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Five ways to a better 5G

Key trends influencing
consumer adoption of 5G



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Methodology

Quantitative data was collected from 26 markets in December 2020. More than 30,730 online interviews were held with people aged 15–69, in markets where active 5G commercial networks were launched, as well as those without an active commercial network. These included Australia, Argentina, Brazil, China, Chile, France, Finland, Germany, Ireland, India, Italy, Indonesia, Oman, Peru, Qatar, Romania, South Korea, Singapore, Kingdom of Saudi Arabia (KSA), Switzerland, Taiwan, Thailand, Uruguay, the UAE, the UK and the US. All respondents are smartphone owners and use the internet on a daily basis. Among these 30,730 interviews, 4,025 smartphone users were active 5G subscribers.

This study is representative of the opinions of 1.3 billion smartphone users globally, including 220 million 5G subscribers by the end of December 2020. Qualitative insight was gathered through 44 interviews with 5G early adopters in New York, US; London, UK; and Seoul, South Korea, in March 2020 and February 2021 to understand the changes in

perception of 5G. These respondents were early adopters of tech gadgets such as smart speakers and virtual reality (VR) headsets and were actively using mobile broadband connected to a 5G network.

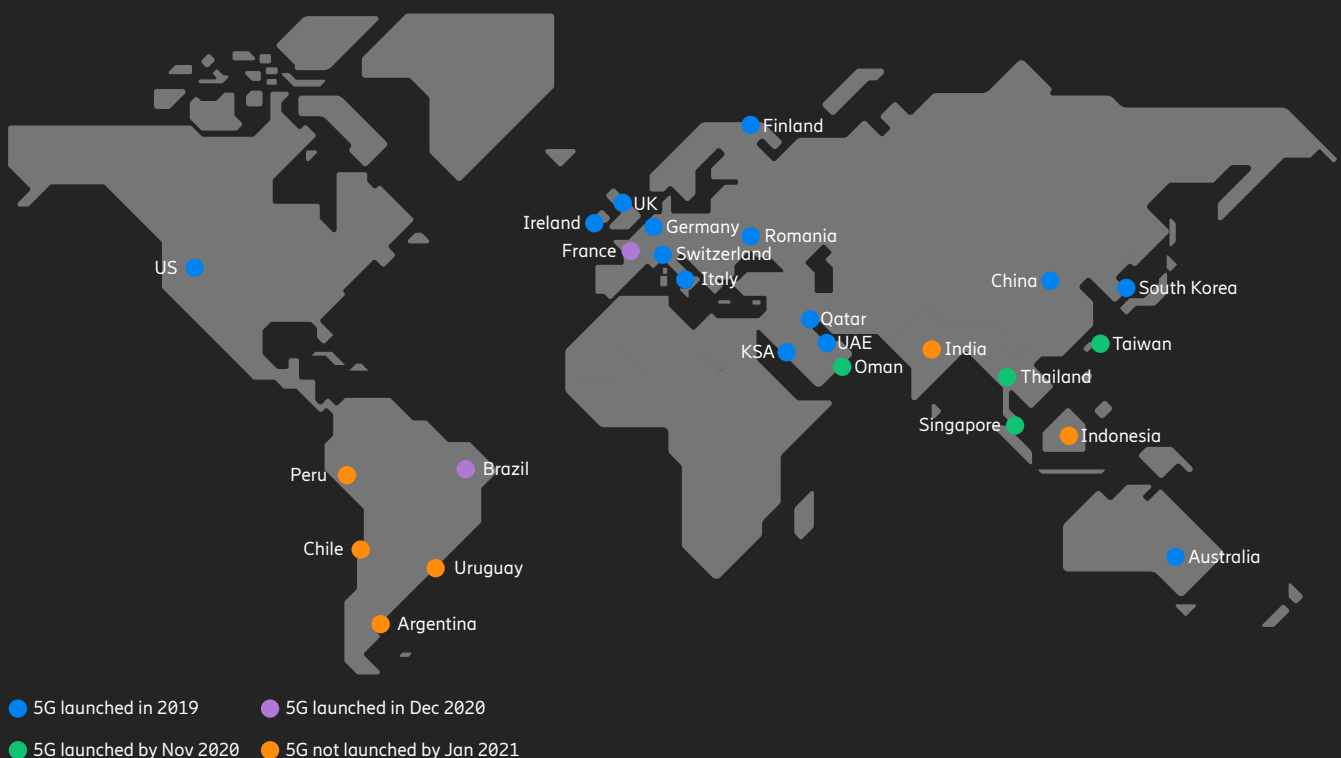
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Our knowledge is gained in global consumer and industry research programs, including collaborations with renowned industry organizations and world-leading universities. Our research programs cover interviews with over 100,000 individuals each year, in more than 40 countries – statistically representing the views of 1.1 billion people.

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Meeting consumer expectations on 5G

As communications service providers in a growing number of markets switch on 5G, consumer expectations are rising faster than expected.

Analysis of the 5G network experience has mostly focused on 5G speeds and availability, based on independent network measurements. But it is equally important to understand how 5G early adopters perceive the 5G network experience. This report, the biggest ever 5G consumer study, uncovers key trends influencing the adoption, usage and perception of consumers towards 5G.

The report suggests five ways that service providers can meet consumer expectations and improve their 5G experience, now and in the future:

1. Enhance the value: address the knowledge gap to educate and better market the value of 5G.
2. Consumers expect the quality of indoor and outdoor coverage to be consistent.
3. Adapt to network requirements of new services enabled by 5G.
4. Focus on the jobs consumers want 5G to do, to envision new use cases.
5. Go beyond just showcases: accelerate the commercialization of existing and new use cases.

