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SUPPORTING TODAY'S CONNECTED CONSUMER

A Parks Associates Whitepaper Developed for Sutherland

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Supporting Today's Connected Consumer

Home Technology Evolution

Over the past 10 years, the technical landscape of US households has evolved significantly. The technical composition inside the home is different in several ways, and old models of break/fix support no longer meet consumer needs. The tools and the types of support services needed have changed.

These changes dictate that device manufacturers and other support providers change their strategies in ways that adequately support customers, while minimizing provider costs.

New technical support needs in the home have also created opportunities. For example, service providers, including broadband and traditional service providers, have opportunities to generate additional revenues by bundling technical support services for emerging connected devices with existing services.

Other sectors are seizing on the opportunity to support connected consumers. Home service providers like Porch.com, Task Rabbit, Puls, and Home Advisor promote smart home device setup and installation services to customers. Home network solution providers are another group that is developing sophisticated algorithms to provide efficient network and device diagnosis services to connected consumers.

Computing and Entertainment Devices

Traditional connected devices (computing and entertainment devices) still maintain a strong presence in US broadband households. While the markets for most of these devices have reached or are approaching saturation, actual adoption levels have remained fairly consistent since 2014. The markets for some entertainment devices are shrinking—including the market for smart DVRs, and smart Blu-ray players—while the markets for other entertainment devices, including smart speakers, are growing.

100% of US broadband households own a computing device.

69% of US broadband households own a connected entertainment device; up from **64%** in 2019.

US broadband households now have an average of **9.1** computing and entertainment devices.

> Desktops
> Laptops
> Home Network Routers
> Smartphones
> Tables
> Smart TVs
> Gaming Consoles

> Streaming Media Player
> Smart Blu-ray Player
> Smart DVR
> Virtual Reality
> Headsets

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Smart Home Devices

Smart home devices are gaining traction in US broadband households--driven by the demand for increased convenience, safety, and security. Broadband households now have an average of two smart home devices, though this rises to an average of 6.8 smart home devices among households owning at least one such device.

30% of US broadband households own at least a smart home device; up from 17% in 2015.

US broadband households now have an average of 2.0 smart home devices.

- Smart Thermostats
- Smart Door Locks
- Smart Video Doorbells
- Smart Cameras
- Smart Light Bulbs
- Smart Lighting Control Systems
- Smart Outdoor Light Fixtures with Camera

- Smart In-wall Switch
- Smart Plugs
- Smart Sprinkler Systems
- Smart Garage Door Openers
- Smart Smoke/CO Detectors
- Smart Water Leak Detectors
- Smart Water Shut Off Valves
- Smart Major Appliances

Connected Health Devices

Connected health device ownership has increased steadily since 2015. Devices falling under the umbrella of connected health include connected fitness devices, connected medical devices, sleep devices, wearables, and augmentation products—such as hearing aids.

42% of US broadband households report owning a connected health device; up from 33% in 2015.

US broadband households now have an average of 1.2 connected health devices.
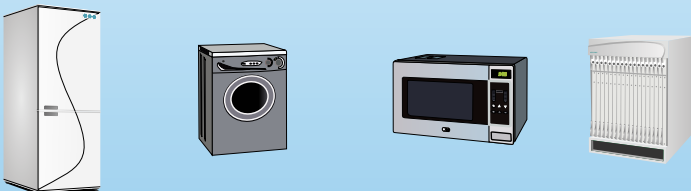
- Smart Watch
- Fitness Tracker/Band
- GPS Sports Watch
- Pedometer
- Exercise Equipment
- Heart Rate Monitor
- Weight Scale
- Sleep Monitor
- Smart Mattress

- Thermometer
- Glucometer
- Blood Pressure Cuff
- Pill Box
- CPAP Machine
- Cardiac Monitoring
- Device
- Pulse Oximeter
- Hearing Aid
- Hearing Amplifier

Smart Major Appliances

Smart major appliances emerged in the US market in 2011. However, adoption rates remain low. With large appliance manufacturers actively developing and promoting new smart appliance features, the market is gaining traction.

11% of US broadband households have at least one smart major appliance.

