MOBILE BROWSERS AND CLOUD GAMING

Appendix C: Consumer behaviour in the mobile browser market: Methodological assessment of CMA research and other research

22 November 2024

Website: www.gov.uk/cma

1. Introduction

1.1　We commissioned the independent market research agency Verian (formerly Kantar Public) to conduct research with UK consumers who own a smartphone.[1]

1.2　This appendix sets out:

(a)　our view on the strengths and limitations of the research (section 2).

(b)　an overview of the main points made in submissions on the draft survey questionnaire that we published for consultation before fieldwork and which underpins the research's conclusions, and our assessment of these submissions (section 3).

(c)　our assessment of a small number of survey questions where the CMA places limited reliance on their findings (section 4).

(d)　methodological comments from the Parties on the CMA consumer research, and our assessment of them (section 5).

(e)　our assessment of consumer research conducted by Apple and shared with the CMA (section 6).

(f)　our assessment of secondary data analysis of the CMA consumer survey, conducted by Apple and shared with the CMA (section 7).

1.3　In this introduction we begin by summarising the methodology for the CMA Survey. We then assess the survey with regard for the CMA's good practice guidance.

1.4　As set out in our good practice guide, statistically robust customer survey research can be very important in reaching informed decisions.[2] The CMA takes many aspects into account when assessing the evidential weight that can be given to survey results, including: the questionnaire quality, the fieldwork quality and method, and the coverage and representativeness of the survey responses.[3] Of particular relevance here is that:

---

[1] Verian Group UK (2024) Mobile Browsers Consumer Research report.
[2] CMA (2018) Good practice in the design and presentation of customer survey evidence in merger cases, paragraph 1.1.
[3] CMA (2018) Good practice in the design and presentation of customer survey evidence in merger cases, paragraph 4.38.

(a)   The questionnaire should be carefully designed; and assessed to consider how closely it reflects the objectives of the research and how readily participants may be expected to provide meaningful responses.[4]

(b)   Representativeness of the achieved sample, scope for sample bias and non-response bias.[5]

(c)   The CMA is generally cautious about giving full evidential weight to surveys that achieve a response rate below 5% unless there is evidence that the achieved sample is representative of the target population.[6]

---

[4] CMA (2018) Good practice in the design and presentation of customer survey evidence in merger cases, paragraph 4.38(d).
[5] CMA (2018) Good practice in the design and presentation of customer survey evidence in merger cases, paragraph 4.38(c).
[6] CMA (2018) Good practice in the design and presentation of customer survey evidence in merger cases, paragraph 4.38(g).

2. Our view on the robustness of the CMA consumer survey: its strengths and limitations

2.1 We address, in turn, the aspects highlighted at (a)-(c) in paragraph 1.4:

(a) The questionnaire design should elicit robust data:

   i. We designed the survey questionnaire carefully, in accordance with generally accepted principles and those highlighted in our good practice guide. We employed an iterative process for questionnaire design. This included: conducting a rapid evidence review to identify survey questions which had been tested, and found to work, in the field; publishing the draft questionnaire and inviting comments; drawing on the experience of the market research agency; conducting qualitative research to explore consumers' understanding and technical literacy; cognitively testing the questionnaire; and conducting a soft launch to test the survey before commencing the full launch.

   ii. In developing the survey, we paid particular attention to the ordering of questions, wording (including in information text), response scales used and to how best to aid respondent's comprehension and recall. Such careful consideration of all these aspects reduces the potential for leading questions, framing, and less meaningful answers and, therefore, survey results that may be biased or difficult to interpret.

   iii. The qualitative research and cognitive testing highlighted that mobile browsers was a difficult subject to tackle in a consumer survey, but also enabled us to tailor language and question design to minimise item non-response and response error. Whilst we consider the questionnaire to have worked well overall, we acknowledge that due to the technical nature of the subject matter – which the qualitative research highlighted some consumers did not understand well – some survey questions had limitations. These specific questions are addressed in paragraphs 4.1 to 4.9, below.

(b) The sample should be representative of the target population:

   i. Verian conducted an online survey of a sample of UK smart phone users aged 16+, using Verian's 'Public Voice' panel. This is a high-quality survey panel, representative of the UK population aged 16+, which has been built using random sampling methods so that inferences from the data it collects will have design-based validity. This is in contrast with the typical panel in the UK which is based on a convenience sample: a pool

of self-selected individuals who have responded to general advertisements to participate in surveys.[7]

ii. At the time of the survey, the Public Voice panel comprised 23,055 members from across the UK. Most of these panel members were recruited via the Address-based Online Surveying ('ABOS') method in which (probabilistically) sampled individuals complete a 20-minute recruitment questionnaire either by web or on paper. Recruitment surveys were carried out in 2019, 2020 and 2021 and the respondent samples have been linked together via a weighting protocol to form a single panel. The agency conducted the survey between 13 March 2024 and 8 April 2024. Fieldwork closed with a total of 3,506 completes. Of these, 3,424 passed a basic QC test. We address non-response bias under (c) below where it is most pertinent.

