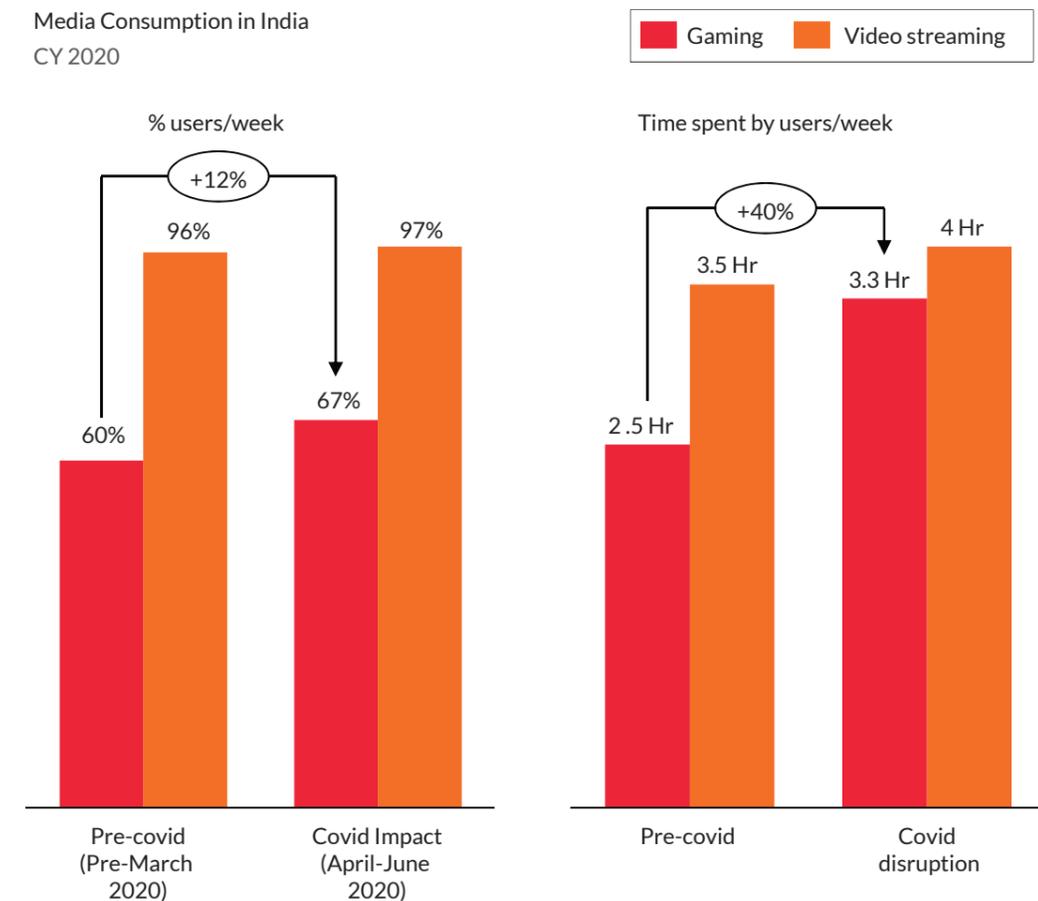
Exhibit 8 – Mobile data traffic by different categories. Users spend most of their data on streaming videos and playing games.



Source: Nokia MBit Index 2020

The Covid-19 pandemic boosted gaming more than media

Exhibit 9 – Media consumption pre covid and post covid. Time spent on playing games increased by 40% during lockdown.

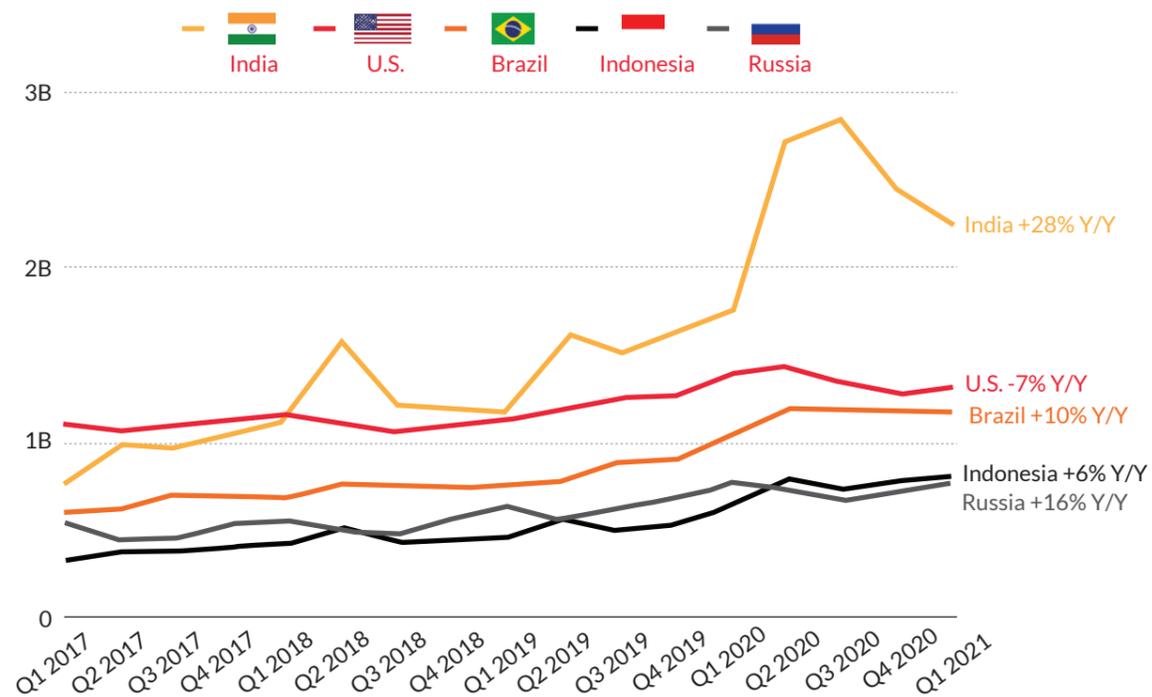


Source: Redseer analysis, desk research

Government-imposed lockdown accelerated organic growth of digital games as mobile app downloads increased by 50% and consequently user engagement went up by 20%. As of 2020 India is the largest mobile gaming market by number of app downloads, contributing up to 12% of the world total



Exhibit 10 - Top countries by mobile game downloads, App Store and Google Play. As smartphone penetration in India increased in recent years, it has become the largest market for mobile game downloads. Market share for top countries by mobile game downloads, App Store and Google Play. While 77 percent of mobile game revenue in 2020 was concentrated among the five largest markets, the top five countries by downloads combined for only 32 percent of the installs. This demonstrates how getting users to spend in mobile games remains more challenging than new user adoption in most markets.



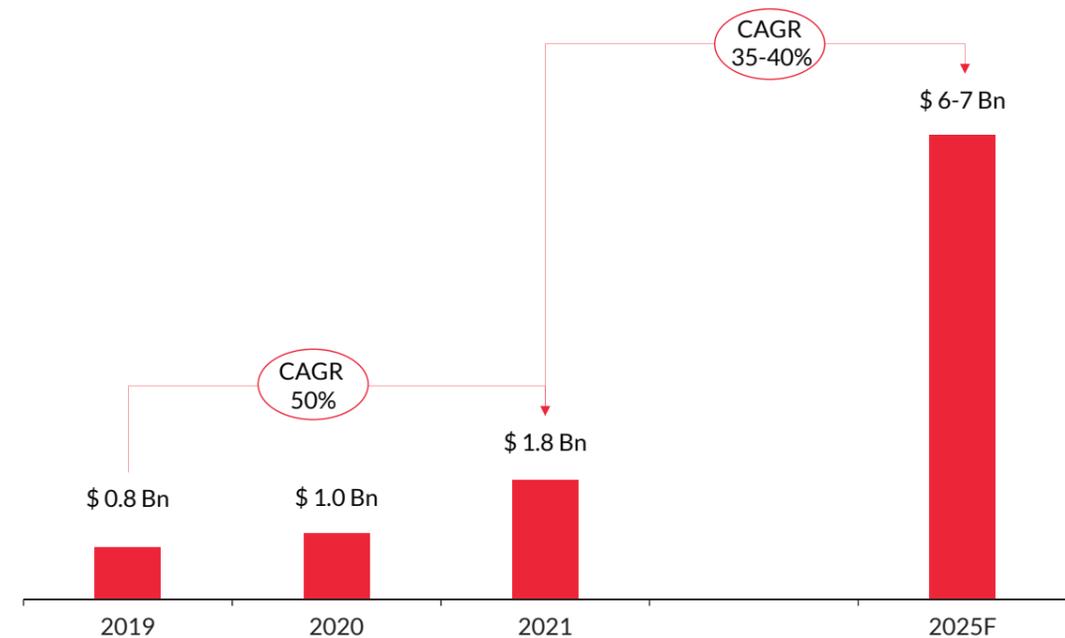
Source: SensorTower

The Indian gaming market is set to triple over the next 4 years

The large and fast-growing userbase is increasingly transacting online. With industry & policy push currently favorable, the ecosystem is set for

growth in the next decade. Future India offers a massive opportunity for mobile gaming and is going to be \$ 6-7 USD Bn market by 2025.

Exhibit 11 - Growth in India gaming market (2019 to 2025 forecast). India is among the fastest growing gaming markets in the world.



Source: RedSeer analysis

2 The Growth of Hardcore Gaming



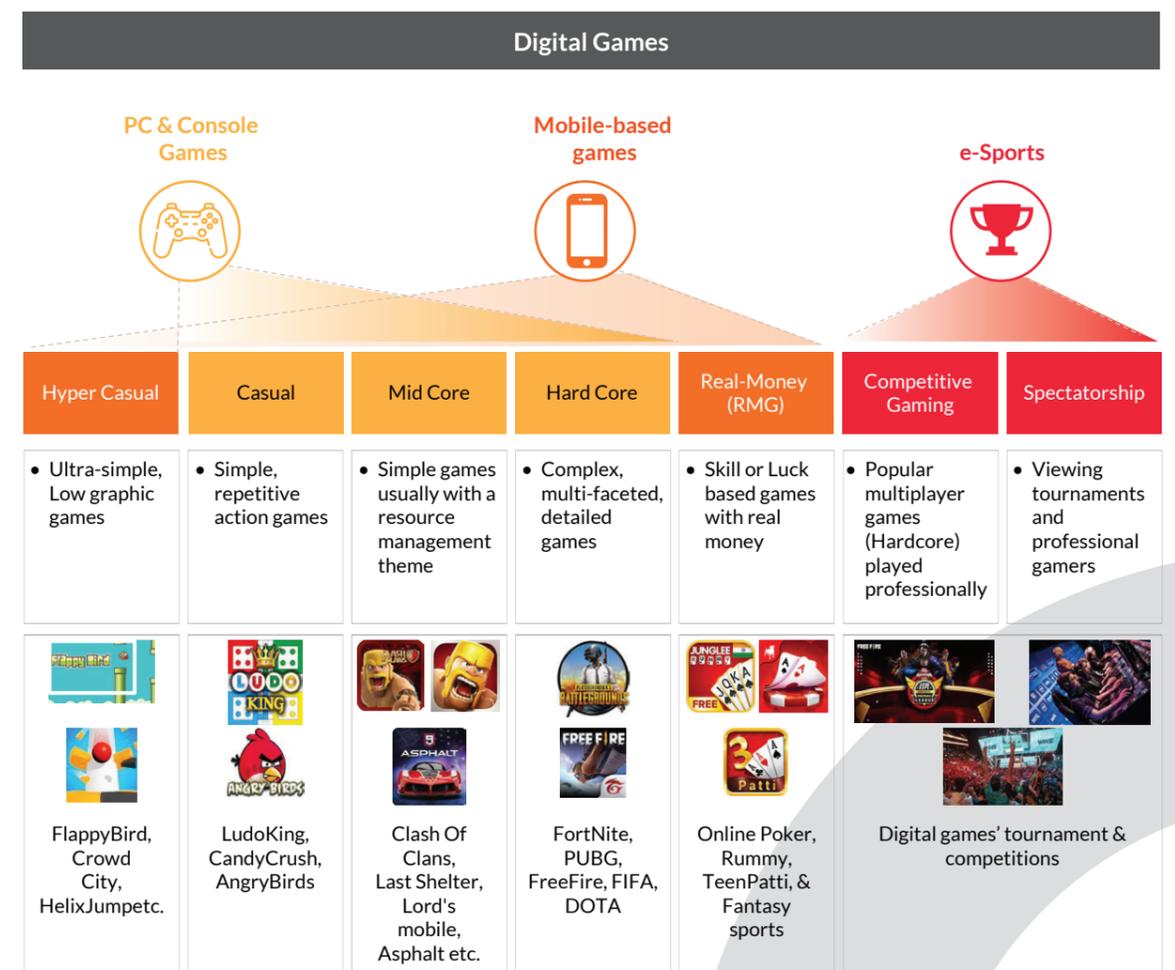
Hardcore gaming is the fastest growing category in mobile gaming

The Indian gamer of today has access to complex games across multiple genres

The Indian gaming landscape has kept up with global trends as top-10 gaming

leaderboards contain both global and regional leaders.

