Appendix D: barriers to switching between mobile operating systems

Introduction

1. As set out in Chapter 3, only a small proportion of mobile device purchasers switch between mobile devices with different operating systems each year. This proportion is smaller among those purchasing an Android device than those purchasing an iOS device (ie users are less likely to switch away from Apple's iOS devices). Based on our consumer survey undertaken in April 2022 with the objective of collecting quantitative and qualitative data from a representative sample of UK smartphone owners on smartphone purchasing, switching and mobile app behaviours,[1] 8% of users who purchased an iOS device had switched from an Android device and 5% of users who purchased an Android device switched from an iOS device.[2]

2. In this appendix, we first consider what factors may affect levels of switching between mobile operating systems, including inertia and customer disengagement, brand loyalty, and satisfaction. We then examine evidence that some factors act as barriers to switching, for example if they could:

   - cause users to perceive switching to be difficult or costly (eg because they would pose a 'hassle'), discouraging potential switchers; and / or
   - impose actual costs on users that do switch (eg financial, time or learning costs).

3. Perceived barriers that can discourage switching, may have a greater direct impact on switching rates than some actual costs for users that do switch. However, it is relevant to consider actual costs because they are likely to reinforce perceived barriers to switching if or when users learn of them, from personal or second-hand experience.

4. Taken together, these barriers may reduce the threat to Apple and Google that users may switch mobile ecosystem, for example to make savings or

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[1] See Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, available at Consumer purchasing behaviour in the UK smartphone market - research report.

[2] See Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figure 13. When considering users that had purchased a smartphone in the past 12 months, 7% of iOS users had switched from an Android device and 4% of Android users had switched from an iOS. Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', accompany Data Tables, dated June 2022. These are calculated as the number of iOS (Android) users that switched from Android (iOS) in the past 12 months as a proportion of all iOS (Android) users that purchased or were gifted their current phone in the past 12 months.

access new features. This may lessen the competitive constraints that apply to them.

5. Evidence from market participants (including survey evidence) and our survey suggested that users face four categories of potential barriers to switching between mobile devices with different operating systems:

   - learning costs associated with switching mobile ecosystem;
   - transferring data and apps across devices;
   - managing subscriptions across devices; and
   - the availability and characteristics of Apple's and Google's first-party (ie developed and operated by Apple and Google) apps, services, other devices.

6. In each case we assess whether these factors could act as a perceived barrier to switching and if they could constitute a barrier by imposing actual costs on users who do switch.

7. While it is difficult to assess the individual impact of each of these factors on users' propensity to switch between operating systems, we consider that, in the round, they pose material perceived barriers to switching. This is based on:

   - Our survey evidence which shows that 64% of users that considered switching when purchasing a new smartphone but ultimately did not ('Marginal Users')[3] mentioned at least one of the barriers to switching identified above as a reason for not switching.[4]
   - Our findings that users perceive learning costs associated with switching, transferring data and apps across devices and the availability of other devices as barriers to switching. This is less the case for managing subscriptions and the availability of first-party apps and services, as discussed in detail in the remainder of this appendix.

[3] Throughout this appendix, we have applied the following definitions: Marginal Users are users that considered switching operating system when purchasing a new smartphone but ultimately did not; Non-Considerers are users that did not consider switching operating system when intending to buy a new smartphone; Non-Switchers are all users that did not switch operating system when purchasing a new phone – this group includes both Marginal Users and Non-Considerers; Switchers are users that switch operating system when purchasing a new phone.
[4] See Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, page 43.

8. We also consider whether potential barriers may have asymmetrical effects: for example, by discouraging switching from Android to iOS but not vice versa. As discussed below, we find that to some extent these perceived barriers apply to switching both to iOS users and Android users, although several appear more significant with respect to users considering switching from iOS to Android. 79% of iOS Marginal Users and 45% of Android Marginal Users mentioned at least one barrier to switching as a reason for not changing operating system.[5]

9. In relation to actual barriers, our survey evidence suggests that the actual barriers faced by those switching ('Switchers') were lower than the perceived barriers among 'Non-Switchers'. However, the survey evidence shows that users who had 'ever switched' are generally more confident with smartphone technology. This could in part explain why these users face lower actual barriers to switching. In addition, 35% of Switchers were dissatisfied with at least one aspect of the switching journey, implying barriers to switching impose at least some cost on users switching.[6]

10. We recognise that barriers to switching may, in some cases, be natural to any process of switching mobile device and ecosystem. Some barriers may also be the result of competitive differentiation between mobile ecosystems or of enhancements to devices. However, in other cases barriers to switching may have no such justification.

