

GutCheck

Connected Home Exploration



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With the proliferation of smart technology and the Internet of Things in daily life, consumers have begun to have access to new ways of controlling and monitoring their homes. Smart/connected home technology promises benefits including comfort, convenience, economy, and safety. Companies in a variety of industries are experimenting with connected home products and services; however, there is no clear understanding of what types of products and services have the most promise among early adopters as well as the potential to catch on among a broader audience.

This research focused on exploring interest in and possible uses for smart/connected home technology. The findings will help companies from a variety of industries ideate and develop products and services to meet rising customer demand.

KEY QUESTION

What types of smart/connected home technology resonate most among consumers, or drive the most interest in using?

RESEARCH OBJECTIVES

1. Explore interest, possible use cases, and barriers to adoption for smart/connected home technology: in-home features, appliances, or devices consumers would be interested in monitoring or controlling remotely and how (i.e., from which devices, in what circumstances)
2. Generate ideas for in-home devices that could be integrated with smart technology
3. Understand appeal of current connected home systems/devices like Alexa, etc.

Research Method	# of Groups	Total Respondents	Days in Field	Recruit to Report (in days)
Exploratory Research Group	2	42	2	7

This study was conducted via an online Exploratory Research Group™ where respondents answered open-ended questions and follow-ups posted by a trained moderator. This technology fosters a dynamic qualitative discussion where respondents are easily able to interact with others in the group.

AUDIENCE

Age	18+
Gender	Mix
Smartphone Owner	Yes, any brand
Smart/Connected Home Tech	Strongly agree with "I am open to the idea of 'smart home' or 'connected home' technology."

Early Adopters
N=22
Own/use one or more smart/connected home device

Potential Users
N=20
Do not currently own/use any smart/connected home device

Convenience of central control and remote access is the main draw

- Convenience (timesaving, easy interaction, and simple remote access via smartphones), saving money, and energy efficiency account for the most interest in smart home tech
- Remote access and multi-functionality are top hallmarks of smart home devices
- Heating/AC, security systems, lights, media, and kitchen appliances all seem fit for smart home tech

Utility, integration, security, and cost are top barriers to adoption and use

- Questions: where's the line between gimmicks and actual utility, how easy is it to integrate different brands of appliances and smart home tech, and how secure is any data these devices are collecting?
- Concerns: security against hacking, initial install price, costs of upgrading/updating

Amazon and Google are seen as the best brands for smart home tech

- Alexa/Amazon Echo tops device-specific lists both for current use and appeal, followed by the Nest (owned by Google) thermostat and smart doorbells like SkyBell and Ring
- Google edges out Amazon for most trusted brand, followed by tech brands Samsung and Apple

Whole-home integration and appliance-specific tasks both have high appeal

- Whole-home command centers top real-world wish lists for both groups, followed by laundry functions
- Fantasy wish lists focus on pet care assistants and start-to-finish cooking or laundry capabilities
- Some see potential in car-home integration, but respondents see it as fairly limited

Convenience is the top draw for smart home tech, but some see it as laziness instead, especially when considering in-home control of integrated systems. Focusing on remote access to these systems and devices may help play up the convenience factor while avoiding the connotation of laziness.

Both Early Adopters and Potential Users still have concerns about the security of smart home systems. Clearly communicating measures to prevent access by hackers can help to reassure customers, and make them more comfortable integrating smart home technology into their homes.

While people are most likely to think of turning to large trusted brands like Google and Amazon for smart home tech, they are willing to try device-specific brands like Nest (Google), Ring, and SkyBell for the functionality. Highlighting unique capabilities of newly introduced products and brands can help overcome the desire for familiar brand names on these devices.

People see opportunities for smart home tech in the areas of laundry, meal preparation, and pet care. Pursuing even simple options like washing machine alerts to smartphones, recipe suggestions based on food on-hand, or remote access to pet food dispensers could bring new customers into the smart home technology market.