Exhibit 12 - Genres of digital games. There are multiple sub-genres catering to niche tastes. Some crafting games such as Roblox are so flexible that they allow users to develop their own games within the virtual world.



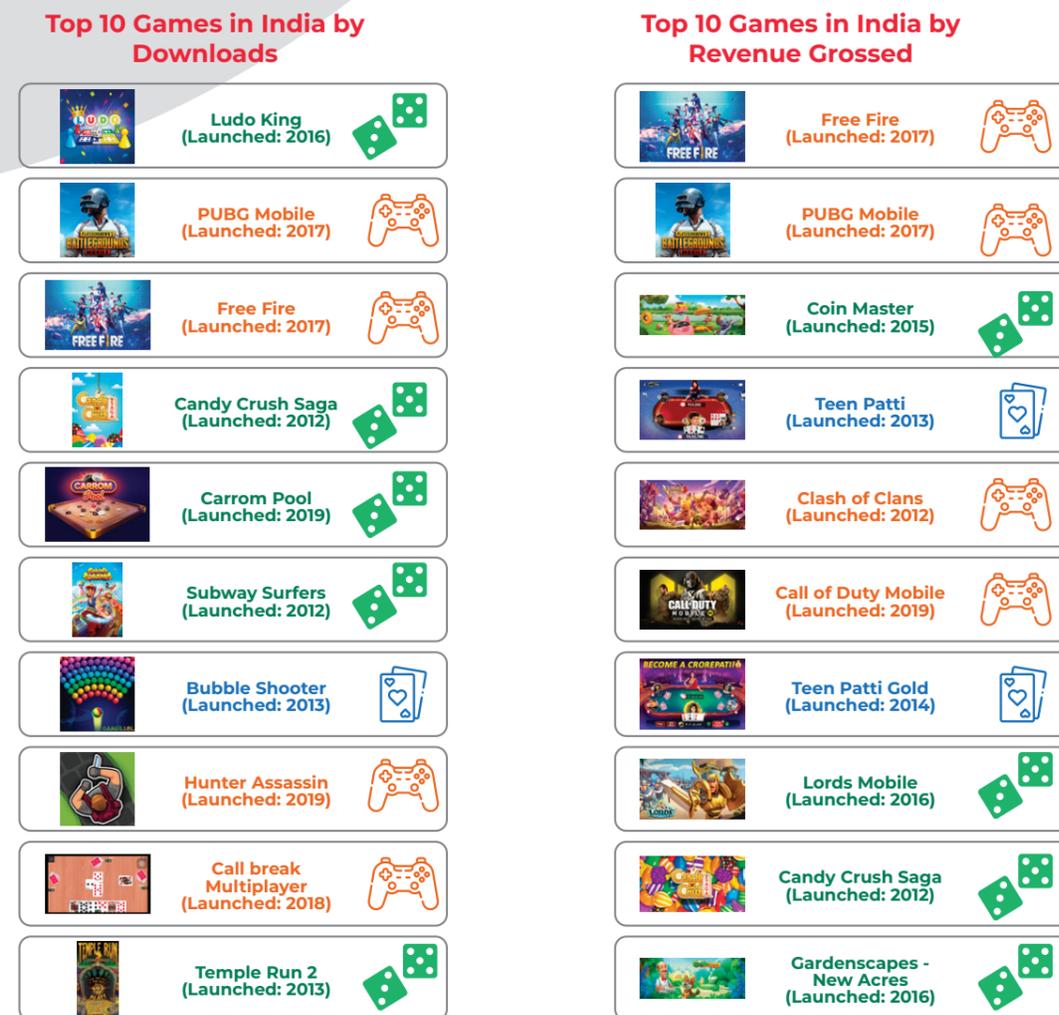
Source: RedSeer analysis, desk research

While Casual Games are popular, Hardcore Games generate the most revenue

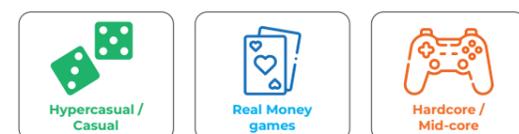
Casual games are the most popular genre in India with their 'Free to Play' design. With low engagement and high churn, monetization has been difficult for Casual Games.

Google Play Store data suggests that Hardcore Games generate more revenue than their more popular Casual Game peers.

Exhibit 13 – Comparison of top downloaded games and top grossing games. Hardcore and mid-core games manage to monetize various aspects of their game and the more engaged players tend to be more willing to pay for upgrades via in-game micro transactions. The Indian gaming landscape has kept up with global trends as top-10 gaming leaderboards contain both global and regional leaders.



Source: Google Play Store India (September 2021), RedSeer analysis



Hardcore Games require higher user engagement and have greater avenues for monetization

While PC & console are still the domain of the most resource demanding games, mobile gaming is becoming increasingly sophisticated.

Exhibit 14 – Comparison of player characteristics and development effort across genres of digital games. The different genres of games require a varying combination of development effort & digital marketing.

	Hyper-Casual/Casual	Midcore/Hardcore
Development Efforts	Low	High
Hardware Requirements	Basic	Mid-range to High-end
Shelf Life	Low	High
User Commitment	Low to Moderate	High
User Acquisition	Easy but erratic	Dedicated effort required to acquire & retain users
Relative per User Revenue	Low	Medium
Monetization	Advertisement & In-app purchases	In-app upgrades, microtransactions, Esports

Source: RedSeer analysis, desk research



Hardcore gamers represent a large market through direct and indirect spending on games, high-end smartphones, and eSports

There are four different core personas of hardcore gamers

Engagement amongst the cohorts increases we go from Newbie gamer to Professionals. Gaming enthusiast and Professionals show higher indication of early adoption behaviour and only thing

stopping them from gaming more often are major life events like getting an education, going to work, or having a family.

Exhibit 15 – Collection of Gamer Personas. This includes description of different type of gamer personas and their gaming consumption

				
	Newbie	Social Gamer	Gaming Enthusiast	Pro & Semi Pro
Description	Newbies have reserved interest in hardcore games and mostly strive for simple rules and easy to play games. Demographics ranges from children to elderly and predominantly female	Social gamers have greater knowledge and experience of playing hardcore games but don't keep up with news about gaming industry. Consists of students who pride themselves on mastering the rules of games	Serious Enthusiasts prefers to devote significant time and practice on hardcore games and play for exhilaration of completing the game. They prefer games that have depth & complexity	Professionals' gamers devote significant resources to gaming and plan to pursue gaming as career option. They adopt to latest trends and actively seek gaming related information
Gaming Expenditure Includes	Limited spending, relies on girding	Occasional spend on in-app micro transactions	Expenditure on high-end phones and accessories	Advanced electronics and multimedia hardware & software
Keeps Updated	Social gamers, Friends and family	Online, Gaming Enthusiasts	Events, Esports streams, online content	Content creators and Gaming Influencers
Uses	Budget and Mid-priced smartphones	Mid-priced and High-end smartphones	High-end & Gaming smartphones	High-end & Gaming smartphones
Mostly Plays	Word games, Arcade games	Action & adventure, Sports games	Battle Royale, Action RPG	Action & adventure, Battle Royale
Hours spent online per week				
• Overall	• 20-25 hours	• 30-35 hours	• 25-30 hours	• 30-35 hours
• Gaming	• 2-3 hours	• 5-8 hours	• 10-15 hours	• 20-25 hours
Money spent online per month				
• Overall	• INR 4K- 6K	• INR 2K-4K	• INR 3K-5K	• INR 5K- 7K
• Gaming	• INR 0-50	• INR 50 -200	• INR 200 -250	• INR 2000+

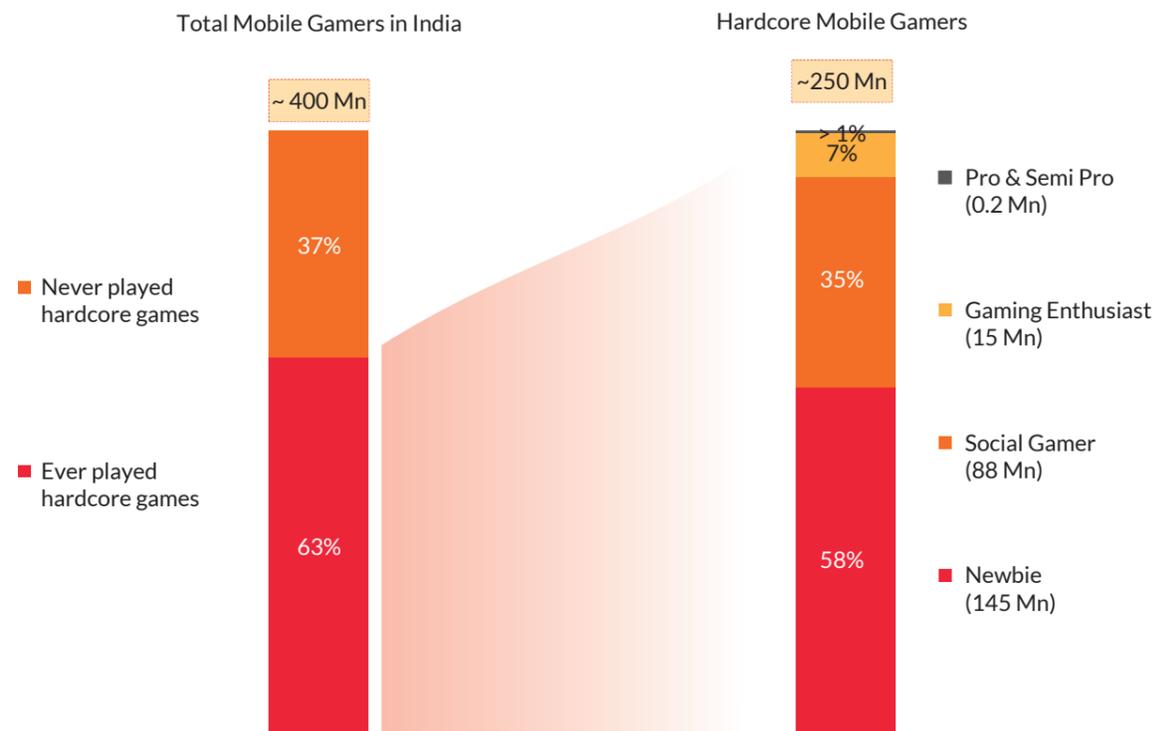
Source: RedSeer analysis, desk research; Surveys

Each persona acts as a stepping stone for the next level and drives hardcore gaming cohort

With time a significant percent of newbies' transition to social gamers, social gamers to gaming enthusiast and so on. And as we move ahead

social gamers, gaming enthusiast and professionals will make up a significant percent of hardcore gamers.

Exhibit 16 – Proportion of different type of hardcore gamers in India as of 2021. Hardcore gamers also tend to play a lot of casual games in parallel.



Source: RedSeer analysis, Survey, secondary research

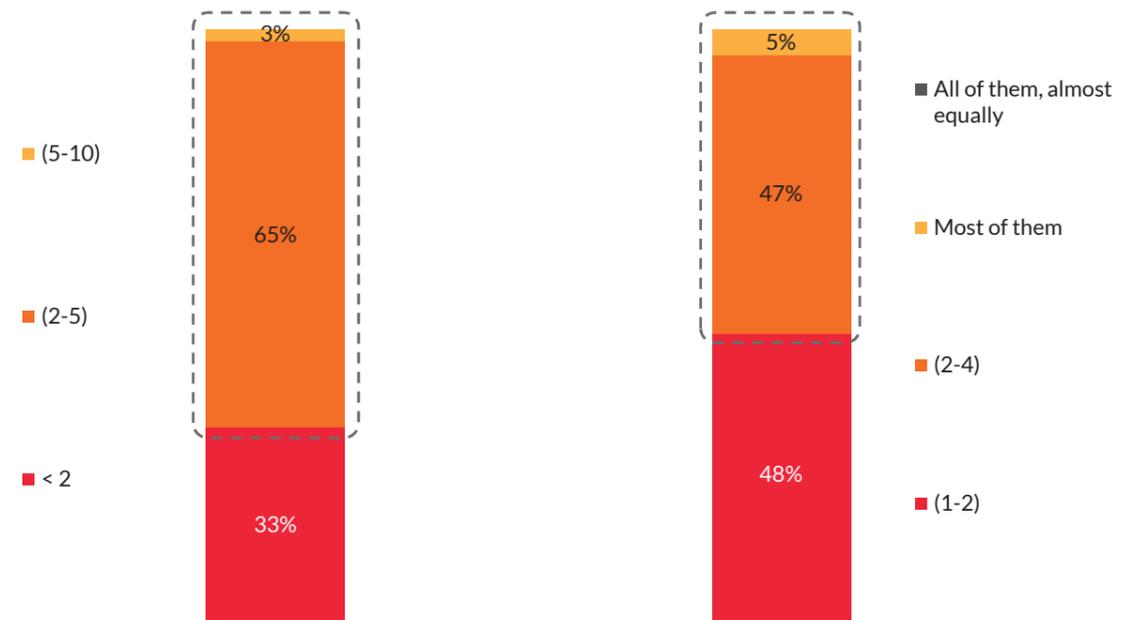
Hardcore gamers make up for an informed audience and act as a gauge for the overall health of the industry. Our survey also establishes hardcore gamers are the most engaged cohort, often spending 4X more time and money on gaming, compared to the casual gamer.