11. The findings in this appendix are relevant to our conclusion, set out in Chapter 2, that Apple and Google have different incentives with respect to retaining users within their ecosystems. At a high level, Apple's incentives to encourage users to purchase Apple devices could increase its incentives to raise barriers to switching away from iOS. Google's incentives to establish barriers to switching mobile ecosystem may be less strong overall, given its strategic focus on online services available across mobile ecosystems and devices.

12. This appendix draws on submissions, survey evidence and internal documents from market participants, as well as other evidence.

[5] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, page 46.
[6] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, page 67.

Factors that may affect levels of switching between mobile operating systems

13. As set out above, only a small proportion of users switch mobile ecosystem each year.

14. There is no recognised 'optimal' level of switching that, if met, would demonstrate that competition between Apple's and Google's mobile ecosystems is effective. However, we are concerned that barriers to switching may help drive prevailing low switching rates, alongside consumer inertia and motivations to remain within a mobile ecosystem. This would weaken the competitive constraint each ecosystem has on each other.

15. We consider that some mobile users have reason to consider switching when purchasing a new device, such as trading up for the latest hardware feature or motivated by financial savings. Apple and Google's responses help inform this view:

    - Apple stated that there is competition among device manufacturers for switching customers: for example, the iPhone SE was intended to attract Android users. It noted that some manufacturers offer discounts for those trading in devices made by another manufacturer.[7]

    - Google noted that UK users replace their smartphones approximately every two years, creating regular moments at which they may consider switching.[8] Users may consider the different characteristics of devices when deciding which to purchase, such as new hardware, features and functions, improvements to operating systems that enhance the user's experience, and offers of discounted content services. Google argued that competing Android and iOS devices are available in all 'mid-to-high' price segments.

16. However, more generally across markets (eg in retail energy and broadband), many consumers choose not to engage or consider switching provider even where doing so is straightforward and offers clear and quantifiable benefits.

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[7] Apple also cited analysis by the Progressive Policy Institute, which suggested that switching costs from iPhone to Samsung in the US and EU amount to one-time costs of $16 and €18 respectively, including the opportunity cost of time spent switching. However, we note that this analysis did not assess factors such as learning costs, loss of some types of data (focusing on photos, videos and contacts, but not other data) or paid-for apps (all apps included were free apps), transferring the management of subscriptions made through Apple's in-app purchase or Google Play billing, or the costs of losing access to Apple's first-party apps and services (only noting that there are apps providing similar services on Android devices).

[8] A respondent presented evidence suggesting that the average duration of ownership of a smartphone increased by three months between 2015 and 2018.

17. The experience in these markets demonstrates that consumers often need to be rewarded with quite large observable financial savings to overcome their perceptions of the likely time or hassle costs involved in switching provider. In some ways, the benefits from switching mobile device manufacturer / operating system may be more difficult to assess, particularly when claims of quality can be highly technical and challenging to compare on a like-for-like basis. As such, experience from other markets suggests that low switching rates between mobile ecosystems may be unsurprising given the perceived barriers we found.

18. Different factors may motivate users to remain within their prior mobile ecosystem when they purchase a new device. Respondents suggested that factors that encourage users to remain within a mobile ecosystem include:

- **Satisfaction** with the characteristics of Android and iOS devices. Users are generally satisfied with their current device and Apple finds that 'dissatisfied users are much more likely to switch [operating system] than satisfied users'.[9] In addition, according to Apple, '[…] users stay with Apple or aspire to purchase an Apple device because they prefer it'. In addition, Apple presents evidence showing that 'among the very satisfied users, more Android users switch [operating system] than iOS users' which Apple considers is 'consistent with a view that iOS devices are perceived to have higher overall quality', and that 'switchers that moved from Android to iOS have higher satisfaction levels than those that switched from iOS to Android' which according to Apple shows that 'users can improve their utility by switching to iOS'.