DETAILED FINDINGS



Both groups saw a lot of potential in smart home technology and devices

- Convenience (timesaving, easy interaction, and simple remote access via smartphones), saving money, and energy efficiency accounted for the most interest in smart home tech
- Some also mentioned how useful voice or smartphone control can be for people with physical disabilities, especially mobility impairments and blindness
- Most people in each group said that smart home enabled devices are likely to completely replace existing devices in the home in the near future, though a few saw them settling alongside current devices instead



Anything that makes my life easier and helps me accomplish tasks more efficiently is desired. Hands-free technology that allows me to accomplish tasks without necessarily being in direct contact with (or in the same room) the object is beneficial.
-Female, 27, None



The benefits of smart home technology are pretty obvious. They are extremely helpful in day to day life and accomplishing goals in a more timely manner. I feel as a species, humans are always looking for ways to cut time and make everyday tasks more convenient to leave time for other activities. Smart Home technology is another step in that direction.
-Male, 28, Samsung SmartThings Hub, Other device



People can be lazy and that is completely fine. Some people just like it because it is very convenient, and it is very worth it to people who are physically incapable of doing these activities (in a wheel chair, for example).
-Male, 19, Alexa/Amazon Echo, Phillips Hue

Remote access and multi-functionality were common hallmarks of smart home tech



When I think of smart home, I think of everything available at the touch of a button. No need to get up and turn off the light; just use a button on your phone. Forgot to start the dryer before you left for work? No need to turn around, just click a button on your phone.
-Female, 23, Other device



I choose the Amazon Echo because of the numerous helpful features it has. In the commercials you can talk to it to find songs based on the lyrics, find out information like "How far is the sun from the earth?", etc. This is what I think of when I think "smart home"
-Female, 27, None



I think a smart home represents connectivity. Technology allows us to have everything at our fingertips and it's no surprise that our home would be too. To be able to do all the simple functions of your home on a smartphone makes a home "smart."
-Female, 18, Alexa/Amazon Echo

Heating/AC, security systems, lighting, media, and kitchen appliances were ideal for smart home tech

- **Thermostat control** offered increased comfort and convenience, but would also help with energy efficiency and saving money
- Remote access to **door locks, garage doors, and security cameras** gave people more confidence in the safety of their homes while away
- Automatic or remote control of **lights** could improve both energy efficiency and home safety by giving the impression of being home while away
- Many liked the idea of voice or smartphone control of **media systems** throughout the home, to provide seamless music and video experiences
- Accessing **kitchen appliances** remotely could help jumpstart the day by getting coffee started from bed; help with food shopping by tracking food stocks; or even improve safety by allowing users to check ovens and stoves were turned off



Light bulbs, appliances, doors, garages, A/C units, because these are the functions we use every day. I think technology is best helpful when it allows things we use every day to be more efficient.
-Female, 18, Alexa/
Amazon Echo



I think kitchen appliances and a thermostat would be most suited for smart technology since those are the things we tend to forget about the most. It would be great to be able to set your thermostat remotely so that you not only save on energy costs, but you help the environment by only running your system when you need it. It would also be great to preheat the oven before you get home or set your coffeemaker to start before you wake up.
-Female, 20, None



I think the best feature is being able to control it from a location away from home. It could be a good deterrent for burglars. I also would like to be able to see my kids when they are home alone.
-Female, 41, None

Google, Amazon, and tech brands seemed most trustworthy for smart home tech

- Both groups felt Google would be the easiest brand to trust when it comes to smart home tech, followed closely by Amazon
- Technology brands Samsung and Apple also came to mind as trustworthy
- Appliance brands like GE and LG were mentioned by some, as well as specific device brands that are starting to become more well-known, like Nest (Google) and Ring
- When it comes to new smart home technology, people are looking for the comfort of established brands with good track records in tech fields



If big name brands like Google, Apple, Tesla, or Samsung came out with more smart home technologies, I would invest in them because I trust these brands and their dedication to improving our lives with technology.
-Female, 18,
Alexa/Amazon Echo



Amazon Echo because, well, it's Amazon. I can't think of a company brand that is as trustful as them with new tech.
-Male, 50, Other device



Nest, Ring, Samsung, LG, Google. Only because I have other products by these companies that I already use that are working well for me so far.
-Male, 39, Nest, Ring

Alexa/Amazon Echo topped lists for current use and overall appeal

- Alexa/Amazon Echo is the most common in current use among Early Adopters
- Nest (Google), Sleep Number IT Bed, and Ring doorbell are also popular
- Similarly, both groups rate Alexa/Amazon Echo and Nest (Google) highest in appeal
- SkyBell & Ring doorbells also rate highly for appeal, as does the Scout Home Security system
 - While the question was specific to particular brands' devices, respondent comments about smart tech doorbells and home security systems were primarily focused on function, rather than individual brands