Hardcore gamers are highly engaged...

In a survey conducted over 500 hardcore gamers, ~70% of the respondents said they play 2-5 games in parallel.

Exhibit 17 – Gaming engagement among hardcore gamers. A user reports, "I have 10+ games installed on my Samsung Galaxy S20. I spend my time across PUBG and casual games. Committing to more than 2 hardcore games at a time is very demanding."

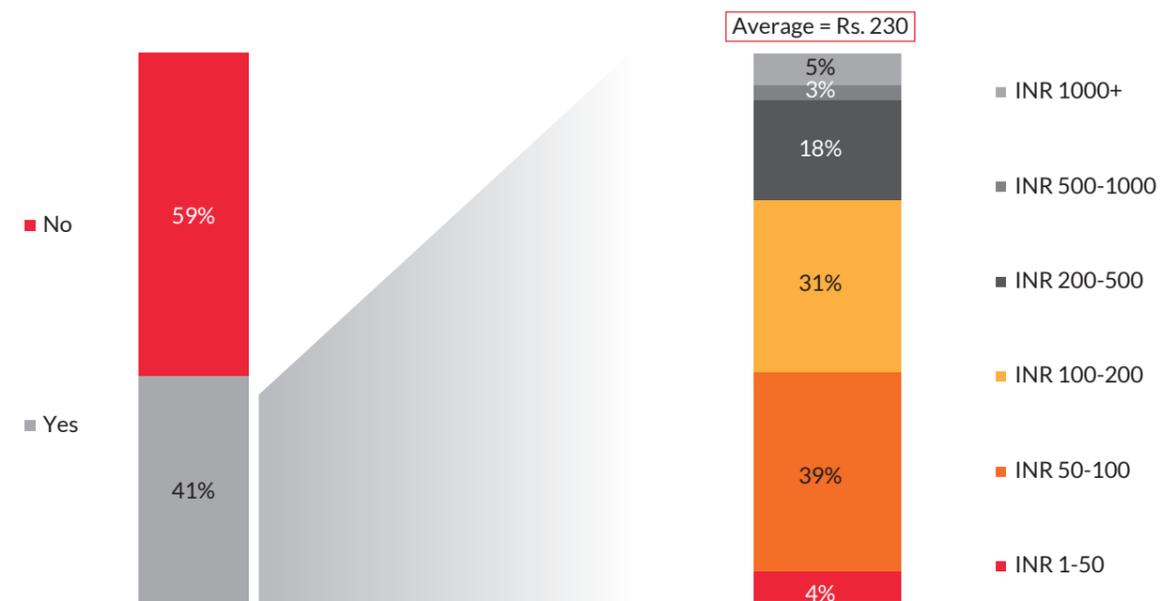


Source: RedSeer analysis on surveys conducted in September 2021

... and spend significant money on gaming

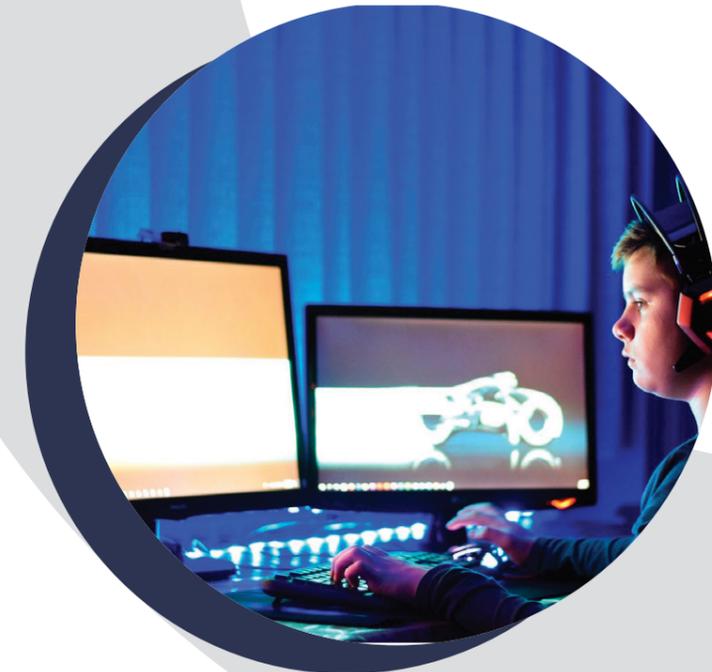
~40% of the hardcore gamers are paying for playing these games (up to 70% among metro-based gamers). ~25% of gamers started paying for gamers after the onset of pandemic.

Exhibit 18 – Money spent by hardcore gamers on gaming. Players spend money on unlocking digital content and accelerating their game progress.



Source: RedSeer analysis on surveys conducted in September 2021

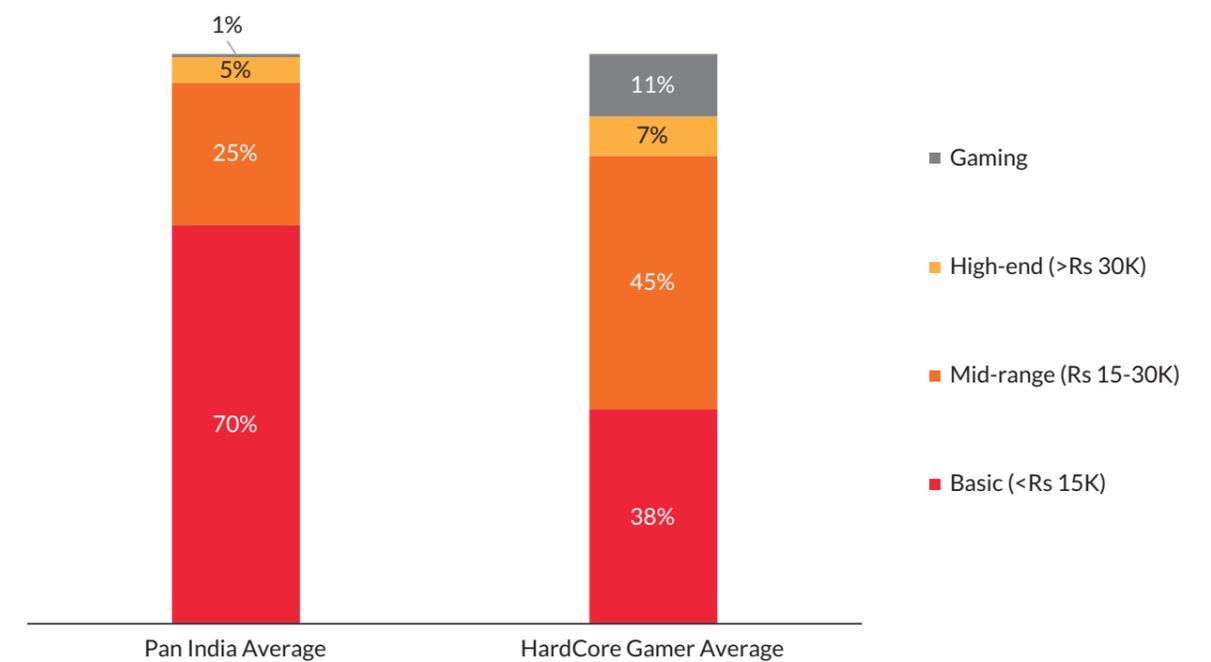
40% of the gamers start microtransactions or In-app purchase within 2 weeks of starting the game and 25% of the gamers spend at least Rs 200 on games each month. As expected, metro gamers lead on spending habits.



... and buying high-end smartphones

Penetration of higher-end phones is considerably higher amongst surveyed hardcore games in comparison to number of units of phone sold by category.

Exhibit 19 – Comparison of smartphone ownership at pan India and among hardcore gamers. Gaming enthusiasts buy higher end smartphones compared to the average Indian smartphone owner.



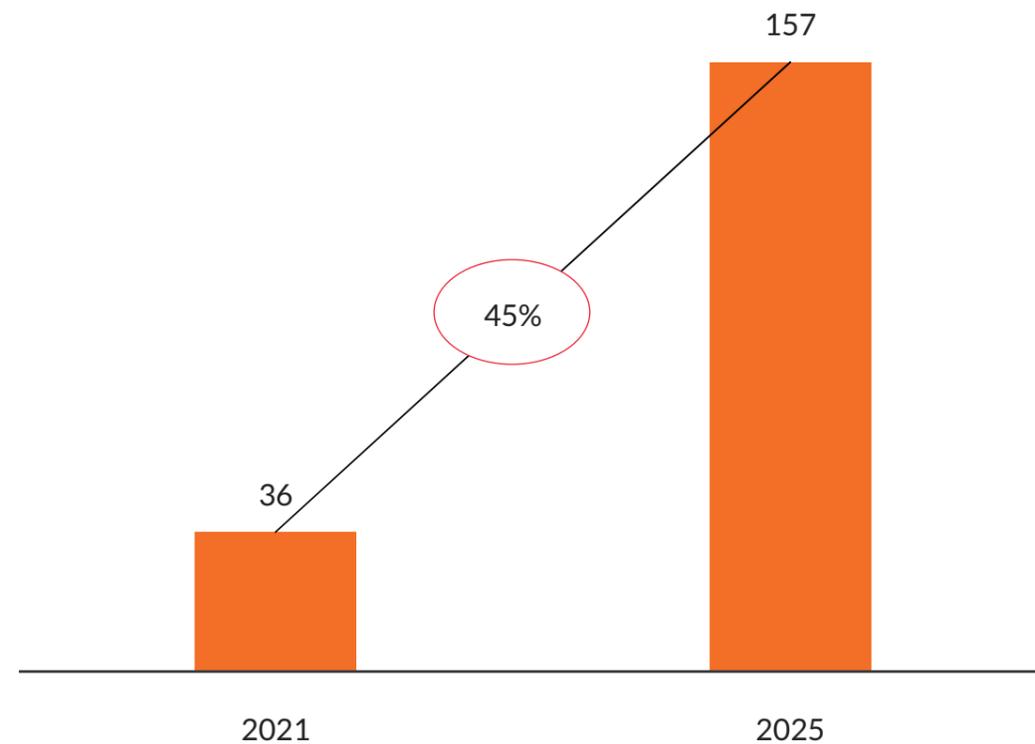
Source: RedSeer analysis on surveys conducted in September 2021, desk research

Hardcore gamers not only play games, but also spend time spectating eSports - already a \$30Mn market

Hardcore gamers build viewership for e-sports. Viewers comprise popular streamers' fanbase and amateur

gamers. Several players watch professional streams to improve their own gaming skills.

Exhibit 20 - Projected growth in India eSports from 2021 to 2025 (in millions of USD). Esports is an upcoming segment of gaming in India which revolves around professional gamers competing and streaming popular events. Channels such as Discord, Twitch and YouTube are becoming a reliable source of income for professional gamers and streamers.



Source: RedSeer analysis

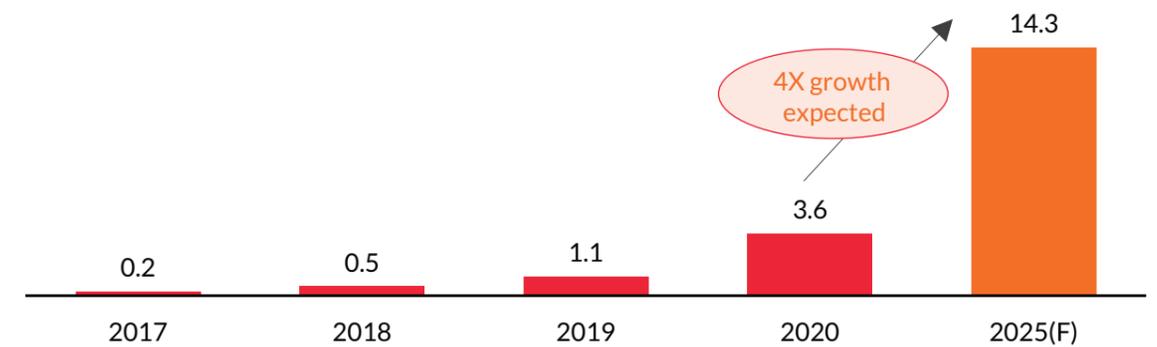


eSports is a source for prestige and a chance for gamers to earn real money

An increasing number of gamers report themselves as aspiring towards a career in professional or semi-professional gaming. Sponsored and amateur teams compete for eSports prizes in

tournaments at levels varying from college to international. eSports will be a medal event at the Asian Games 2022 (but not at the Olympics, yet).

Exhibit 21 - Growth in announced and predicted prize money from eSport tournaments in India (in millions of USD). Some gaming tournaments that have been around for more 10 years, now have prize pools that run into millions of USD.