Key findings:

1. Consumer intent to upgrade to 5G accelerates despite the pandemic.

At least 300 million smartphone users could take up 5G in 2021. By the end of 2020, 22 percent more smartphone users with 5G-ready smartphones could have adopted 5G if knowledge gaps had been addressed.

2. 5G triggers changes in usage behavior, starts to displace Wi-Fi.

5G users spend two hours more per week using cloud gaming and one hour more on augmented reality (AR) apps compared to 4G users. 20 percent say they have decreased their usage of Wi-Fi after upgrading.

3. Indoor 5G coverage more important for consumers.

5G early adopters rate indoor 5G coverage as two times more important than speed or battery life in driving satisfaction.

4. Early adopters are pleased with 5G speeds but expect more innovation.

Seventy percent are dissatisfied with the availability of innovative services and expect new applications making use of 5G.

5. Consumers value 5G plans bundled with digital services and are willing to pay 20–30 percent more.

However, two-thirds of use cases highly valued by consumers have not yet been commercialized.

Understanding the evolving consumer expectations around 5G is critical to drive adoption



State of consumer 5G

The number of live 5G markets is increasing daily as consumers become more aware of the technology and hype gives way to reality. But there is a wide disparity across the globe in terms of knowledge and intention to upgrade to 5G.

When comparing consumers' intentions to upgrade to a 5G smartphone in our March 2019 5G consumer survey, to our December 2020 survey results, we see that despite the pandemic there is an average increase of two percentage points globally. India saw the biggest rise in intention, though 5G networks are not still not available to consumers. Among 5G markets, the US and South Korea show an increase. China saw a 7 percent decrease, but 51 percent of urban smartphone users in major cities still wish to take up 5G.

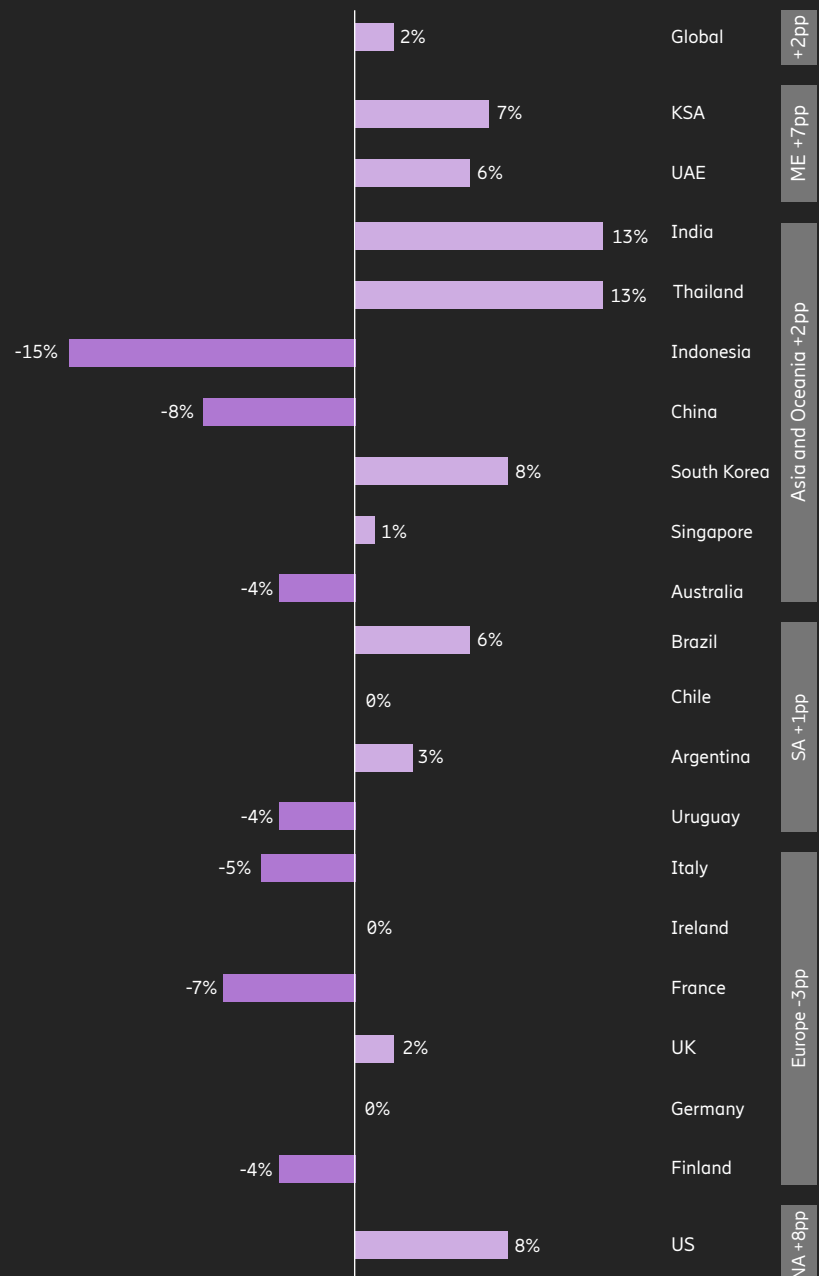
Italy, France, Germany, UK and Finland see a more moderate consumer intention to upgrade, as delays in commercial launches and rollout of 5G network coverage, financial uncertainty due to the pandemic, 5G misinformation campaigns and lack of compelling digital services enhanced by 5G, seem to have impacted consumer intentions to upgrade, compared to the excitement witnessed back in 2019.