I have an Amazon Echo, which is very useful, especially when guests come over for say a party occasion. The Amazon Echo can play a selection of music whether it is from Spotify, Amazon Music, or iTunes. It can also give out jokes and do various other quirky things, by simply knowing the code. Alexa, the Amazon Echo is also very useful because she has the ability to turn your Smart Lights on, and my garage door as well, so it is very useful overall. Alexa has helped with the house, creating grocery lists for us, and even ordering products that we need when we don't have access to a computer. The Amazon Echo has it all, making this the most useful technological smart home device ever created.

-Male, 19, Alexa/Amazon Echo, Phillips Hue



I live on the second floor of my home so [I'd like] a system of being able to answer the doorbell without the great inconvenience of stopping what I'm doing to go downstairs.

-Female, 23, None

Some still have questions about how smart home technology would work

- Where's the line between a gimmick and something with actual utility?
 - Some current smart home tech devices (like connected fridges) straddle this line, with some respondents appreciating the ability to check on food stocks remotely, while others say to “just open the door to check”
- Would different smart home systems and devices be widely compatible; or would they require replacing functional items, or limit users to specific brands of appliances?
- How secure is any data these devices are collecting?



I don't really understand the draw of WiFi connected lighting, other than being able to turn lights on or off. The ability to change or adjust the colors of lights seems like too much of a luxury and not worth the current prices.

-Male, 29, None



The only issue is that there are so many options out there and then what if I don't choose the right one. Also I am a little confused if these systems have to be replaced every year or two for updated ones. I wouldn't want to change everything in my house out all the time.

-Female, 33, None



Unsure about how they work, the actual advantages aside from 'cool', interoperability, and cost. Cost especially as 'buy an Echo for \$100' but then to get it to work with anything, you have to buy those items too. It's essentially upgrading several components in your house, not just one item.

-Male, 42, Alexa/Amazon Echo

Top concerns were security and cost

- The top area of concern, especially among Potential Users, was device security
 - While many loved the idea of remotely accessing things like locks and home security cameras, some worried about whether these devices might be open to “hacking” from outside sources
- Many also brought up price as why they have not yet accepted smart home tech
 - Initial installation costs seemed daunting, especially for whole-home systems
 - Some were also worried about ongoing costs of maintenance or repair, as well as updating
- Some were concerned about how difficult it may be to install smart home tech, and whether they have the needed skills to install and maintain it themselves



As with any new technology, I'll admit I err on the side of caution and let everyone else sample it for a while 'til they can work out all/any kinks. I love the idea of it but with hackers and all the other possible security anomalies this one is a bit more nerve-racking to me. I do all financial things over my phone but the idea of signing in and accessing my home security system via my phone is unsettling.

-Female, 36, None



I think that I would need someone to come and install some of it. I would be worried about it all connecting properly and working together as needed. Also if it stops working who will come and take care of it?

-Female, 33, None



I'm not so sure of the reliability and expense associated with repairing smart technology when it no longer works as intended. I'm not so sure for that reason I would want an appliance that is smart home technology. The other aspects I think would make life easier but again still wonder about reliability and privacy.

-Female, 39, Other device

Most saw the typical smart home tech users as everyday people making daily life smoother



In this image, the mom and children are perhaps listening to a song and having a good time. Its a small thing they're doing, but its a touching moment. Perhaps it was purposely advertised this way, but nonetheless I believe it shows how this form of technology will most likely integrate and be used in our lives. I believe in the future it will be a part of many fond memories, creating small moments just like this one.

-Female, 27, None



If he forgot his key he can unlock it with his phone and if he forgot to lock it he can check on his phone and lock it. People always forget to lock something and will feel safer if they can check from wherever they are.