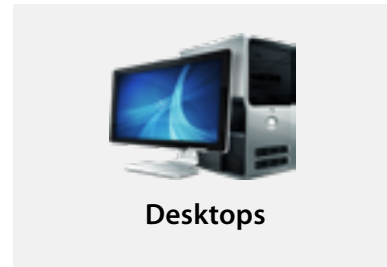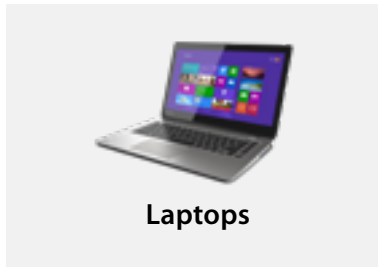**7%** of US broadband households report purchasing at least one smart major appliance in 2019.

- Smart Refrigerator
- Smart Clothes Washer
- Smart Clothes Dryer
- Smart Range Cooktop
- Smart Oven
- Smart Dishwasher
- Smart Microwaves
- Smart Water Heater
- Smart Air Conditioner

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COVID-19 Impact on Consumer Technology Product Adoption

The COVID-19 pandemic is influencing consumer electronic purchases and will likely impact consumer support needs.

> " **26%** of US broadband households report purchasing a consumer electronic device during the pandemic between February 2020 and May 2020. © Parks Associates

Consumers were most likely to purchase:

Laptops	Smartphones	Desktops

Consumers also report an increase in purchase intentions for these devices. Prior to 2020, purchase intentions for laptops and desktops had been fairly consistent, with approximately 20% and 15% of US broadband households reporting intention to purchase at least one laptop and desktop computer respectively each year. However, purchase intention rates for these devices experienced an increase in 2020.

This increase is likely driven by new social distancing guidelines brought on by COVID-19, which requires many individuals to work and attend school from home.

Among the 26% of US broadband households that purchased a connected device during the COVID-19 crisis (between February 2020 to May 2020), the leading reasons given for purchase were for entertainment, to help someone work from home, and to help someone in the home complete school work remotely.

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Supporting New Consumer Needs

Consumers want to embrace new connected devices that promise to help them monitor and manage their personal lives more efficiently and effectively.

Keys to Creating Consumer Trust in Smart Devices

Provide capabilities that are easy to access	Ensure devices work as they should	Keep consumer data safe

The Technical and Business Challenges Emerging

The technical challenges and support needs that consumers have today are very different than in the past. These challenges start from the moment consumers attempt to purchase a product. The consequences of these challenges negatively impact both the consumer and brand.

Pre-Purchase Support Needs

Consumers have a solid understanding of traditional computing and entertaining devices and the value propositions they offer. They do not typically require extensive support for the purchase of these products. Newer connected devices present a bigger purchase challenge as consumers attempt to figure out which products are a good fit for their lifestyles and home layout. For smart home devices in particular, consumers indicate strong purchase intentions year over year. However, only a small percentage of consumers actually purchase the products, indicating barriers to adoption.

The barriers impacting the space often fall into three buckets:

- Poor perception or understanding of product value
- Concerns about security and privacy
- Concerns about the technical complexity of the products

11% of consumers who do not own or intend to purchase smart home devices report they are confused about how to set up and use them.

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Commonly Asked Consumer Questions

Consumers commonly ask sales representatives and support providers questions about device interoperability, device configuration, and data security and privacy policies.

Interoperability
1. Which platform should I pick?
2. Will it work with a specified device in my home?

Configuration
1. Will a specified feature be enabled automatically, or is there something that needs to be done to enable it?
2. Will device data automatically sync to my phone, or do I have to take additional steps to sync data?

Privacy and Security
1. What aspects of my personal data will my device share?
2. Are my devices listening?
3. Who can hack into my device?

Inexperience with new products and how they work is one factor driving purchase support needs. This drives fears about difficulty enabling features or that product features won't work as expected. Without clarity on these elements, consumers may avoid making purchases.

A lack of industry standards also drives uncertainty about whether products will work seamless together and with other products in the home, causing consumers to seek information about product compatibility or avoid making purchases altogether. The lack of industry standards regarding which data is collected from connected devices, how it can be used, and the transparency requirements governing data collection leaves consumers questioning the specific practices of brands they are interested in purchasing.

