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Consumer Attitudes Towards IoT Security

Report

James Stannard, Rebecca Writer-Davies, Dylan Spielman, Jason Nurse

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Executive Summary

Ipsos MORI was commissioned by the Department for Digital, Culture, Media and Sport (DCMS) to undertake an online survey of the UK public to explore consumer purchasing behaviour of, and attitudes to connected devices. The survey used a quota approach and was designed to be representative of UK population demographics.

The findings will be used to further develop regulatory proposals and assist DCMS in developing more robust future policy and engagement strategies.

The survey findings provide insights into purchasing behaviour related to connected devices, the extent to which COVID-19 has changed consumer purchasing behaviour of connected devices as well as consumer attitudes to smart-device security.

Key findings

Device ownership and usage

Smartphones are the most commonly owned devices in the UK with nine in ten consumers owning one (87%). On average, consumers in the UK own products across five device categories with younger consumers, on average, owning products across more device categories than older consumers. Since the start of the coronavirus pandemic in March 2020, households are most likely to have purchased a smartphone (17%) or laptop (11%).

Consumer IoT devices

Since the start of the coronavirus pandemic in the UK in March 2020, six in ten consumers in the UK (57%) report an increase in their household use of smart devices.

When it comes to checking security on devices prior to purchase, one in five consumers (20%) say they have previously checked to see if new smart devices have a default password that is not unique to it, with nine in ten of this group saying they go on to change the password (89%). One in five consumers (20%) also report checking the minimum support period for the device. Yet when asked about the importance of this information being publicly accessible, seven in ten consumers (71%) agree it is important that information on minimum support periods is available to consumers - though there is no clear consensus on where this should be displayed on online product pages.

When exploring public attitudes to the responsibility of manufacturers and those in the supply chain around eight in ten consumers (84%) agree that those in the supply chain have a responsibility to check and be aware of devices cyber security features before they go on sale while nine in ten consumers (87%) say smart devices should have basic embedded features to protect user privacy and security.

When asked about device usage once its support period ends, more than one third of consumers in the UK (36%) continue to use their smart devices in the same way while one in five keep it as a backup or spare.

Purchasing smart devices

A third of consumers in the UK (33%) tend to spend less than an hour researching smart devices before they purchase them while around one in five (19%) spend five hours or more. Consumers are most likely to use product reviews by other customers to find out about smart devices before purchase (56%).

When asking about sources of cyber security information and guidance, searching on the internet (37%) is the most common response, followed by family (22%), the media[1] (18%) and friends (18%).

Six in ten UK consumers typically buy smart devices online (59%) while around a third do so in-store (32%).

Apps

Just under half of consumers (44%) download apps at less than monthly with young consumers more likely to download apps regularly than older consumers. Consumers are most likely to source information about apps from reviews on the app store (37%), the description provided with the app (36%) or the app rating or ranking (33%). The Google Play Store (52%) and Apple App Store (44%) are the most commonly cited places to download apps onto their smartphone or tablet.

Router security

Nine in ten consumers in the UK (91%) report owning a Wi-Fi router/internet hub. A quarter of UK consumers (24%) say they have changed their Wi-Fi network password or changed their router password (23%). Around one in eight consumers (13%) say they have updated their router software.

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[1] Full question response text: "Media – newspapers, magazines, online news sites, TV, radio"

Background and Methodology

Background

The Department for Digital, Culture, Media and Sport (DCMS) is the government department leading on improving the cyber security of consumer Internet of Things (IoT) products and associated services. A consumer IoT product can be defined as any network-connectable product that is supplied or made available for the use or enjoyment of consumers.

Since 2017, the DCMS Secure by Design Team with support from the National Cyber Security Centre (NCSC) has undertaken work relating to two key risks for insecure consumer IoT products. Firstly, that insecure consumer IoT products and services are undermining consumers' security, privacy and safety; and secondly, the wider economy faces an increasing threat of large-scale cyber-attacks launched from large volumes of insecure IoT devices.

To date, work undertaken by DCMS has included a review to compile proposals for improving the security of consumer IoT devices, a Secure by Design report including a Code of Practice that set out thirteen guidelines for improving the security of such devices and a public consultation on regulatory proposals for consumer IoT security.

Following the consultation response and further policy work, in July 2020, DCMS published a Call for Views which outlined the proposed regulatory approach to consumer IoT devices. This provided the ability to test the approach and build in stakeholder feedback to design a robust, world-leading regulatory framework.

Alongside the above work, officials are also conducting work on three other areas of technology, namely app store security, enterprise uses of IoT and router security. These projects will further support DCMS's efforts to improve the security of the consumer IoT ecosystem. DCMS, with the support of NCSC, are currently compiling a robust evidence base which will be informed by the findings of this survey.

In October 2020, DCMS commissioned Ipsos MORI to conduct research among consumers to ensure any regulatory proposals are informed by views from the UK population. Despite a rapid increase in the uptake of smart devices, there remains a lack of understanding and high levels of concern among UK consumers around smart device privacy and data security.[2] The purpose of the survey is to further understand consumer awareness of minimum support periods and basic security features within internet connected devices as well as the impact of the coronavirus pandemic on consumer use of internet connected devices. This report presents findings from the consumer survey.

Methodology

This survey was undertaken in October - November 2020 by Ipsos MORI on behalf of DCMS, covering consumer views and experiences of the security of IoT devices.

The survey of 2,001 members of the public was conducted online through the Ipsos MORI Online Panel between 28 October and 5 November 2020. It also identifies how attitudes and experiences differ across the population in line with respondents' socio-demographic background and device ownership. Younger age groups, for example, have different experiences and perceptions of devices to older age groups.

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[2] https://www.consumersinternational.org/media/261950/thetrustopportunity-jointresearch.pdf

The report outlines the responses of discrete sub-groups of the overall respondent sample. The number of respondents for each of the key sub-groups identified in the report are outlined on the following page.

	Sub-group	**Base size**
Gender	Male	1,001
	Female	1,000
Age	16-24	264
	25-34	339
	35-44	329
	45-54	353
	55-64	326
	65-74	230
	75+	160
Area	North	463
	Midlands	330
	South	442
	East	195
	London	270
	Wales	107
	Scotland	166
	Northern Ireland	28
Employment status	Working	1,662
	Not working	339
Education	Graduate	1,064
	Non-graduate	937
Income	Up to £19,999	337
	£20,000-£34,999	524
	£35,000-£54,999	502
	£55,000+	410
Ethnicity	White	1,793
	BAME	184

The Ipsos MORI Online Panel comprises a pre-recruited group of individuals or multiple individuals within households who have agreed to take part in online market and social research surveys. The Ipsos MORI Online Panel is made up of around 300,000 individuals which has been built using multi-source recruitment, including standard approaches such as banners, website and text ads, and search engine marketing as well as targeted recruitment to ensure the inclusion of individuals from hard to reach groups. The panel is structured to reflect the general profile of the population in respect of key indicators such as gender, age, and region among others and invitation to participate in particular studies can be sent out to a representative subsample of the panel.

For all Ipsos MORI Online Panel studies, panellists are rewarded with points for every questionnaire they complete, depending on questionnaire length and complexity. Points can be redeemed for a range of vouchers on the dedicated panellists' website.

Respondents to this survey were recruited using an email invitation including a link to the online questionnaire. The survey invitations were designed to achieve robust numbers of interviews in each demographic. Findings throughout this report are based on all participants who were asked to complete each relevant survey question. Note that because some questions were only asked to participants who gave certain answers to previous questions the number of participants answering questions is not always 2,001.

Where findings do not sum to 100 or a combined figure appears to be+-1 more/less than the sum of two or more separate figures, this is likely due to rounding or multiple responses. Results have been

weighted at the overall survey level by gender, age, region, work status and education to reflect the population breakdown.

Findings

This chapter explores the main findings from the survey and covers consumer IoT device ownership, behaviours and attitudes related to device security and support, purchasing behaviours, apps and router security.

Device ownership and usage

Key findings

- Smartphones are the most commonly owned devices among UK consumers (87%).
- On average, UK consumers own smart devices across five categories.
- Younger consumers own devices across more categories on average than older consumers in the UK.
- Since the start of the coronavirus pandemic, households are most likely to have purchased a smartphone (17%) or laptop (11%).
- Higher earners are more likely to have purchased a smart device since the start of the coronavirus pandemic.