(c) The survey should achieve a minimum response rate of 5% unless there is evidence that the achieved sample is representative of the target population:

i. CMA guidance on the design and presentation of consumer surveys was published in 2018. Whilst this was primarily designed for use by parties on merger cases, and before online random probability panels existed in the UK, many of the principles are applicable to other types of case which the CMA conducts, including market investigations. In the guidance we state that, 'unless there is evidence that the achieved sample is representative of the target population, the CMA is generally cautious about giving full evidential weight to surveys that achieve a response rate below 5%'.

ii. Survey non-response bias occurs when those who respond to a survey and those who do not are systematically different in ways that would be associated with their responses to questions that are key to the findings. If such a bias exists, this is one way in which the views and behaviours of the respondent group would not be representative of those of the entire population of interest. While there is not a direct relationship between the response rate achieved and representativeness, the lower the response rate, the greater the potential for such non-response bias – if uncorrected – to reduce representativeness.

iii. We took a number of approaches to minimise non-response, including keeping the survey as short and engaging as possible, offering an incentive, and using several email reminders. This contributed to the survey achieving a response rate of 32% among the sample invited to participate in the survey. However, the 'cumulative' response rate failed to

---

[7] See Verian Group UK (2024) Mobile Browsers Consumer Research – Technical Report.

achieve 5% when accounting for: the Public Voice panel recruitment response rate; the probability of being available for the Mobile Browsers survey; and the probability of responding to the Mobile Browsers survey. On this basis, the overall design-weighted cumulative response rate was 3%.

iv. While the cumulative response rate was lower than 5%, far more is known about the attrition between initial sample and response to this survey than is usually the case with a low response rate survey where often very little is known about the non-responding sample. Furthermore, analysis by the agency provides reassurance that the survey is broadly representative. For example, the agency has compared multiple demographic and non-demographic recruitment survey variables from the weighted Mobile Browsers survey sample with the original weighted panel recruitment survey dataset of UK adults. The median difference in these estimates is only 0.5 percentage points; and 95% of differences are <=2 percentage points. This suggests that the Mobile Browsers survey sample is well-aligned with the weighted recruitment survey dataset, providing confidence that we can fairly treat it as a reasonable proxy for the target population.

v. The agency also conducted a comparison of findings with the CMA's Mobile Ecosystems Market Study (MEMS) survey (2022) into consumer purchasing behaviour in the UK smartphone market.[8] The MEMS survey sample was sourced using Ofcom's database of mobile phone 'blocks' and a random digit dialling protocol was utilised. In general, the results, where comparable questions are asked, are well-aligned between the two surveys despite the differing sampling methodologies. For example, the two surveys produce almost identical estimates in terms of brand choice; very similar estimates in terms of technical confidence; and estimates are similar enough with respect to what was important when choosing their phone, despite some differences in the question structure. Alignment between sources is not strong evidence that neither is biased but it is positive given the different sampling methods.

2.2   Therefore – in terms of considerations around sample bias and in accordance with our good practice guide – we consider we can assign evidential weight to the CMA survey.

---

[8] CMA consumer research into purchasing behaviour in the UK smartphone market, published 17 June 2022.

3. The Parties' submissions on the CMA consumer survey questionnaire and our assessment of them

3.1 We published the draft survey questionnaire and invited parties and other stakeholders to comment. The questionnaire was published on the case page on 15 February 2023, along with a notice explaining the overall research methodology. Parties were given five working days to comment. Comments on the draft questionnaire were received from Apple, Google, Mozilla and the Information Commissioner's Office (ICO). Comments were reviewed in advance of finalising the questionnaire. Many of the suggestions, for example changes to wording and the removal of some questions, were accepted and incorporated into the final questionnaire.

3.2 Mozilla shared some questions on data privacy which had been used by them in a previous survey. After noting the findings from its survey, we took the decision not to replicate the questions in our survey. Mozilla also suggested some changes to a draft question on data tracking; the decision was subsequently taken to remove this question from the survey.[9] The ICO provided a number of comments on question wording, many of which were incorporated into the survey.[10]

3.3 The main parties made comments, both overall and on individual questions. We summarise and address some of the substantive comments from the main parties here, in turn:

(a) **Measuring the importance that users attach to security and privacy.** Apple commented that providing smartphone users with robust privacy and security features is a core component of the Apple business model; and that the survey failed to adequately explore the importance of these matters for device users. Apple did not suggest specific questions for inclusion on the survey. Apple suggested providing guidance to respondents in the event that more than five factors were important to their purchase decision. Apple also suggested that we provide definitions of 'security' and 'privacy'.[11] Both suggestions were accepted and incorporated into the final questionnaire. Paragraph 5.3 provides further information on the rationale that informed our approach to measuring the factors that are important for users, including security and privacy.

(b) **Factors which influence smartphone purchase**. Google suggested changes to the wording of the proposed question and the response codes –

---

[9] Mozilla response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.
[10] ICO response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.
[11] Apple response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.

some of which were adopted for the main survey.[12] In addition to the comments mentioned in the previous paragraph, Apple suggested some changes to the response codes.[13] We aimed to avoid making too many changes to the MEMS field-tested question, but we made a number of changes, including adding some factors that had been suggested, changing the wording of some options, and substituting low ranking codes from the MEMS results with specific codes relevant to this MI. The final list met the maximum length for respondents to answer effectively, based on cognitive testing from MEMS.

(c) **Respondents' understanding of terms such as 'operating system', 'pre-installed browser' and 'default browser'.** Apple commented that there is limited technical understanding of such terms and that these should be clearly explained when first used and, to avoid misunderstanding, repeated where the context so requires throughout the survey.[14] Respondents' technical understanding was explored in the qualitative research and cognitive testing, which further demonstrated the need for clear explanations. The changes suggested by Apple were incorporated in the survey.

(d) **Detailed exploration of users' preferred approach to choosing their mobile browser**. Apple suggested some specific questions to ascertain users' preferences for choosing their mobile browser, including testing of choice screen options.[15] After consideration, we determined that the suggested questions were not well-suited to this survey due to concerns about the complexity of the suggested response options and the degree of testing and development that would be required.

(e) **Measuring respondent's technical understanding of mobile browsers, search engines and apps with True/False statements (TFGRID)**. Apple made a number of comments on the draft True/False statements.[16] Google also made comments on the draft True/False statements.[17] We made a number of changes, where we felt that the suggestions would improve the survey, including removing some statements and revising the wording of others.

---

[12] Google response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.
[13] Apple response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.
[14] Apple response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.
[15] Apple response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.
[16] Apple response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.
[17] Google response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.