Brand Impact

Consumer inexperience and lack of industry standards mean brands must provide information resources that can address their questions efficiently and effectively or risk missing sales opportunities due to consumer uncertainty.

Providing consumer education tools that help consumers garner information quickly about device compatibility, feature enablement, and security and privacy policies can help alleviate consumer concerns about whether or not a product will be a good fit for them and drive product sales. Consumer purchase concerns also create the opportunity for brands to provide premium consultation services, such as those offered by Best Buy and Amazon for the smart home and generate additional revenue.
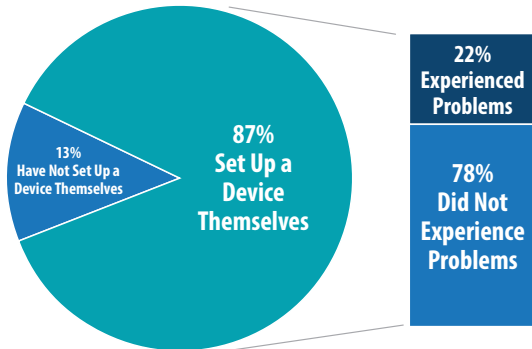
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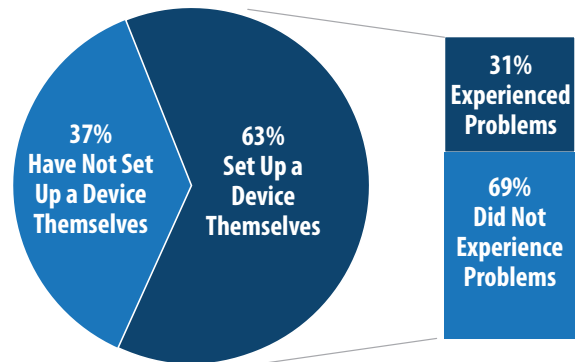
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Problems Setting Up Devices

Most consumers are now comfortable setting up traditional connected devices themselves.

Compared to traditional computing and entertainment device owners, fewer smart home device owners (63%) report setting up at least one smart home device on their own. Among those who did, a higher percentage (31%) reported experiencing difficulty with the process. This indicates a stronger need for support with these newer connected devices.

CE Device Owners

13% Have Not Set Up a Device Themselves

87% Set Up a Device Themselves

22% Experienced Problems

78% Did Not Experience Problems

Smart Home Device Owners

37% Have Not Set Up a Device Themselves

63% Set Up a Device Themselves

31% Experienced Problems

69% Did Not Experience Problems

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More extensive setup process - To complete the setup process, smart home devices must connect to consumers' home Wi-Fi networks. Ninety-two percent of US broadband households use Wi-Fi to access the internet wirelessly at home. Smart home devices use a variety of communication protocols, this means that many devices require a hub to connect to consumers' home networks. This additional step creates complexity.

Industry fragmentation - Even when connecting Wi-Fi-based products to the home network, consumers may still experience difficulty. The home network router market is fragmented and product manufacturers must design smart products to work with all the various routers in consumers' homes. If a product is not designed to work with a specific model of a specific brand of router, it can lead to initial connection problems for the consumer.

SoftAP technology is often fragile - The use of SoftAP technology creates additional opportunities for setup challenges. Many product manufacturers utilize SoftAP technology in their devices to initiate connections to the home network router. This technology is fragile, leaving room for several glitches to occur during the process. Fourteen percent of smart home device owners report experiencing problems connecting their devices to the home network router.

87% of consumers set up at least one connected computing and entertainment device on their own. Of these consumers, 22% reported experiencing difficulty with the setup process.

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Brand Impact

The problems consumers encounter when setting up emerging connected device can extend the time it takes to set up the product or lead to an all-out set up failure. This creates inconvenience that drives poor customer onboarding experiences. In addition, brands incur losses when setup experiences are not superior. Consumers experiencing setup problems often return products. The leading reasons given for returning smart home products are difficulty with the physical installation of the product, the product didn't work as advertised, issues configuring device setting, and the product was broken or defective. Along with costs, like repackaging fees associated with product returns, poor experiences can drive apprehension to make additional smart home device purchases and drive future losses for a brand.