The survey findings show smartphones are the most prevalent devices with nine in ten consumers (87%) owning at least one. Other popular devices include laptops (72%), TVs that connect to the internet (66%) and tablets (62%). Less commonly owned devices include smart devices to protect the home such as a smart camera or video doorbell (12%), smart health products such as smart scales (9%) and smart kitchen appliances (7%).

On average consumers in the UK own devices across five categories. Younger consumers are more likely to own devices across more categories, for example, on average, those aged 16-44 own devices across six categories.

Figure 1.1: Personal device ownership and usage

Q. Which, if any, of the following do you own and use?

Device	%
A smartphone	87%
A Wi-Fi router / internet hub	76%
A laptop	72%
A TV that connects to the internet	66%
A tablet	62%
A games console	37%
A personal assistant / smart speaker device	34%
A smart watch or fitness tracker	29%
A smart energy device	19%
A smart device to protect the home	12%
A smart health product	9%
A smart kitchen appliance	7%
A smart toy or baby monitor for children	3%
A smart door lock	2%
Other	1%
None of the above	1%
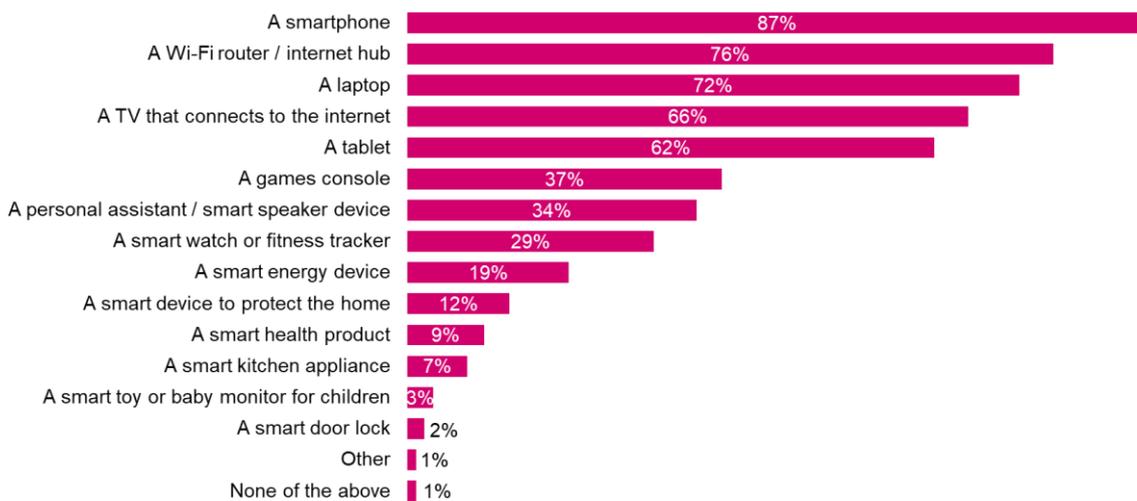
Base: 2,001 adults aged 16+; Fieldwork dates: 28 October to 5 November 2020

Device ownership since the start of the coronavirus pandemic

The survey findings show that since the start of the coronavirus pandemic in the UK in March 2020, households in the UK are most likely to have purchased a smartphone (17%), a laptop (11%) or a personal assistant/smart speaker device such as an Amazon Echo or Apple HomePod (10%). Around one in ten also report purchasing a tablet (9%), a TV that connects to the internet (9%) or a smart watch or fitness tracker (9%).

Since the start of the coronavirus pandemic in March 2020, on average, UK households have purchased two smart devices.

When looking at device purchases by age, younger consumers (16-34) are generally more likely to report having purchased a device than those aged thirty-five and above. When looking at specific devices more closely, consumers in the 16-24 (30%) and 25-34 age groups (23%) are significantly more likely to report their household purchasing a smartphone compared with older consumers. Similarly, a quarter of 16-24s (23%) report their household purchasing a laptop while one in ten (11%) purchased a smart health product (for example a thermometer or toothbrush) since March 2020, significantly higher than all other age groups.

Figure 1.2: Household purchasing of smart devices since COVID-19

Q. Since the start of the coronavirus pandemic in the UK, that is March 2020, has <u>your household</u> purchased any of the following?

Device	%
A smartphone	17%
A laptop	11%
A personal assistant / smart speaker device	10%
A tablet	9%
A TV that connects to the internet	9%
A smart watch or fitness tracker	9%
A games console	7%
A Wi-Fi router / internet hub	6%
A smart energy device	5%
A smart health product	4%
A smart device to protect the home	4%
A smart kitchen appliance	2%
A smart toy or baby monitor for children	2%
A smart door lock	1%
Other	*%
None of the above	52%
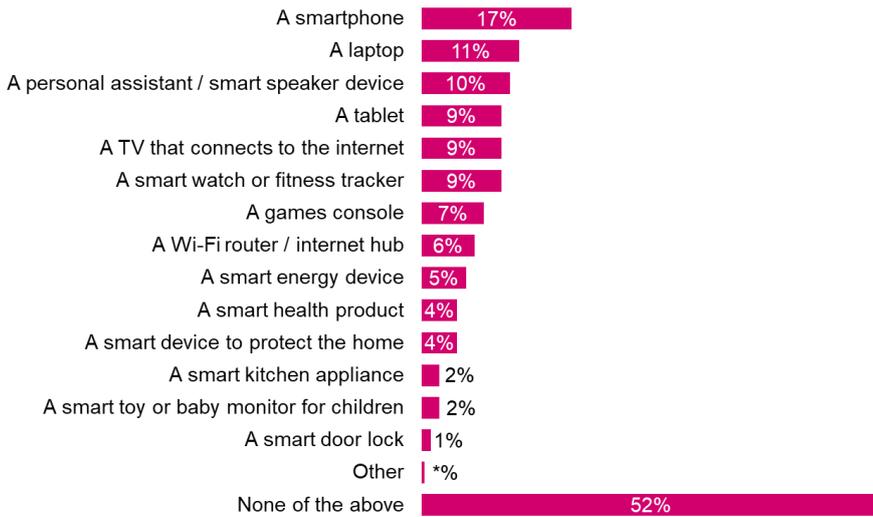
Base: 2,001 adults aged 16+; Fieldwork dates: 28 October to 5 November 2020

Those in the highest income bracket (£55,000+) are the most likely to have purchased a device since March 2020. One in ten consumers earning more than £55,000 per year (9%) report having purchased a smart device to protect the home such as a smart camera or video doorbell, significantly higher than all other earnings brackets.

Consumer IoT

Key findings

- Since the start of the coronavirus pandemic in the UK in March 2020, six in ten consumers in the UK (57%) report an increase in their household use of smart devices.
- One in five consumers (20%) report having checked to see if new smart devices have a default password that is not unique to it. Of this group, nine in ten (89%) actively go on to change the password.
- One in five consumers (20%) report checking the minimum support period (the length of time the product will receive updates for) when purchasing a smart device.
- Seven in ten consumers (71%) agree it is important that information on minimum support periods is made publicly accessible for consumers.
- However, there is no clear consensus on where information related to minimum support periods should be displayed on online product pages.
- More than one third of consumers in the UK (36%) continue to use their smart devices in the same way when their support period ends.
- One in five consumers (18%) keep their device as a replacement/backup/spare.
- Around eight in ten consumers (84%) agree that those in the supply chain have a responsibility to make such checks and be aware of security features in products before they are sold.
- Nine in ten consumers (87%) say smart devices should have basic embedded features to protect user privacy and security.

Smart device usage since the start of the coronavirus pandemic

Since the start of the coronavirus pandemic in the UK in March 2020, six in ten consumers in the UK (57%) report an increase in their household use of smart devices. Four in ten consumers (38%) say their household use of smart devices has neither increased nor decreased while four percent say it has decreased.

Consumers in the 25-34 age bracket are the most likely to say their household use of smart devices has increased (65%) since the start of the coronavirus pandemic, significantly higher than those aged 45-54 (53%), 55-64 (53%) and 75+ (47%).

It should be noted that younger consumers also have the highest proportion who say their use of smart devices has decreased since March 2020. For example, one in ten 16-24-year olds (11%) report a decrease in their household use of smart devices, significantly higher than all other age groups. This can largely be accounted for by the fact that consumers aged 16-34 are less likely than older groups to say their household use of smart devices has neither increased nor decreased since the start of the pandemic. For example, a quarter of 25-34s (26%) say their household use of smart devices has neither increased nor decreased compared with half of those aged 75+ (50%).