-Female, 33, Sleep Number IT Bed

Some respondents pictured the embodiment of a smart home tech user as a big-industry tech guru or CEO, like Mark Zuckerberg, Steve Jobs, Bill Gates, Elon Musk, Larry Page, or Sundar Pichai



I picked Mark Zuckerberg because he has created one of the most popular social networking sites. Because of him, we can now connect anytime with anyone—on our phone, on our laptop, etc. With this same idea, our houses can be very connected with the outside world.
-Female, 23, Other device



I think Elon Musk represents a smart home user. He is all about efficiency and productivity. As he invests in his SolarCity, I think soon he will help make a path into smart home technology.
-Female, 18, Alexa/Amazon Echo



I would create a command center for your home.

This would be a type of small "tower." It would be available in multiple colors so you could incorporate it into the decor of your home. You would be able to use an app on your smart phone to control lights, thermostat, garage door and door bell camera. You would also have the option of including your appliances such as washer, dryer, oven, microwave and refrigerator camera.

-Female, 43, None



The next mega successful smart home enabled device would be one in which everything was all in one place, streamlined, user-friendly, clean, and secure. Users would be able to lock and unlock their doors, turn on the dishwasher, make a cup of coffee, monitor their front door, turn on music, and record a TV show all in one place, among other things. It would be one single device, the size of a small iPad. This would be incredibly helpful in being as efficient as possible in the modern ever-busy lifestyle.

-Female, 28, None



My smart device would be a small hub display that you can control from any smart phone as well. This hub would control everything, by voice or touch. You are working in your garage, your friend comes over, "Garvis" tells you someone is at your door, you look at your smart phone app, see its your buddy, could tell it "Garvis, please open the front door;" boom, front door unlocked and friend can enter. This can be expanded to control everything from faucets, lights, heaters, curtains, TVs; the works!

-Male, 26, Nest

When asked about integrating their cars with smart home tech, reactions were mixed

- Many thought first in terms of driverless cars, and thus had concerns for road safety
- Some saw potential for linking garage door operation to their cars directly
- Others said it would be useful to have control of things like car door locks alongside home locks in smart home security systems, or more sophisticated remote-start functionality through smart home systems
- A few liked the idea of accessing home systems like thermostats, music, and lighting through their cars, but most preferred to keep this type of control in their smartphones
 - Others raised the concern of compromising home security when they sold their cars, or if one should ever be stolen



Sure! Car pulls up, garage door opens automatically, and closes behind...cool. No more lost remote or dead batteries. Car can automatically sync with my home music library when I pull in? Neat! Car has built-in security monitoring features and alerts? Cool!
-Male, 42, Alexa/Amazon Echo



Cars are having their own evolution of smart technology to make them safer. I don't think much has to be done to integrate the car itself into the home. Instead a device like a smartphone is the gateway to operating both the home and car smart features.
-Female, 49, Other device



I do not think it would be useful because of the safety factor. I would not feel comfortable when I sold or traded my car. I would still be nervous about the new owner still having access to my devices.
-Female, 43, None

Laundry, meal prep, and pet care stood out as future directions for smart home tech

- One popular suggestion was laundry help, everything from smartphone alerts for when to move clothes between the washer and dryer to a fully-automated process all the way through folding clothes
- Meal prep was another area where people said they want tech help, anywhere from recipe suggestions based on what's on hand to robotic systems that could order or shop for food and cook from start to finish
- Some also suggested tech to help with pet care, including remote-access food dispensers



Automated washer/dryer with the ability to change out from the wash to dry! It would be cool if there was also a Jetsons-type of system to just type what you want to eat (obviously have to preload) and it would do all the cooking for you. Really anything to automate life would be great!

-Male, 39, Nest, Alexa/Amazon Echo, Sleep Number IT Bed, SkyBell Doorbell



A food and water dish for pets that you would fill and then could use your device to dispense food and water down into the bowls if you needed to. I chose this because many people have pets and sometimes if your out of town or you're just running late and need to make sure your pets are fed this could work. Then you might need a doggie door operated by your device to let them out.

-Female, 39, Other device



A device that would make homemade meals for you and clean the dishes afterwards would be amazing. You would set out ingredients you would like to use and the device would assemble and cook everything to perfection.

