



Privacy and Security

Tips for Marketers in an IOT World

**THE IOT
EXPLOSION**



**CONSUMER
ATTITUDES**



**GDPR
IN A FLASH**



**5G AND
THE IOT**



**DATA
PRIVACY**



**KEY
TAKEAWAYS**



AN EXPLOSION OF CONNECTED DEVICES



**THE 5G
WAVE**

**CONNECTED
HOMES**

**PROMISE
AND PERIL**

**CONSUMER
CONCERNS**

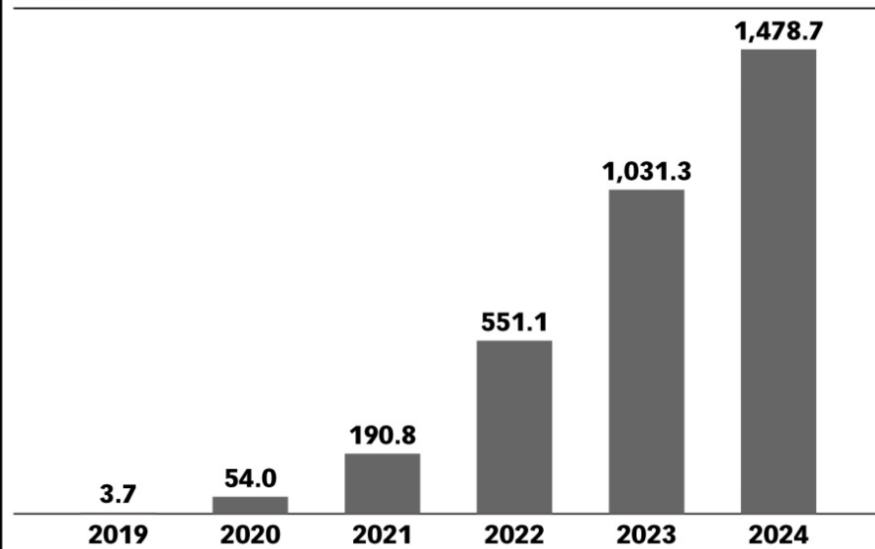
THE 5G GROWTH ENGINE



THE 5G GROWTH ENGINE

5G Smartphone Connections Worldwide, 2019-2024

millions

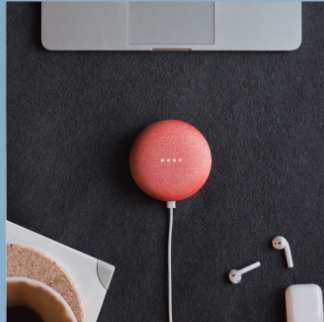


Source: Ericsson, "Mobility Report: November 2018," Nov 27, 2018

245218

www.eMarketer.com

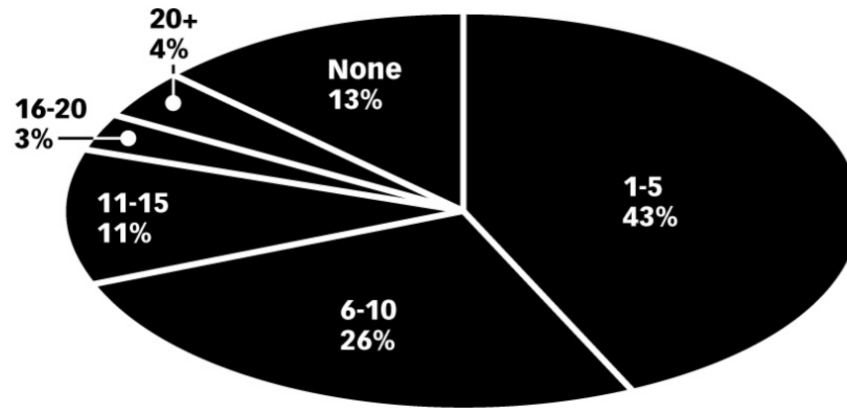
CONNECTIONS @HOME



CONNECTED FUTURES

How Many Connected Devices Do US Adults Think They'll Be Using by 2022?