  Our survey evidence is consistent with users being highly satisfied with their smartphone devices.[10] However, as outlined in Chapter 3, while high satisfaction levels are a useful indicator of consumer experiences, they do not necessarily imply strong competition between iOS and Android devices. In particular, we are mindful that many of the potential harms from weak competition in technology markets may not be visible to consumers, particularly where they relate to missing out on new products

[9] This finding is in line with our survey evidence, which shows 71% of Switchers reported a 0-7 score on a 0-10 scale in relation to satisfaction with previous phone. For Non-Switchers, this is lower at 55%. See Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, accompany Data Tables, Q15.b 'How satisfied are you with your previous smartphone?'.
[10] For example, our survey shows that, when asked 'how satisfied are you with current smartphone', on a 0 to 10 scale, 74% of iOS users and 69% of Android indicate their degree of satisfaction is between 8 and 10. See Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figure 11. As expected, for those that switched brand, satisfaction is significantly higher with current device compared to previous device (72% 8-10 for current compared to 41% for previous). See Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figure 14.

and services that never make it to market, or where harms are imposed more directly on business users – we discuss this in Chapter 7

- **Brand loyalty**: survey evidence shows that brand is one of the main reasons why users decide not to switch operating system. For example, our survey suggests that 47% of iOS Non-Switchers and 38% of Android Non-Switchers are happy with their preferred brand – further, 37% of iOS Non-Switchers identify more closely with iOS than Android, while the reverse is true for 44% of Android Non-Switchers.[11]

  As noted in Chapter 3, a preference for a certain brand can be driven by actual or perceived differences in quality or other factors that influence the value a user places on a device.[12] It is likely that, at least in part, the importance of smartphone brands reflects perceived differences in quality and the value that consumers place on different features of iOS and Android devices which reduces the extent of competition between rivals.[13]

- **Consumer disengagement**: 31% of iOS users and 35% of Android users reported that they could not see significant benefits from switching operating system.[14] While this could be driven by genuine preference for a given operating system, it is also consistent with consumer disengagement. In addition, our survey found only a small sample of Marginal Users – 11% for Apple and 12% for Android.[15]

19. Furthermore, consumer disengagement, brand loyalty and user satisfaction may co-exist with barriers to switching. As set out above, barriers to switching diminish the competitive constraints that apply to Apple and Google.

20. Below we consider whether learning costs associated with switching mobile ecosystem, transferring data and apps, managing subscriptions, or the availability and characteristics of first-party apps, services and other devices,

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[11] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figures 26 and 27. This picture does not change when considering the most important reason for not switching. For example, for iOS Non-Switchers, 'I am happy with/prefer my existing smartphone brand' is the second most important factor for not switching overall (out of 18 factors considered) and the most important for 14% of users. Considering Android Non-Switchers, 'I am happy with/prefer Android' is the second most important reason for not switching overall (out of 18 factors considered) and the most important factor for 10% of users. Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figures 28 and 29.
[12] Actual differences in quality can arise due to genuine preferences for a mobile device over another, for example based on a hardware or software quality assessment. Perceived differences in quality can arise due to investments in marketing and branding and can also reduce the extent of competition between rivals.
[13] This is also considering that Apple has a strong "brand intimacy", which could impact users perception of iOS devices and in turn impact the extent to which they compete with Android devices – see Apple claims third place in 2022 brand intimacy rankings | AppleInsider, last accessed on 3 May 2022.
[14] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figures 26 and 27.
[15] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figure 24.

pose barriers to switching and to what extent. We also consider whether such barriers apply more strongly to switching from Android to iOS or vice versa.

Learning costs associated with switching mobile ecosystem

Potential to act as a barrier to switching

21. Users may need to adapt to different controls, functionality, and features if they switch to a different operating system. Those considering switching may perceive this as a 'hassle' that would discourage them, while users who switch may then incur time costs learning to adapt to a different device.[16]

22. The extent to which learning costs may deter switching may depend on, for example, users' confidence in drawing on available tutorial information and their broader digital literacy. Some users may not consider learning costs a deterrent to switching, while they may be a significant deterrent to those least confident in their ability to adapt to a new device.