-Female, 28, None

APPENDIX



Appendix A: Respondent Profile

Gender	
Female	27
Male	15

Age	
18-24	12
25-29	8
30-34	5
35-39	10
40-44	3
45-49	2
50+	2

Household Income	
\$0 to \$19,999	5
\$20,000 to \$29,999	2
\$30,000 to \$39,999	2
\$40,000 to \$49,999	5
\$50,000 to \$59,999	3
\$60,000 to \$69,999	1
\$70,000 to \$79,999	5
\$80,000 to \$89,999	5
\$90,000 to \$99,999	3
\$100,000 to \$109,999	3
\$110,000 to \$119,999	0
\$120,000 to \$129,999	1
\$130,000 to \$139,999	1
\$140,000 to \$149,999	2
\$150,000 to \$249,999	4

Children in Household	
Yes	21
No	21

Region	
South	21
West	8
Midwest	7
Northeast	6

Appendix A: Respondent Profile, Cont.

Smart/Connected Home Tech Owned or Used

Alexa/Amazon Echo	9
Nest (Google)	7
Sleep Number IT Bed	5
Ring	3
Samsung SmartThings Hub	1
Kwikset Smartcode 916	1
Phillips Hue	1
Scout Home Security	1
SkyBell Doorbell	1
Belkin WeMo Slow Cooker	1
Chamberlain Garage Door Opener	1
Ecobee	0
Samsung Family Hub Refrigerator	0
Fisher-Price Rock'n Play Sleeper	0
Other	5
None, I do not own any "smart home" devices	20

Smartphone Owner

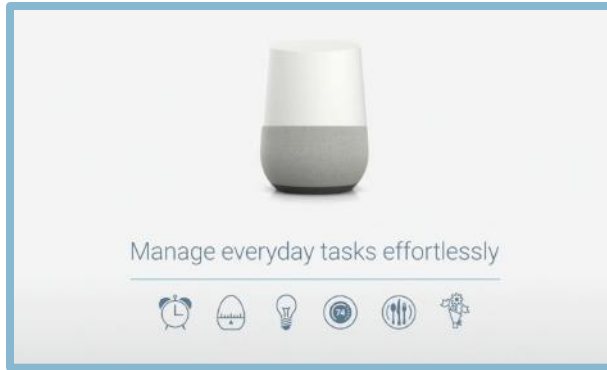
iPhone	26
Android	15
Windows phone	1
Blackberry	0
Other smartphone	0
I do not own a smartphone	--

Open to Smart/Connected Home Tech

Strongly agree	42
Somewhat agree	--
Neither agree nor disagree	--
Somewhat disagree	--
Strongly disagree	--

Appendix B: Uploaded Images

Q3: Find an image online (or take one of your own) that you feel accurately represents the terms “smart home” or “connected home” technology and upload it.



Male, 19, None



Female, 23, Other device



Female, 28, None



Female, 30, Alexa/Amazon Echo



Male, 39, Nest, Alexa/Amazon Echo, Sleep Number IT Bed, SkyBell Doorbell



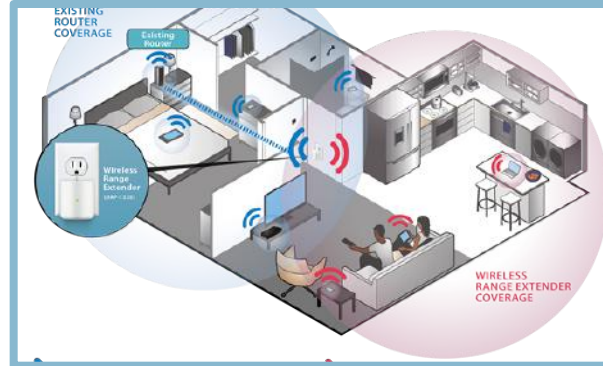
Male, 19, Alexa/Amazon Echo, Phillips Hue

Appendix B: Uploaded Images, Cont.

Q3: Find an image online (or take one of your own) that you feel accurately represents the terms “smart home” or “connected home” technology and upload it.



Female, 35, None



Male, 29, None



Male, 18, None



Female, 41, None



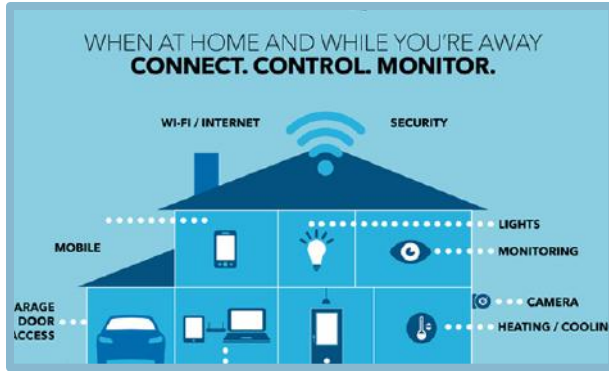
Male, 37, None



Female, 39, None

Appendix B: Uploaded Images, Cont.