% of respondents, Aug 2018



Note: includes smartphones, laptops, smart TVs, game consoles, wearables, connected car systems, smart home devices and other connected devices

Source: Transaction Network Services, "Operator IoT Intelligence Report" conducted by Kantar TNS, Dec 11, 2018

244087

www.eMarketer.com

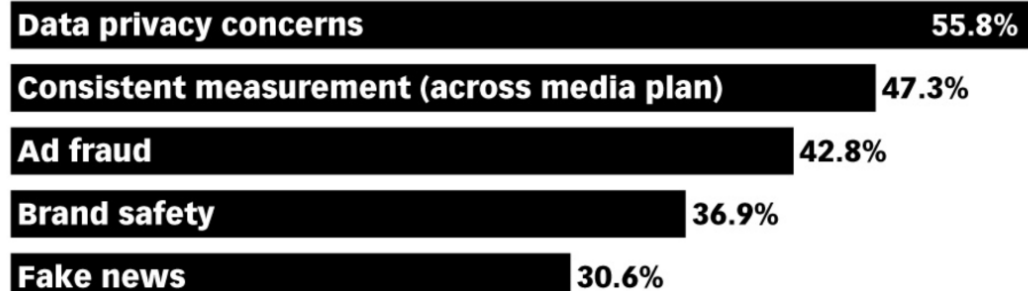
PROMISE AND PERIL



PROMISE AND PERIL

What Industry Challenges Do US Digital Media Professionals See Becoming a Greater Concern in 2019?

% of respondents



Source: Integral Ad Science (IAS), "Industry Pulse: Advertising trends, technologies, and priorities that will shape the industry in 2019," Jan 29, 2019

245008

www.eMarketer.com

CONSUMER CONCERNS

Do Smartphone Users Worldwide* Feel They Are in Control of Their Personal Data Used by Mobile Apps and Services?

% of respondents, July 2018

Feel in control, I am asked for permission and make a conscious choice about how my data is used



Feel I have some choice about my data some of the time



I know that by agreeing to the terms and conditions I am giving permission for them to use my personal data, but I don't feel I have a choice



Know my personal data is being collected but I am never asked for permission



I didn't know apps and services make use of my personal data



None of the above



*Note: n=6,500 ages 16+; *Brazil, France, Germany, India, Japan, Poland, Spain, South Africa, the UK and the US*

Source: Mobile Ecosystem Forum, "Global Consumer Trust Report 2018," Nov 20, 2018

CONSUMER CONCERNS

Do Smartphone Users Worldwide* Feel They Are in Control of Their Personal Data Used by Mobile Apps and Services?

% of respondents, July 2018

Feel in control, I am asked for permission and make a conscious choice about how my data is used



13%

Feel I have some choice about my data some of the time



14%

I know that by agreeing to the terms and conditions I am giving permission for them to use my personal data, but I don't feel I have a choice



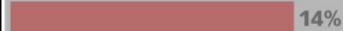
36%

Know my personal data is being collected but I am never asked for permission



12%

I didn't know apps and services make use of my personal data



14%

None of the above



12%

Note: n=6,500 ages 16+; *Brazil, France, Germany, India, Japan, Poland, Spain, South Africa, the UK and the US

Source: Mobile Ecosystem Forum, "Global Consumer Trust Report 2018," Nov 20, 2018

243346

www.eMarketer.com

Feel in control, I am asked for permission and make a conscious choice about how my data is used

13%

Feel I have some choice about my data some of the time

14%

I know that by agreeing to the terms and conditions I am giving permission for them to use my personal data, but I don't feel I have a choice

36%

Know my personal data is being collected but I am never asked for permission

12%

I didn't know apps and services make use of my personal data

CONSUMER CONCERNS



Technology

The doorbells have eyes: The privacy battle brewing over home security cameras

TECH

LinkedIn 2012 Data Breach May Have 100 Million

Professional social network says it will invalidate passwords that weren't changed since breach

By ROBERT MCMILLAN

Updated May 19, 2016 6:55 p.m. ET

After hackers stole usernames and passwords from LinkedIn Corp. in 2012, the company spent close to \$1 million on an investigation that determined that 6.5 million users had been affected.

This week, LinkedIn acknowledged that it underestimated the impact—by more than 10 times—of the breach. The company has since been compromised.