Figure 1.3: Household usage of smart devices since COVID-19

Q. Since the start of the coronavirus pandemic in the UK, that is March 2020, has <u>your household</u> use of smart devices increased, decreased or remained the same?
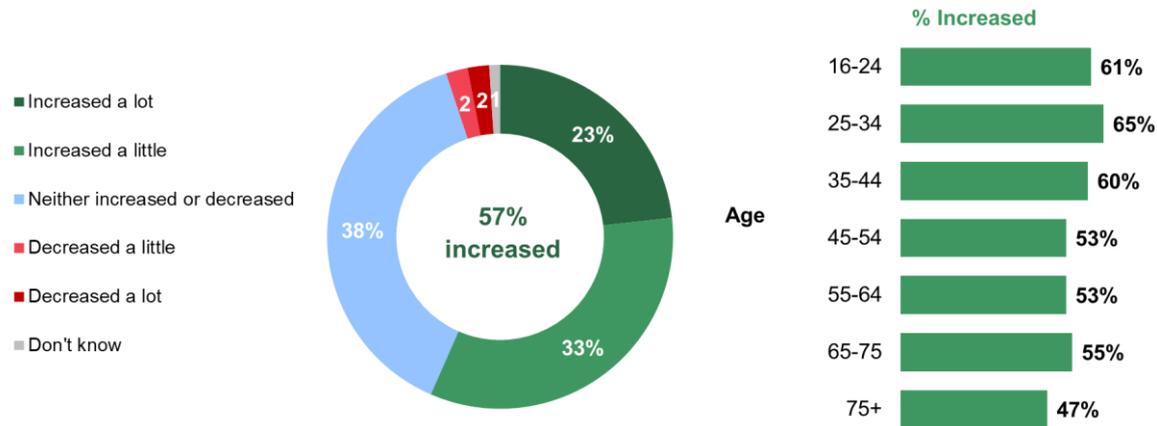
- Increased a lot
- Increased a little
- Neither increased or decreased
- Decreased a little
- Decreased a lot
- Don't know

57% increased

23%
33%
38%
2 2 1

% Increased

Age	
16-24	61%
25-34	65%
35-44	60%
45-54	53%
55-64	53%
65-75	55%
75+	47%

Base: 1,984 adults aged 16+ who own a smart device (personally or within their household); Fieldwork dates: 28 October to 5 November 2020

Checking smart devices for default passwords

One in five consumers (20%) say that when purchasing a smart device, they have checked to see if the device has a default password that is not unique to it. The proportion of consumers answering 'Yes' to this question varies considerably by age with younger consumers more likely to have checked the device. Consumers aged 16-24 are the most likely to have checked (43%), significantly higher than all other age groups. Those aged 75+ are the least likely to have checked (8%) and also the most likely to say 'Don't know' (14%) which may reflect less awareness and knowledge of technology.

Figure 1.4: Checking devices for default passwords

Q. When purchasing a smart device, have you ever done any of the following things?

A. Checked to see if the device has a default password that is not unique to it (for example a common or easily-guessable password such as admin, 123456, password, 000000 etc.)
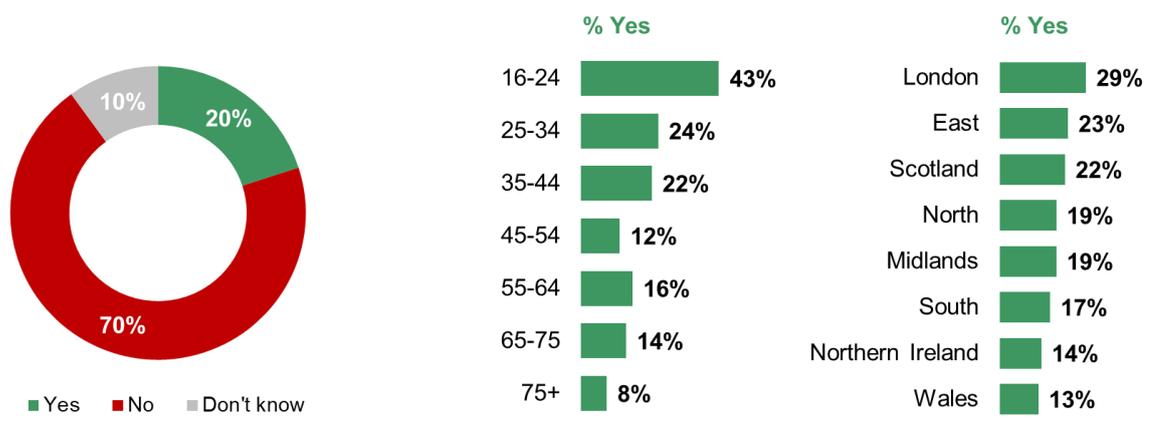
20%
70%
10%

- Yes
- No
- Don't know

% Yes

16-24	43%
25-34	24%
35-44	22%
45-54	12%
55-64	16%
65-75	14%
75+	8%

% Yes

London	29%
East	23%
Scotland	22%
North	19%
Midlands	19%
South	17%
Northern Ireland	14%
Wales	13%

Base: 1,984 adults aged 16+ who own a smart device (personally or within their household); Fieldwork dates: 28 October to 5 November 2020

The findings also show several regional differences. Consumers in London are the most likely to have checked a device for a default password that isn't unique (29%), significantly higher than those in the North (19%), the Midlands (19%), the South (17%) and Wales (13%).

Changing default passwords after purchasing smart devices

Nine in ten consumers (89%) who have previously checked smart devices for default passwords say they tend to also change the password on new devices.

Figure 1.5: Changing default passwords after purchasing a smart device

Q. When purchasing a smart device that comes with a default password, do you tend to change the password?

■ Yes   ■ No   ■ Don't know
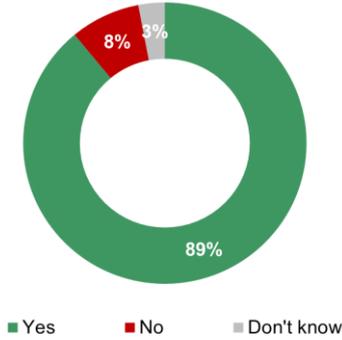
Base: 434 adults aged 16+ who have previously checked smart devices for default passwords;
Fieldwork dates: 28 October to 5 November 2020

Checking the minimum support period for smart devices

One in five consumers (20%) report checking the minimum support period (the length of time the product will receive updates for) when purchasing a smart device. As with checking for default passwords, this differs by age with younger consumers again the most likely to conduct checks. Just under half of 16-24-year olds (46%) say they have checked the minimum support period when purchasing a smart device, significantly higher than all other age groups. Older consumers are less likely to have checked the minimum support period for devices, with those aged 75+ least likely to have done so (6%).

Figure 1.6: Checking the minimum support period for devices

Q. When purchasing a smart device, have you ever done any of the following things?

B. Checked to see the minimum length of time the product will receive updates for
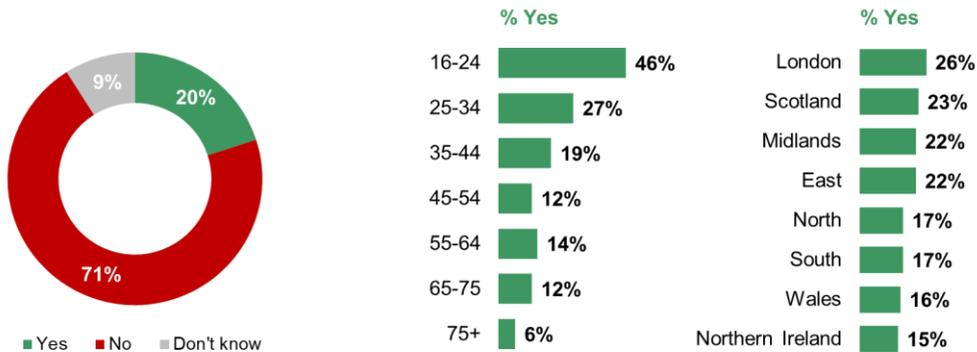
	% Yes		% Yes
16-24	46%	London	26%
25-34	27%	Scotland	23%
35-44	19%	Midlands	22%
45-54	12%	East	22%
55-64	14%	North	17%
65-75	12%	South	17%
75+	6%	Wales	16%
		Northern Ireland	15%

■ Yes   ■ No   ■ Don't know

Base: 1,984 | adults aged 16+ who own a smart device (personally or within their household); Fieldwork dates: 28 October to 5 November 2020

Consumers in London are the most likely to say they have checked the minimum length of time a product will receive updates for (26%), significantly higher than those in the North (17%) and the South (17%).