Source: RedSeer analysis

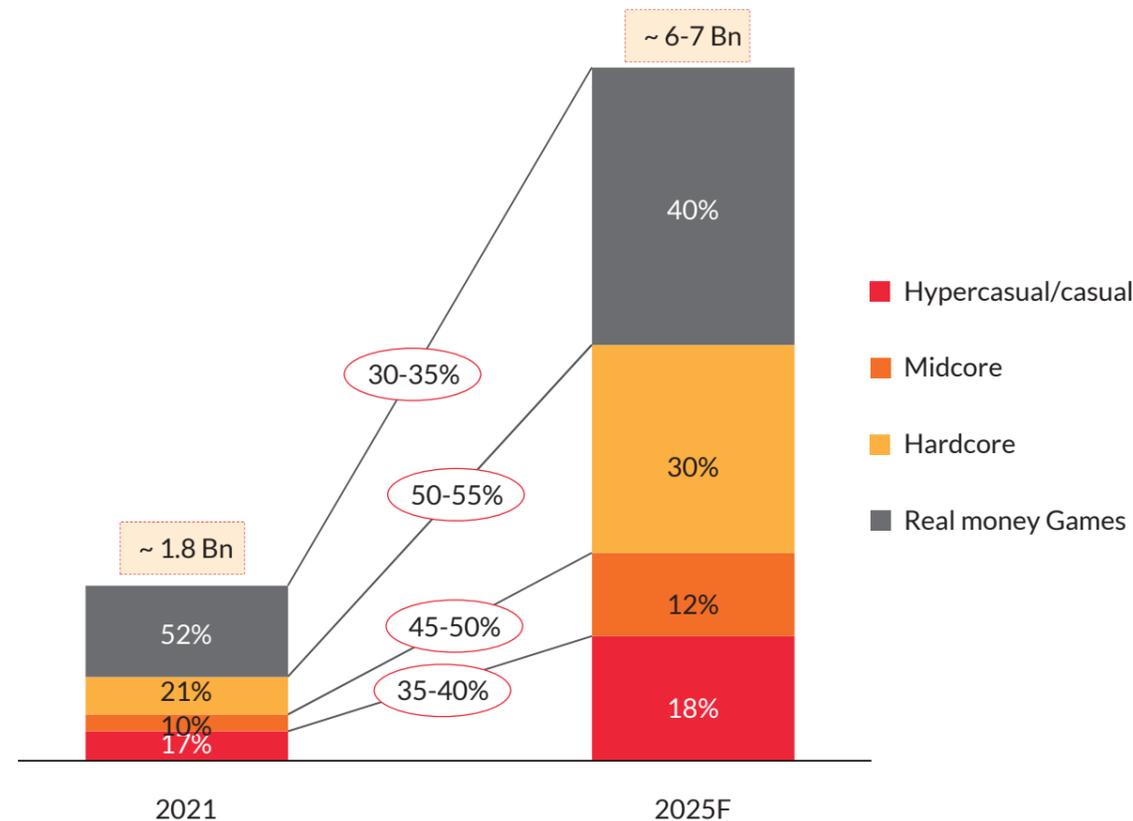
Hardcore gaming will be among the fastest growing segments in the Indian mobile gaming market

A 4X growth in hardcore gaming is expected over the next 5 years

The growth of hardcore gaming subsegment is projected to outpace all the other subsegments of Indian mobile gaming industry. Monetization per user is expected to improve further with

increase in consumer spending due to a behavioral shift caused by games like BMI (earlier PUBG), as well as increase in ad spends due to greater engagement.

Exhibit 22 - Split of India mobile gaming market by type of games (2021 to 2025 forecast). Hardcore is the second biggest subsegment after Real money games. There are multiple sub-genres catering to niche tastes. Some crafting games such as Roblox are so flexible that they allow users to develop their own games within the virtual world

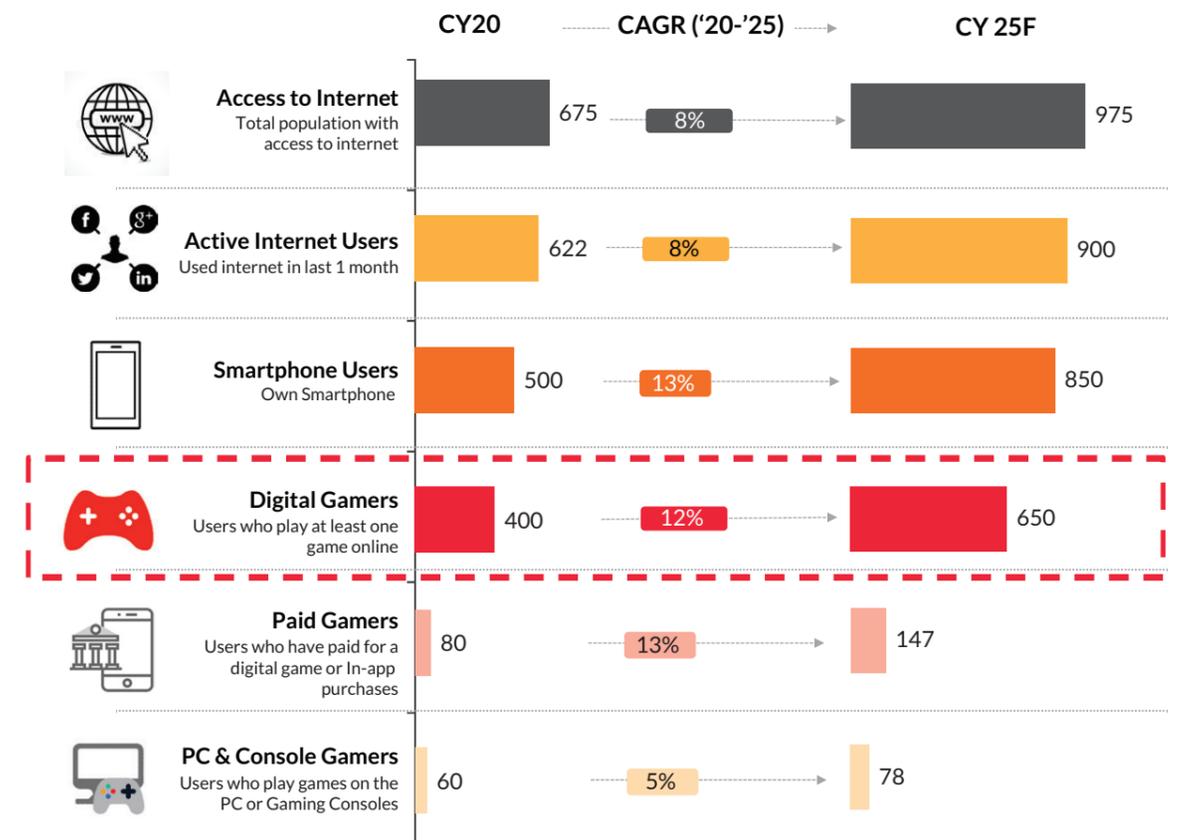


Source: RedSeer analysis, desk research

2 out of 3 internet users will be playing digital games by 2025

The Indian gaming market has seen an increase in number of gamers and as well as user engagement.

Exhibit 23 - Change in India's internet funnel (in millions of users). There were 250 Mn gamers in India in 2018 which grew to ~430 Mn in the first half of 2021. This makes India the second largest base of online gamers in the world after China.



Source: RedSeer IP

In parallel, women have been upending the male gamer stereotype. Separate reports by Google and InMobi suggest that more than 40% of the gamers are women who are spending a significant amount of time playing games.

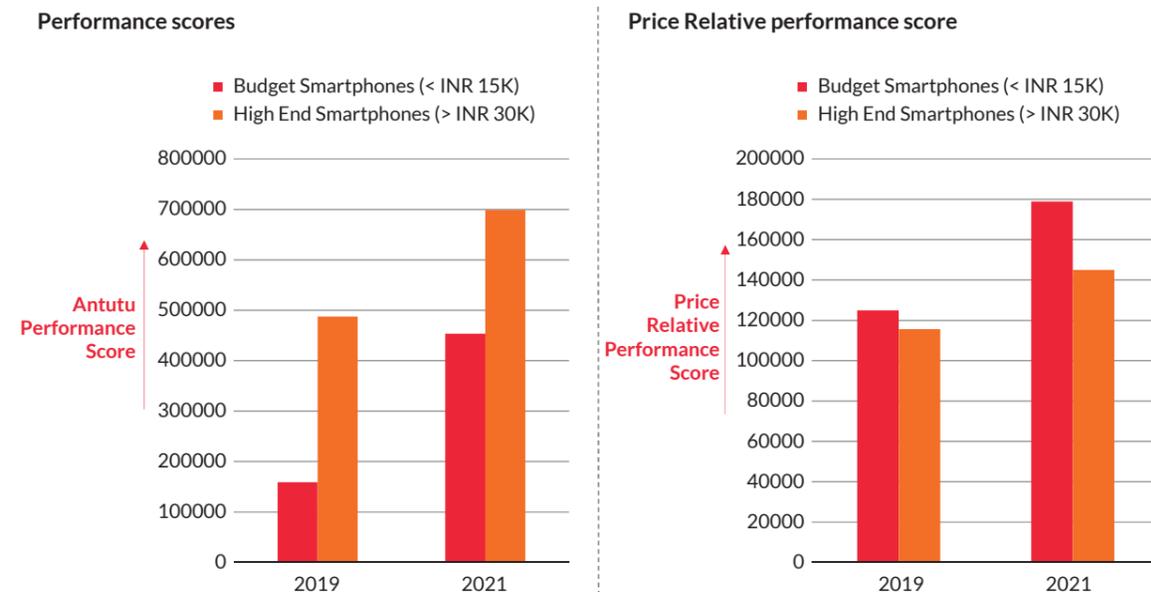


Today's budget smartphones are capable enough to run high end games, making hardcore gaming available to the masses

Smartphones have become more affordable and pack the hardware to run hardcore and midcore games. This has

opened accessibility to more immersive gaming for the masses.

Exhibit 24 – Comparison of absolute performance and price-relative performance across from 2019 to 2021. Antutu score is an industry accepted benchmark for measuring smartphone performance (a higher score is better). While the performance showed an upward trend and improvement in hardware with time, the price-relative performance growth is much faster. We have considered Antutu scores of top 5 selling phones in the category. Price relative performance is performance of the smartphones in the category relative to price offered multiplied by 1000 for comparability.



Source: RedSeer analysis, Antutu



5G is expected to transform the India gaming landscape

In the switch to 5G, the average speed will be more than double of 4G, and towers will be able to support about a million devices per square kilometer.

5G will have a tremendous impact on online gaming, where milliseconds can make a difference between life and death, victory or defeat.

Exhibit 25 – Non-exhaustive list of gaming accessories available across online platforms to supplement mobile gaming. Branded and unbranded gaming console equivalent items are available across the price spectrum. OnePlus collaborated with Qualcomm Technologies Inc. and Ericsson to showcase the power of the 5G technology using Hatch's smartphone-based games streaming platform at India Mobile Congress (IMC) in 2019.

	Streaming	<ul style="list-style-type: none"> Esports will flourish with more gamers translating into more stream viewers. Most professional players also stream their practice games on YouTube or Twitch regularly and now even amateurs run their own channels with tips and tricks.
	Latency	<ul style="list-style-type: none"> Faster the internet connection, lower the risk of lag, leading to a more consistent online experience.
	8K & VR/AR Content	<ul style="list-style-type: none"> Life-like digital experiences will become the norm enabled through high resolution content. One minute of AR can consume 33 times more data than a minute of standard definition video.
	Edge Computing and Cloud Gaming	<ul style="list-style-type: none"> Console developers will shift to cloud-based subscription services that provide greater flexibility and limited upfront costs for gamers while also providing access to regular performance upgrades over time.

Source: RedSeer analysis, desk research

Third-party manufacturers are blurring the lines between mobile and console gaming

A variety of accessories have elevated the mobile gaming experience from casual thumb-tapping to button-

mashing. Gaming accessories range from battery packs to audiophile headphones to console controllers.

Exhibit 26 – Non-exhaustive list of gaming accessories available across online platforms to supplement mobile gaming. International brands (e.g., OnePlus, Oculus, etc.) and small unbranded offer a range of console equivalent items across the price spectrum.