(f) **Understanding why the most-used mobile browser was preferred (WHYMOST)**. In the draft questionnaire, respondents were asked why they used their most-used browser (WHYMOST1); and those selecting 'It is my preferred browser (even if I sometimes use different browsers for specific web activities)' were routed to a follow up question where they could select from a list of factors (WHYMOST2). Apple suggested that the response code 'It is my preferred web browser (even if I sometimes use different browsers for specific web activities)' should be reworded to 'It is my preferred web browser for many web activities' as many iOS users will not "sometimes use different browsers for different web activities".[18] After consideration, we retained the original wording. Apple submitted that all codes at WHYMOST1 should filter through to WHYMOST2 and there should be further explanation of security and privacy features at WHYMOST2.[19] We accepted that the routing of WHYMOST2 should be extended to include one additional response mentioned at WHYMOST1; so routing respondents who selected 'The web browser was already on my smartphone and I chose to keep using it based on my previous browser experience' at WHYMOST1 to the follow up question WHYMOST2. But we decided against routing all responses at WHYMOST1 through to WHYMOST2, to avoid encouraging 'over-consideration' by respondents of specific factors influencing mobile browser choice; this included not routing those who responded at WHYMOST1, 'The web browser was already on my smartphone, and I had no reason to use another web browser' through to WHYMOST2. This approach reflected learning from the qualitative interviews and ACCC survey evidence.[20] Google suggested that additional compatibility codes should be added to WHYMOST2.[21] This was accepted and incorporated into the final questionnaire.

(g) **Measuring difficulties experienced when changing the default mobile browser (WHYDIFF).** Apple suggested that the question asking whether users who had changed their default browser experienced a range of specified problems was potentially leading. Apple proposed a filter question asking whether any problems had been experienced.[22] We accepted that there was a risk of leading respondents to select one or more issues. To minimise this risk, we filtered the question on SWITCHEASE, which asked respondents how easy or difficult they had found the switching process.

---

[18] Apple response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.
[19] Apple response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.
[20] Source: Australian Competition and Consumer Commission (ACCC). Consumer views and use of web browsers and search engines. Final report. Published: September 2021.
[21] Google response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.
[22] Apple response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.

Accordingly, all valid responses at SWITCHEASE were routed to WHYDIFF, with the exception of those respondents who stated at SWITCHEASE that they had found the switching process 'very easy'. Accordingly, those finding the switching process 'fairly easy', 'fairly difficult' or 'very difficult' were routed to WHYDIFF and invited to select any applicable factors from a list of potential difficulties. Google suggested that the response options should be randomised,[23] which was accepted and implemented in the survey.

(h) **Measuring the incidence and usefulness of prompts (NEWPROMPT).** The draft questions asked whether respondents had seen a number of 'pop-up' prompts, and whether they were useful. Based on feedback, we removed two of the proposed questions and focused the remaining two questions on respondents who had changed their default browser.

(i) **Understanding what information users would find helpful when deciding which mobile browser to set as their default browser (HELPDEFAULT).** Apple commented that the question was open to significant interpretation and contained a risk of bias.[24] The question was subsequently removed from the final survey.

(j) **Measuring users understanding of how their internet use is tracked and used (KNOWTRACK).** Apple commented that it was confusing asking about companies and organisations in the UK, stating that 'most important companies and organisations involved in 'tracking' are US-based'. Apple also considered that 'organisation' may include government agencies, NGOs and similar bodies.[25] Google commented that it was unclear which organisations the question referred to.[26] The question was subsequently removed from the final survey.

---

[23] Google response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.
[24] Apple response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.
[25] Apple response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.
[26] Google response to Mobile Browsers and Cloud Gaming Market Investigation: Invitation to comment on consumer survey draft questionnaire, published 15 February 2023.

4. Our approach to the reliance placed on certain survey questions

4.1 In the previous section we discussed parties' comments on the draft questionnaire that was shared in advance of survey fieldwork commencing. In this section, we consider the learning from the survey, following the fieldwork and subsequent analysis of survey responses. Broadly, the research demonstrated that mobile browsers were a difficult subject to tackle in a consumer survey. The qualitative research found user confusion with 'browser' and 'default browser' and a tendency to conflate web browsers and search engines, including Google Chrome and Google Search. The cognitive testing found that some low confidence users were unable to state which mobile operating system they had,[27] and found confusion between pre-installed browsers and default browsers. While the final survey questions were carefully developed to attempt to overcome these problems, subsequent analysis of the survey responses means that we have placed limited reliance on the response to certain survey questions, as explained below.

4.2 Table 1 lists the survey questions which we have treated with caution in reaching our conclusions. To enable an objective assessment of this, we assessed this by the following categories:

(a) Questions that provide findings that are inconsistent with the findings from the qualitative research, where actual user behaviour was observed, and consequently where we place stronger reliance on the latter. For example, while the consumer survey found high levels of confidence among respondents in their ability to download and change the default browser, the qualitative research revealed user difficulties in practice with downloading alternative mobile browsers and switching the default browser; including among participants with self-assessed high digital confidence and previous experience of downloading a web browser (see paragraph 4.8 for more detail).[28]

(b) Questions that provide findings that we know to be factually incorrect. For example, some respondents indicated that a mobile browser they typically use was preinstalled on their device when we know independently that that browser is never preinstalled on that device (see paragraph 4.5 for more detail).

(c) Where respondents have provided mutually incompatible responses to two or more questions. For example, respondents who indicated that they had not

---

[27] In view of this, mobile operating system was auto-coded from brand of phone in the survey.
[28] Verian Consumer Research: Presentation of key survey findings, page 36/37.

moved their default browser and who also indicated that their default browser was in a location other than the factory setting location (see paragraph 4.7 for more detail).