The risks to a brand when consumers have poor setup experiences is high. However, setting up all devices on behalf of all customers is cost prohibitive to most brands. To the extent possible, brands must build in solutions that automate the setup process on behalf of the consumer. It is important to make the setup process intuitive and to develop instructional tools such as online videos that help consumers navigate the setup process effectively.

Connectivity Issues

Even after initial connections are made during device setup, devices often lose connection to the home network. Connectivity problems are leading issues facing owners of connected devices. Forty-six percent of smart home device owners who reported experiencing a technical issue in 2020 reported a loss of wireless connectivity.

Smart Home Devices: Technical Problems Experienced

% Experiencing Specified Problem

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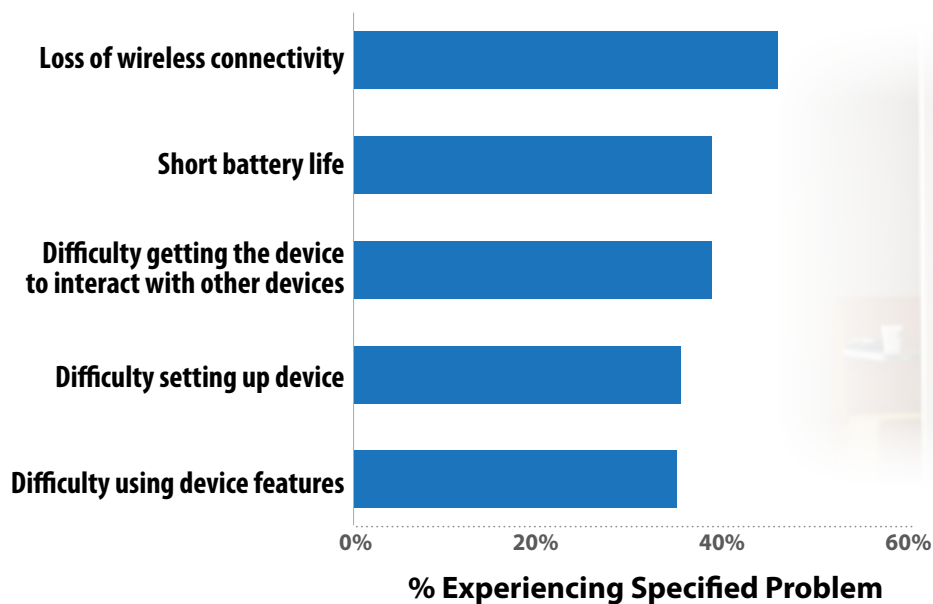
Unreliable device connections present a major threat to the experience with emerging connected devices, given the highly sensitive nature of many device use cases.

Use cases for smart home devices include maintaining home and personal security/safety, preventing disasters like fires and floods, and protecting valued assets in the home. Smart home devices are also increasingly being leveraged for aging in place solutions that enable caregivers to remotely monitor the health and wellbeing of loved ones. Connected health devices are responsible for helping consumer monitor vital statistics and keeping them at optimal levels. For devices performing these functions, a loss of connectivity is not just inconvenient, but can have serious detrimental consequences.

Congested home networks, weak Wi-Fi signal, and **out-of-range devices** are all factors causing loss of wireless connectivity and service interruptions for connected devices.

Brand Impact

Along with the potentially devastating impact on consumers, service disruption due to problems maintaining connectivity has a negative impact on a brand. Customers will lose confidence in devices' ability to maintain their promise—whether this is to maintain safety and security or optimal health. This not only reduces NPS and brand equity, but negatively impacts the industry's ability to grow.

Given the importance of sustained connectivity to the home network, proactive strategies that prevent service interruptions are ideal. Solutions are emerging that enable service providers to monitor and manage consumer home networks with the following objectives:

- Maintain reliable Wi-Fi connections
- Optimize home network performance to guard against weak signals and slow speeds
- Promote good coverage throughout the home and eliminate dead spots
- Protect the network from hacking

Interoperability Issues

Interoperability promises to unlock additional features and capabilities for smart home devices and systems, improving the value proposition for consumers. However, seamless device-to-device interaction remains out of reach.