Q3: Find an image online (or take one of your own) that you feel accurately represents the terms “smart home” or “connected home” technology and upload it.



Male, 42, Alexa/Amazon Echo



Female, 29, Nest, Sleep Number IT Bed



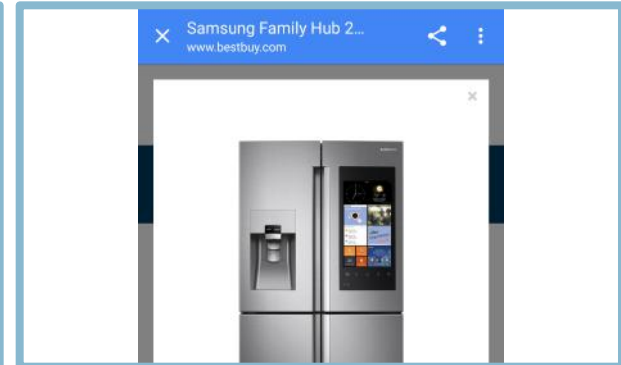
Female, 18, Alexa/Amazon Echo



Male, 39, Nest, Ring



Male, 36, Nest, Alexa/Amazon Echo, Scout Home Security



Female, 39, Alexa/Amazon Echo

Appendix B: Uploaded Images, Cont.

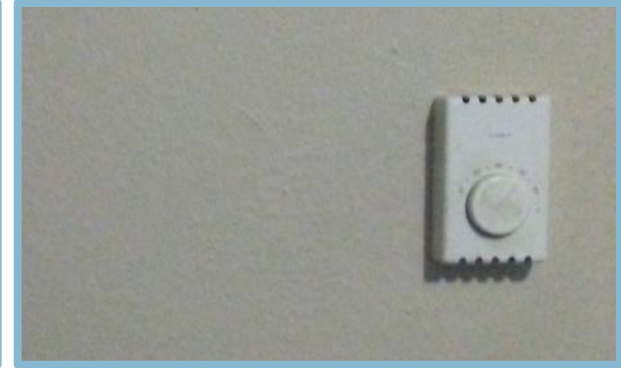
Q3: Find an image online (or take one of your own) that you feel accurately represents the terms “smart home” or “connected home” technology and upload it.



Female, 23, None



Male, 38, Alexa/Amazon Echo



Female, 39, None



Female, 36, None



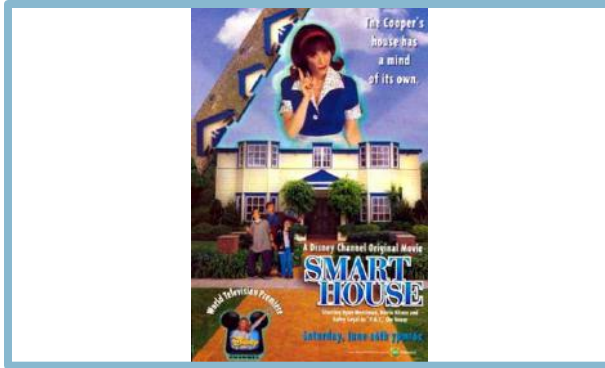
Female, 49, Other device



Female, 52, Ring

Appendix B: Uploaded Images, Cont.

Q3: Find an image online (or take one of your own) that you feel accurately represents the terms “smart home” or “connected home” technology and upload it.