4.3 In the following paragraphs we describe the specific limitations for each of the listed questions.

Table 1. Survey questions assigned limited evidential weight

Number	Question Code	Question text	Reason for assignation of limited evidential weight
1	Browspont	"Which web browsers have you heard of? Please type in as many as you can think of, separated by a comma, or if you are not sure select 'none'. "	Category B – search engines confused with browsers.
2	Browinstall	"Which web browsers do you currently have installed on your smartphone? If you are unsure, please check your phone now."	Category C – inconsistency with Preinst
3	Preinst	"Did you or someone else download this web browser onto your smartphone, or was it already installed on the phone when you got it?"	Category C – inconsistency with Browinstall
4	Whymost1	"You mentioned that [BROWMOST] is your most used web browser on your personal smartphone. Why do you use this particular web browser on your smartphone? Please select the most important reason."	Category B – reporting Chrome as preinstalled on an iOS device
5	Browdef	"Of the web browsers that you have on your phone, which one of these would you say is your 'default web browser'."	Category C – inconsistency with Browdefhow
6	Browdefhow	"Just to check, have you or someone else changed the default web browser on your current personal smartphone?"	Category C – inconsistency with Browdef
7	Browloc1	"If you wanted to open your [BROWMOST] web browser on your smartphone, in which of these places would you find it?"	Category C – inconsistency with Browloc2
8	Browloc2	"Just to check, did you (or someone else) move your web browser to this location or was it there already when you started using your current smartphone?"	Category C – inconsistency with Browloc1
9	Switchease	"How easy or difficult was it to change the default web browser on your current personal smartphone?"	Category A – divergence from qualitative findings
10	Whydiff	"Which of the following issues, if any, did you experience when changing the default web browser on your current personal smartphone?"	Category A – divergence from qualitative findings
11	Defaultconf	"Imagine that you have more than one web browser on your smartphone, and that you are asked to change which one is set as the default web browser[29]. Do you think you could work out how to do this on your own, without needing to ask someone else or search for information online?"	Category A – divergence from qualitative findings

4.4 In conducting the survey, we wanted to explore users' spontaneous awareness of browsers (1. Browspont) before presenting them with a list of definitive mobile browsers to select from (Browprompt). However, where respondents spontaneously wrote 'Google' in the open text box in response to Browspont, it was not possible to probe on whether they meant Google Chrome or Google Search. In the analysis, 'Google' was coded to Google Chrome. The decision was taken to avoid under-reporting awareness of Chrome, but we consider that this likely inflated awareness of Google Chrome as a specified browser. Further demonstrating user confusion between mobile browsers and search engines, a

---

[29] This wording was used if respondent had only one browser installed. If the respondent had more than one browser installed, then they were asked to "Imagine that you are asked to change which web browser on your smartphone is set as the default browser…"

small proportion of users wrote in the names of search engines, for example Bing and Yahoo.

4.5   Respondents were asked which browsers were currently installed on their phones (2. Browinstall). Among iOS users, 54% stated that Google Chrome was installed on their phone. iPhones do not come with Google Chrome pre-installed, which suggests that half of iOS users had downloaded or transferred Google Chrome onto their phones from their previous iPhone device. However, among the subset of iOS users who mainly used Chrome, 33% subsequently reported that Chrome had been pre-installed (3. Preinst), which is not possible.[30] Similarly, when respondents were asked why they used their most-used browser (4. Whymost1), 26% of iOS users who mostly used Google Chrome reported that it was 'already on my smartphone'.[31] While this represents a small group in total, it indicates confusion by a minority of respondents. This may be due to confusion about the browsers on their phone; for example, confusing Google Chrome with Google search. Further analysis of the small subset of Chrome on iOS users found that those reporting that Chrome was pre-installed were skewed towards older and low confidence users. Or it could be due to poor recall, for example forgetting that they – or someone else on their behalf – had downloaded or transferred Chrome onto their phone, which may have given these users the impression that Chrome was pre-installed. In the qualitative research, participants (particularly those with lower technical confidence) often could not recall whether a browser was pre-installed or whether they had downloaded it.

4.6   Similarly, we observed some inconsistencies in the data on the default browser (5. Browdef), and whether the default browser had been changed (6. Browdefhow). While a definition of default browser was provided in the survey – reflecting learning from the cognitive testing and qualitative research, and advice from the parties – analysis of responses suggested that some confusion remained.[32] For example, while 59% of Samsung users stated that Chrome was their default browser, only 29% of Samsung users reported that they or someone else had changed their default browser.[33] All Samsung phones have Samsung Internet pre-installed as the default browser so Samsung users would need to have changed their default browser if, as stated, their default browser was Google Chrome. The anomaly could be due to poor recall, for example forgetting that they – or someone else on their behalf – had changed their default browser. Users' confusion about whether they have changed their default browser may arise because there are two potential user journeys to change the default: users can either change their default

---

[30] See Verian Group UK (2024) Mobile Browsers Consumer Research report, paragraph 6.2.
[31] Three response options (from a set of five) stated that the most used browser was already on the phone: 'Already on my smartphone, chose to keep using it based on previous browser experience'; 'Already on my smartphone, no reason to use another browser'; Already on my smartphone, didn't know there were other options.
[32] The introduction to DefaultConf advised respondents, 'A 'default web browser' is the web browser that usually opens up automatically, for example when you click on a weblink in a message.'
[33] See published data tables (Browdef/ Browdefhow by Mobbrand)

browser via a prompt or by accessing their device settings; and those users who have responded to a prompt, which requires fewer steps (eg often only two), may be less likely to recall having taken this action. Equally, it could indicate confusion about the default browser on their phone.

4.7   The survey asked respondents where, on their smartphone, their most-used web browser was located (7. Browloc1). Options presented to respondents included: 'it is pinned to my screen (stays in same location even if I swipe to a new page)'; 'on my home screen'; 'on a page other than home screen'; 'in a folder (grouped together with other apps) on my home screen'; 'in a folder (grouped together with other apps) on a page other than home screen'; and 'don't know'. The question allowed respondents to select more than one response option, in recognition of overlap between options. While a minority of respondents selected more than one option, the data suggests that respondents did not exhaustively select all response options that applied. As such, estimates for some options may be under-reported. For example, just 40% of Safari users reported that Safari was located in the 'hot seat',[34] but 57% of Safari users reported that they had not moved Safari from its original location (8. Browloc2). As the factory setting location for Safari is in the 'hotseat', the latter estimate may represent a better estimation for the number of Safari users for whom Safari is located in the 'hotseat'.