Minimum support periods for smart devices

The survey included several questions using agree/disagree statements to gauge attitudes towards security features on smart devices. When asked about the importance of publicly available information on minimum support periods, seven in ten consumers (71%) agree it is important for this to be publicly accessible for consumers. One in five say they neither agree nor disagree (18%) while four percent disagree.

Figure 1.7: Attitudes to publicly available information on software updates for smart devices

Q. To what extent, if at all, do you agree or disagree with the following statements?

| When purchasing a smart device, it is important that the minimum length of time it will receive software updates is publicly accessible | 35% | 37% | 18% | 3 | 16% |
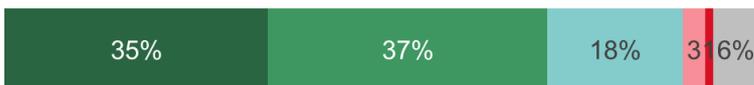
■ Strongly agree ■ Tend to agree ■ Neither agree nor disagree ■ Tend to disagree ■ Strongly disagree ■ Don't know

Base: 1,999 adults aged 16+; Fieldwork dates: 28 October to 5 November 2020

Placement of minimum support period information online

The survey included a question which asked participants where, on an online product page, they would like the support period for products displayed. Participants were presented a series of mocked-up images of a product page on a website - each with a corresponding statement - and were asked to select which image/statement showed their preferred placement of the information.[3] Participants were asked to choose from the following statements:

- **Option A:** Information provided above the title of the product
- **Option B:** Information to be provided in the top section of the product website
- **Option C:** Information provided in the section which provides general details or key features of the product. This section is usually called 'Product Description' or 'Product Information' and each retailer places this section in different areas on product websites.
- **Option D:** Information included within the section where technical details and specifications of the product are provided. This section is sometimes called 'Product Details/Technical Specification' and is usually found halfway down the product page or within a tab on the product website.
- **Option E:** A new section or tab specifically dedicated to security updates but which is clearly accessible on the product website

While there is no clear consensus on a preference for where support period information should be displayed, the most popular options were 'Option C – the product description section' with one in five consumers (20%) and 'option E (20%) – a new section or tab specifically dedicated to security updates'. The least popular option among consumers was 'Option A – information provided above the title above the product' with around one in ten (12%) opting for this.

Figure 1.8: Preferred placement of information on the support period for smart devices
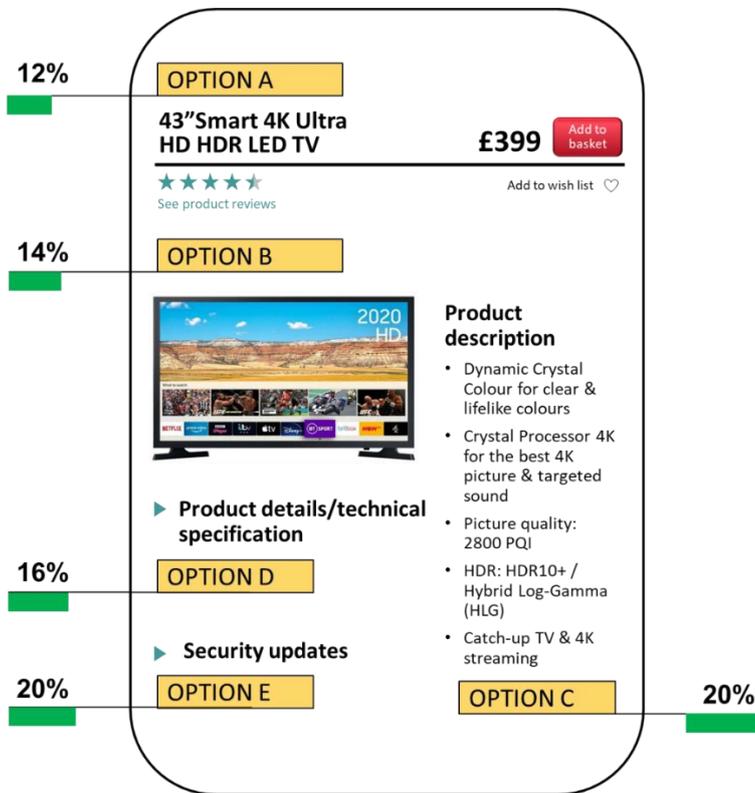

Device use when support period ends

More than one in three consumers in the UK (36%) continue to use their smart devices in the same way when their support period ends. This is the most common response to this question and is followed by one in five (18%) who keep their device as a replacement/backup/spare. One in ten say they recycle their device (9%) while a similar proportion give it to family and friends (8%). Three percent of people say they tend to throw the device away when the support period ends.

Figure 1.9: Device use when support period ends

Q. What do you typically do with any smart devices you own once their support period (i.e. the length of time during which software issues found in a product will be fixed) has ended?

I keep using it in the same way	36%
I keep it as a replacement / backup / spare	18%
I recycle the device	9%
I give to family or friends	8%
I trade it in as part of a deal for a new device	6%
I sell it via an online marketplace	5%
I throw the device away	3%
I give it to charity	2%
Other	1%
Don't know	12%
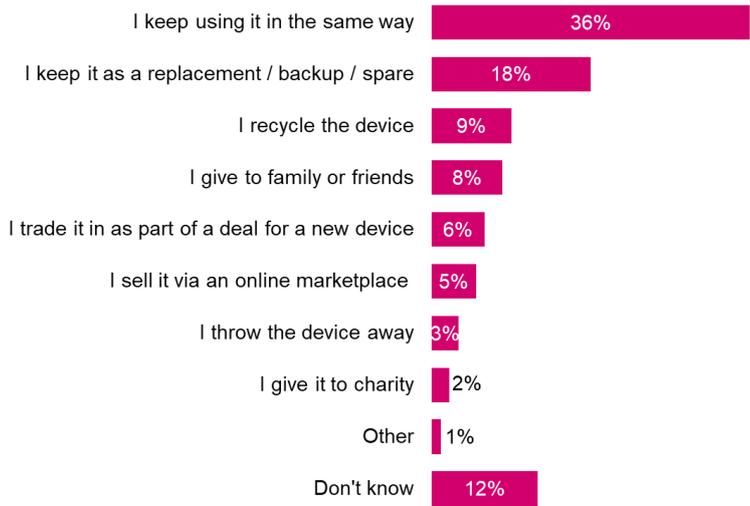
Base: 1,976 adults aged 16+ who own a smart device (personally or within their household); Fieldwork dates: 28 October to 5 November 2020

When looking across age groups, consumers in the youngest (16-24) and oldest (75+) age brackets are the least likely to continue using their devices in the same way (28% and 27% respectively). Those in the 16-24 age group are also the most likely to give the device to family and friends (12%), trade it in as part of a deal for a new device (10%) or give it to charity (5%). A quarter of consumers aged 65-74 (26%) keep their device as a replacement/ backup/spare, the highest of all age brackets and significantly higher than those aged 25-34 (16%), 45-54 (13%) and 55-64 (17%).

Figure 1.10: Device use when support period ends by age

Q. What do you typically do with any smart devices you own once their support period has ended?

% who keep using the device in the same way

Age

16-24	28%
25-34	33%
35-44	41%
45-54	42%
55-64	38%
65-74	40%
75+	27%
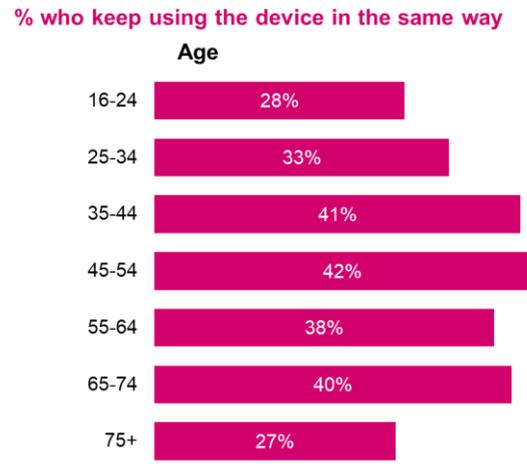
Base: 711 adults aged 16+ who keep using their device in the same way when the support period ends; Fieldwork dates: 28 October to 5 November 2020

The role of those in the supply chain to check device security features

Consumers were asked whether manufacturers, retailers and others in the supply chain have a responsibility to check and be aware of devices cyber security features before they can be purchased. More than eight in ten consumers (84%) agree that those in the supply chain have a responsibility to make such checks and be aware of security features in products before they are sold. Only three percent of consumers disagree with the statement.

