



USER FRIENDLY

2020 connectivity and mobile trends

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Hanish Patel: I'm Hanish Patel, and this is User Friendly, the show where we explore emerging trends in tech, media, and telecom and how they impact business operations and the world around you.

As US telecom companies build and roll out 5G wireless networks, executives are hoping consumers will embrace the faster, more reliable Internet service 5G can deliver. The good news is that Deloitte's new Connectivity and Mobile Trends Survey affirms that they're unlikely to be

disappointed. Consumers are ready for more when it comes to wireless connectivity, both on the go and in the home. Today, I have the distinct pleasure of welcoming Dan Littman and Nicole Gallagher, principals within Deloitte Consulting's Tech, Media & Telecom practice, to explore the results and discuss their implications for mobile carriers, device manufacturers, and beyond. Dan and Nicole, welcome to the show.

Nicole Gallagher: Great. Thanks, Hanish.

Dan Littman: Thank you, Hanish.

Hanish: All right. So let's get straight into it. So Dan, this is the inaugural year for the US Connectivity and Mobile Trends Survey. Could you give our listeners a little bit of background on the survey and the methodology behind it?

Dan: Yeah, absolutely, Hanish. We surveyed more than 2,000 consumers for this study, and we identified consumer preferences across different generations. We looked at

five different generation groups:

Gen Z, Millennials, Gen Xers, Boomers, and Matures. And the objective was really to understand how the consumers are interacting with smartphones, connected devices, and mobile technologies in general, and what might drive future consumption.

Of course, the study, as you mentioned in your introduction, was very well timed with the rollout of 5G. So even though consumers really didn't have the experience of using 5G quite yet, they were very familiar with the promises of higher speeds and greater functionality, and we are able to discern some really interesting findings and results about how 5G might shift consumption in the future.

Hanish: Fantastic. Dan, thank you for that. Having gone through the report, I know there's some absolute nuggets in terms of just some of the findings that you and the team had through this survey. So I'm going to be drawing upon you and Nicole a bit later on to really expose some of that data that we saw. But Nicole, I have to move to you, and this is really to bail me out. I'm the one that always says, "Make this user-friendly, let's not use technical terms." And what did I go and do? Mention 5G in my intro. So I would love for you to help our listeners, give a quick understanding of what 5G means from a consumer standpoint, and also, when are we actually expecting 5G to really become prime-time?

Nicole: Well, Hanish, I think it is good to step back and sort of talk about what it is, because we do sort of throw it around, and I think some folks are smiling and nodding, and it means different things to different people. So it's good to set that baseline.

So 5G is the fifth-generation wireless technology, and it's going to help us do some of the things that we do today faster. So greater speed is a big part of that, so that we can move more data. It'll create lower latency in the network so that we can be more responsive, and you'll hear use cases that folks use around driverless cars, and that low latency is one of the things that that is meant to enable. And it'll provide the ability to connect to a lot more

devices at once, and so you'll hear device manufacturers talking about how they create an ecosystem or a system of devices that talk to one another.

So there's a lot of discussion around connected home and the Internet of Things related to 5G. And the timing is really an interesting topic for me because, as I have been following it, you know what? In some cases it's out there already, right? It's being piloted in places. It's being rolled out. But most folks are going to have to wait until 2020 to see it.

Hanish: Nicole, firstly, thank you for bailing me out on the 5G piece and kind of putting forward what it means from a consumer standpoint. Let's angle in on the consumer part of it. One of the fascinating things that I read in the survey is just around upgrade cycles for smartphones. And I know I'm one of those that can't wait until the latest one comes out, and every year I've got the latest one. But it sounds like that cycle's lengthening for a lot of consumers, and to that point, is 5G something that actually has the potential to really spur on new smartphone sales?

Nicole: You know, both of those things are true. So we are seeing that consumers are holding onto their phones longer. The study confirmed something that I think we were feeling a little bit anecdotally, that fewer than 60 percent of consumers plan to buy a smartphone in the next two years, and about a third of consumers have a phone that's two years or older at this point right now. And so we're seeing people hold onto their phones longer. But then at the same time, we did see data that indicated that 5G is going to be a driver for folks to look to replace their devices, that it will offer features and functionality that consumers believe would make it worth it to replace their phone. I think that that's absolutely true.