39% of smart home device owners who reported experiencing problems in 2020 reported difficulty getting their devices to interact with other devices.

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Interoperability is a growing problem for smart home device owners in the US. In 2018, only 11% of smart home device owners who experienced problems reported interoperability issues. As consumers accumulate a greater number of connected devices, they will seek to maximize their value through use cases that involve device interoperability.

Interoperability issues are driven by the **lack of established standards in device communication protocols** used throughout these industries. Moreover, all efforts to achieve seamless interoperability, whether through the development of a shared open standard for communication, API integrations, or application layer integration, are all emerging slowly.

> 38% of consumers who do not own or intend to purchase smart home devices do not do so because they do not see any benefit to purchasing them.
>
> © Parks Associates

Brand Impact

Poor perceived value is one of the leading barriers to smart home device purchases.

Among those who acquired smart home devices in 2019, the leading value proposition influencing them to purchase the products was to add convenience to their lives. Device interoperability can significantly increase the level of convenience that can be derived from connected devices, compared to when these devices operate independently. It facilitates the creation of recipes that allow activity in one device to independently trigger activity in other devices.

For example, if a consumer's smartphone can communicate directly with their smart door lock, then the smartphone can trigger the door lock to open when the owners gets home. The owner's door lock can then communicate with the owner's smart thermostat to adjust the temperature to the user's desired setting, when they get home.

If smart devices can communicate with each other, they can save users time and effort. Seamless device interoperability has the ability to drive appeal and dramatically expand the market for smart home devices.

Creating and enforcing industry standards is one approach for achieving greater interoperability. However, establishing industry standards demands extensive time and resources. It is also challenging as various standards providers lobby for their own solutions. The use of open APIs and integration adapters can improve the ability to enable and support these systems.

In December 2019, leading tech companies Amazon, Apple, Google, and Zigbee Alliance announced a new working group, **Project Connected Home Over IP**, to develop a new open-source connectivity standard for smart home devices. The standard is being developed to increase overall compatibility among smart home devices and to make it easier for manufacturers to develop these products.

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Poor Device and Support Experiences

Initially, the complexity of traditional computing devices resulted in high volumes of support requests for those devices. However, brands and other support providers have leveraged years of data and experience with these devices to improve customer experiences with computers, smartphones, and home network routers. Large repositories of data are now used to perform PC health checks and proactively highlight issues with consumers' devices. Support providers have automated fixes for complex issues including Wi-Fi configuration issues, and issues related to app settings and email setup.

Support providers have also developed sophisticated remote support tools to facilitate better and more consistent support experiences. Automated solutions like the digital prescreening of customer devices and issues, minimize time to resolution. The consolidation of various connectivity and device efficiency testing metrics into a single dashboard for support agents also facilitate efficient problem resolution. Minimal participation in the support process has dramatically improved the support experience for computing device owners.

Reduction in PC-related issues

39% of desktop owners reported experiencing a problem with their device in 2014, compared to only 18% in 2019.

33% of laptop owners reported experiencing a problem in 2014, compared to only 17% in 2019.
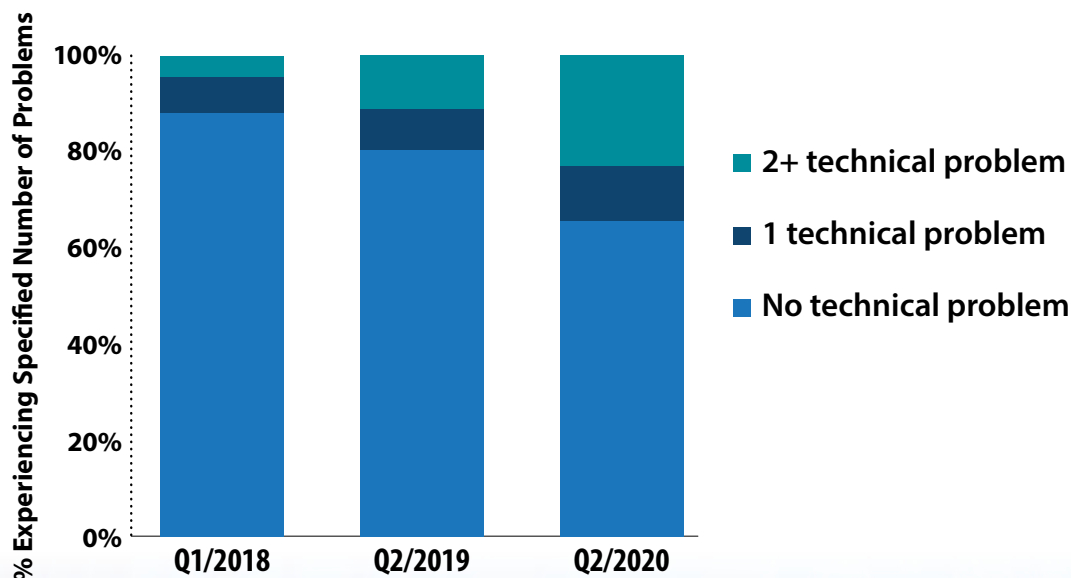
In contrast to computing devices, a higher percentage of smart home device owners have reported experiencing problems with their devices in 2020 than in 2018.