Female, 20, None



Female, 28, None



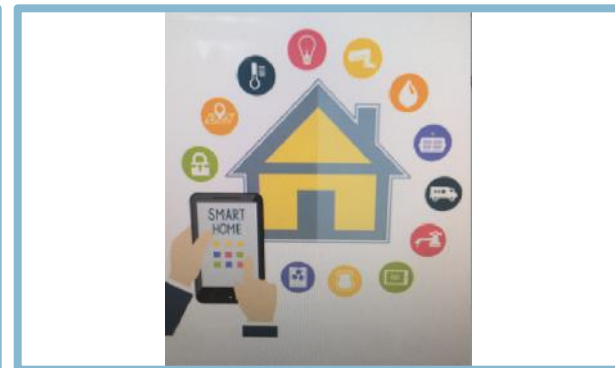
Female, 20, Alexa/Amazon Echo, Sleep Number IT Bed



Female, 33, Sleep Number IT Bed



Female, 33, None



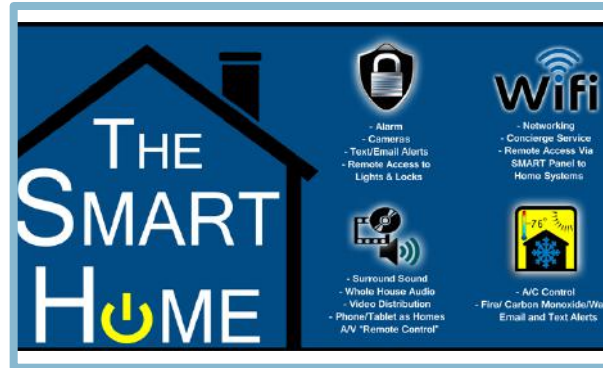
Female, 43, None

Appendix B: Uploaded Images, Cont.

Q3: Find an image online (or take one of your own) that you feel accurately represents the terms “smart home” or “connected home” technology and upload it.



Male, 47, Kwikset Smartcode 916,
Ring, Sleep Number IT Bed,
Belkin WeMo Slow Cooker



Male, 50, Other device



Female, 23, None



Female, 26, None



Female, 27, None



Female, 39, Other device

Appendix B: Uploaded Images, Cont.

Q3: Find an image online (or take one of your own) that you feel accurately represents the terms “smart home” or “connected home” technology and upload it.



Female, 22, Nest



Male, 26, Nest



Female, 22, None



Female, 23, None



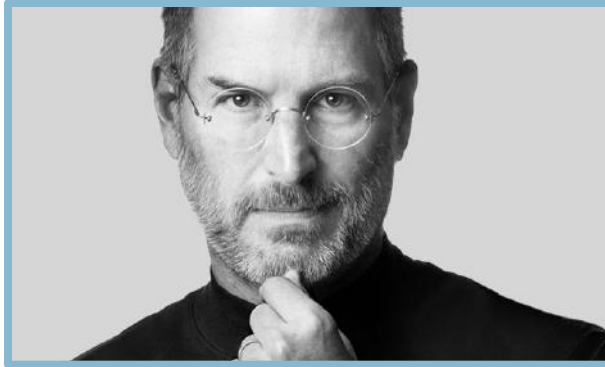
Male, 28, Samsung SmartThings Hub,
Other device



Male, 31, Chamberlain
Garage Door Opener

Appendix B: Uploaded Images, Cont.

Q15: Find an image online of someone (person, character, etc.) that you think embodies the idea of a “smart home” or “connected home” technology user, and upload it.



Male, 19, None



Female, 23, Other device



Female, 28, None



Female, 30, Alexa/Amazon Echo



Male, 39, Nest, Alexa/Amazon Echo, Sleep Number IT Bed, SkyBell Doorbell



Male, 19, Alexa/Amazon Echo, Phillips Hue

Appendix B: Uploaded Images, Cont.

Q15: Find an image online of someone (person, character, etc.) that you think embodies the idea of a “smart home” or “connected home” technology user, and upload it.



Female, 35, None



Male, 29, None



Male, 18, None



Female, 41, None



Male, 37, None



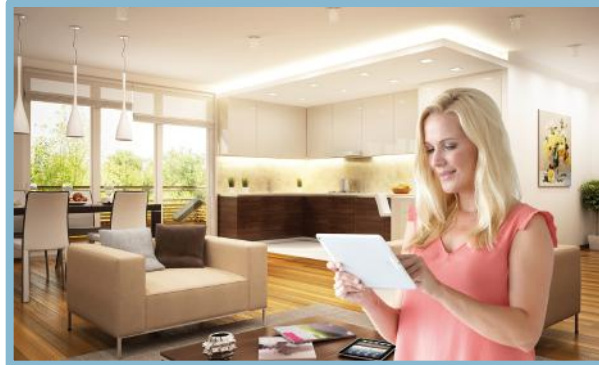
Female, 39, None

Appendix B: Uploaded Images, Cont.