And I think the factors that we're seeing that drive consumers, really, to hold onto their phones and delay their upgrades is really that more than half of consumers think that their phone does everything that they need it to do today, that the functionality is

adequate for what they're trying to do, or more than adequate, and that the newer phones coming out don't provide enough in terms of a step function to make it worth it to upgrade, and that a lot of consumers are saying that the cost or economic factors are really driving, the main driving force, behind their choice not to upgrade.

So I interpret those two data points together as value for money. It's not that they're saying that smartphones don't have new features and functionality, they're just not seeing that the features and functionality are translating into a value that makes it worth it to upgrade.

Dan: So in most areas of the survey, we saw some remarkable consistency between generations. In terms of smartphone life cycles and renewal cycles, that's one where the Matures and especially the Boomers held onto their phones the longest. And that's especially relevant for the Boomers. They still have a majority of the purchasing power in the US. They're the wealthiest group. So cost is less of an issue for them. And it really is, as Nicole mentioned, the functionality and the price-functionality equation. And without cracking into getting the Boomers to upgrade their phones more quickly, it's really hard to make a dent in the lengthening renewal cycles.

Hanish: So it sounds like this . . . 2020 coming forward is very much likely to be a big cycle for a lot of folks with the further rollout of 5G across many more cities in the US. And we're likely to see that. So then, with that said, what does it look like for the mobile carriers? With that on the horizon, what steps have they taken or are taking to meet this demand that's going to be coming forward in a big way for the connected consumer, as we call it?

Dan: Well, we approached that question in a number of ways in the survey, and consumers really didn't hesitate to express what they liked about their wireless carriers. And it actually seems that most of the efforts that the carriers have made, especially around improved network quality and providing a range of very simple, very cost-effective pricing plans, is paying off.

Network and pricing are what consumers cite as the most important aspects of their wireless service, and it's also what they say they like best about their customers, about their carriers.

Consumers are generally satisfied. 30 percent indicate that there's really nothing they disliked about their wireless carriers. And I think that's mostly, of course, good news for the carriers. It means churn levels will stay pretty low, but it also makes differentiation very, very difficult. So if you're trying to win new share, or win new subscribers, if everybody already likes their carriers, it's very hard to win them away from somebody else.

And that's where I think it gets interesting, because the question is going to become "Can carriers use 5G as a viable method of differentiation?" When you unpack network stats after a survey, it's mostly more coverage that they're interested in and they were satisfied with. In reality, most were dissatisfied with speed as they watch more and more streaming video on their mobile devices than using the cellular network. So the potential is there to use 5G as a speed differentiation to attract new customers.

Hanish: So then with that, let's bring in the third component to this trifecta, as I like to call it. We've talked a little bit about the consumer, a little bit in here about the carrier. Nicole, what's the reaction from the device manufacturer? I mean, have we seen any evolution in the relationship or the partnership between the makers of smartphones and the carriers we all want as a consumer?

Nicole: Well, I would say that over time, the relationship has evolved. The smartphone carriers are seeking to build a more close connection with consumers directly, rather than going through carriers. Building that relationship allows them to do a couple of different things. They're looking to take a greater portion of consumer share of wallet, so putting an ecosystem of devices together so that your headphones talk to your smartphone, talk to your refrigerator, talk to your . . . anything in your life. And 5G is related to that because of this ability to

interconnect this ecosystem of devices. And so we see a greater connection between smartphone manufacturers and consumer electronics manufacturers and the end consumer, especially when it relates to mobile devices and looking to build that relationship more directly rather than through the carriers.

Hanish: Something that you mentioned around connected devices, I recall reading a fascinating data point in the survey about . . . There's something like 10 or so connected devices, just alone in the household, on average, that we have at the moment, which blew me away in that sense, and that really got me starting to count how many I've got in the home. So I'd love to know a little bit more about what we're seeing in that space as well.