Smart Home Device: Number of Technical Problems Experienced

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Several factors likely drive the increase in problems with these devices and inadequate support experiences.

Immature technologies - As the smart home device industry progresses, device manufacturers increasingly add feature sets to devices that use advanced technologies such as artificial intelligence (AI). While these technologies have come a long way, many are still being refined. For example, AI has improved the capabilities of smart cameras allowing them to distinguish among animals, people, and objects. This has dramatically improved the usefulness of smart cameras in home security. However, consumers still experience false alerts or device failure to detect objects. These challenges are the result of immature technologies and may not be resolved. Six percent of smart home device owners who report experiencing a problem in 2020 report that their problem was never resolved.

Complex use cases – The complex use cases involved in IoT often make it difficult to identify the source of the problem when something goes wrong. The problem can lie with the consumer's broadband service or home network connection, the entertainment devices themselves, or within the technologies that allow the lights to communicate with the entertainment devices. Consumers are often the ones who bear the burden of a difficult diagnosis. They are often required to seek support from all providers types as they all try to determine which party is responsible for the problem.

Inadequate support tools – Users of technology in the home now range from toddlers to elders, who leverage tablets, smart speakers, and other connected devices for communication, education, entertainment, and to maintain health. Given that many newer devices do not have auto resolution capabilities, these consumers have to be active participants in the support process when they encounter an issue, helping support agents make the necessary observations for diagnoses and helping to make the necessary adjustments to resolve technical problems. This challenges support providers to have a range of tools and skill sets that can support consumers of all age groups and various technical skill levels effectively. Consumers ultimately have negative support experiences when support providers do not have all the resources to adequately support them.

Brand Impact

Poor product and customer experiences weaken the customer experience and customer relationship with the brand. It also drives up support costs for brands, especially if support tools are inadequate.

Device-generated data, especially when analyzed within the context of a consumer's technical environment or ecosystem, can yield insights that can help to prevent glitches that threaten connected home experiences.

Video-based support solutions that allow technical support providers to see tech hardware inside consumers' homes is helping to improve the support experience for consumers and reduce support costs to brands. Video allows technicians to make observations necessary for diagnosis, independent of consumers, and demonstrate to consumers how to resolve issues as opposed to providing verbal descriptions. Interactive video solutions that allow tech companies to support their customers virtually have been available for some time. However, COVID-19 restrictions have accelerated the implementation of these tools by service provider like COX and Verizon. The tools allow them to effectively support their customers remotely.

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Security and Privacy Concerns

Device security is a priority for owners of connected devices. Services that protect devices from viruses, spyware and other malicious software have been the most appealing premium support services for traditional computing devices for many years. With the **increase in the range of devices connected to the internet**, consumers are exposed to more risk. And many consumers know this. With several **smart camera breaches in 2019 and speculation about a lack of transparency in smart TV data collection activities receiving a lot of media attention**, consumers are hyper-aware of the security and privacy breaches, and many have concerns.

Brand Impact

Security and privacy breaches result in poor user experiences and consumer concerns about data security result in missed sales opportunities due to consumer apprehension to purchase products.