EQUIFAX®
DATA BREACH

#IchooseNEOMA



The New York Times

Opinion

Internet Hacking Is About to Get Much Worse

We can no longer leave online security to the market.

By Bruce Schneier

5G AND THE IOT



**5G SMARTPHONE
CONNECTIONS**



**BREAKOUT
BY REGION**



**IOT
CONNECTIONS**

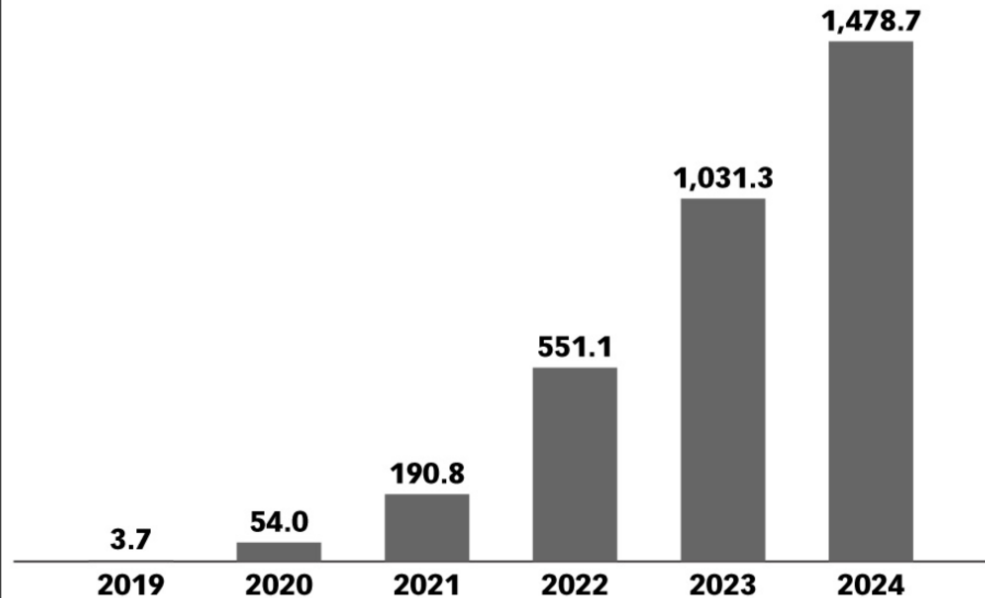


**IOT SECURITY
AS SALES POINT**



5G Smartphone Connections Worldwide, 2019-2024

millions



Source: Ericsson, "Mobility Report: November 2018," Nov 27, 2018

245218

www.eMarketer.com

5G Smartphone Connections Worldwide, by Country/Region, 2019-2024

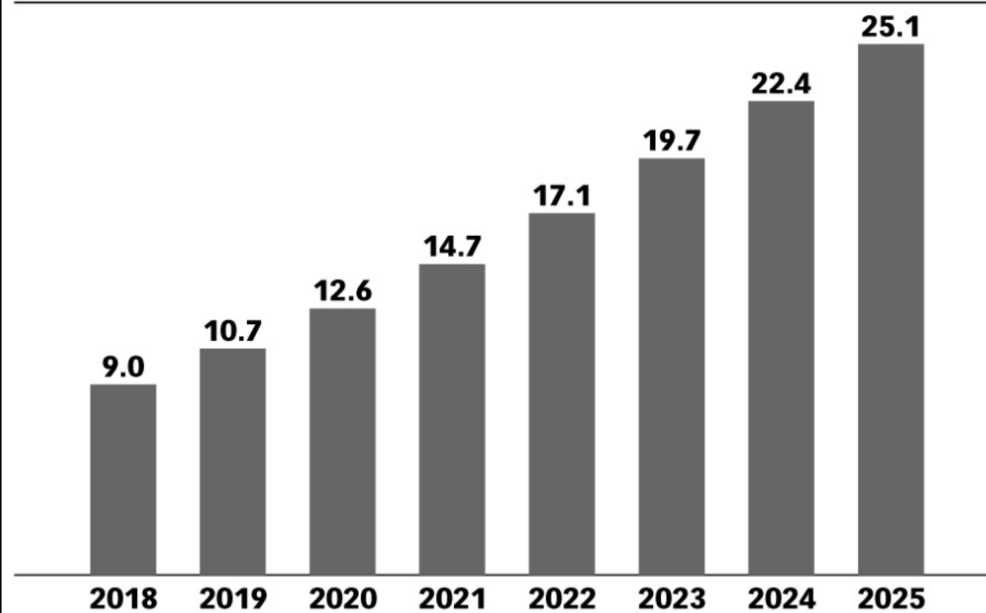
millions

	2019	2020	2021	2022	2023	2024
Northeast Asia	2.2	34.2	109.7	346.1	651.9	879.6
North America	1.5	16.5	46.4	103.4	176.2	245.6
Western Europe	-	2.0	19.3	58.0	105.1	147.7
Central & Eastern Europe	-	0.4	1.0	7.9	20.4	55.7
Latin America	-	0.7	2.9	10.2	25.0	47.4
Southeast Asia & Oceania	-	-	3.7	10.1	19.8	45.9