Nicole: It's funny that you say that, because we also talked about connectivity in the home, and it was one of the high priorities, and one of the elements that . . . or the promise of 5G that consumers were looking for is that better connectivity and service inside the home is what consumers were looking for a good part of the time. More than half of consumers rate that as one of the things that they expect to come out of 5G. So I think that we're expecting for our home to become more connected, but it's happening sort of naturally over time, organically. So I would say that that's absolutely true.

Hanish: So let's actually drill in there and when we talk a bit more about the home, and Dan, clearly 5G's not just about mobile connectivity. Do you anticipate that 5G will actually provide a viable, fixed wireless substitute for what we all have as wired broadband at home?

Dan: It absolutely can, but it depends on pricing, which is what our survey uncovered, and it also depends on how 5G is deployed in different geographies. So we've studied this question around people's satisfaction with Wi-Fi connectivity in the home, which most of the time, of course, is connected to a wireline broadband, and how that compares to cellular speeds. And I'd say this year, and this survey, showed a continuation

of a trend that we've seen through other surveys as well, in which the cellular network actually starts to become faster, in some cases, than the Wi-Fi connectivity in the home, or at least that's the customer perception of that.

By the way, this is one of those that really didn't differ by generation. The results were remarkably similar. So for the wireless carrier, I think it does open up opportunities for wireless broadband substitution, provided that you're at the right speed and the right price. The right speed really depends, again, on how 5G is deployed. You can absolutely achieve very high speeds that approach fiber-like speeds with millimeter wave, and you see some of those deployments already in place in the US, but cost also matters a lot. 61 percent of those interested in using wireless instead of a wireline connection would not do so if that meant increasing their costs. And 50 percent of those say they wouldn't do it if it meant buying more hardware. So at the very least, you can expect these value propositions to include kind of the same pricing and maybe even some subsidized hardware.

Hanish: Got it. Dan, I have to pull you up on a technical term then, millimeter wave. Help our listeners understand that one.

Dan: Sure. So these are the very, very high frequencies that range into 24, 28, or higher, and that's 24, 28 gigahertz (GHz). When you think about LTE, that's typically operating on sub-3 GHz in most cases, even sub-1 GHz. So what that allows you to do is cram a lot more data and bits in the same amount of spectrum, because the frequencies are so much higher. The disadvantage to that is that they don't propagate very well. In other words, the signals don't go very far, and they don't penetrate walls or windows very well. So what you see in millimeter-wave deployments is a lot of small cells. That's why you need more towers. And you also see a need, sometimes, for indoor coverage mechanisms, like antennas that have to be stretched and connected to modems inside. That differs from when you see lower-band or mid-band frequencies being deployed, which is how all carriers are approaching

this. They'll have some very-high-frequency, some mid-band, and some low-band to make sure that they have coverage and capacity.

Hanish: Beautiful. Thank you for that. So then, I just want to touch upon that. So we've all the great stuff that 5G promises and some of the things that both . . . you know, Dan, Nicole, that you've talked about. There could be a potential downside for the need to have so many of these antennae or spots either within the home or outside of the home to enable this network to be successful. Would that be a fair statement?

Dan: I think there absolutely will be multiples, more small cells, than there have been macro cells in the network. We call that, in the industry, densification of the network. And it's really the best way to get the higher speeds and the greater capacity that customers are demanding as they use more and more data traffic, especially through video. And then, of course, that'll even expand further as AR/VR come online.

Hanish: Got it. So actually, let's go into that faster connectivity. What would that mean for those of us—and I'll probably put my hand up—with the multiple screens in the home and the screen addiction that we have? Nicole, how might 5G impact not just viewing and . . . You guys touched upon video, but, say, gaming and other entertainment uses that 5G could really enable?