While globally we see that 39 percent of consumers express an intention to upgrade to 5G, analysis based on current ownership of 5G smartphones, tech attitudes, life stage of consumers, income and demographics, reveals that only 21 percent of consumers would realistically upgrade to 5G in 2021, and the rest in 2022 or later. This translates to at least 300 million consumers across the 20 markets in our survey who could be 5G subscribers in 2021. If 5G commercial launches do take place in other markets like India, Brazil and Indonesia, then we could surpass this figure.

300m

At least 300 million consumers could upgrade to 5G in 2021

Figure 1: Percentage change in consumer intention to upgrade to 5G (March 2019 vs. December 2020)



The 5G knowledge gap

Consumer awareness of 5G potential remains high. However, marketing rhetoric that is heavy with tech jargon is limiting real understanding of its value, device capabilities and offerings.

Across the 20 markets in our survey where 5G commercial networks are available, an average 4 percent of consumers own a 5G smartphone and have a 5G subscription. While 22 percent of smartphone users who own a 5G-ready smartphone are still using a 4G subscription, a further 4 percent claim they are on a 5G plan, but use a 4G smartphone.

In China, this is 5 percent, and the blanket term “5G package customers” is often used by Chinese service providers to refer to anyone on a 5G subscription, regardless of whether they actually have a 5G device or access to a 5G network.

In the US, our survey found 14 percent of smartphone users who claim they are on 5G were using a 4G smartphone and 12 percent who own a 5G smartphone say they have a 4G subscription.

This suggests a lingering confusion and knowledge gap among consumers around device capability and compatibility,

5G network availability and lack of clarity on whether access to 5G is included by default or requires a change of plan or a specific smartphone model. Another factor is the inability to differentiate between Wi-Fi types like 5GHz vs. cellular 5G.

In addition, different versions and flavors of 5G network capabilities being marketed using tech jargon by service providers are contributing to this knowledge gap.

If the value of 5G technology had been better marketed, in terms that were more relevant to consumers’ needs, an additional 22 percent of consumers globally, who already owned 5G-ready smartphones in 2020, could have upgraded to a 5G plan.

In markets such as India and Indonesia, where commercial 5G networks were not live, the survey found an existing installed base of 22 percent of smartphone users with a 5G-capable

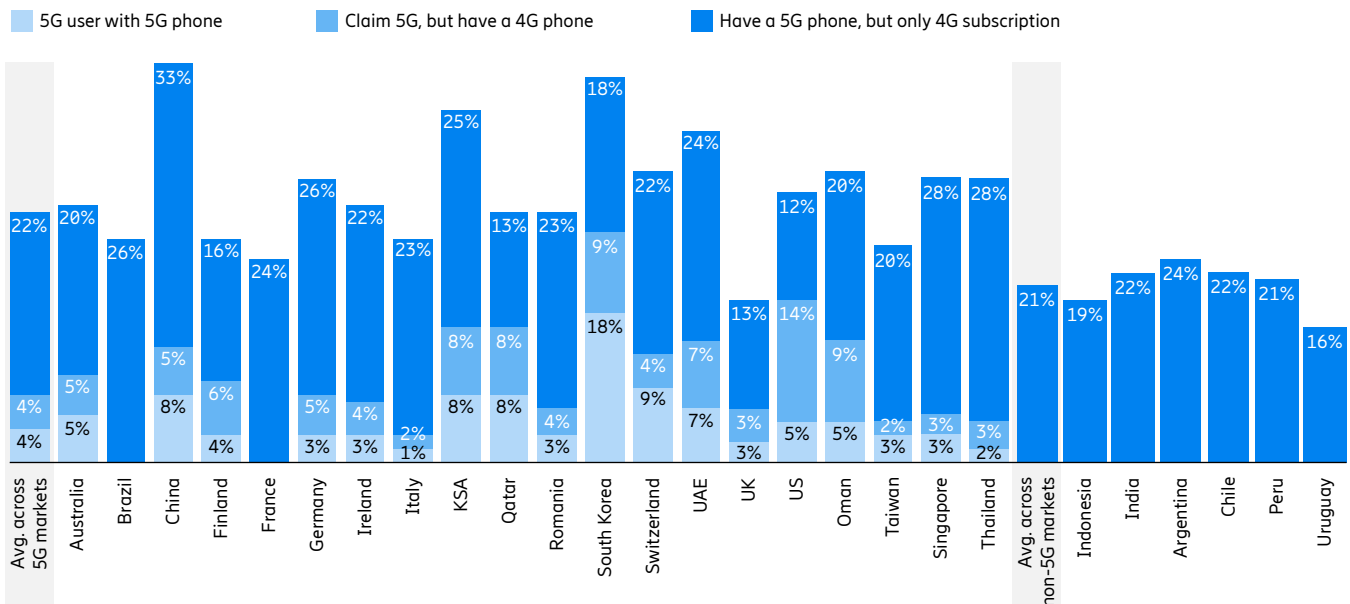
smartphone. This could provide a secure foundation for service providers to drive quick adoption of 5G.

Since initial 5G deployment has focused largely on city centers and downtown areas that need capacity augmentation, consumer perception of 5G availability varies. In the UK, for example, consumers living in the city center perceive that they spent 1.5 times longer connected to a 5G network than those living in a suburban area.

x5

Improving consumer perception of 5G availability could increase the likelihood of adoption by at least five times

Figure 2: Percentage of consumers on 5G plans vs. ownership of 5G-ready smartphones



Base: Smartphone users aged 15–69 across 26 markets in the survey
 Source: Ericsson ConsumerLab, Five ways to a better 5G (May 2021)

5G drives network satisfaction

5G early adopters seem to be more satisfied with 5G than smartphone users connected with 4G LTE.