India	-	0.1	6.8	9.7	16.9	38.5
Middle East & Africa	-	-	1.1	5.7	16.0	18.3
Worldwide	3.7	54.0	190.8	551.1	1,031.3	1,478.7

Source: Ericsson, "Mobility Report: November 2018," Nov 27, 2018

Internet of Things (IoT) Mobile Connections Worldwide, 2018-2025

billions

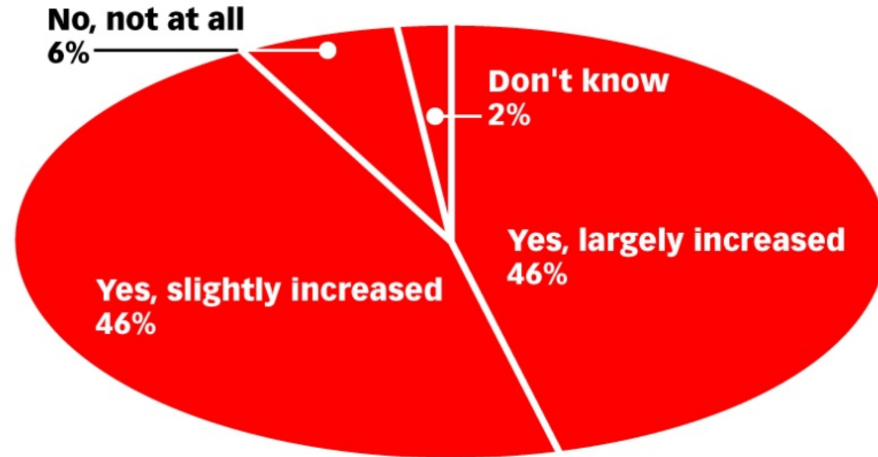


Note: includes consumer and industrial devices

Source: GSMA Intelligence, "Global Mobile Trends 2018," Sep 11, 2018

IT/Business Decision-Makers Worldwide Who Believe that Their Internet of Things (IoT) Security Has Increased Sales/Product Use, July 2017

% of respondents



Source: Gemalto, "The State of IoT Security Takes a Back Seat," Oct 31, 2017

CONSUMER ATTITUDES



ANTICIPATED
OWNERSHIP



CURRENT
OWNERSHIP



SPEAKER
SYNCS



SPEAKER
ACTIVITIES



AI DEVICES
OWNED

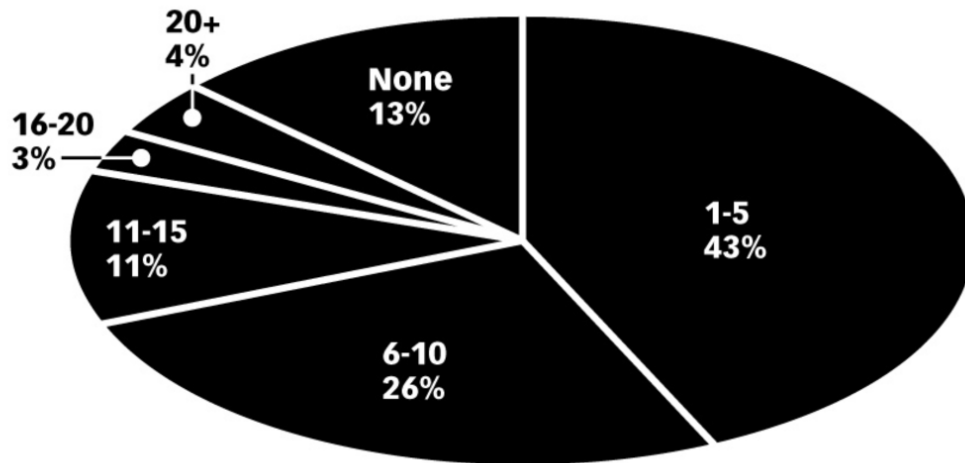


WEARABLES



How Many Connected Devices Do US Adults Think They'll Be Using by 2022?