Example Accessory (Budget)	Example Accessory (Premium)	Description & Example Games
 LIMTAS Pro Mobile Gaming Trigger (₹399)	 OnePlus Gaming Triggers (₹1099)	<ul style="list-style-type: none"> Floating L1 / R1 triggers for FPS such as PUBG and Free fire
 Cosmic Byte C1070T Gamepad (₹1,099)	 Amkette Evo Gamepad Pro 2 (₹2,900)	<ul style="list-style-type: none"> Affordable device for Android to replicate a hand-held console experience for all sorts of games
 Homido V2 VR (₹4000)	 Oculus Quest 2 Advanced All in One VR (₹35740)	<ul style="list-style-type: none"> Headset to convert any smartphone to a functional VR experience, limited to compatible apps and games
 ULFAT AK16 (₹235)	 GAMEVICE (₹13,747)	<ul style="list-style-type: none"> Premium device focused on iPhones & iPad to replicate a hand-held console experience for all sorts of games

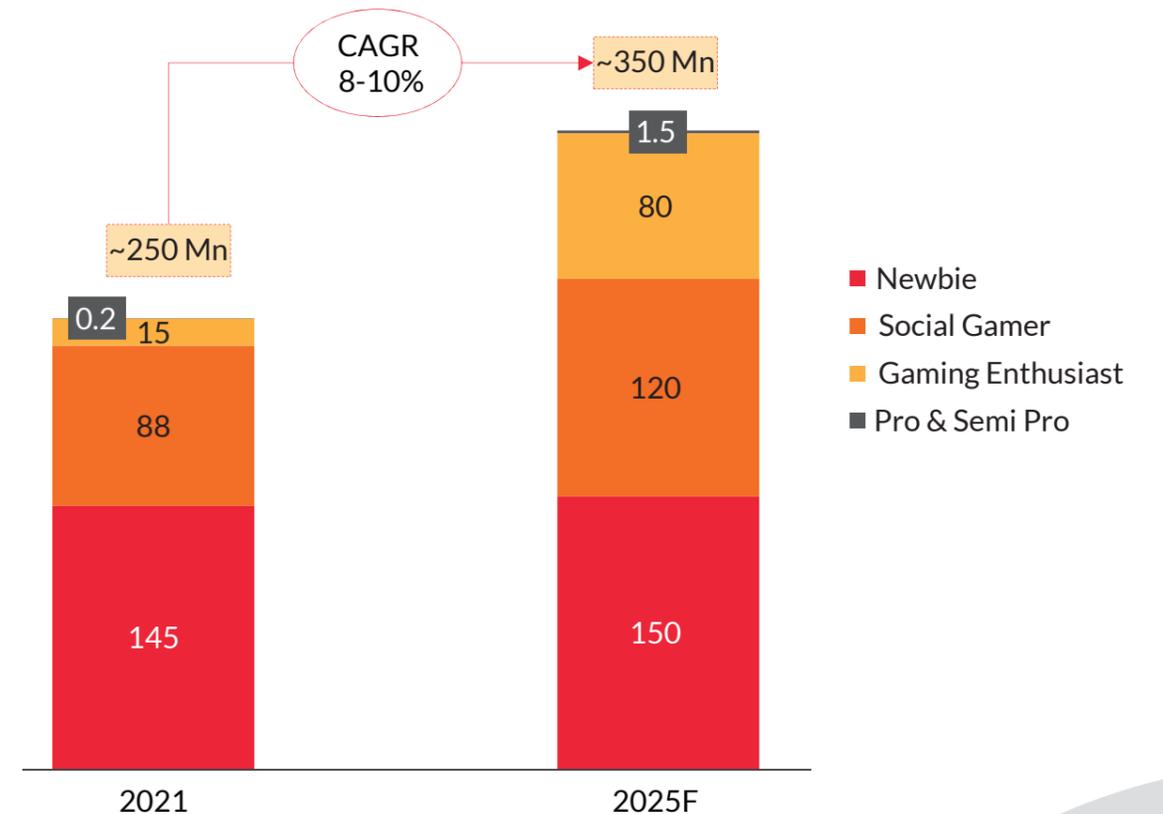
Source: RedSeer analysis, desk research

Consequently, the Hardcore Gaming in India is set to grow aggressively

Hardcore gamers are supposed to grow at the CAGR of 8-10% but the revenue growth will be driven by laddering of gamers as more and more level up, there will be increase in time and

money spent on games. Viewership of eSports will grow organically and lead to creating an ecosystem where more and more people will see professional gaming as a viable career option.

Exhibit 27 – Split of hardcore gamer personas (2021 to 2025 forecast). New gamers added in the subsequent years will be labelled as newbie gamers.



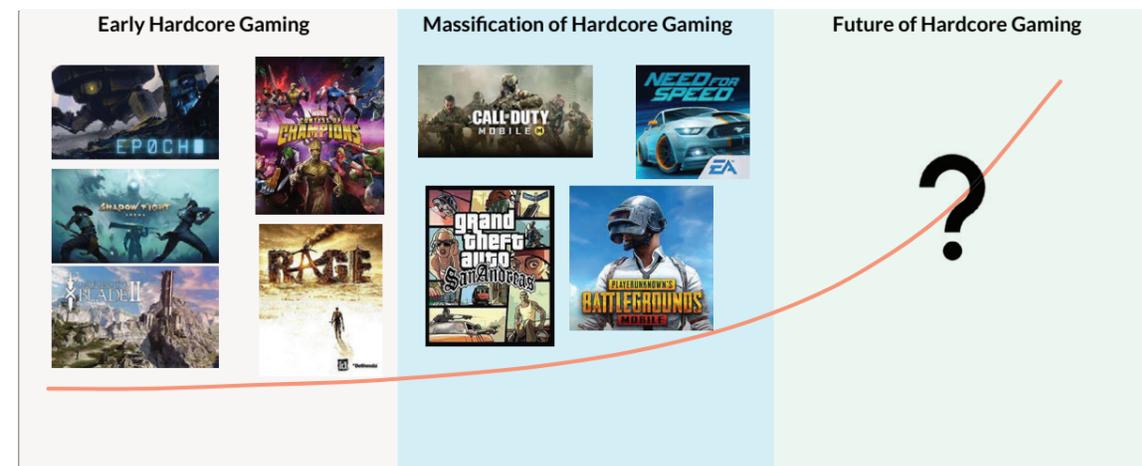
Source: RedSeer analysis, desk research; Surveys

Battle royale gaming and the massification of hardcore mobile gaming

Battle royale games have been instrumental in demonstrating that mobile gaming has the capability to catch the attention of the nation. PUBG (now known as Battle Grounds Mobile India) became a phenomenon, as other publishers launched their own battle royale titles.

Battle royale games also managed to monetize a significant part of their userbase through in-app purchases of skins, battle passes, etc. Battle royale games also boosted eSports popularity through tournaments and live streaming.

Exhibit 28 – Evolution of hardcore mobile gaming. Battleground Mobile India achieved 16 million daily active users in the first month after its relaunch in India and has >50 million downloads as per Google Play Store.



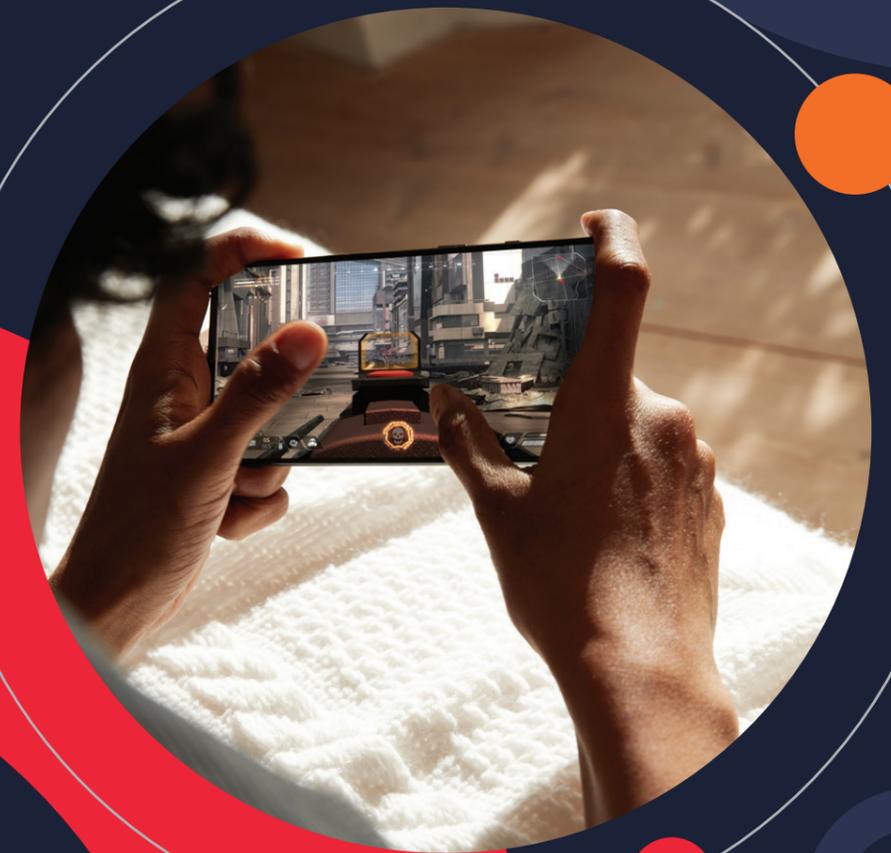
Before 2015, hardcore mobile gaming was a niche affair. Low smartphone penetration coupled with fewer available titles, kept hardcore gaming out of the masses' reach. Even the more complex games were simple shooting games or 2D side-shooters.

Source: RedSeer analysis, desk research

Price-relative performance of budget phones increased significantly, and complex games became common. Mobile ports of popular PC / console titles were launched and a few were massive hits.

As hardware and network become increasingly accessible, future technologies are being integrated into traditional gaming experience. VR toggle mode, cloud gaming, and auto-generated worlds are under development.

3 The Role of OEMs in Hardcore Gaming





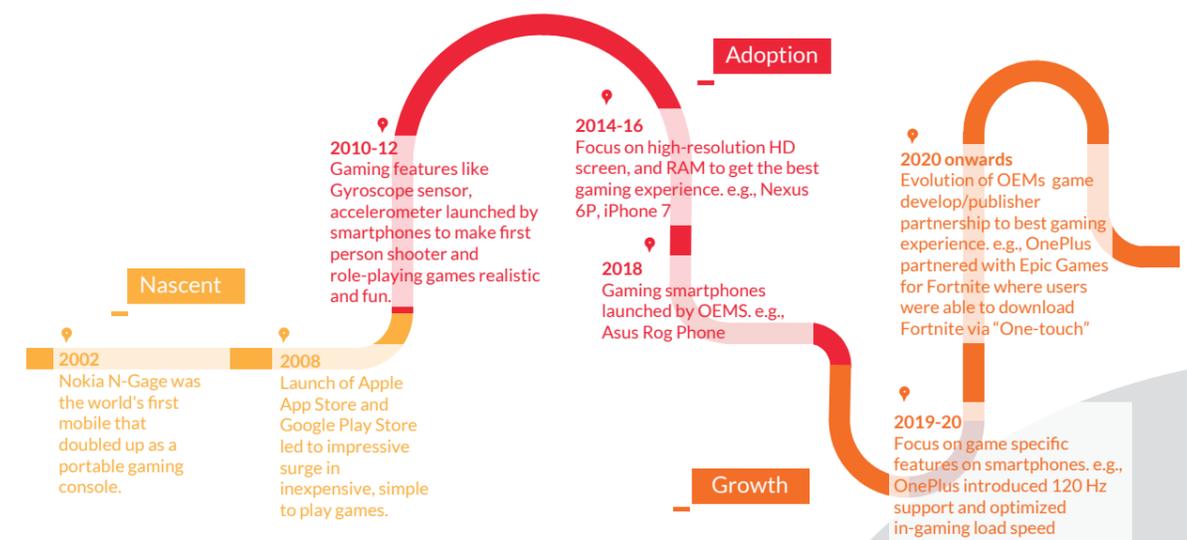
OEM innovation has made high-end gaming accessible for masses

Device manufacturers have led the growth of hardcore gaming in India

Gaming on any device requires high-end and powerful graphics processing capability in addition to the CPU performance. Most high-end smartphones already are equipped with the latest high-end Snapdragon 855 from Qualcomm, and gaming phones have put in specialized cooling systems, much like we see in high-end gaming PCs.

OEMs are continuously focusing on improving performance of phones and any performance improvement provides a major positive impact in user experience and gaming quality through improved resolution and frame rates. Coupled with an ability to work on a 5G network (in development) and high-speed Wi-Fi 6, the potential for a streaming gaming experience is compelling for OEMs.

Exhibit 29 – Evolution of gaming features in smartphones. Gaming experience is now focused extensively by OEMs and is now one of the core propositions for any smartphone (budget to high-end).



Source: RedSeer analysis, desk research

Gaming is a critical part of OEM product strategy

OEMs showcase features that keep gaming and media at the center

Every year's flagships release with the latest and best in hardware performance. The pace of change is

still fast with 3nm chips already under prototyping.

Exhibit 30 - Top features upgraded in smartphone launches every year. Annual launches are calendarized nowadays with hardware & OS upgrades announced in events live streamed by millions of viewers.

Features	Impact on Gaming Experience	Examples
 Screen – Size, Resolution & Refresh rate	<ul style="list-style-type: none"> Higher refresh rates of >60Hz make moving content look and feel smoother and snappier The higher refresh rates can be beneficial on games where every frame counts while making split-second decisions Higher resolution in smartphones helps the games look good 	<ul style="list-style-type: none"> Flagship phones are emulating the >90 Hz as a standard feature now Latest gen phones are already touching 144 Hz
 Next Gen CPUs & GPUs	<ul style="list-style-type: none"> Dedicated GPU on SOC allows for console like gaming and heavy-duty media processing Image and video processing are increasingly done on mobile OEMs are now developing their own SOC's to work with their ecosystem 	<ul style="list-style-type: none"> Current generation processors are 5nm with limited global manufacturing capacities A few OEMs are working towards with their own SOC's
 Smartphone Cooling Technology	<ul style="list-style-type: none"> Smartphones use cooling technologies like Water-Carbon cooling and Liquid cooling to regulate internal temperature during gaming 	<ul style="list-style-type: none"> Only a few gaming phones offer cooling features such as OnePlus 9R 5G with VC cooling system
 Connectivity	<ul style="list-style-type: none"> Next generation low latency networks such as connections as 5G, Wi-Fi 6 and Bluetooth 5.2 will enable lag free gaming 	<ul style="list-style-type: none"> Only flagship phones tend to sport next generation connectivity options due to limited network readiness

Source: RedSeer analysis, desk research

Gaming is deeply integrated into mobile OS ecosystems

OEMs develop add their own flavor of Android over stock versions. Every release has features dedicated to

enhancing the gaming experience. Immersive gaming mode is a standard feature across OEMs.