4.8   One of the objectives of the research was to understand the user journey in switching the default browser. Respondents who had reported having changed their default browser were asked how easy or difficult they had found the switching process (9. Switchease/10. WhyDiff). While very few respondents reported having encountered any difficulties in the survey, the qualitative research found a very different pattern. In the qualitative research, participants commonly encountered difficulties, and while the most confident and capable were able to change the default easily, it was not unusual for participants to fail to switch.[35] The difference may be partly explained by the user journey that was tested in the qualitative research; while there are two user journeys for changing the mobile browser – responding to a prompt or via settings – the qualitative research was only able to test the unprompted journey. Equally, the routing of the survey question – only to those that had (successfully) changed their default browser – meant that we did not collect any information from respondents that may have tried, and failed, to change their default browser. On balance, given that relatively few survey respondents reported having actual experience of switching their default browser (21%), we consider the consumer survey results may over-state the ease of switching default browser among all smartphone users and should be treated with caution.

---

[34] The 'hot seat' refers to the first response option, namely that the most-used browser is 'pinned to my screen (stays in same location even if I swipe to a new page)'.
[35] See Verian Group UK (2024) Mobile Browsers Consumer Research report, paragraph 9.4 for further information.

4.9   The consumer research also found evidence that respondent's self-assessment of their technical knowledge and ability should be treated with caution. Qualitative research found that, while participants could self-report as very confident with their smartphone, there was variation in the level of actual technical proficiency exhibited by this group. Some who self-reported as technically confident were observed to be capable of fairly straightforward activities on their smartphone, but uncomfortable with more complex tasks. The cognitive testing of the questionnaire also found that some lower ability users rated themselves quite highly because they focussed their confidence on a relatively narrow range of tasks with which they were familiar.[36] Analysis of survey data also found that self-reported technical confidence may not always reflect technical experience; while two-fifths of respondents were confident that they could 'definitely' change their default browser without help (11. Defaultconf), most had not changed their current default browser. It is plausible that some of these respondents had changed their default browser on a previous device; or that some had changed it but forgotten; but it is equally plausible that some may have found the activity difficult in practice, as evidenced by the qualitative research when participants were observed attempting to change their default browser. Taken together, the evidence suggests that questions measuring self-assessed technical confidence and/or the ability to perform technical tasks should be treated with some caution. However, this should be balanced against the survey finding that respondents who self-identified as having low technical confidence were more likely to give a wrong answer at the true/false knowledge questions, these being designed to provide an objective measure of technical knowledge. From this we conclude that self-assessed low technical confidence is probably accurate but self-assessed high technical confidence is likely to encompass individuals with a range of skills and abilities and should therefore be treated with some caution.

---

[36] TECHCONF asked respondents 'How confident, if at all, are you with using your smartphone and the different apps that are available on it?', using a 4-point likert scale ('Very Confident' to 'Not at all confident').

5. Methodological comments from Apple concerning the Verian consumer research

5.1 Several parties commented on the consumer research following publication of the research reports and working papers. The majority of comments related to the findings from the research, and how these should be interpreted within the context of the case. In addition to these comments, Apple made several comments on the methodological robustness of the research. We consider these below.

5.2 Apple commented on the design of the survey question (MobfactorA) that measures the factors users' rate as most important when purchasing or choosing a smartphone. Respondents were presented with a list of 14 factors, plus an 'Other' (write-in) option and asked to select up to five factors that were most important.[37] Apple commented that this approach 'artificially reduces the ranking given to features that are important but are less eye-catching or front-of-mind'. Apple contrasted this with the approach used by Apple in their buyer's surveys, where respondents were required to rate the importance of all factors listed (as many as 30 factors in some surveys). Apple noted that, during MEMS, the pilot survey carried out by the CMA tested an approach similar to Apple's approach, which did not limit respondents' options, and found that security and privacy were ranked at a level consistent with the Apple surveys.[38]

5.3 The CMA survey addressed the issue of security and privacy in a way that is consistent with previous research evidence (ACCC and MEMS). The approach adopted by us had previously been piloted on MEMS, alongside an alternative approach in which respondents were asked to rate the importance of all factors in a list, using a Likert scale. The MEMS pilot demonstrated that, while a large majority of respondents rated privacy and security as 'important' or 'very important' with the Likert scale question, these factors were far less likely to be selected when respondents were asked to select the 'top five' factors; here, brand, price and operating system were more likely to be selected than security and privacy. From this, we concluded that in absolute terms, people value their security and privacy. However, in relative terms, security and privacy are not important factors driving the choice of phone for most people, as evidenced by the relatively small proportion of survey respondents that selected these factors among their top five most important factors[39]. Our focus was on the factors that determined choice of smartphone, and, on this basis, we adopted the approach we considered would provide the most informative data. We consulted on this approach when the questionnaire was published for consultation in February 2023 and incorporated

---

[37] Respondents were instructed: 'Please read the whole list and choose up to five responses. If there are more than five important factors, choose the five most important.'
[38] Apple's response to Working Papers 1 - 5, published on the CMA's case page on 3 September 2024, paragraph 56.
[39] It is also evident in the fact that 40% of respondents chose to select fewer than five factors when asked to select the five most important.

Apple's suggestion to provide guidance to respondents in the event that more than five factors were important for user's purchase decision. We therefore do not agree with the contention that our approach to this question artificially reduces the ranking given to these factors.

5.4 Apple commented that respondents selecting 'Brand' when choosing their most important purchase factors may have been selecting this on the basis of the brand's reputation for privacy and security.[40] We are satisfied that the question provided respondents with the opportunity to select 'Security' and 'Privacy'; and that there is no reason to assume that the inclusion of 'brand' would have prevented respondents from also selecting 'Security' and 'Privacy' if these were among the most important factors for respondents.