% of respondents, Aug 2018



Note: includes smartphones, laptops, smart TVs, game consoles, wearables, connected car systems, smart home devices and other connected devices

Source: Transaction Network Services, "Operator IoT Intelligence Report" conducted by Kantar TNS, Dec 11, 2018

Ownership of Select Connected Devices Among US Internet Users, Aug 2018

% of respondents

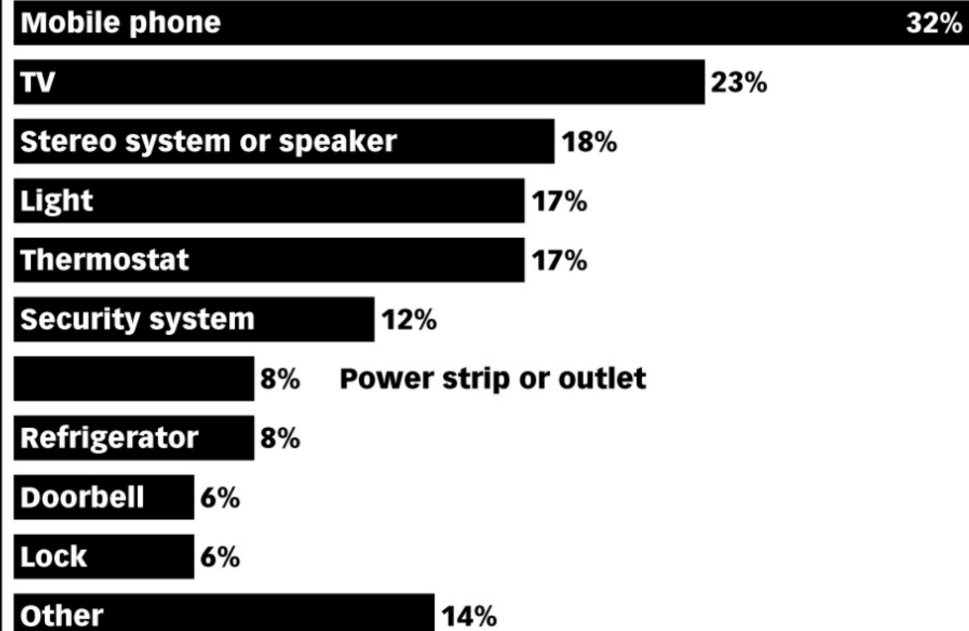
Smart TV	46%
Gaming console	36%
Video streaming device that connects to TV	31%
Wireless speaker/soundbar (without voice assistant)	26%
Voice-assisted speakers	20%
Home camera or monitoring system/alarm	14%
Smart thermostat	13%
Connected set-top box or PVR	9%
Connected car system	8%
Smart lighting systems	8%
Home appliance that can connect to the internet	7%
Smart smoke detector	6%
Open and close door sensors	5%
Pet cameras or monitoring system	5%
Hub that links devices within the home	5%
Smart lock	5%
Smart plug	5%
Smart personal or smart pet tracker	4%
None	25%

Note: n=2,003 ages 18-75

Source: Deloitte, "Global Mobile Consumer Survey 2018: US Edition"
conducted by Ipsos MORI, Nov 12, 2018

Which Devices Are US Smart Speaker Users Syncing with Their Smart Speakers?