Exhibit 31 – Non-exhaustive list of OEM-added gaming features integrated within the OS. After market mods enable advanced features such as hardware overclocking.

OEM	OS	Gaming Features at OS
 Apple	iOS	<ul style="list-style-type: none"> Apple Arcade Unified on-screen gamepad
 OnePlus	Oxygen OS	<ul style="list-style-type: none"> OnePlus Games Pro Gaming Mode
 Oppo	Color OS	<ul style="list-style-type: none"> Game Space Gaming Assistant Hyper Boost
 Samsung	One UI	<ul style="list-style-type: none"> Game Launcher & Instant Games Gaming Booster Mode Discord Integration Game Plugins
 Xiaomi	MIUI	<ul style="list-style-type: none"> Gaming on Floating Windows Game Turbo

Source: RedSeer analysis, desk research

OEMs have responded to the growing demand for gaming with exclusive launches

OEMs are launching gaming specific phones, either with next gen hardware

or in collaboration with other brands.

Exhibit 32 – Non-exhaustive list of exclusive gaming phones in recent years. In addition, OEMs often release co-branded limited luxury editions to cater to the enthusiasts.

	
<p>Razer Phone 2 (2018)</p> <p>Launched with a 120Hz screen and Dolby speakers; the second-generation phone catered to a niche, but strong fan-following</p>	<p>OnePlus 9R 5G (2021)</p> <p>Featured 6.55-inch AMOLED 120Hz with 2400 x 1080 pixels display with Snapdragon 870 5G chipset; OnePlus has introduced gaming features right since OnePlus 7 releases, including gaming-specific accessories</p>
	
<p>Asus ROG Phone 5 (2021)</p> <p>Flagship gaming device with features such as air triggers and high battery capacity</p>	<p>Poco F3 GT (2021)</p> <p>Affordable gaming device with gaming specific features such as Maglev triggers and RGB lighting</p>

Source: RedSeer analysis, desk research



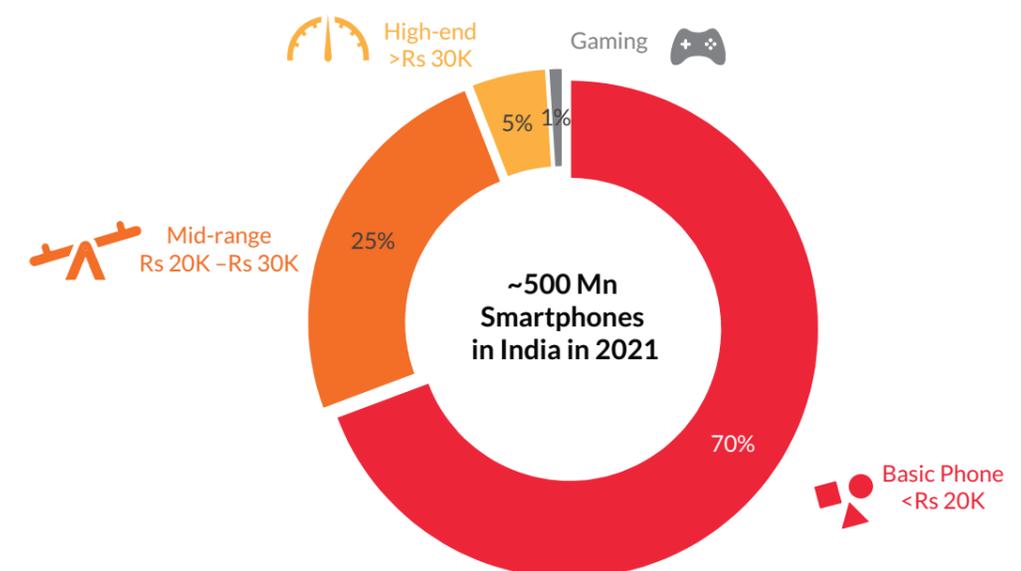
Indian hardcore gamers want better featured phones to play their games

India is a value-first smartphone market

Recognizing the bottom-heavy nature of the Indian market, several games offer

a LITE version of their games which can run on lower spec phones.

Exhibit 33 – Smartphone split by price buckets. More than 80% of the smartphones sold in India are less Rs 20,000. Consequently, the flagship phones cater to the top of the market.



Source: RedSeer analysis, desk research

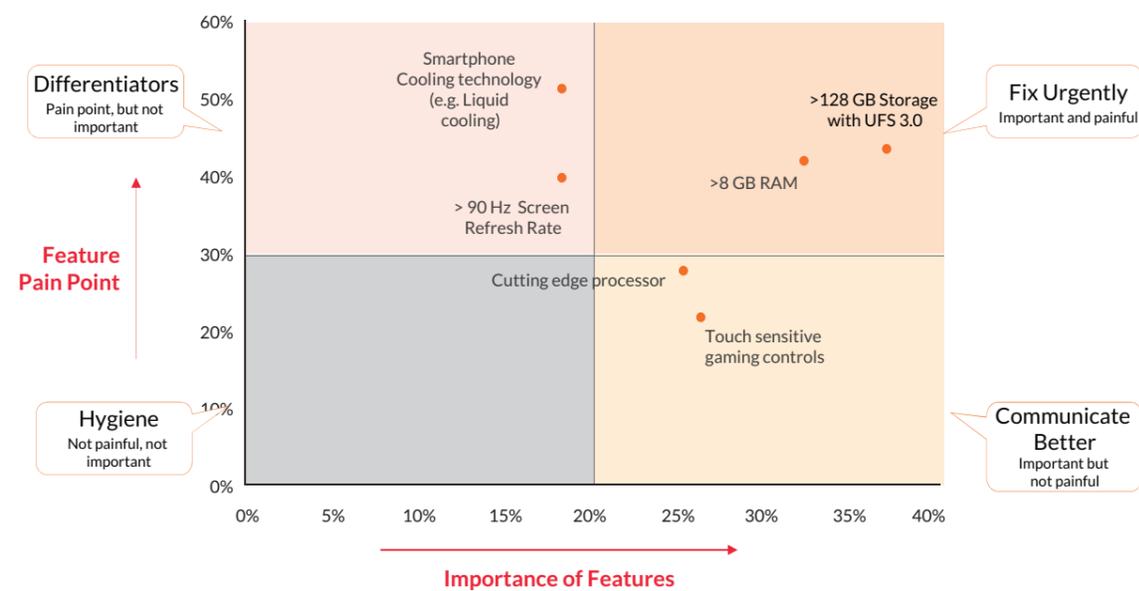


Hardcore gamers are demanding next generation features from their smartphones

Hardcore gamers tend to be aware readers who have a keen interest in hardware and keep a close ear to the gaming community. Consequently,

they are also more discerning about the features they demand from their smartphones.

Exhibit 34 – Comparison of gaming related pain points and priority features among hardcore gamers. Features such as fast refresh screens and smartphone cooling are differentiating features. “Gaming smartphones need to deliver on superior technical aspects rather than focus on gimmicky lights and speakers,” as per a hardcore gamer.



Source: RedSeer analysis on surveys conducted in September 2021, desk research

4 Gearing Up for the Next Decade of Growth in Hardcore Gaming





A need for policy and self-regulation – impact of gaming on education, employment, and economy

The gaming industry is witnessing a paradigm shift with the penetration of internet across all forms of media consumption.

The next set of hardcore gamers will be first-time gamers. They will have limited exposure to the concept of online security and privacy. The impact of hardcore gaming has received its share of positive and negative press. Creating a positive experience for this new generation of gamers is critical in guiding the future of hardcore gaming. The next phase of growth in gaming will be driven by identifying challenges faced by various stakeholders and developing solutions for current and future expected scenarios.

Digital gaming has the potential to create value beyond leisure and entertainment. The gaming ecosystem has already attracted more than a billion dollars of capital infusion including FDI. The digital gaming industry is expected to add 60-80 thousand direct high-quality jobs and generate 3 times as many indirect jobs. This will in turn have a cyclical effect on digital consumption.

This section summarizes present and future initiatives that may regulate this industry based on the outcomes of this study.



Education is being gamified to enhance learning experience

Application of gamification concept in education has potential to drive engagement levels. Unlike traditional classroom learning, in gamified learning, students get instant feedback, they can identify their mistakes, explore, and discover new pieces of information, and strategies to progress towards their goals. Students are not only encouraged to learn but, by applying their knowledge in a real-time, interactive set-up, they are able to retain it as well.

This has already been part of agenda for Government's Education initiatives:

- Gamified Assessment Solution:** The Department of School Education, Government of Chhattisgarh collaborated with NIC to create many gamified assessment solutions. For this, a set of 1,00,000 question bank was created. Each question was tagged to NCERT defined learning outcomes and then they were rendered into small games.
- Knowledge Hub for Electronic Learning (KHEL):** Madhya Pradesh government started this game-based application for classes 1-3 to improve learning outcomes in Math and Language in accordance with the school curriculum and enhance the students' ability in aspects such as observation, critical thinking, and communication
- Gamification in National Education Policy (2020):** A special call-out was created for the gaming industry for gamifying education. Content creation for coursework, learning games & simulations, AR/VR. The policy articulated a clear public system for ratings by users on effectiveness and quality.

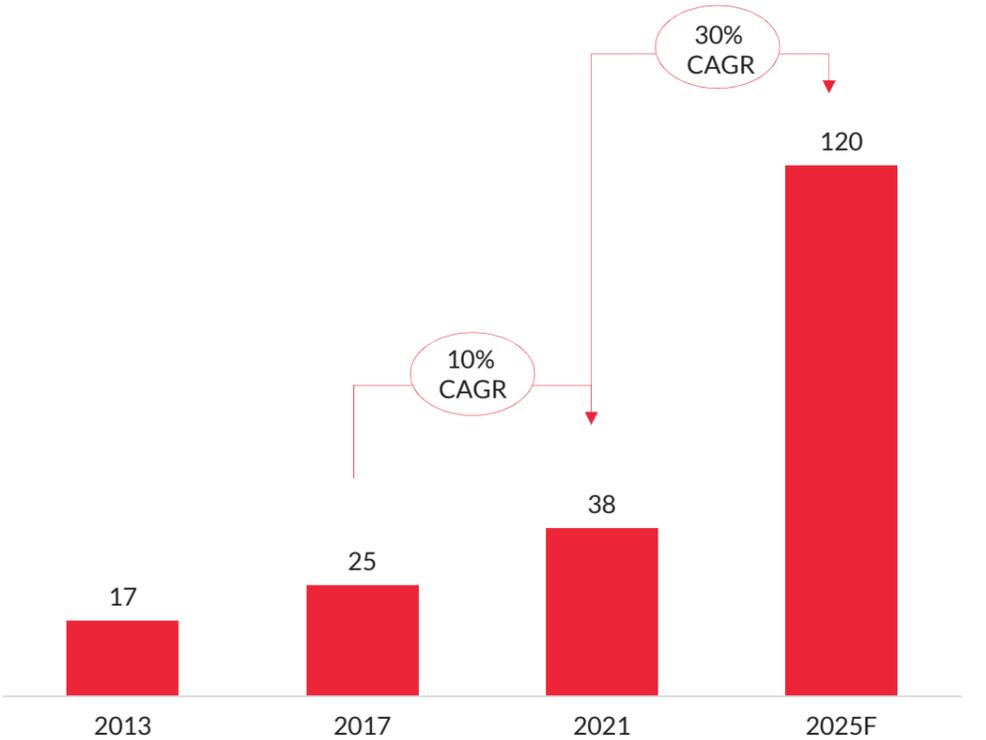
Gaming is expected to generate 80,000 jobs by 2025

India has shown a steep rise in the number of game developers required. Besides 275 game development companies and over 15,000 game developers, there are also 5,468 Indian game publishers present on Google

Play Store offering 19,518 games across categories. Currently gaming offers around 40,000 direct jobs, with an additional 80,000 expected to be created in the next 4 years.



Exhibit 35 - Number of employees (thousands) in Indian gaming industry. The developed IT industry provides a ready talent pool for both domestic and international businesses operating in India.



Source: RedSeer analysis

As per job search website Indeed, searches and posting for the gaming industry grew by 13-15% between 2020 & 2021. The number of job postings was double in comparison to job searches pointing towards a high appetite in the gaming industry.