5.5 Apple commented that the qualitative consumer research conducted by Verian had been limited, and conducted in an 'unrealistic setting'. This referred to a task participants were asked to complete. In this, participants were asked, "Can you show me how you would download a new browser and then set it as the default browser on your phone?" Apple commented that 'this framing discourages users to search for solutions online, which might be a more conventional approach'.[41] We disagree with Apple's assertion that the framing of the task for users discouraged them from searching for a solution online. We consider that the instructions were sufficiently open as to not preclude searching on the internet for help; the prompt, 'Can you show me how you would download a new browser and then set it as the default browser on your phone?' allows respondents to search for solutions online if that is how they would approach the task outside the setting of the study. [42] Furthermore, as noted in the Verian report and presentation, some users in this task did in fact search online first.[43] We are confident therefore that the framing of the task did not discourage users to search for solutions online.

5.6 Referring again to the Verian qualitative research, Apple commented that the natural starting point for the user journey to change the default browser is the alternative browser app, with the app able to provide a shortcut to the relevant settings page for the user to change the default; and that 'the CMA's focus on an alternative and less likely user journey starting from the general iOS settings is unrealistic'.[44] On reviewing the findings from the research, the interviewers noted that participants encountered a number of problems, with the key area of difficulty occurring in settings – due to lack of familiarity and not knowing where to look, or the setting itself not being obvious – but with a range of other difficulties also being encountered by participants. We therefore consider that the research is a valid

[40] Apple's response to Working Papers 1 – 5, published on the CMA's case page on 3 September 2024, paragraph 57.
[41] Apple's response to Working Papers 1 – 5, published on the CMA's case page on 3 September 2024, paragraph 201.
[42] Verian Group UK (2024) Mobile Browsers Consumer Research – Technical Report, page 64
[43] Verian Group UK (2024) Mobile Browsers Consumer Research report, paragraph 9.4.4.
[44] Apple's response to Working Papers 1 – 5, published on the CMA's case page on 3 September 2024, paragraph 203.

representation of the range of difficulties that may be encountered when users are not responding to a prompt.

6. Consumer research shared by Apple with the CMA

6.1 Following the Apple Hearing on 11 July 2024, Apple provided the CMA with survey findings from four quarters of their iPhone Buyers Survey covering the period FY23-Q3 to FY24-Q2.[45,46]

6.2 Apple also shared data from the iPhone Owner Survey in an analytical report provided to us in August 2024.[47] [✂]. The authors of the Apple report concluded that the relevance of security and privacy may not be picked up to a sufficient degree by the CMA question which restricted the number of items users considered to be most important. As discussed previously, both approaches were piloted in MEMS, and the decision on which approach to adopt was carefully considered. We also took on board feedback from parties, including Apple, to this question at the questionnaire consultation phase of this investigation. Noting the tendency for respondents to rate items in terms of their generally perceived importance, we consider that the approach we adopted was more useful for our specific purpose in forcing respondents to consider which factors were most relevant for their smart phone purchase decision.

6.3 We have undertaken an internal review of four quarters of the Apple iPhone Buyer Survey.[48,49] Our assessment is discussed below. We start by briefly assessing the methodology and respondent profile, and then consider what the survey tells us with regard to the importance of security and privacy for users' smartphone purchase decisions.

Methodology and sample

6.4 The iPhone Buyer Global Reports that we reviewed provide some methodological information. [✂].[50] [✂].[51] [✂].[52]

6.5 [✂].

6.6 A number of metrics indicated that the survey respondents were very brand loyal.[53] On average, across the four quarters of data reviewed:[54]

---

[45] [✂]

[46] Apple's response to the CMA's information request [✂]: Apple also provided 11 Quarterly iPhone Buyer reports, 1 KPI report, 1 iPhone Owners Report and some AppleCare case logs. We do not discuss these data here.

[47] Apple, submission to CMA [✂].

[48] The review identified a high level of consistency between quarters, providing assurance that four quarters of data was sufficient to make a reasonable assessment of their findings. Our in-depth review focused on iPhone Buyer: Global Reports, FY23-Q3 to FY24-Q2. We focus our assessment only on data for UK buyers.

[49] [✂]

[50] [✂]

[51] [✂]

[52] [✂]

[53] All data patterns reported in this section were consistent across the four quarters reviewed. All data reported is for UK buyers only.

[54] iPhone Buyer: Global Reports, FY23-Q3 to FY24-Q2.

(a) [✂]

(b) [✂]

(c) [✂]

(d) [✂]

6.7 A number of metrics indicated that the survey respondents had a relatively high level of technical confidence. On average, across the four quarters:

(a) [✂]

(b) [✂].

6.8 The respondents also had a relatively young age profile. Upwards of [✂]; compared with [✂] of the iOS users in the CMA survey conducted by Verian. Similarly, the proportion of full-time students [✂].

6.9 Noting the possibility that the sample may be skewed towards brand loyal, younger, and possibly more technically confident, respondents – together with the absence of sufficient information to assess the representativeness of the survey – we treat the data with some caution. However we note in Apple's report to us,[55] that data in the iPhone Buyer Global Reports [✂].[56] [✂]. The report's authors also state, 'Apple surveyed an average of around [✂] recent iPhone buyers per quarter and almost [✂] in total in the UK, a sample that is magnitudes larger than the Accent and Verian surveys commissioned by the CMA'.[57] We discuss the report further in paragraphs 6.10-6.13.

The importance of security and privacy for users

6.10 The Apple iPhone Buyers Surveys provide a long-running time series on the importance of a range of smartphone features to users when they purchased their model of iPhone. [✂].[58] Apple submitted in its response to the Working Papers that security and privacy are consistently ranked among the most important features for users. This view was supported by our review of the Apple survey data. For example, across the four quarters of survey data that we reviewed, [✂].