Figure 1.11: Attitudes to the responsibility of manufacturers, retailers and others in the smart device supply chain

Q. To what extent, if at all, do you agree or disagree with the following statements?

Manufacturers, retailers and other relevant stakeholders in the supply chain have a responsibility to check and be aware of a device's cyber security features before they can be purchased

| 46% | 38% | 10% | 2 | 2 |

■ Strongly agree ■ Tend to agree ■ Neither agree nor disagree ■ Tend to disagree ■ Strongly disagree ■ Don't know

Base: 1,999 adults aged 16+; Fieldwork dates: 28 October to 5 November 2020

Appetite for built-in security features

The survey findings suggest there is an appetite for built in-security features on smart devices. Nine in ten (87%) say smart devices should have basic embedded features to protect user privacy and security.

Figure 1.12: Attitudes to build-in cyber security features

Q. To what extent, if at all, do you agree or disagree with the following statements?

Smart devices should have basic cyber security features embedded to protect user privacy and security

| 53% | 35% | 8% | 2 | 2 |

■ Strongly agree ■ Tend to agree ■ Neither agree nor disagree ■ Tend to disagree ■ Strongly disagree ■ Don't know

Base: 1,999 adults aged 16+; Fieldwork dates: 28 October to 5 November 2020

When analysing the data by age, there are differences between older and younger consumers. Consumers in the 16-24 age bracket are the least likely to agree with the statement (77%), a significantly lower proportion than all other age groups. They are also the group most likely to disagree with the statement (6%) though this is a relatively low figure. Consumers in the 55-64 and 65-74 age groups are most likely to agree that smart devices should have basic cyber-security features embedded (both 92%).

Consumers in the North (91%) and South of England (89%) are the regions most likely to agree with the statement, both significantly higher than consumers in London (83%) and the Midlands (83%).

Figure 1.13: Attitudes to build-in cyber security features by age and region

Q. To what extent, if at all, do you agree or disagree with the following statements?

Smart devices should have basic cyber security features embedded to protect user privacy and security

■ Strongly agree ■ Tend to agree
■ Neither agree nor disagree ■ Tend to disagree
■ Strongly disagree ■ Don't know

87% Agree — 53%, 35%, 8%, 2, 1, 2

% Agree

Age	%
16-24	77%
25-34	88%
35-44	87%
45-54	87%
55-64	92%
65-75	92%
75+	87%

% Agree

Region	%
North	91%
South	89%
East	88%
Wales	87%
Scotland	87%
Midlands	83%
London	83%
Northern Ireland	78%
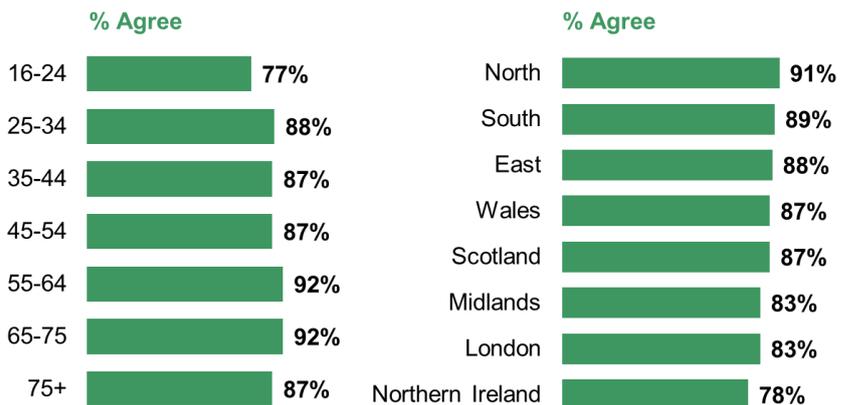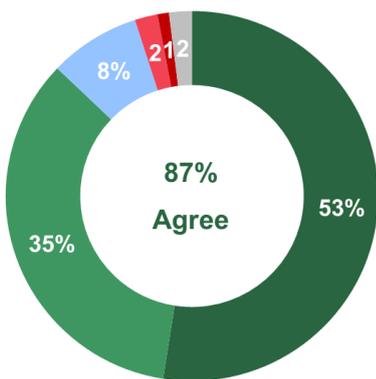
Base: 1,999 adults aged 16+; Fieldwork dates: 28 October to 5 November 2020

Purchasing smart devices

Key findings

- A third of consumers in the UK (33%) tend to spend less than an hour researching smart devices before they purchase them while around one in five (19%) spend five hours or more.
- Consumers are most likely to use product reviews by other customers (56%), product descriptions (42%) and product reviews by experts and organisations (39%) to find out about smart devices before purchase.
- Consumers most commonly get cyber security information and guidance by searching on the internet (37%), followed by family (22%), the media (18%) and friends (18%).
- Younger consumers are more likely to use social media as a source of information about smart devices and cyber security information, while older consumers are more likely to use friends and family.
- About half of consumers (49%) think that online marketplaces that sell their own products as well as other third-party bands should have the same responsibility for product safety and security as a marketplace which stocks only third-party products/connects buyers and sellers, but more think that they should have more responsibility (34%) than less (11%).
- A majority of consumers typically buy smart devices online (59%) while about a third do so in-store (32%).
- A majority of consumers (64%) of consumers who purchased smart device online did so from an online marketplace while around a third (32%) did so directly from the company or product website.

The amount of time consumers spend researching smart devices before purchase

A third of consumers in the UK (33%) tend to spend less than an hour researching smart devices before they purchase them while around one in five (19%) spend five hours or more. The survey findings show that from a pre-coded list, consumers most commonly spend 1-2 hours researching smart devices before making a purchase (24%).

Younger consumers tend to spend less time researching smart devices before purchasing a device, but those in the oldest age group (75+) are most likely to spend less than an hour on research with around one in five of this group (19%) saying that they typically do no research before purchase.

Those in the top two income brackets (£35,000+) tend to spend more time on research than those with incomes less than £35,000. Around one in ten (8%) of those earning less than £35,000 say that they typically do no research before purchase compared with three percent of those earning more than £55,000.

Figure 1.14: Amount of time spent researching smart devices before purchase

Q. And when you typically purchase a smart device, how much time do you tend to spend researching the device before you make a purchase?
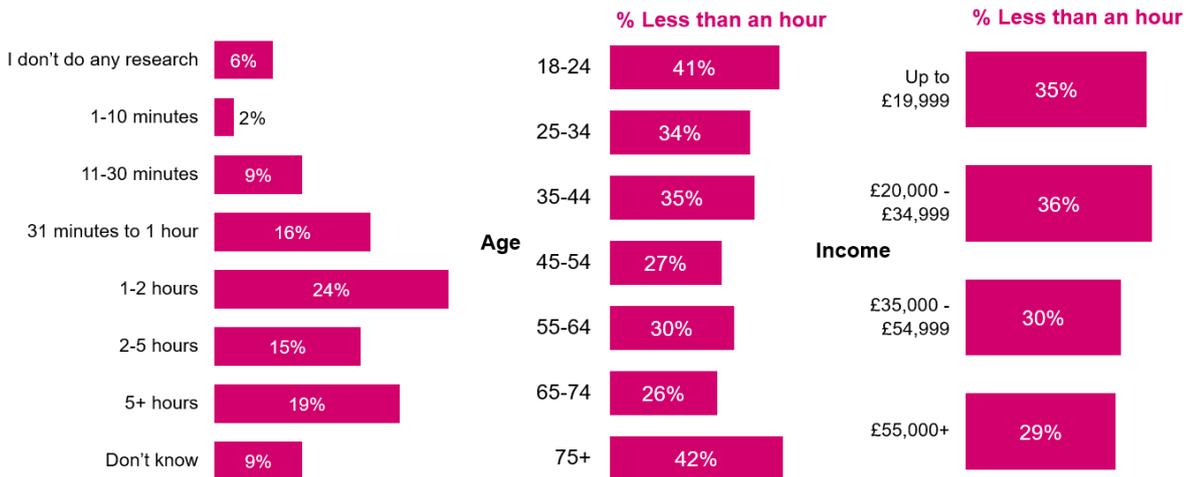
Base: 1,984 adults aged 16+ who own a smart device (personally or within their household); Fieldwork dates: 28 October to 5 November 2020

Sources of information about smart devices and cyber security

The survey results show that consumers are most likely to use product reviews by other customers (56%), product descriptions (42%) and product reviews by experts and organisations (39%) to find out about smart devices before purchase.