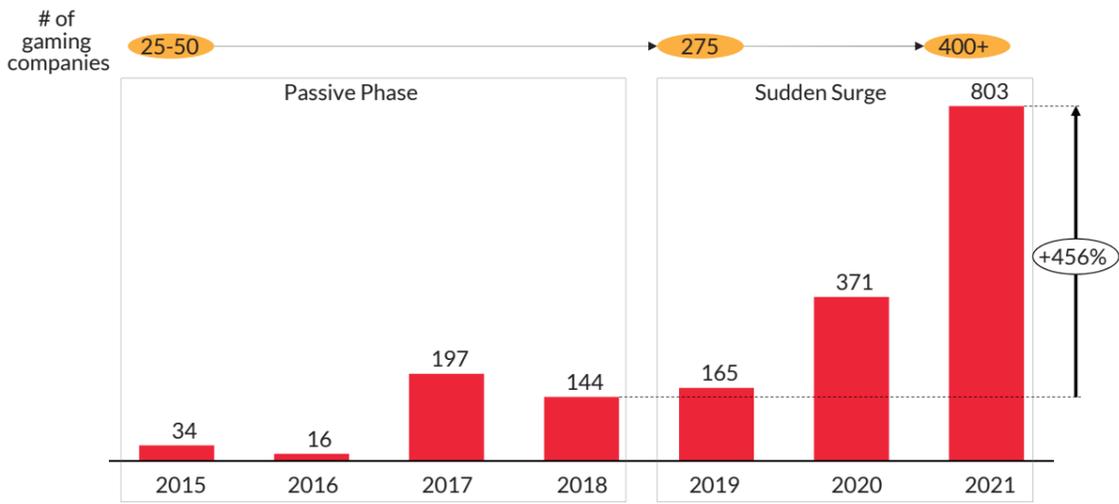
Recognizing this demand for gaming related careers, higher education institutions have launched formal degrees in gaming. Some of the recognized degrees include B. Tech in Computer Science and Game Development. MSc in Multimedia and Animation, etc.

VC/PE Funds have recognized the large gaming opportunity in India, as investments have grown 5X in the past 4 years

The Indian gaming sector has attracted nearly USD 1 Bn in investment in the last 6 months. The number of Indian gaming

companies has grown from 25 in 2010 to more than 400 in 2021.

Exhibit 36 - Investments in Indian digital gaming (in millions of USD).



Source: RedSeer analysis

Industry Recommendations – Developing for Bharat

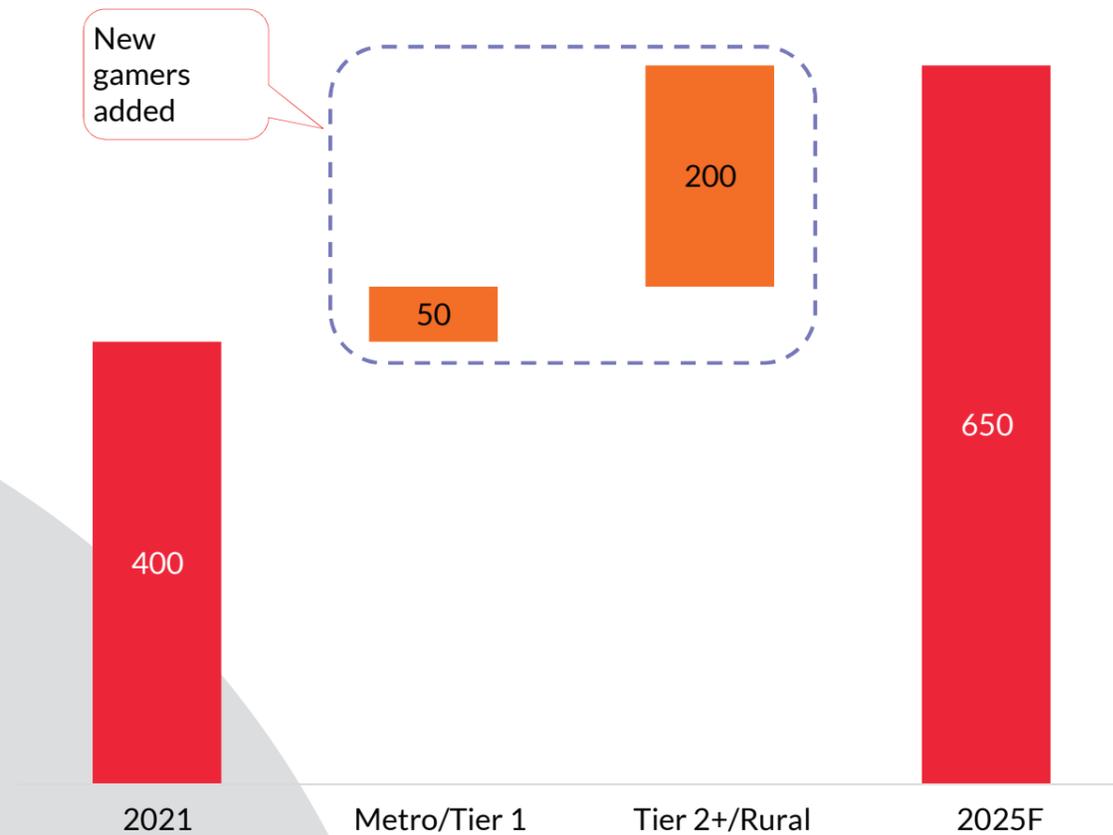
Bharat will drive the next phase of growth

The recent spurt in internet growth has been driven by rural India (13% rural vs 4% urban growth in digital penetration). This trend is likely to continue.

Our existing research suggests that this new demographic prefers vernacular

content and has limited exposure to western media & culture. This has already resulted in a wave of India-first games. As more users start playing hardcore games, this trend is expected to continue.

Exhibit 37 – Forecast of growth in number of gamers from 2021 to 2025. Users in smaller towns now have access to similar information as users in larger cities. Consequently, viral trends (including games) spread fast. However, user preferences vary significantly across regions in India.



Source: RedSeer analysis

Indian developers are creating games for Indian users with indigenous themes

Indian developers are now creating digital versions of the games that Indian players have enjoyed through the centuries.

Exhibit 38 – Non-exhaustive list of games being developed for Indian audiences. Developers are innovating on themes & content. Indian history/mythology-based themes are gaining traction.

Games for Bharat Examples

<p>Real Money Gaming</p>	<ul style="list-style-type: none"> • Teen Patti: Multiple versions of the game have acquired 100M+ downloads, often topping highest grossing charts on app stores • Dream 11/ MPL: Fantasy Sports that coincide with major events in the Indian Sports calendar, also offers an international flavor
<p>Childhood Games</p>	<ul style="list-style-type: none"> • Ludo/Snakes & Ladders: Digital version of board games gained popularity during lockdown with millions of simultaneous players • Marbles (Kancha): A popular game in rural North India played with marbles. Many variants available on online stores (e.g., Kanche and Motu Patlu Kanche Game both have 1M+ downloads on Google Play Store) • Kite Flying: Kite flying is an integral part of Indian culture during festivals (such as Independence Day and Makar Sakaranti) Variants such as Kite flying game by Maiworm Digital Strategy has 50M+ downloads on Google Play Store as of August 2021
<p>Regional Games</p>	<ul style="list-style-type: none"> • Jhandi Munda: A street game played in Northeastern India has a mobile version on Google Play Store that has 1M+ downloads as of August 2021 • Jallikattu. A multiplayer version of the Tamil traditional race launched in 2018
<p>Topical Games</p>	<ul style="list-style-type: none"> • Corona Fighters. A government sponsored game focused on helping people learn Covid appropriate behavior • Kaun Banega Pradhan Mantri: Launched to coincide with the 2019 general elections in India, it features politicians collecting votes on the streets

Source: RedSeer analysis

We estimate that the monetizable Indian vernacular userbase will cross 400 Mn (by 2023). Already Hindi stream of e-sports tournaments is quite popular. One BMI (earlier PUBG) tournament's Hindi stream peaked at 449K viewers, highest ever in India (PMWL 2020)



Future games will be elaborate, visually attractive, and narrative driven hardcore games

Outside of global successes, each country has its own successful hardcore games that cater exclusively to regional tastes.

A similar story seems to be playing out in India too. Recent Indian games are finding thematic whitespaces that will resonate culturally with Indians. They showcase choice-driven stories, immersive art, and rewarding progression systems.

Indian government also recently appealed for games based on “Indian Culture and Folk Tales”.

Few names are already coming up in the segment:

- Studio Sirah is developing **Kurukshetra: Ascension** inspired by two of India’s greatest epics — the Mahabharata and the Ramayana and has started pre-registration
- **Raji: An Ancient Epic**, based on Indian folklore was developed by the Pune-based studio Nodding Heads Games and launched last year
- **Indian Airforce: A Cut Above**, is a game that lets the user play the roles of an IAF officer and has 1M+ downloads on Play Store

Monetization models are still emerging, with no clear success.

Government & Academia Recommendations – Creating A Fertile Ground for Gaming Growth

The government’s push for digital India is creating favorable conditions for gaming growth

The Indian Government is probably doing the most exciting groundwork in the world to create an infrastructure for a fertile digital ecosystem. Several policies are expected to drive the gaming industry.

Exhibit 39 –Non-exhaustive list of Government initiatives to help develop digital infrastructure. Impact of these initiatives on mobile gaming industry

Policy	Impact on Gaming
 Digital India Flagship program of the Government of India with a vision of transforming India into a digitally empowered society and knowledge economy	Better governance as a driver to incentivize citizens to come online
 Digital Village A key program to create model villages where every aspect of life is possible online	Bigger talent pool of key skills such as handset repair and CAD
 Digital Payments Infrastructure Emphasis on creating mass, affordable digital payments which has led to private-sector innovation	Frictionless digital payments infrastructure for micro-transactions and in-app purchases transactions
 Bharat Stack A set of APIs that helps businesses, startups, and developers to utilize a unique digital Infrastructure	Better infrastructure for developers
 Bharat Broadband network A special purpose vehicle to create the National Optical Fiber Network (NOFN) in India	High speed connectivity in rural India enabling access to a new demographic
 Make in India Initiative Focused on facilitating the inflow of new technology and capital, while creating millions of jobs and putting India on the global manufacturing map	Increased employment opportunity across the value chain leading to higher consumption potential
 Production Linked Incentive Targeted at boosting domestic manufacturing and attracting large investments in mobile phone manufacturing and specified electronic components, including Assembly, Testing, Marking and Packaging (ATMP) units	Cheaper hardware at both end-user (device access) & enterprise levels (infrastructure)
 Digital Reach Program Ubiquitous coverage of broad-based, affordable, high-speed internet connectivity through a combination of fiber to the home (FTTH) and 5G wireless technology	Fiber to the home (FTTH) and 5G will hasten access to reliable, high-speed internet enabling low latency gaming
 Digital Literacy To make one person e-literate in every household in the country, two schemes were launched viz. NDLM and DISHA, wherein a total of 53.7 lakhs individuals were trained & certified in Digital Literacy in the country	Unlocking a monetizable, digitally literate user base among rural India at the bottom of the user funnel

Source: RedSeer analysis, desk research



The initiative to support gaming has been taken at all levels, by the government and the gaming industry

Invest India (the National Investment Promotion & Facilitation Agency of the Government of India) has called out gaming as a sector of interest. Prime Minister Narendra Modi has spoken out in support of the national games

industry, "India should tap the huge potential in this area and lead the international digital gaming sector by developing games that are inspired from Indian culture and folk tales."

Exhibit 40 -Non-exhaustive list of government initiatives and industry led programs to promote gaming and ancillary industries. These initiatives will support gaming industry by developing industry leaders and highly qualified personnel through trainings and improve quality of gaming industry in India.

Classification	Initiative/Program	Description
Govt. of India initiative in administered by STPI	STPI Octane	Inter-networked Centers of Excellence focused at promoting next generation internet startups in gaming, visual effects and IOT in the Northeast, with a gaming COE in Aizawl
Govt. of India initiative in partnership with Govt. of Telangana	IMAGE STPI Hyderabad	STPI has setup a Center of Excellence (COE) in Hyderabad to provide resources such as incubation, mentoring, technology support, and funding for Gaming, Animation, VFX, Computer Vision and AI start-ups

Classification	Initiative/Program	Description
Govt. of India program in partnership with Govt. of Odisha	STPI SCOUT 21	COE Program by STPI (Software Technology Parks in India) to bring transformation through disruptive technologies and aims to improve to software & hardware solutions for ESDM sector
Govt. of India initiative	National Centre of Excellence for Animation, Visual Effects, Gaming and Comics (2021) (to be launched)	A center of excellence has been announced in partnership with IIT Bombay to create Indian leadership in Animation, Visual Effects, Gaming and Comics. It aims to help companies, especially start-ups, access global markets & technologies and foster better talent.
Non-Profit Association supported by Govt. of Telangana	Telangana VFX Animation and Gaming Association	Telangana Govt. wants to establish Telangana as a creative industry hub with the vision to promote education and entertainment through indigenous digital content
Govt. of Karnataka initiative	Karnataka Animation, Visual Effects, Gaming and Comics (AVGC) Policy 2017-2022	Second iteration of a 5 year program by Karnataka State Government to create a pool of world class designers, illustrators, animators, CG artists, technical directors, and game developers
In partnership with respective State Govt.	State Level Hackathons	State Governments are organizing hackathons to promote coding culture. Few of the examples are: <ol style="list-style-type: none"> HT Codeathon (New Delhi Govt.) Code from Home Online Hackathon (Rajasthan Govt.)
In partnership with respective State Govt.	STEM Programs	State Governments are focusing on STEM lead curriculum to improve technical skills (coding, digital fluency) among girls in schools. Few of the programs are: <ol style="list-style-type: none"> IBM STEM for Girls (Bihar Govt. & Odisha Govt.) Samagra Shiksha (Gujarat Govt.)
Non-Profit Industry Body	Electronic Sports Federation of India (ESFI)	ESFI is a Non-Profit Organization which represents Esports in India and is building esports ecosystem in India by nurturing talents and developing and promoting all areas from establishing academy to providing the best education in the fields of computer education and development of the creative & social faculties
Industry Body	E-sports Development Association of India (EDAI)	EDAI is working to develop esports ecosystem in India and wants to build a framework for esports to be a multi-disciplinary skill in the NEP 2020 (National Education Policy of 2020)

Source: RedSeer analysis, desk research

Hardcore gaming needs greater policy clarity on a few initiatives that also impact the industry at large

While governments at all levels are for gaming, regulatory uncertainty will change the landscape of gaming companies are currently operating under.