Nicole: So this is another one where the generational responses were really striated and you could see a greater or a differentiated response by generation in the survey. And mobile phone addiction or Internet addiction is a very real problem. And I can say, as a parent of young children, I can see it coming down the road, right? I'm doing everything we can to stop it while trying to espouse the benefits of technology at the same time. It's an interesting challenge. Something like 90 percent of American adults own a cell phone, right? It's really pervasive, and some doctors compare it to being addicted to gambling. And so it's really something that's newly being studied or newly being looked at. There are some

people that call it nomophobia, which is "no-mobile phobia," the fear of not having your phone, which is a little bit scary, but it really is something that we saw evident in the survey for sure, or there were at least indicators. So more than half of Gen Z and Millennials say that they'll watch more streaming video on their mobile devices. So, confirming that point that you just said, that video is a big part of it, but more than 40 percent said that they'll play more mobile games and streaming video games. And I think that that's also confirmed anecdotally, when you think about the behavior of the folks and you look left and right, that our . . . the younger generations really do use their phones for things like that and their devices for things like that.

And about a third say that access to 5G is going to change how they use their devices. And I think, specifically, the use cases that we hear are things like AR/VR, and the survey confirmed that close to 35 percent of our Gen Z and Millennial respondents say that they expect to use digital reality technologies like AR and VR more or differently when 5G is released.

Hanish: Got it. That's from the entertainment perspective, and certainly, 5G—we touched on it earlier—has a significant impact on what could be going on in the home, and certainly every year at the Consumer Electronics Show that takes place in Las Vegas, we see more and more about home automation devices. But I've always been a little bit curious in terms of what is the true adoption of these. Dan, do you think 5G is a potential driver for the smart home market as well?

Dan: I definitely think 5G will drive smart homes and more and more connected devices within the homes. And it's happening even before 5G. Our survey yielded 28 percent of consumers use at least one home automation device and 40 percent of them use at least three home automation devices—that's 40 percent of the 28 percent of consumers. So the adoption curve is significant, and you expect that to get much, much higher than the penetration rates of smartphones, as Nicole was talking about, because you can have a number of devices

per home, whereas, you know, people typically only need one or maximum two smartphones. But I think this is one of the most notable stats in the survey, and you already mentioned it, that, you know, the average home has 11 connected devices. So if you think about the impact of that and take it back a little bit in time here . . . If you go back, way back, let's go 35 years ago back to 1985. The number of connected devices per capita—and most of these were wireline phones, old-style—was 0.5. So, 0.5 devices per capita.

35 years later, let's fast forward to today. That number is three. Three devices per capita in the US. Think how much the world has changed just going from 0.5 to three—6x. Now think about going just 10 years in the future—before, it's 35—now let's just go 10 years to 2030. The projections range broadly, but it's anywhere from about 50 to 140 devices per capita. So you think about how much the world will change, and many of those will be home automation devices. How much of the world will actually change when machine-to-machine becomes more prevalent than people-to-people communications? That's pretty exciting, and that's enabled by 5G.

Hanish: Wow. Dan, I just want to pause for a moment there and make sure I heard that correctly. Circa 10 years from now, it's anything between 50 and 140 devices per capita. Is that right?

Dan: That's right, because there's no longer the dependency. Machines can be online all the time, and you can have a countless number of machines per person. Whereas, again, in terms of connected devices, there is only 24 hours a day, not counting sleep, when a person can be using a device.

Nicole: It's probably true that all of these connected devices you don't even realize, right? Because you're not necessarily personally interacting with the connected features. Some of the uses of connectivity happen in more industrial use cases. Even the elevators that you're riding in, in a lot of cases, are connected, and they're gathering data on their performance. Industrial robots that are running the plants and the seaports

that are moving our goods around the country. There are a number of consumer uses that we talk about, and they're sometimes easy and tangible to talk about in these conversations, but I don't know that we even always realize the number of devices that we're interacting with on a daily basis that are connected as well.

Dan: Exactly right, Nicole, and that's really one of the most exciting benefits of 5G. LTE or 4G had limitations. Wi-Fi has limitations as to how many devices can be on a single network within a confined geographic location. Given densification, given broader spectrum blocks, 5G really relieves those limitations and allows for all the machine-to-machine devices that you're talking about, both in an industrial setting and in a home setting.