To alleviate consumer concerns about privacy, device manufacturers can offer privacy rights and guarantees, such as the right to determine what data can be accessed and how it can be used. Device manufacturers must treat security and privacy as a priority and apply robust security features to their smart products. Security features must be designed into the product from the ground up. The product firmware, the communication link to the cloud, and the cloud infrastructure must all be carefully designed and tested. As more robust encryption and security software become available, manufacturers should take advantage of the capability to upgrade these devices.

Conclusion

Valuable use cases and good experiences drive adoption of new connected products and systems, poor experiences weaken brand equity.

Brands must focus on maintaining superior product experiences throughout a customer's journey with their products. Generally, the fewer the number of steps that consumers have to take to get their devices up and running, the better.

The same goes for problems—the fewer problems or service interruptions that come to the attention of a user, the better the perceived product experience. Thorough beta testing, prior to bringing a product to the mainstream market can help brands identify and address potential issues that can downgrade the product experience. Product testing laboratories are dedicated to assessing customer journey from unboxing and installation to the ongoing use of the product. These companies may also examine how products interact with other technologies in their environments for a thorough analysis of the customer experience.

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Consumer Support Needs	Drivers of Support Need	Business Impact
Pre-purchase support needs	• Consumer inexperience with new products and how they work • Lack of industry standards around communication protocols, device security, and privacy	• Missed sales opportunities. due to consumer uncertainty
Problems setting up devices	• More extensive device setup processes • Technology fragmentation in industry. • Fragile technologies used in the setup process	• Cost of product returns • Loss due to consumer apprehension to buy additional products
Connectivity issues	• Congested home networks • Weak Wi-Fi signal strength • Out-of-range devices	• Loss of confidence in the promise of connected devices • Inhibits overall market growth
Interoperability issues	• Lack of established standards in device communication protocols	• Brands' ability to create value is restricted
Poor device and support experiences	• Immature technologies • Complex device use cases • Inadequate support tools	• Customer and brand relationships are weakened • Support costs to the brand increases
Security and privacy breaches and concerns	• Increase in the range of devices connected to the home network • Strong media attention to breaches experiences	• Missed sales opportunities due to consumer concerns

Until brands can provide this ideal product experience, where customers face few to no issues, reactive support must be readily available, efficient, and effective. Brands must also provide consumers with smart self-help tools that are intuitive and effective. These tools can provide automated testing and diagnostics that enable consumers to resolve problems independently. Smart self-help tools also serve as information assets for calls that are ultimately escalated for professional support, increasing the efficiency of diagnosis and problem resolution.

A few industry leaders are implementing comprehensive support measures for emerging connected devices, but much work remains for the industry to ensure superior user experience across the market.

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About Sutherland

Sutherland delivers outcomes-based services and solutions to support technology companies' most valuable asset—their customers. With 38,000+ professionals, across 60+ global multi-lingual delivery centers and Sutherland Anywhere, work-at-home program, we combine skilled people with proven methodologies and analytics-powered front-to-back office capabilities for an exceptional customer experience that drives revenue. www.sutherlandglobal.com

About Parks Associates

Parks Associates is an internationally recognized market research and consulting company specializing in emerging consumer technology products and services.

Founded in 1986, Parks Associates creates research capital for companies ranging from Fortune 500 to small start-ups through market reports, primary studies, consumer research, custom research, workshops, executive conferences, and annual service subscriptions.

The company's expertise includes the Broadband of Things (IoT), digital media and platforms, entertainment and gaming, home networks, Broadband and television services, digital health, mobile applications and services, support services, consumer apps, advanced advertising, consumer electronics, energy management, and home control systems and security.

For more information, visit parksassociates.com or contact us at 972.490.1113, info@parksassociates.com.

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Patrice covers smart home products and services and leads Parks Associates Smart Home Tracker product, keeping clients informed of industry developments and competitive shifts across more than 10 smart home product markets. She also leads digital home technical support services with a focus on market trends, business models, and provider strategies. Patrice manages custom research projects and strategy workshops that help companies understand the consumer experience in the connected home.

Patrice earned her MBA from Texas A&M University at College Station and BSc in Psychology from the University of the West Indies.

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