- **Taxation.** There is a lack of clear policy regarding taxation of earnings through gaming. Revenue streams can vary from live streaming platforms to online skill gaming to eSports prize money.
- **Personal Data Protection Bill.** The draft bill in its present form will require gaming companies to change the way they manage user data. Games providers may have to implement challenging software modifications when developing procedures to ensure that players can exercise their data protection rights. Among other requirements,

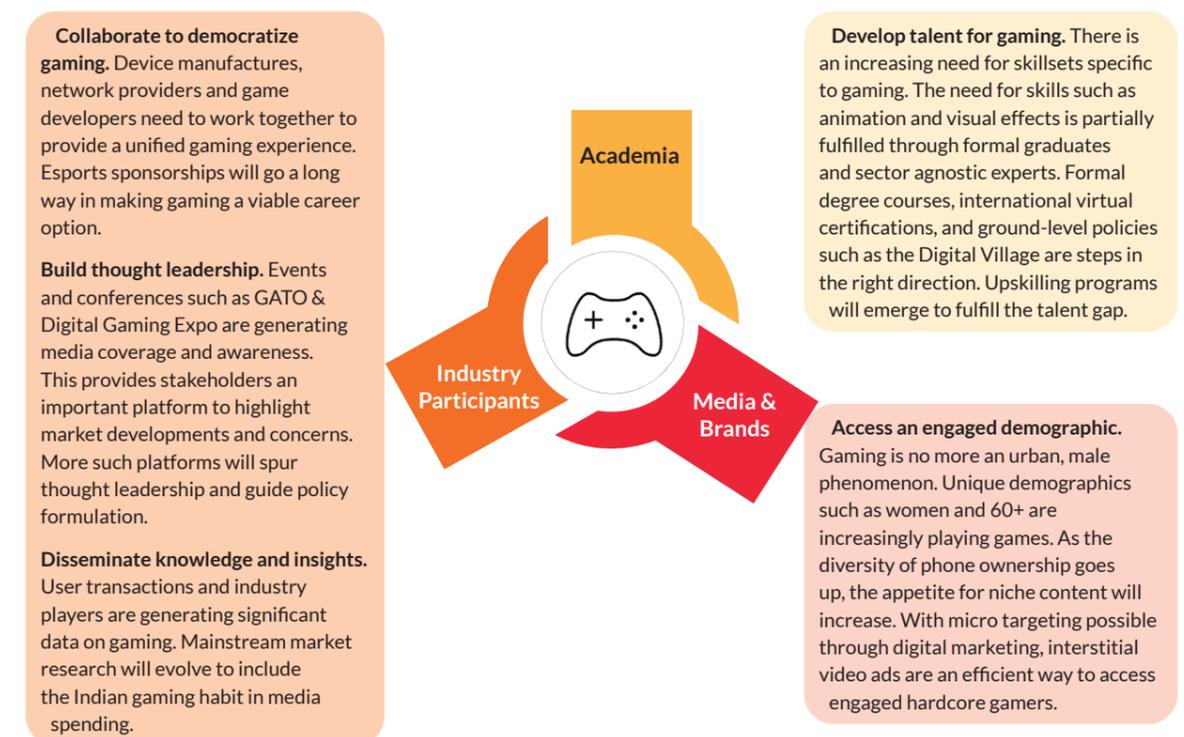
data controllers must provide players access to information on data processing, categories of stored information, and the purposes and duration of storage. Game providers will have to think of ways to cut the player's character out of the game without impairing the other users' playing pleasure. Localization rules will change the way international games access information on Indian players and children.

- **Non-Personal Data Framework.** Non-Personal data is anonymized public, community, and private data. Compliance with the NPD framework will require significant effort as even gaming companies will be defined as data companies. Given the specific nature of gaming, this data will be of limited use to the government.



Stakeholders across the board will need to come together for hardcore gaming to succeed in India

Exhibit 41 –Non-exhaustive list of recommendations for industry stakeholders.



Source: RedSeer analysis

Game on



OnePlus has always strived to perfect and deliver devices that couple future-ready hardware with clean and optimized software. And with India emerging as one of the top five mobile gaming markets in the world, gaming has been a central tenet of innovation within OnePlus, with product development and several brand initiatives looking to push the limits of mobile gaming every year.

Esports has become one of the company's core genres and is poised to become better and stronger in the coming years. With greater accessibility and affordability of technologies such as Augmented Reality, Virtual Reality and cloud gaming on the horizon, OnePlus is constantly innovating to be the flagbearer of authentic and immersive experiences in leading the way into a decade of strong growth for mobile gaming in India.

Keeping community at the center, OnePlus has launched multiple gaming related initiatives such as FPS Counter on Game Space. These insights are generated from the crowdsourcing platform IDEAS 2.0.

OnePlus brought industry-first features to the gaming community such as the 120Hz Refresh, Warp Charge, Screen Recording, as well as the Gaming Mode and Fnatic mode, thereby facilitating a truly immersive gaming experience for our users and community.

OnePlus has partnered with industry leaders such as Fnatic. By sponsoring leading eSports events such as Domin8, OnePlus is powering the gaming community. Users of OnePlus 6 (and newer) were able to download Fortnite via "One-touch" easy installation of the Epic Games App exclusively through the "Game Space" application. As the leading premium smartphone company in India, OnePlus brought Fortnite to its fervent fanbase for easy gameplay across the board. OnePlus has also collaborated with Qualcomm Technologies Inc., Hatch and Ericsson to showcase the power of the much anticipated 5G technology.

OnePlus wishes to support the development of the esports industry in the country and provide opportunities to showcase India's wide talent pool.

As the Indian mobile gaming sector continues to gain momentum, OnePlus looks forward to leveraging the rapidly developing smartphone consumer base, newer initiatives, and rising interest in technology to innovate for gamers and the industry alike.

Fueled by this intent, OnePlus has emerged as one of the preferred gaming phones of choice in the industry. The goal for OnePlus is to be the gaming smartphone of choice for e-gamers at every level, be it professional or amateur and pave the way forward for the development of mobile gaming in India.

Methodology



We reached out to all the stakeholders to build a deep understanding of the status quo

Exhibit 42 – Sources of data during the research process.

	 Mobile Gamers	 Game Developers & Publishers	 OEM Manufacturers & Industry Experts	 Secondary Research
Profile	Consumers who have played hardcore mobile games like Free Fire, BGMI in last 1 month	Mid level managers across game developers and game publishing companies	Current & ex-employees of OEMs and Members of Industry bodies like IMAI	Industry reports, media articles, Government documents etc.
Data Collection Method	Telephonic discussions/ Survey	Telephonic in-depth discussions	Telephonic in-depth discussions	NA
Sample Size	500 (surveys	4-5 In Depth Interviews	4-5 In Depth Interviews	NA

We conducted telephonic reach outs with the mobile gamers across Metro, Tier 1 and Tier 2 cities. The discussions were conducted in last week of August and early September. We ensured a fair representation across city types from across the country. 40% of the interviews

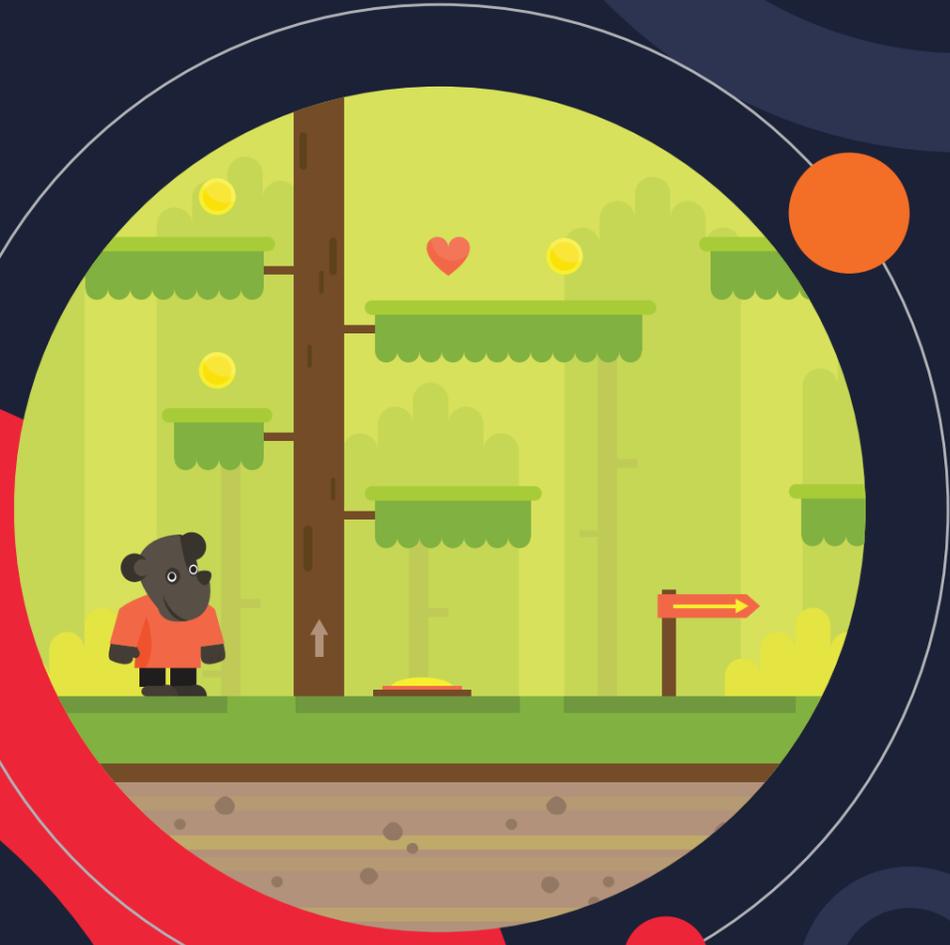
were conducted in Metro while the remaining 60% were from Tier 1 and Tier 2+ cities. A 65: 35 male to female ratio was achieved through natural fallout along with ~60% of the sample falling into 18-30 years age group.

Glossary



Keywords	Definition / Terms / Acronyms
Currency conversion	USD 1 = INR 70
Metro Cities	Mumbai, Delhi, Bangalore, Chennai, Hyderabad, Kolkata, Pune, and Ahmedabad (8 cities)
Tier 1 cities	Non-metro cities with population more than 1 Mn (20 cities)
Tier 2+ cities	Non-metro cities with population less than 1 Mn (4400+ cities),
Rural Areas	Population less than 10000
Gaming	Digital Gaming (including PC/Console and Mobile)
Hypercasual games	Single core mechanic, easy to pick up but difficult to master and uniformly challenging which, encourages players to come back like Helix Jump
Casual games	Mildly engaging, simple game mechanics and rules that can be picked up quickly. More evolved graphics and gameplay than Hyper-casual games like Angry Birds, Candy Crush
Mid Core	Usually feature a multi-player experience and revolve around resource management skills, unlike casual games where the goal is usually to solve a puzzle or complete a repetitive action like Clash of Clans
Hard Core	Complex gameplan, mechanics and storyline providing a very high engagement by gamers, usually played multiplayer like Free Fire, BGMI
RMG	Games related to casino, card or any involvement of real money or tokens against money like Dream11, Rummy Circle
e-Sports	Competitive digital gaming and live streaming of gaming tournaments & viewership
OEM	Original Equipment Manufacturers
SCOUT	Smart City Challenge & Outcome for Urban Tans formation
STEM	Science, Technology, Engineering and Mathematics
DISHA	Digital Saksharta Abhiyan or National Digital Literacy Mission (NDLM)
ESDM	Electronics System Design and Manufacturing
AR/VR	Augmented reality and virtual reality
IP	Intellectual Property
OS	Operating System
STPI	Software Technology Parks of India
AVGC	Animation, Visual effects, Gaming and Comics

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