% of respondents, Q2 2018



Source: Nielsen, "MediaTech Trender Survey, Q2 2018" as cited in company blog, Sep 27, 2018

US Smart Speaker User Penetration, by Activity, 2019

% of smart speaker users

Audio listeners	79.8%
Inquirers	73.0%
Shoppers*	37.1%
Smart-home control users	34.5%
Buyers*	27.0%

*Note: individuals of any age who use a smart speaker for each activity at least once per month; *ages 14+; at least once in the calendar year*

Source: eMarketer, Dec 2018

Artificial Intelligence Devices/Technologies Owned by US Internet Users, by Demographic, May 2018

% of respondents in each group

- | | |
|--|-------------------------------------|
| 1 Mobile phone voice assistants | 5 Online translation systems |
| 2 Home voice assistants | 6 None |
| 3 Smart-home devices | 7 Don't know |
| 4 Voice-activated remote controls | |

	1	2	3	4	5	6	7
Age							
18-34	55%	32%	18%	18%	12%	23%	-
35+	38%	19%	14%	15%	7%	43%	-
Parenthood status							
Parents	52%	34%	25%	25%	12%	24%	-
Nonparents	41%	18%	11%	13%	7%	42%	-
Total	45%	24%	16%	16%	9%	36%	4%

Note: n=1,000

Source: Intel, "Next 50" conducted by PSB Research, Aug 22, 2018

Do US Internet Users Plan to Use a Wearable or IoT Device* to Make Purchases During the 2018 Holiday Season?

% of respondents, by age

18-21



22-37



38-53



54-72



Total



■ Yes ■ No

*Note: ages 18-72; *e.g., payment-enabled watch, speaker, appliance, etc.
Source: Discover, "2018 Discover Holiday Survey Data Report" conducted by Research Now, Nov 14, 2018*

DATA PRIVACY



CONSUMER
CONCERN LEVELS



M2M/IOT
ATTACKS



APP
DATA



PURCHASING
CONCERNS



PROFESSIONALS'
WORRIES



PARENTS'
ATTITUDES



SMART
SPEAKERS



US Internet Users Who Are Concerned About Their Personal Information and Privacy, by Age, Aug 2016 & Aug 2018

% of respondents

18-24



25-34



35-44



45-54



55-64



■ Aug 2016

■ Aug 2018

Source: Transaction Network Services, "Operator IoT Intelligence Report" conducted by Kantar TNS, Dec 11, 2018

Machine-to-Machine (M2M)/Internet of Things (IoT) Malware Attacks Worldwide, Q1 2014-Q4 2017

millions

	Existing malware	New malware
Q1 2014	179	7
Q2 2014	215	28
Q3 2014	215	37
Q4 2014	286	48
Q1 2015	382	36
Q2 2015	426	27
Q3 2015	460	23
Q4 2015	472	33
Q1 2016	491	35
Q2 2016	544	33
Q3 2016	572	25
Q4 2016	589	21
Q1 2017	595	29
Q2 2017	643	49
Q3 2017	684	55
Q4 2017	710	56

*Source: Counterpoint Technology Market Research as cited in company
blog, April 6, 2018*

Do Smartphone Users Worldwide* Feel They Are in Control of Their Personal Data Used by Mobile Apps and Services?

% of respondents, July 2018

Feel in control, I am asked for permission and make a conscious choice about how my data is used

13%

Feel I have some choice about my data some of the time

14%

I know that by agreeing to the terms and conditions I am giving permission for them to use my personal data, but I don't feel I have a choice

36%

Know my personal data is being collected but I am never asked for permission

12%

I didn't know apps and services make use of my personal data

14%

None of the above

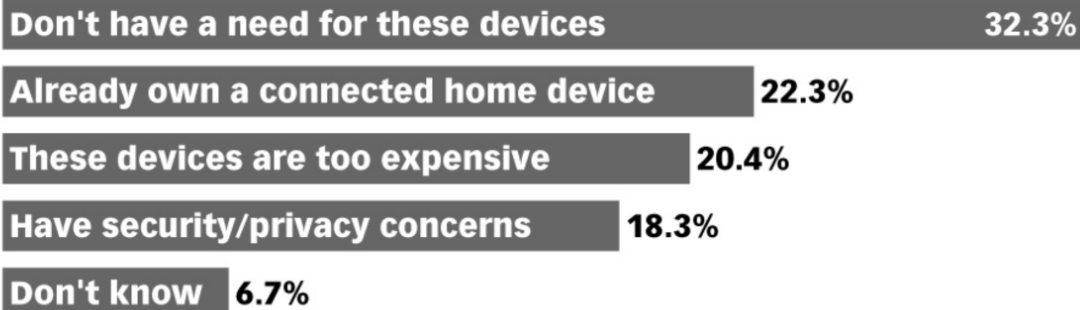
12%

*Note: n=6,500 ages 16+; *Brazil, France, Germany, India, Japan, Poland, Spain, South Africa, the UK and the US*