Younger consumers (16-34) are more likely to use social media as a source of information, with about one in three (35%) of those aged under 35 saying they use social media compared with around one in ten (7%) of those aged 55 plus. Younger consumers are also more likely to look at online labels / stickers, with around one in six (16%) of those aged under 35 saying they use this as a source of information, significantly higher than older age groups. Older consumers are the most likely to report that they use family and friends as a source of information. Around one in twenty consumers aged 65+ (6%) say that they use family and friends, significantly higher than all other age groups.

Figure 1.15: Sources of information about smart devices

Q. When you typically purchase a smart device, what sources of information do you tend to use to find out about the device?

I read product reviews by other customers	56%
I read the product description	42%
I read product reviews by experts and organisations	39%
I look at product images online	37%
I look at the product in-store	34%
I read product documentation	29%
I read reviews by retailers	26%
Social media	19%
I read reviews by manufacturers	18%
I look at online labels / stickers	10%
I do not review any information	5%
Ask family/friends	2%
Other	*%
Don't know	6%

Base: 1,978 adults aged 16+ who own a smart device (personally or within their household); Fieldwork dates: 28 October to 5 November 2020

The survey results show that consumers most commonly get cyber security information and guidance by searching the question or problem on the internet (37%), followed by family (22%), the media (18%) and friends (18%).

Age differences in the sources consumers reported using for cyber security information and guidance are similar to those for sources of information about smart devices.

Younger consumers (16-34) are more likely to use social media for cyber security information and guidance. Among consumers under the age of 35, around one in seven report using Facebook (14%) or Instagram (14%) while one in twelve report using Twitter (8%) or social media influencers (8%), significantly higher than all other age groups.

Older consumers are most likely to use family for cyber security information and guidance. Around three in ten consumers aged 65 or above (31%) say that they use family, significantly higher than other age groups.

There are also some differences in the sources of information used by consumers by region. Consumers in Scotland are more likely to get cyber security information and guidance from the media (27%) than

other regions, consumers in London and Scotland are more likely to use tech media (both 17%) and consumers in London are more likely to use social media influencers (10%).

Figure 1.16: Sources of information about smart devices

Q. Which of these sources do you tend to use to get cyber security information and guidance?

Source	%
I search the question or problem on the internet	37%
Family	22%
Media – newspapers, magazines, online news sites, TV, radio	18%
Friends	18%
Technology companies	16%
Consumer groups and organisations	14%
Gov.uk	13%
Tech media, such as Techradar, Wired, ComputerWeekly,	11%
Facebook	8%
Work colleagues	8%
The National Cyber Security Centre	5%
Twitter	5%
Instagram	5%
Cyber Aware campaign	4%
Social media influencers	3%
None/I don't	1%
Other	1%
Don't know	19%
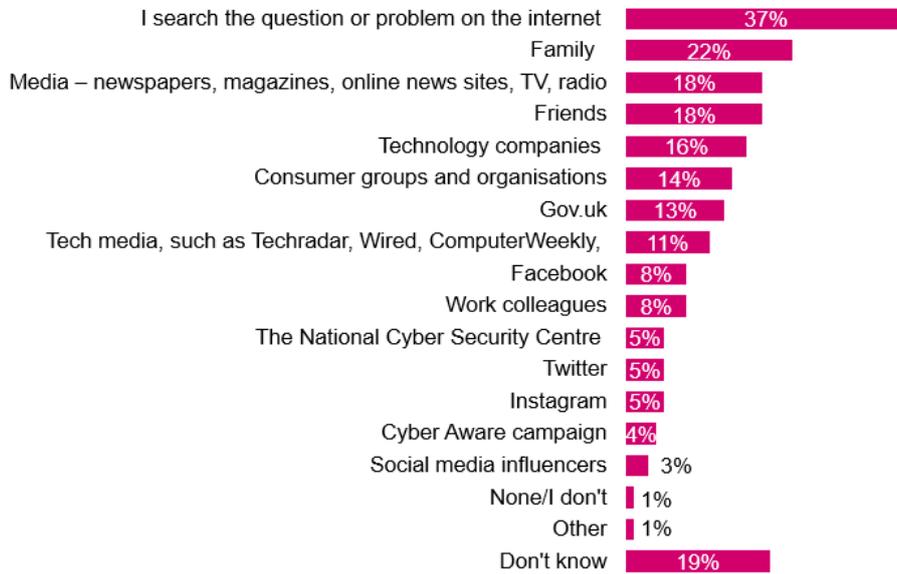
Base: 2,001 adults aged 16+; Fieldwork dates: 28 October to 5 November 2020

Consumer views on the responsibility of retailers for product safety and security

Half of consumers (49%) think that online marketplaces that sell their own products as well as other third-party bands should have the same responsibility for product safety and security as a marketplace which stocks only third-party products/connects buyers and sellers. However, about a third of consumers (34%) think that online marketplaces that sell their own products should have more responsibility while just one in ten (11%) think they should have less responsibility.

Consumers aged 45-54 and 75+ are least likely to think that online marketplaces that sell their own products should have more responsibility (28% and 23% respectively) but there is no consistent age gradient. However, younger consumers (16-34) are generally more likely than older consumers to think that online marketplaces that sell their own products should have less responsibility than a marketplace which stocks only third-party products. About one in six of those under the age of 35 (17%) hold this view compared to one in twenty (5%) of those aged 65 and above. There are no significant differences in these views between regions.

Figure 1.17: Responsibility of retailers for product safety and security

Q. To what extent, if at all, do you think that an online marketplace that sells its own products as well as other third-party brands (e.g. Amazon, Maplin etc.) has more, less, or about the same responsibility for product safety and security than a marketplace which only stocks third-party products/connects buyers and sellers (e.g. eBay, Etsy etc.)?
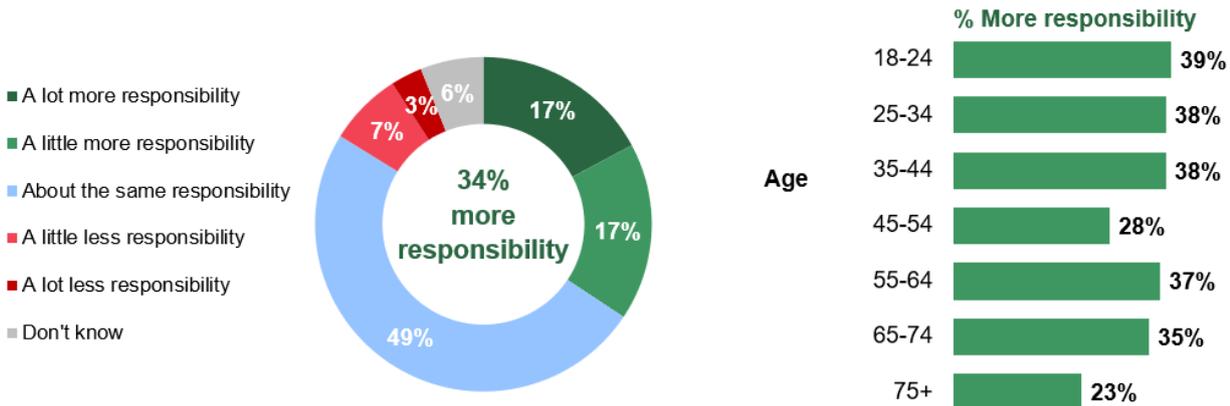
Base: 1,999 adults aged 16+; Fieldwork dates: 28 October to 5 November 2020

Where consumers typically buy smart devices

The survey results show that six in ten consumers typically buy smart devices online (59%) while about a third of consumers do so in-store (32%) and about one in twenty (4%) do so from a friend or family member.

Middle aged consumers were most likely to purchase smart devices online, with about two thirds of those aged 35-54 saying they typically do so (67%), significantly higher than those aged 16-24 (54%) and those aged 55 and above (51%). Older consumers were generally more likely to buy smart devices in-store. Around four in ten consumers aged 55+ (39%) say that they typically buy smart devices in-store compared to three in ten under 35s (31%) and a quarter of those aged 35-54 (25%).