6.11 In reviewing the Apple survey data, the following considerations were noted:

(a) [✂]. The high proportion of respondents rating security/privacy as 'extremely important' suggests that they may be rating these factors in principle, rather

---

[55] Apple submission to CMA [✂].
[56] Apple submission to CMA [✂].
[57] Apple submission to CMA [✂].
[58] [✂].

than in relation to a particular iPhone model, as they have been required to give a response on their importance.

(b)   [✄]. By comparison, the CMA survey, which separated privacy and security, found that respondents differentiated between the two factors.

(c)   [✄].

(d)   [✄].

6.12   [✄].[59] [✄].[60] [✄].[61] [✄].

6.13   As described in paragraph 5.3 above, we consider that the Apple iPhone Buyers Survey demonstrates the importance that people attach to their security and privacy, both in relation to their smartphone and mobile browser, and more generally. However, in relative terms, security and privacy are not important factors driving the choice of phone for most people. Given we lack certain information about this survey; but also noting the limitations noted at paras 6.11(a) and 6.11(b) around the methodology, that we have been able to observe, together with our observations on the regression analysis at paragraph 6,12, we place significantly more evidential weight on the CMA research when assessing the importance of security and privacy to users when choosing their smartphone. Specifically, we are confident that when measuring the main factors that drive users' smartphone purchase decisions, the approach adopted in the CMA survey has provided robust data.

---

[59] [✄].
[60] [✄].
[61] [✄].

7. Secondary data analysis of the Verian consumer survey conducted by Apple and its relevance for our findings

7.1   Apple requested that we share an anonymised dataset containing the CMA survey responses, to enable Apple to undertake bespoke analysis. We shared an anonymised dataset and data dictionary with Apple (and Google) on 24 July 2024. To ensure that individuals could not be identified the following variables were removed: respondent ID; age (years); health/disability; country; region; country of birth; ethnic group; and SOC20 (the Standard Occupational Classification for the UK).

7.2   Apple provided a short report containing the results of their bespoke analysis.[62] In the remaining section, we review the analysis shared with us, some of which we have replicated to quality assure our interpretation of new results. However, we note that Apple chose to recode some of the raw data prior to conducting its analysis. This included the following changes:

   (a)   Browinstall: the 11% of iOS users who reported that they do not have Safari installed on their iPhone were recoded by Apple as having Safari installed. Similarly, the 1% of iOS users that reported not knowing which browser(s) are installed and the 1% that selected 'none of the above' were also recoded in Apple as having Safari installed.

   (b)   Specific statistics on confidence in downloading and changing the default browser were recalculated based on an adjusted sample, specifically:

      i.   Downconf: Excluded from analysis the 1% of iOS respondents that stated that they did not know whether they would be able to download a browser onto their smartphone without help.[63]

      ii.   Defaultconf: Excluded from analysis the 3% of respondents that stated they did not know whether they would be able to change the default browser on their smartphone without help.[64]

7.3   Verian, in its original analysis of the survey data did not recode the raw data as Apple has done. We do not consider the recoding that Apple has done as appropriate. With respect to Browinstall for example, Apple assumes that all iOS users have Safari installed and those responding otherwise 'just forgot to name it'. This fails to recognise that some users – or someone on their behalf – may have

---

[62] Apple submission to CMA [✂].
[63] Downconf asked respondents: 'Imagine that you are asked to download and use a different web browser on your smartphone. Do you think you could do this on your own, without needing to either ask someone else or search for information online?
[64] Defaultconf asked respondents: 'Imagine that you are asked to change which web browser on your smartphone is set as the default browser, do you think you could work out how to do this on your own, without needing to ask someone else or search for information online?

removed Safari from their device home screen which may be considered equivalent to uninstallation of Safari from a user's perspective. The recoding of all iOS users as having Safari also has a secondary effect of increasing the number of mobile browsers that users are recorded as having, which is a key survey metric used by Apple in their re-analysis of the Verian data. For example, a respondent that has reported only having Chrome, and has therefore been coded by Verian as having one browser, will be recoded in the Apple analysis as having multiple/two browsers (Safari and Chrome). We also consider that it is not appropriate to recode 'don't know' or 'none of the above' responses at Browinstall to 'Safari only'. This fails to acknowledge that a user who does not know which browser they had, could in fact have any or multiple browsers. We therefore discount any new analysis of these specific questions that Apple have produced.

7.4   The new analysis covered browser awareness, number of mobile browsers installed, reasons for using most used browser, the placement of browsers on the phone, and the ease of changing the default browser. We discuss these in turn.

Browser awareness (Browspont)

7.5   Apple state that just 4 percent of iOS users were able to name only Safari and no other browser,[65] which was confirmed by our internal analysis.

7.6   Apple also note that 'among users who only have Safari installed, around two-thirds could name two or more browsers spontaneously'.[66]

7.7   The Apple analysis finds that, 'there is also no evidence that users with only Safari installed would be less aware of alternatives than users with multiple browsers installed… there is virtually no difference in browser awareness between these two groups'. However, recoding decisions taken by the authors slightly distort the pattern.[67] In our internal analysis, we find that among iOS users with multiple browsers installed, 75% spontaneously mentioned two or more browsers; among those with one browser installed, this proportion fell to 61%.

Number of browsers installed (Browinstall)

7.8   The Apple analysis reports, 'the majority – almost 60% – of respondents using iOS reported that they had a different browser than Safari installed, demonstrating that most iOS users already engage in actively trying out alternative browsers'. The new analysis is based on recoded data, which as we have outlined in paragraph 7.3, has the effect of increasing the number of browsers reported by respondents,

---

[65] Apple submission to CMA [✂].
[66] Apple submission to CMA [✂].
[67] In the Apple analysis, respondents who answered "Don't know" or "None of the above" when asked for the name of their browser have been recoded to "Only one browser installed (Safari)". In our analysis, these respondents are excluded as it is not possible to confirm which, or how many, browsers they have.

thus increasing the estimated proportion with multiple browsers. We do not consider this recoding appropriate.[68] In the Verian analysis, and as reported by the CMA, we find that 53% of iOS users had two or more browsers installed.[69]

Reasons for using most used browser (Whymost1)

7.9   The Apple analysis finds that the majority of Safari users who have only one browser installed either kept this browser (Safari) based on previous experience, had no reason to use another browser, or simply preferred it. Our internal analysis support this.