Among smartphone users with 5G-ready smartphones and a 5G plan, across the 15 markets in our survey, we already see that an average of 10 percent more users are very satisfied with 5G, compared to those using 4G. However, this varies by markets and depends on factors such as the extent of outdoor and indoor 5G coverage, speeds, reliability, the quantity and type of spectrum available to service providers, device availability and consumer expectations in that market.

In Switzerland, 59 percent are very satisfied with 5G network performance, while only 30 percent are very satisfied with 4G. In the US, while we already see 14 percent more users being very satisfied with

5G compared to 4G, the release and usage of new mid-band frequencies would bring a further positive shift in 5G performance.

On the other hand, in South Korea, smartphone users are very discerning and rate the 5G network experience lower in comparison to a fully developed and built out 4G experience. While 31 percent are very satisfied with 4G, 27 percent are with 5G. This lower level of satisfaction could be attributed to exaggerated claims of 5G performance made during the promotion period, unsatisfactory 5G indoor coverage, a lack of more diverse and affordable price plans limiting consumer choices, and an already superior 4G and home Wi-Fi experience

as a benchmark. While this is a deviation from the trend seen in other markets, it doesn't mean that the South Korean 5G deployment is subpar.

To understand the extremely high expectations and benchmarks of South Korean consumers we need to look back at satisfaction levels measured by Ericsson ConsumerLab in 2012–13, when 4G was launched in South Korea. The share of consumers satisfied with 4G back then is similar to the level we see now with 5G, suggesting that when compared to consumers in other markets, South Korean consumers expect much more from their service providers — superior performance, no gaps in coverage and new innovative services, especially when they are asked to pay a premium for a 5G subscription plan.

Figure 3: Global trends in 5G vs 4G LTE network satisfaction

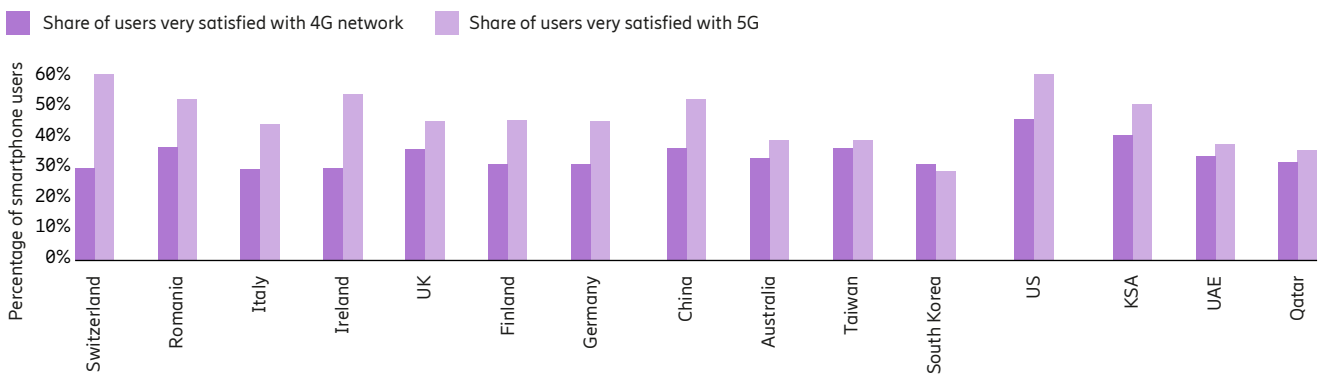
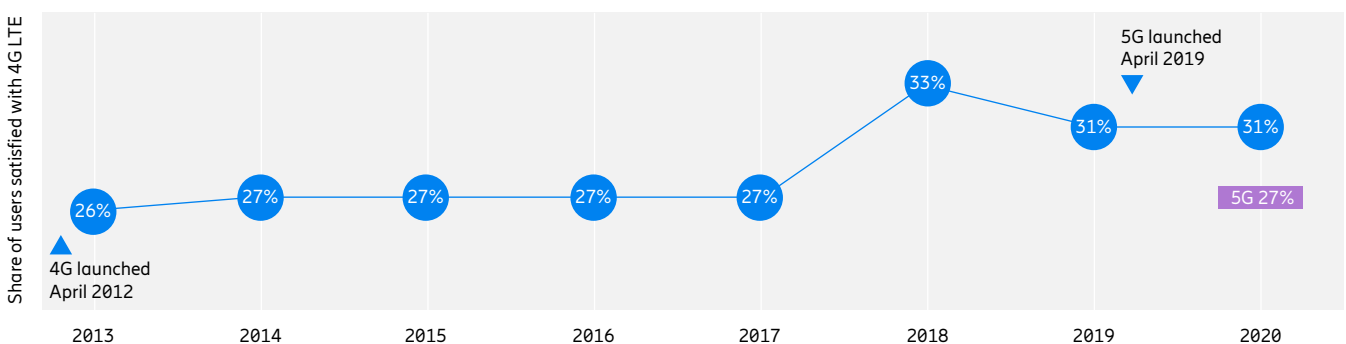


Figure 4: Consumer satisfaction trend with 4G LTE network in South Korea



Base: Smartphone users aged 15–69 across 15 markets in the survey
 Source: Ericsson ConsumerLab, Five ways to a better 5G (May 2021); ConsumerLab Analytical Platform 2013–2021