Younger consumers are most likely to purchase smart devices from a friend or family member. One in ten aged 16-24 (10%) and one in twenty of those aged 25-34 (5%) reported doing so, compared with two percent of those aged 35+.

Figure 1.18: Where consumers typically buy devices

Q. Again thinking about when you typically purchase a smart device, do you tend to purchase…

- ■ Online (from a company or online marketplace)
- ■ In-store
- ■ From a friend or family member
- ■ From somewhere else
- ■ It depends
- ■ Don't know

| 59% | 32% | 4% | * | 5% |
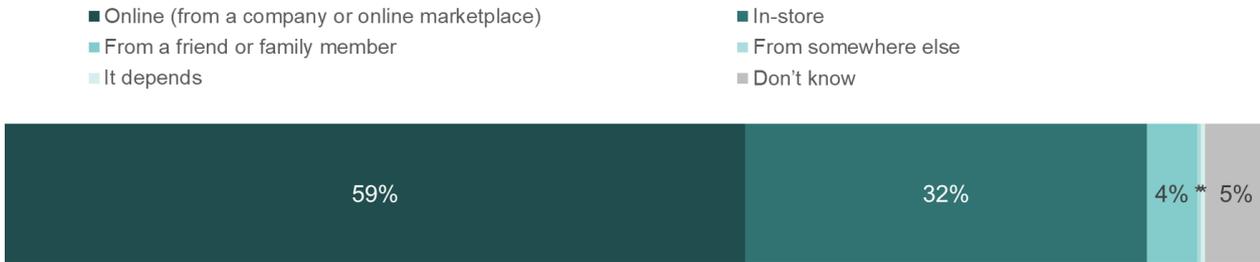
Base: 1,980 adults aged 16+ who own a smart device (personally or within their household); Fieldwork dates: 28 October to 5 November 2020

Where consumers purchased their last smart device online

The survey results show that around two thirds of consumers (64%) who purchased a smart device online last did so from an online marketplace while around a third (32%) did so directly from the company or product website. Young participants are most likely to have purchased directly from the company or product website, with around four in ten (43%) of consumers aged 16-24 doing so, significantly more than other age groups.

Figure 1.19: Where consumers purchased their last smart device online

Q. Thinking back to the last time you purchased a smart device online. Where did you buy the smart device from?

- ■ An online marketplace (such as Amazon, eBay, etc)
- ■ Directly from the company / product website
- ■ Don't know

Base: 1,207 adults aged 16+ who typically purchase a smart device online; Fieldwork dates: 28 October to 5 November 2020

Apps

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Key findings

- Consumers most commonly download apps less than monthly (44%) but about one six do so more than weekly (16%). Young consumers are more likely to download apps regularly while older consumers are more likely to do so less than monthly or never.
- Consumers most commonly use reviews of the app on the app store (37%), the description provided with the app (36%), the app rating or ranking (33%) and privacy permissions (30%) when choosing to download or keep/delete an app.
- Consumers tend to use either the Google Play Store (52%) or Apple App Store (44%) to download apps onto their smartphone or tablet. Young consumers and those with higher incomes are more likely to use the Apple App Store and less likely to use the Google Play Store.

</div>

How often consumers download apps

The survey results show that consumers most commonly download apps on their smartphone or tablet 'less than monthly' (44%) with around three in ten consumers downloading apps monthly (28%), one in six downloading apps weekly or daily (16%) and one in ten never downloading apps (9%).

Older consumers generally download apps less regularly than younger consumers. About one in six consumers (16%) aged 55 and above say that they never download apps, rising to around three in ten among those aged 75 and above (29%), while just two percent of those under the age of 35 say the same. Similarly, participants aged 16-24 (39%) and 25-34 (28%) are significantly more likely to download apps weekly or daily.

Figure 1.20: How often consumers download apps

Q. How often do you download apps on your smartphone/tablet?

Daily	3%
Weekly	14%
Monthly	28%
Less than monthly	44%
Never	9%
Don't know	2%
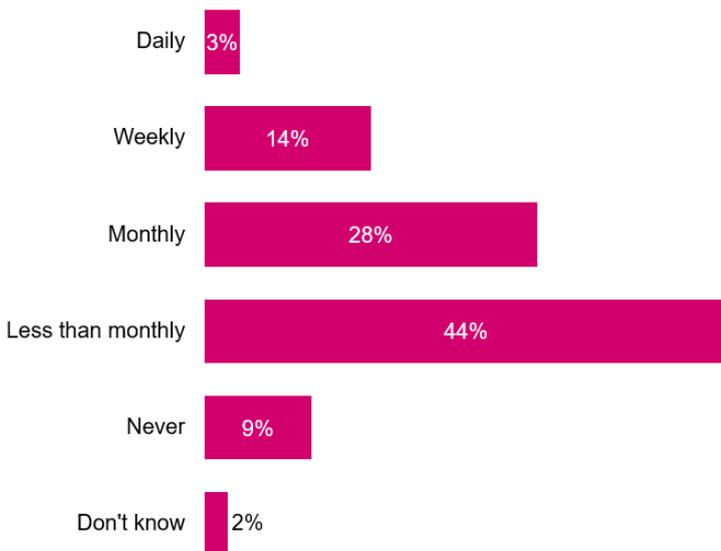
Base: 2,001 adults aged 16+; Fieldwork dates: 28 October to 5 November 2020

What information consumers use when they download or retain apps

Results from the survey show that consumers most commonly use reviews of the app on the app store (37%), the description provided with the app (36%), the app rating or ranking (33%) and privacy permissions (30%) when choosing to download or keep/delete an app. Those aged under 45 are more likely to use app ratings or rankings, with four in ten consumers aged 16-24 (38%), 25-34 (40%) and 35-44 (40%) saying they typically do so, significantly higher than those aged 45 and above. Middle aged consumers are most likely to use reviews of the app on the app store, with nearly half (46%) of those aged 35-44 doing so, significantly more than those aged 16-24 and those aged 55 or above.

Older consumers are generally more likely to use the description provided with the app than younger consumers. Around four in ten of those aged 55 or above (41%) report typically doing so, compared with around a quarter of those aged 16-24 (26%) and a third of those aged 25-34 (36%).

Figure 1.21: What information consumers use when they download or retain apps

Q. Thinking about apps on your smartphone or tablet, what information do you typically use when you choose to download or keep/delete an app?
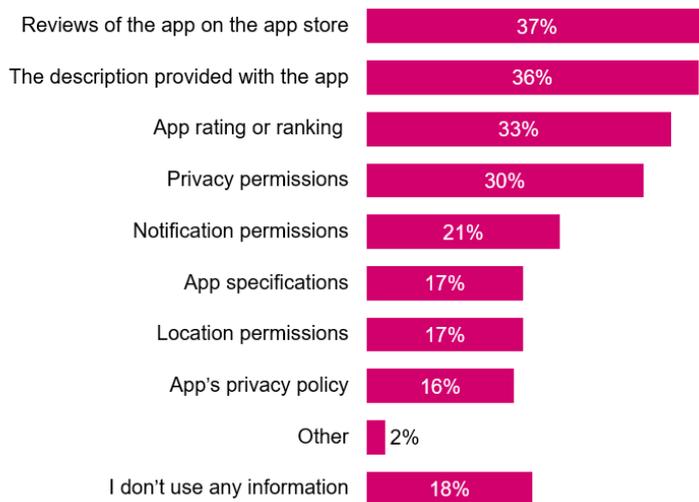
Reviews of the app on the app store	37%
The description provided with the app	36%
App rating or ranking	33%
Privacy permissions	30%
Notification permissions	21%
App specifications	17%
Location permissions	17%
App's privacy policy	16%
Other	2%
I don't use any information	18%

Base: 1,810 adults aged 16+ who download apps on their smartphone/tablet; Fieldwork dates: 28 October to 5 November 2020

Which app stores consumers tend to use

The survey results show that consumers tend to use either the Google Play Store (52%) or Apple App Store (44%) to download apps onto their smartphone or tablet.

Younger consumers are less likely to use the Google Play Store and more likely to use the Apple App Store with about a third of those aged 16-24 (35%) saying they use the Google Play Store and six in ten (61%) saying they use the Apple App Store, significantly higher than all other age groups.