Q15: Find an image online of someone (person, character, etc.) that you think embodies the idea of a “smart home” or “connected home” technology user, and upload it.



Male, 42, Alexa/Amazon Echo



Female, 29, Nest, Sleep Number IT Bed



Female, 18, Alexa/Amazon Echo



Male, 39, Nest, Ring



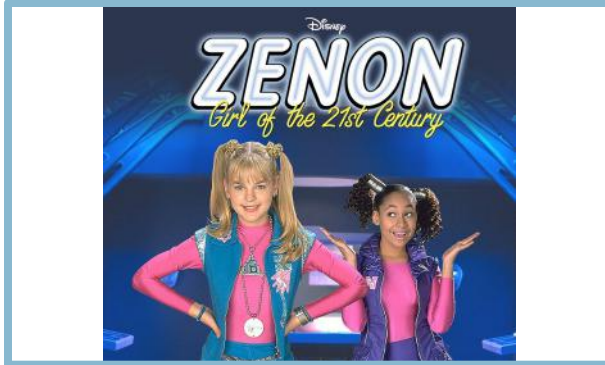
Male, 36, Nest, Alexa/Amazon Echo, Scout Home Security



Female, 39, Alexa/Amazon Echo

Appendix B: Uploaded Images, Cont.

Q15: Find an image online of someone (person, character, etc.) that you think embodies the idea of a “smart home” or “connected home” technology user, and upload it.



Female, 23, None



Male, 38, Alexa/Amazon Echo



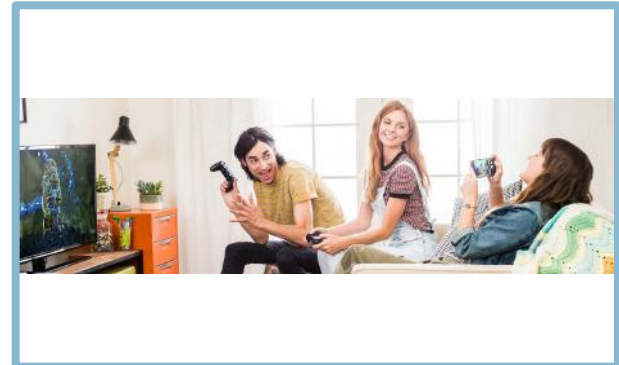
Female, 39, None



Female, 36, None



Female, 49, Other device



Female, 52, Ring

Appendix B: Uploaded Images, Cont.

Q15: Find an image online of someone (person, character, etc.) that you think embodies the idea of a “smart home” or “connected home” technology user, and upload it.



Male, 47, Kwikset Smartcode 916,
Ring, Sleep Number IT Bed,
Belkin WeMo Slow Cooker



Male, 50, Other device



Female, 23, None



Female, 26, None



Female, 27, None



Female, 39, Other device

Appendix B: Uploaded Images, Cont.

Q15: Find an image online of someone (person, character, etc.) that you think embodies the idea of a “smart home” or “connected home” technology user, and upload it.



Female, 22, Nest



Male, 26, Nest



Female, 22, None



Female, 23, None



Male, 28, Samsung SmartThings Hub,
Other device



Male, 31, Chamberlain
Garage Door Opener

Appendix C: Polling Questions

(Q20) Current Appeal

Please rank your top 3 smart home devices from the following list based on appeal, with 1 being the MOST appealing and 3 being the THIRD most appealing.

DEVICE	1	2	3	TOTAL TOP 3
Alexa/Amazon Echo	12	10	5	27
Nest (Google)	9	5	7	21
Ring	4	4	0	8
Samsung SmartThings Hub	3	5	2	10
Samsung Family Hub Refrigerator	3	1	5	9
Kwikset Smartcode 916	3	1	1	5
Scout Home Security	2	3	6	11
Sleep Number IT Bed	2	0	7	9
Belkin WeMo Slow Cooker	2	0	1	3
Phillips Hue	1	1	1	3
SkyBell Doorbell	1	4	5	10
Ecobee	0	1	0	1
Chamberlain Garage Door Opener	0	6	2	8
Fisher-Price Rock'n Play Sleeper	0	1	0	1