Pandemic fuels need for better indoor 5G

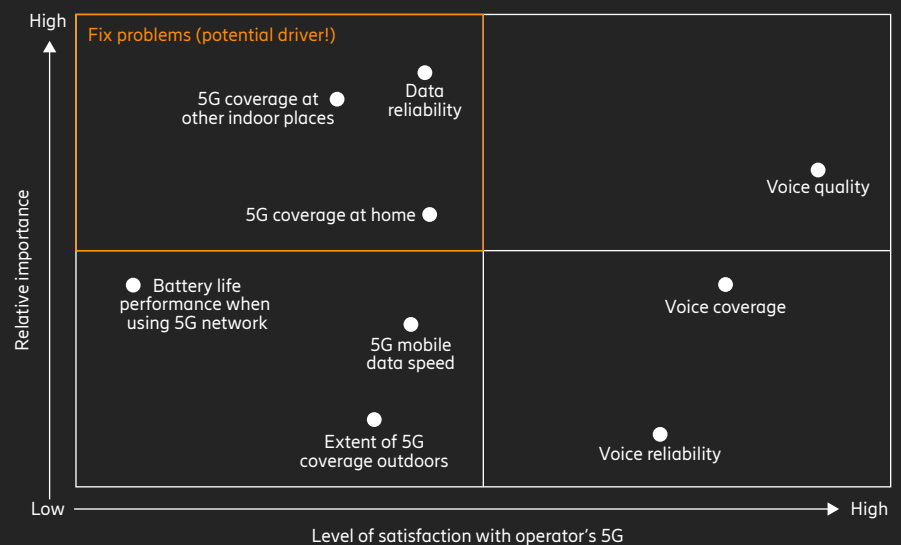
During the COVID-19 pandemic, countries across the world implemented a range of stringent policies, including stay-at-home lockdowns, school and workplace closures and cancellation of events and public gatherings, moving daily activities indoors.

With more time spent at home, the first experience that some consumers had with 5G in 2020 was indoors.

Our analysis looked at consumer satisfaction vs. the relative importance of different network parameters, such as 5G network speeds, outdoor coverage and indoor coverage, among others. It suggests that 5G indoor coverage, at home and in public places like malls and stores, is relatively more important than 5G speeds and even battery life in driving overall consumer satisfaction, especially during the pandemic.

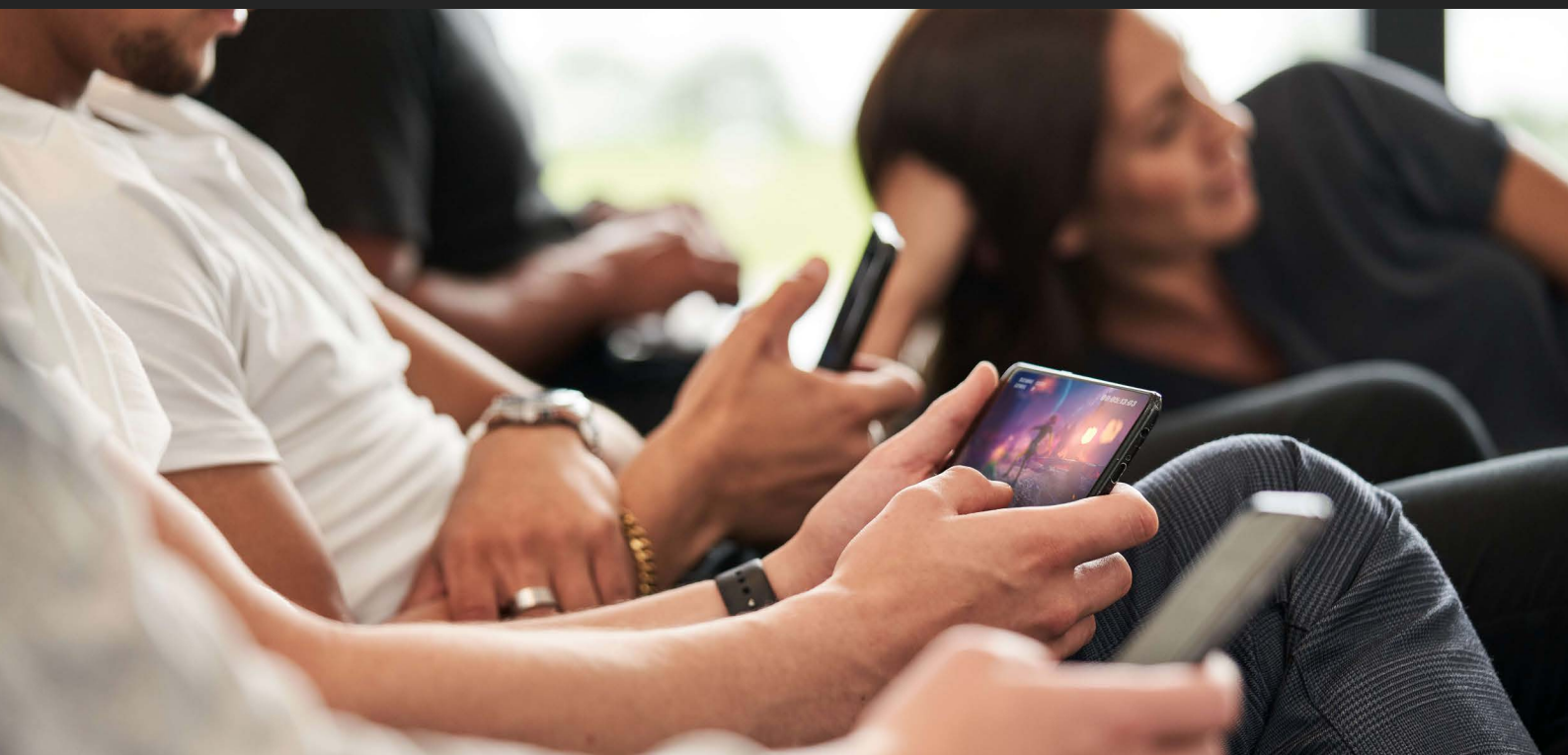
In South Korea, as many as half were dissatisfied with their indoor 5G coverage, and 40 percent in Taiwan say the same. In Australia, while 35 percent say they were satisfied with indoor coverage, 24 percent were not.