Older consumers are most likely to use the Samsung Galaxy Store and Amazon app store. About one in seven (15%) of those aged 75+ use the Samsung Galaxy Store, significantly more than those aged 35-44 (6%) and 45-54 (7%). About one in ten of those aged 55-64 (10%) and 65-74 (13%) use the Amazon App Store, significantly more than those aged 35-44 (5%).

Consumers in lower income brackets are generally less likely to use the Apple App Store than higher earners. Around a third of consumers with an income under £20,000 (32%) and four in ten with an income of £20,000 - £34,999 (40%) say that they regularly use the Apple App Store, significantly less

than those with an income of £35,000 - £54,999 (49%) and those with an income of £55,000 or more (55%). Similarly, consumers with an income of £55,000 or more (45%) are significantly less likely to use the Google Play Store than those with an income of £35,000 or less (57%).

Figure 1.22: Which app stores consumers tend to use

Q. When downloading apps onto your smartphone or tablet which app stores do you tend to use?
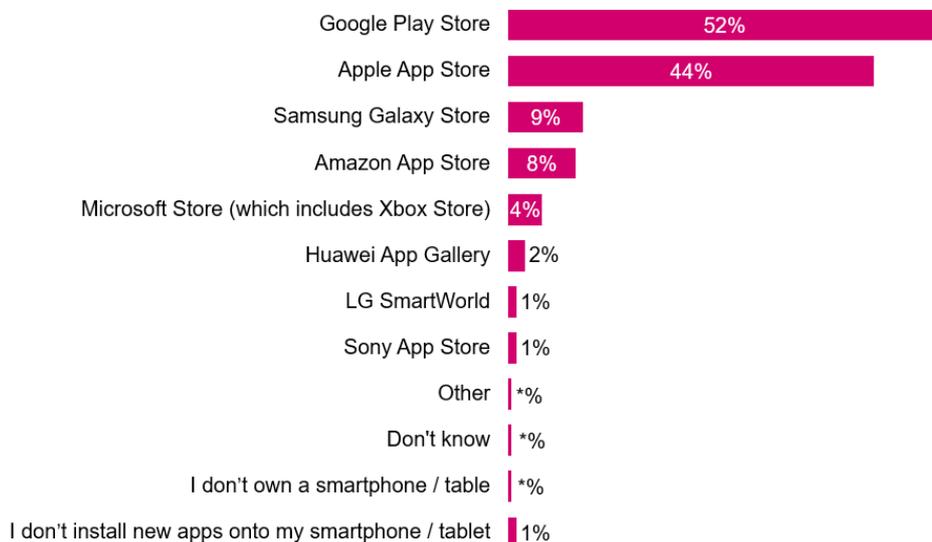
Google Play Store	52%
Apple App Store	44%
Samsung Galaxy Store	9%
Amazon App Store	8%
Microsoft Store (which includes Xbox Store)	4%
Huawei App Gallery	2%
LG SmartWorld	1%
Sony App Store	1%
Other	*%
Don't know	*%
I don't own a smartphone / table	*%
I don't install new apps onto my smartphone / tablet	1%

Base: 1,810 adults aged 16+ who download apps on their smartphone/tablet; Fieldwork dates: 28 October to 5 November 2020

## Router security and household internet connections

Key findings

- One quarter of UK consumers (24%) say they have changed their Wi-Fi network password or changed their router password (23%).
- Just under half of UK consumers (45%) say they installed their household internet connection themselves after signing up to an internet service provider.
- Four in ten consumers in the UK (41%) say their internet connection was installed by an engineer on behalf of an internet service provider.

Nine in ten consumers in the UK (91%) report owning a Wi-Fi router/internet hub. When asked about router security settings and specific things consumers have changed, the most commonly reported behaviours are changing the network/Wi-Fi password (24%) with a similar proportion saying they have changed the router password (23%). Around one in eight consumers (13%) say they have updated their router software while one in ten consumers have reviewed the router settings (11%), changed the network name (11%) or set up parental controls (9%).

Less commonly reported behaviours include changing the router IP address (5%), changing the router encryption (5%) or setting up a guest network (4%). Around half of consumers report not having conducted any of the listed behaviours related to their Wi-Fi router (51%).

Figure 1.23: Behaviours related to Wi-Fi routers in household

Q. Thinking about the Wi-Fi router/internet hub in your household, have you…
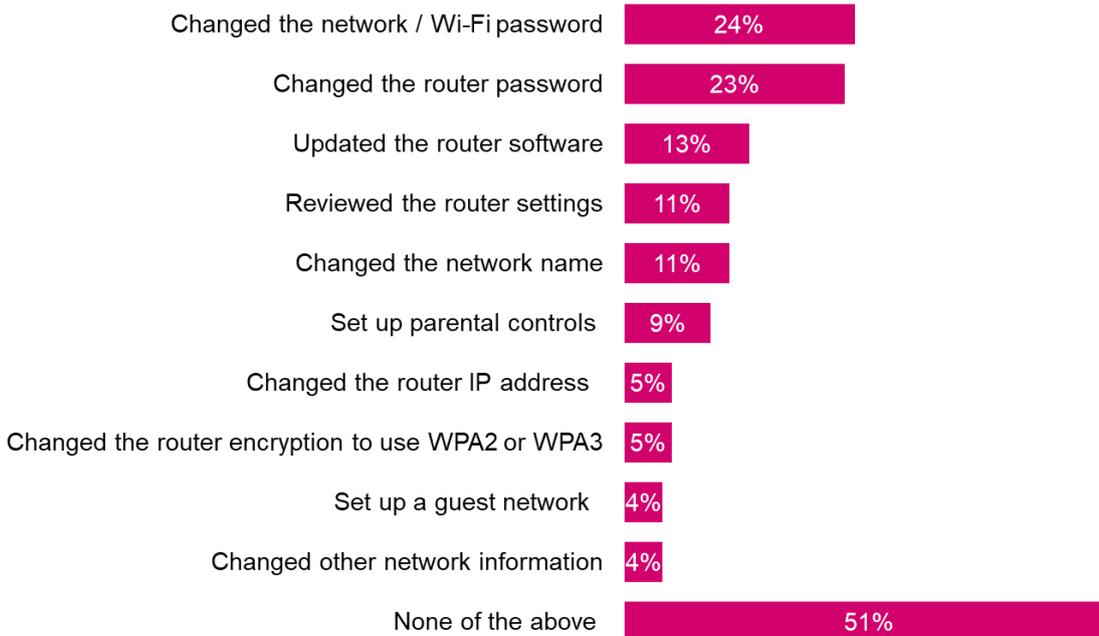
Base: 1,846 adults aged 16+ who own a Wi-Fi router/internet hub; Fieldwork dates: 28 October to 5 November 2020

Younger consumers are generally more likely to have changed settings on their Wi-Fi router. For example, around here in ten consumers aged 16-24 (29%), 25-34 (25%) and 35-44 (34%) have changed

their Wi-Fi network password compared with one in five aged 55-64 (21%) and one in ten aged 65-74 (13%) and 75+ (10%).

When it comes to updating router software, those aged 16-24 (22%) are significantly more likely than all other age groups (with the exception of 45-54 year olds) to have done this.

Older consumers are the most likely to say they have not conducted any of the behaviours listed in the question. Consumers aged 55-64 (62%), 65-74 (72%) and 75+ (77%) are significantly more likely to say 'none of the above' than those aged 16-54.

Internet connections within households

When asked about how the internet connection in their household was installed, just under half say they installed it themselves after signing up to an internet service provider (45%). The next most commonly stated response was the four in ten (41%) who say it was installed by an engineer on behalf of an internet service provider.

Younger consumers are the most likely to say it was previously installed by previous tenants (12%) or by a landlord, university or other organisation (6%).

Looking across the data by age group, it suggests older consumers are more reliant on family and friends with 7% saying it was installed by family/friends, significantly higher than all other age groups.

Figure 1.24: How internet connections are installed within households

Q. Thinking about the internet connection within your household, how was this installed?

I did it myself after signing up to an internet service provider (e.g. Virgin Media, Vodafone, BT etc)	45%
By an engineer on behalf of an internet service provider (e.g. Virgin Media, Vodafone, BT etc)	41%
It was previously installed within my home by the last tenants	4%
It was previously installed by a landlord, university or other organisation	3%
Family member	1%
I don't have an internet connection/I use mobile data	1%
Friend/aquaintance	*%
Other	*%
Don't know	6%

Base: 2,001 adults aged 16+; Fieldwork dates: 28 October to 5 November 2020

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