Source: Mobile Ecosystem Forum, "Global Consumer Trust Report 2018," Nov 20, 2018

What Is the Main Reason US Smartphone Users Do Not Want to Purchase a Connected Home Device?

% of respondents, Oct 2018

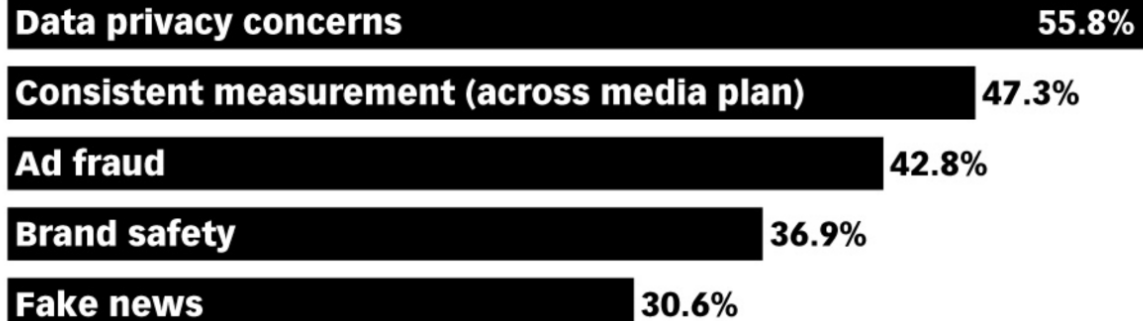


Note: devices such as Amazon Echo, smart TVs, connected vacuums like Roomba, etc.

Source: RootMetrics/IHS Markit, "The Lifestyles of Mobile Consumers," Nov 29, 2018

What Industry Challenges Do US Digital Media Professionals See Becoming a Greater Concern in 2019?

% of respondents



Source: Integral Ad Science (IAS), "Industry Pulse: Advertising trends, technologies, and priorities that will shape the industry in 2019," Jan 29, 2019

245008

www.eMarketer.com

US Parent Internet Users' Attitudes Toward Screen Time for Their Children, June 2018

% of respondents

76% of parents say their kids engage in more screen time than they'd like

73% of parents schedule activities for their kids to minimize screen time

50% of parents say their kids are likely to engage in screen time on their own, when they have an hour of free time

Note: n=1,000 with children ages 12 and under

Source: GoGo Squeez survey conducted by Edelman Intelligence, July 23, 2018

240252

www.eMarketer.com

Reasons that US Internet Users Will Not Shop on Smart Speakers, Nov 2018

% of respondents

Like to see what they buy before a purchase, even if it's just a digital picture

51%

Worried about the privacy of personal information

48%

Worried about the security of payment information

46%

Note: ages 18+

Source: RetailMeNot, "The 2019 Retail Marketing Playbook," Jan 24, 2018

244820

www.eMarketer.com

Clear, transparent consent practices and privacy policies. Policies must be easy to understand, and consumers can either accept or withdraw consent at any time.

The right of consumers to access their personal data. Consumers can see what data is being collected and used by companies, and for what purposes.

The “right to be forgotten.” Consumers have the right to demand their data be deleted or not used at any time.

Privacy by design. Companies must structure new systems and approaches with a privacy-first mentality, and not with privacy as an add-on feature.

Mandatory data breach notifications. If a data breach has occurred companies must make this known within 72 hours of the breach taking place.

Data protection officers. Companies whose core businesses include large-scale consumer data collection must designate a "DPO."



True 5G is still a couple years away. But existing 4G networks will scale to handle the first stage of growth of the IOT.



IoT devices will allow better measurement, in particular, information that can be used for improved attribution across the customer journey.



Marketers should be thinking now about incorporating privacy- and security-by-design principles in their forays into experimental channels.