Figure 5: Level of satisfaction vs. importance of 5G network indicators



Base: Smartphone users aged 15–69 in Australia, China, Finland, Germany, Ireland, Italy, KSA, Oman, Qatar, Romania, Singapore, South Korea, Switzerland, Taiwan, Thailand, the UAE, the UK and the US
Source: Ericsson ConsumerLab, Five ways to a better 5G (May 2021)

The pandemic has fuelled the need for more consistent 5G indoor coverage



5G changes usage behavior

With improvements in 5G performance and unlimited plans across markets, we are starting to see new usage behaviors and a displacement of Wi-Fi usage both at home and in other locations.

On average one in five users upgrading to 5G have decreased Wi-Fi usage at home and other locations. In markets like the US, Taiwan, Switzerland, Finland, and South Korea, where a higher proportion of 5G users are on unlimited plans, 22 percent have decreased their home Wi-Fi usage, while 10 percent claim they have stopped using Wi-Fi on smartphones after upgrading to 5G.

Back in August 2019, SK Telecom also [reported this trend](#),¹ with average monthly Wi-Fi usage time of 5G users decreasing by about 37 percent from 4.3 hours to 2.7 hours. Households with three or more members actively using home broadband were more likely to report a decrease in their reliance on Wi-Fi once they upgraded to 5G. During the pandemic, with home broadband usage at an all-time high, consumers seem to be relying on 5G cellular connectivity as a backup when performance issues arise with shared home Wi-Fi.

When comparing usage of digital services between 5G vs. 4G, 5G users are more engaged with using high bandwidth immersive digital services than 4G users. 5G users not only spend two hours more per week streaming high definition mobile video than 4G users, but have also started to use enhanced video apps involving

streaming of multi-angle views and 360-degree video content.

New services like cloud gaming and AR apps also see a two hours and one hour per week average increase respectively by 5G users. Analysis based on passive smartphone measurement² also shows that users in the US spent an hour per week on average on cloud gaming services like Nvidia GeForce NOW, in 2020.

In South Korea, 5G users seem to be using multiple cloud gaming services. GameBox, a 5G cloud game streaming service by KT, saw roughly 20 minutes per week of usage, while Xbox Game Pass users spent 40 minutes per week on the SKT 5GX Cloud Game service.

With more time being spent on bandwidth-intensive apps, 5G early adopters in our survey saw a monthly data usage increase of 2.5 times compared to 4G users. While 5G-powered VR headsets are not commercially available yet, and most usage is on Wi-Fi, 5G users already seem to be spending more time using VR content compared to 4G users. Immersive video, which includes AR and VR, already contributes to 20 percent of total time spent by 5G users on digital services listed in Figure 6.

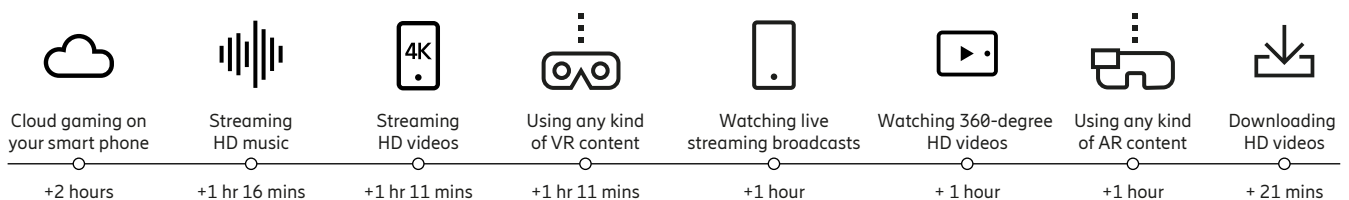
20%

On average 1 in 5 users upgrading to 5G have decreased Wi-Fi usage at home and other locations.

2 hours

5G users spend two hours more per week on cloud gaming and one hour more on AR apps than 4G users.

Figure 6: Avg. increase in time spent per week (hrs:mins) by 5G early adopters on activities compared to 4G LTE users



Base: Smartphone users aged 15–69 in Australia, China, Finland, Germany, Ireland, Italy, KSA, Oman, Qatar, Romania, Singapore, South Korea, Switzerland, Taiwan, Thailand, the UAE, the UK and the US

Source: Ericsson ConsumerLab, Five ways to a better 5G (May 2021)

¹ SK Telecom report 2019

² Ericsson analysis of App Annie data, Q4 2020-Q1 2021

Early adopters recommend 5G, but expect more innovation

Our survey shows that higher satisfaction with 5G network performance means 5G users are more likely to recommend their mobile service operators, but they also expect more innovative services to be offered.