7.10   Looking at the response option, 'the web browser was already on my smartphone and I had no reason to use another web browser', Apple find that the share of this response option remains high for Safari users who had multiple browsers, as well as Safari users with only one browser installed. The Apple analysis includes recoding of some data.[70] In replicating this analysis, without the recoding, we find that this response was notably higher for Safari users with one browser installed (45%), compared with those with three or more browsers installed (27%). However, Safari users with two browsers installed were more similar to those with one browser installed (38% and 45% respectively).

7.11   The report also finds that the share of Safari users explicitly stating that their most used browser (Safari) is their preferred one, is higher for users with more than one browser installed. Our internal analysis supports this. Around a quarter of Safari users with three or more browsers (24%), and a fifth of Safari users with two browsers (20%), stated that Safari was their preferred browser. This fell to less than one in ten Safari users with only one browser installed (8%); the latter group being more likely to say that it was already on their smartphone and they had no reason to use another browser (45%) and more likely to say that 'the web browser was already on my smartphone and I didn't know there were other options' (9% compared with 3% of Safari users with 2 or more browsers). The authors suggest that questionnaire design may have confused respondents,[71] and note that Apple suggested changes when consulted on the questionnaire. We discuss Apple's comments on the questionnaire, and our response, in paragraph 3.3.

---

[68] The authors recode data as follows: Where iOS users claim that they do not have Apple Safari installed, we correct the number of browsers installed by adding Apple Safari. If the respondents answered "I don't know" or "None of the above" when asked which browsers they have installed on their smartphone, we assume that they only have Apple Safari installed'.
[69] Verian Group UK (2024) Mobile Browsers Consumer Research report, paragraph 6.1
[70] The Apple report states (Figure 3, footnote): Some iOS users claim that they do not have Apple Safari installed. For these users, we correct the number of browsers installed by adding Apple Safari. If the respondents answered "I don't know" or "None of the above" when asked which browsers they have installed on their smartphone, we assume that they only have Apple Safari installed.
[71] The authors suggest, 'As the reply was drafted ("It is my preferred web browser (even if I sometimes use different browsers for specific web activities)"), it may have suggested that users should only select it if they have tested other browsers.'

7.12   The report also states that, among the minority of iOS users who stated that they continued using their preferred browser because they 'didn't know there were other options', almost 70% could name browsers other than their pre-installed browser spontaneously. Apple submitted that this is an inconsistency, and that the survey data are unreliable. We have not replicated this analysis, but do not consider the interpretation to be valid: those stating that they did not know there were other options could have meant that they did not know they had the option of using other browsers, rather than they did not know other browsers existed.

Placement of browsers (Browloc):

7.13   The Apple report challenges the CMA view that users who intend to switch to a different browser may find it difficult to manually move this browser to a prominent location on their dock or Home Screen. Apple replicates the CMA analysis which shows that iOS users tend to keep their most used browsers on the Home Screen.[72] Apple further demonstrates with new analysis that this is true both for Safari users and iOS users whose main browser is not Safari. The authorsconclude that users are able to put their most-used browser on the Home Screen if they chose to. Our internal analysis confirms that around six in ten iOS users report that their most used browser is on their home screen, and this is similar for Safari users (59%) and iOS users of other browsers (61%). We discuss some concerns with this survey question in paragraph 4.7; for the reasons explained there, we place limited evidential weight on this question.

Changing the default browser

7.14   The report suggests that on any platform, users may specifically change the default browser if they do not like or trust it. Apple illustrate their argument with bespoke analysis of Samsung users, where Apple show that 59% of Samsung users report Google Chrome as their default browser, with just 33% stating that Samsung Internet was their default browser. The authors suggest that this is not observed on iOS because iOS users are satisfied with Safari as the default browser. The published data tables confirm the reported findings for Samsung users.[73] The authors note however that this is inconsistent with the proportion of Samsung users that report changing their default browser.[74] The authors suggest that Samsung users may have forgotten that they switched their default. We have separately identified inconsistencies between stated default browser and whether the default browser had been changed; as such we list these questions in paragraph 4.6 among the survey questions to which we give only limited evidential

---

[72] Verian Group UK (2024), paragraph 7.1
[73] CMA analysis of Verian data tables, BROWDEF by MOBBRAND.
[74] Apple submission to CMA [✂].

weight. Where data from these questions is reported in the main sections of the PDR, we note the limited reliance that we are placing on the data, where relevant.

8. Our overall assessment of the CMA consumer survey

8.1   We have discussed the robustness of the CMA consumer survey against the key considerations detailed in our survey good practice guide. We have highlighted above some of the strengths of our survey, along with the challenges and the steps we took to address these and mitigate the limitations that may have been associated with them.

8.2   We have also considered parties' comments on the draft questionnaire and the survey methodology, and other survey data and analysis provided by Apple.

8.3   Taking all this into account,

(a)   we consider that the CMA survey was designed, conducted and analysed in accordance with survey good practice;

(b)   despite low response rates, and taking into account general comments including on methodology above, we think the survey was essentially robust and we have generally placed weight on it;

(c)   we have placed limited weight on (and interpreted cautiously) the responses to some individual questions listed in Table 1, for the reasons set out in paragraphs 4.1 to 4.9.[75]

---

[75] Note that in the main body of the PDR whenever we cite evidence for which we assigned limited evidential weight we highlight this.