Hanish: In what you guys just said, you alleviated one concern I was about to ask: Does that mean in 10 years from now, I need to know 50 to 140 different passwords? But it sounds like I definitely don't, so that's one concern that's been alleviated. But just then you raised another one, and that's around security, privacy, all of those aspects. As we as consumers are certainly concerned about our personal data, what happens when we factor in all of these things and particularly all of these devices that you guys have just mentioned, that within 10 years from now . . . 50 or 140, where does that all play in?

Nicole: This is another one—and Dan, I'd be curious to hear your point of view on this as well—but this is another one where I think that the generations play a little bit of a part. Because when I talk to younger consumers about this, most of them say that they're willing to trade a little bit of privacy—or a little bit of personal data, let's put it that way—a little bit of personal data for better service, for a more personalized experience. That came out in the survey as well, that almost three-quarters of our consumers understand how their personal data is being collected. But half of consumers agree that as long as they get a greater value from those services, then it's okay. It's okay for you to collect information about me if you're going to use it to help me, to make my customer experience better.

Dan: And I think there's overall just a broader awareness that the data is being used and, in some cases, that consumers even want more control over their data, at kind of one extreme, so that they have the opportunity to limit the amount of data that goes to providers. But on the other extreme, it could be even that they want some sort of compensation that can come, as Nicole was mentioning, and that personalization or quality of service, or it could come in terms of monetary value—discounts, coupons, etc. But we do see an awareness that the personal data is being used more frequently and it's just a bigger topic for consumers at this point.

Nicole: Yeah, consumers are getting a lot smarter about it. I remember one of the data points in the survey is that something like 70 percent of consumers claim to be more aware now than they were even just a year ago about how their data is collected and used. I think some of the new privacy regulations have helped with that.

Hanish: Perfect, thank you. Before I get your final thoughts on this topic, because I know the both of you so well, I'm not going to let you get away without me asking you a personal question to the both of you. So this question's to the both of you. You guys are so in deep and knowledgeable about what's happening in the 5G space, the mobile space connected to in and outside of the home, and you've talked about many of the benefits that we're all going to see as consumers and as enterprises, but what's the one thing that truly excites you about what's on the horizon?

Dan: I think I'm going to go back to something Nicole mentioned earlier in this session, which is the industrial use cases. As much as we can think of the productivity for the consumer and the home, what we're seeing is earlier adoption, more excitement, and potentially even greater utility in industrial and really across many, many verticals.

I would say manufacturing is an early adopter, health care and hospitals are early adopters, and when you think about, again, relieving the constraint of the number of

devices, think about the ability to process data on the edge and really reduce latency, this is what will drive the next round of productivity gains that we've been lacking, quite frankly, in a lot of industries. It has the potential to change cost structures for industry, which then flows down and benefits consumers who are the purchasers of those products.

Nicole: That's exciting stuff to come. Like you said, it won't be something that we see every day, but it'll be a really exciting application of the technology. I'll give perhaps a more personal example: As someone who is married to a home automation junkie, my house is pretty voice-activated right now; I can make a lot of things happen just by talking to the different devices around my house. But I'm excited to see how 5G enables some of the smart city technology. I'd like to see some of the autonomous driving solutions come to life. I live in New York City, and getting around the city can be tough, and I think that autonomous driving may be able to clear some of the gridlock that we see around the city, and I like the idea of being able to spend time in the car and not have to actively drive and make use of that time and actually take some of that time back that we spend in vehicles. I think that'll be an interesting use case if it actually comes true. I'm ready for *The Jetsons*.

Hanish: Brilliant. So it's absolutely clear that connectivity cravings are driving consumer appetite for 5G, home automation, more control of personal data. And there's clearly a huge enterprise element to this, as we heard from Nicole and Dan. And with 5G getting closer and closer to reality, this connectivity craving can be satisfied if smartphone manufacturers and telecommunication carriers are ready to deliver the devices and the connectivity that we're all craving. So with that, I want to thank Dan Littman and Nicole Gallagher for joining us today, and until next time, happy listening.

Nicole: Thank you, Hanish.

Dan: My pleasure, Hanish. Thank you.

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