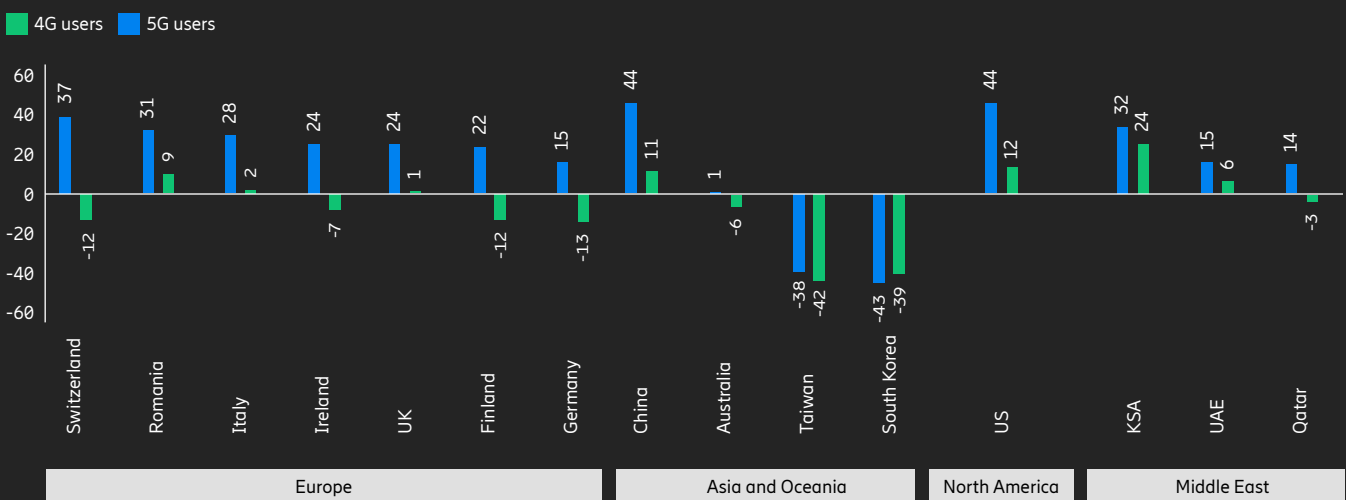
In most markets we see that 5G users are very likely to recommend their service provider's brand to others, resulting in higher Net Promoter Scores, a metric used to assess brand referability. As early adopters of new technology, these users are more forgiving and trust that operators are doing their best to build out the network, so are patiently waiting for coverage to improve. But this patience won't last long. While early adopters are pleased with 5G network speeds, they are already expressing dissatisfaction with a lack of bundled new and innovative apps and services, which they feel were promised in the marketing pitch for 5G.

While 5G users seem to be satisfied with network speeds, 70 percent are dissatisfied with the innovative apps and services bundled on the 5G plans. Apart from some Asian markets such as South Korea, Japan, Taiwan and China, in most markets globally, service providers, while attempting to drive a service-led strategy, have been slow in bundling 5G with digital services beyond what is already being offered on 4G – such as music and video streaming services and other apps. Instead, service providers need to offer exclusive content and services that could differentiate a 5G experience from 4G and promote a sense of novelty and exclusivity.

70%

A full 70 percent are dissatisfied with the availability of innovative services and expect new apps that can take advantage of 5G

Figure 7: Net Promoter Scores by network technology



Base: Smartphone users aged 15–69 across 15 markets in the survey
 Source: Ericsson ConsumerLab, Five ways to a better 5G (May 2021)

From showcases to commercializing use cases

Identifying and understanding the jobs consumers want 5G to do is the first step in envisioning and offering use cases that consumers want, especially ones they are likely to pay for. 5G offers many possibilities to provide new digital services.

In this study we use the [jobs-to-be-done framework](#)³ to help understand both the consumer’s specific goal, or “job”, and the thought processes that would lead to the use of 5G to complete it. When looking at 5G through a jobs-to-be-done lens, consumer needs are shown by studying the consumer core functional job or outcomes that they wish to accomplish using 5G. The study identified five jobs or outcomes that consumers hope 5G will accomplish.

1. To be productive and efficient.
2. To be creative.
3. New ways of connecting and socializing.
4. The need for novelty (thrill, surprise, discovery).
5. Rewarding me-time.

The value of the jobs-to-be-done theory is that it provides an anchor point from which service providers can create value via new or existing use cases.

Despite the pandemic, smartphone users surveyed are willing to pay

10 percent more on average for 5G plans that offer enhanced mobile broadband access. However, they are willing to pay even more for plans with bundled innovative digital services.

Globally, the inclusion of relevant use cases on a 5G plan increased the 5G premium further, by 20–30 percent. However, there are marked differences in markets across the globe. In Australia and the UK, smartphone users were willing to pay an additional 7 percent, while in UAE and China it was 30 percent and 45 percent more respectively, compared to what smartphone users say they pay today for a 4G plan.

Using the jobs-to-be-done framework, we tested 27 different use case concepts aligned with the consumer needs, to assess which concepts consumers feel are worth paying for, while also assessing their current stage of commercialization.

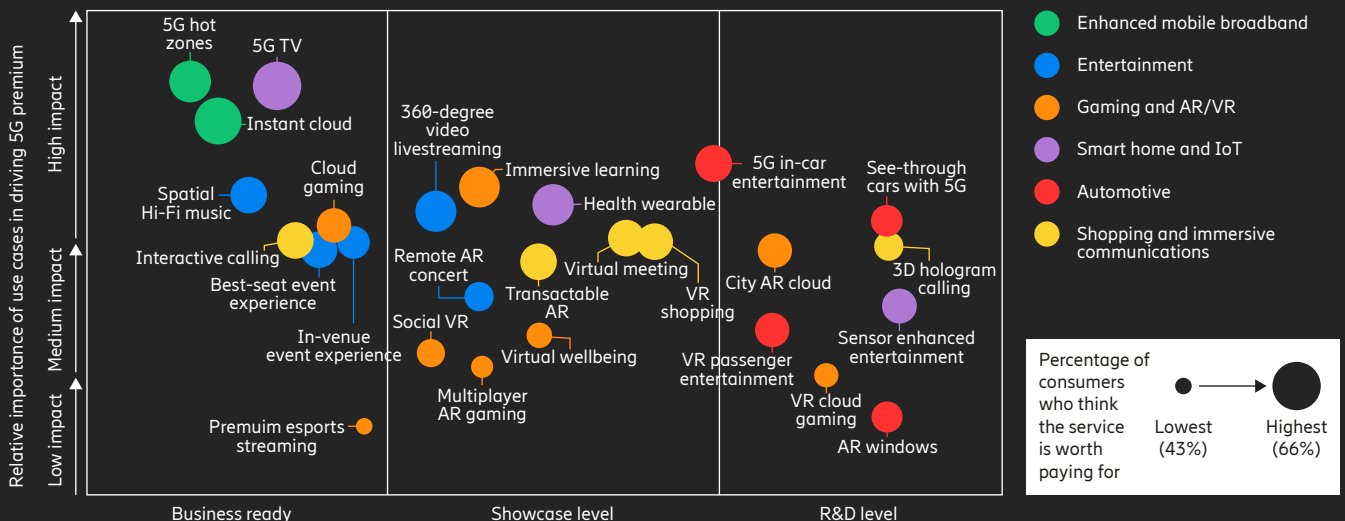
Figure 8 shows the stage of each of the individual use cases, mapped against their relative success in persuading consumers

to pay more for a 5G plan that includes a combination of them. With 27 use cases included in this roadmap, two-thirds of valuable use cases rated by consumers were found to be only in the technology showcases or research and development stage, and not available for consumers to experience.

The commercialization of use cases were benchmarked at three stages:

- 1. Business ready:** digital services/ use cases that are currently being bundled in 5G plans by service providers or are widely available.
- 2. Technology showcases:** use cases that are currently relegated to just technology demonstrations by service providers.
- 3. Still in R&D:** use cases that require significant research and development to solve technology complexity or see ecosystem readiness challenges.

Figure 8: A consumer use case development roadmap for 5G



Base: Smartphone users aged 15–69 in Argentina, Australia, Brazil, Chile, China, Finland, France, Germany, India, Indonesia, Ireland, Italy, KSA, Singapore, South Korea, Thailand, UAE, UK, US, Uruguay

Source: Jobs-to-be-done framework; Ericsson ConsumerLab, Five ways to a better 5G (May 2021)

³ www.christenseninstitute.org/jobs-to-be-done

The value of use cases

5G home broadband is a rural and urban opportunity. In our survey, 18 percent of consumers see 5G fixed wireless access (FWA) services to be extremely relevant.

Across 26 markets in our survey, 16 percent of users are willing to give up their current home broadband provider to try a 5G FWA service.

In the US, while 5G FWA is an opportunity to provide underserved communities and rural pockets with more broadband choices, it is also likely to accelerate cord-cutting in urban areas.

There are two times more users in major metro cities of the US who are willing to switch their current home broadband provider for 5G FWA, than in smaller towns and rural counties. A quarter of users in these mega/metro cities are already looking to cut the cord, that is, give up on their cable TV services in favor of streaming alternatives. This opens up an opportunity for a provider to offer 5G FWA bundled with (5G TV) streaming alternatives.

Globally, 67 percent of consumers are willing to pay for a 5G TV service, while 57 percent are willing to pay for a best-seat event experience, a personalized viewing experience for sports or other

events where users can pick custom camera angles and watch replays.

In comparison, 44 percent of consumers find premium multi-view esports streaming services valuable, but 37 percent do not. The use cases viewed as most valuable by consumers also vary by market.

A recent ConsumerLab study⁴ uncovered USD 31 trillion addressable consumer revenues that will flow over 5G networks by 2030. Service providers could secure USD 3.7 trillion of this, driven by 5G connectivity, which remains the biggest revenue driver.

However, the greatest revenue boost will come from bundling digital services with 5G tariffs, in order to convince consumers of the value of a 5G network platform. Service providers together with other ecosystem players should accelerate the commercialization of digital services that are currently being used as showcases of the new technology. This way they meet consumer needs while unlocking the full revenue potential of 5G.

Imagine an average day in 2025

You start your day at a café with a remote team meeting, where you and your colleagues appear as 3D holograms on your AR glasses powered by 5G. You collaborate on a real-time 3D model with colleagues sitting miles away, uploading work files to the high-speed, secure, instant cloud service over 5G.

You then take a walk to grab lunch and your 5G-powered AR glasses provide real-time contextual AR advertising, reviews and ratings, which are virtually anchored to specific locations. The AR navigation assistance leads you to nearby restaurants, offering discounts based on open AR cloud technology.

You end your day unwinding by watching a soccer game, chatting with friends virtually, first from your smartphone and then moving to your smartglasses, as multiple camera angles in 4K quality give you the best seat in the stadium.

It may seem futuristic, but these are just some of the digital services that could be enhanced by 5G and consumers are looking forward to being realized.

Key recommendations:

1. Enhance the value: address the knowledge gap to educate and better market the value of 5G.
2. Consumers expect the quality of indoor and outdoor coverage to be consistent.
3. Adapt to network requirements of new services enabled by 5G.
4. Focus on the jobs consumers want 5G to do, to envision new use cases.
5. Go beyond just showcases: accelerate the commercialization of existing and new use cases.

⁴www.ericsson.com/en/reports-and-papers/consumerlab/reports/harnessing-the-5g-consumer-potential

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