Respondents' views and evidence

23. Several market participants considered that learning costs are a perceived barrier to switching and affect those who do switch. They agreed with Microsoft's view that operating systems differ in terms of their physical features, design, controls, and functions and that this can be time-consuming and burdensome.

24. Apple stated that, while users may need to learn about different settings and button uses on different operating systems, such learning costs 'would appear to be moderate' due to the 'high availability of video tutorials' and because apps have versions on both Android and iOS.

Survey evidence

25. Our survey found that, in 2022, 31% of iOS Marginal Users and 21% of Android Marginal Users stated that they did not want to spend time learning how to use an Android operating system as one of reasons why they did not switch device.[17] Further, for 11% of all iOS Non-Switchers learning costs was

[16] Learning costs were also identified as a barrier to switching in the following enforcement decisions and market studies: European Commission, Commission Decision of 18 July 2018: Google Android, recitals 523, 524, 527; the Netherlands Authority for Consumers & Markets, Market study into mobile app stores, p. 55; Australian Competition & Consumer Commission, Digital platform services inquiry, Interim report No. 2 – App marketplaces, p. 38.
[17] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Table 18. These percentages are even higher for Non-Considerers.

the *most important* factor for not switching and the third most important reason overall (out of 18).[18] Considering Android Non-Switchers, for 6% learning costs was the *most important* factor for not switching and the sixth most important reason overall (out of 18).[19]

26. In addition, 34% of iOS Marginal Users and 16% of Android Marginal Users felt that 'it would be too much hassle to switch to an Android phone/iPhone'.[20]

27. However, when considering Switchers, we find that only 7% were very dissatisfied or fairly dissatisfied with the experience of using a new app store and only 3% with using a new operating system.[21] This is consistent with survey evidence highlighted by Apple.

Conclusion

28. The available evidence suggests that the learning costs associated with adapting to the different controls, functionality and features of an operating system could create perceived barriers to switching, deterring users from switching operating system. Survey evidence suggests that these barriers are perceived more widely among iOS than Android users.

29. However, this is rarely reported as a problem in practice for those consumers that have switched operating system when purchasing their current device. This may be because users' perception of the challenges associated with learning how to use a new operating system are overstated or because those who are less confident in learning a new operating system are less likely to switch (ie those who switch may be more technically literate).

41% of iOS Non-Considerers and 30% of Android Non-Considerers mentioned learning costs as a reason for not switching. Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, accompany Data Tables, Q.20 'Which of the following reasons explain why you didn't consider switching to/buy/get an iPhone/Android smartphone?'.

[18] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figure 28.

[19] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figure 29.

[20] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Table 18. These percentages are lower for iOS Non-Considerers, at 22%, and higher for Android Non-Considerers, at 19% - see Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, accompany Data Tables, Q.20 'Which of the following reasons explain why you didn't consider switching to/buy/get an iPhone/Android smartphone?'.

[21] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figure 39.

Transferring data and apps across devices

Potential to act as a barrier to switching

30. Multiple respondents set out views on whether challenges to transferring data and apps could constitute barriers to switching between iOS and Android or vice versa. They commented on whether:

    - the extent to which data held by apps and services (such as contacts, text messages and in-game progress), and data about which apps a user had installed on their prior device, are available to users after switching devices; and

    - preferred third-party apps may not be available to users on another mobile operating system.

31. In the remainder of this section, we focus on the extent to which data and apps can be transferred after switching and not on the availability of third-party apps on different operating systems. This is because the most popular third-party apps are available on both Android and iOS devices as set out in Chapter 4.[22]

Respondents' views and evidence

32. There are different tools available to transfer data held by apps and services (such as contacts, photos and videos, text messages and in-game progress) and data about which apps a user had installed on their prior device when switching from an iOS to an Android device, or vice-versa.[23]

33. Views from market participants suggest that content is usually readily available after the switch is finalised and the transferred data is then easily accessible to users on their new phone.

    - Samsung told us that 'Upon a data transfer between different [operating systems], [the Samsung] Smart Switch [app] converts data into a format

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[22] For example, we have estimated that 85% of the top 5,000 apps on the App Store also list on the Play Store and vice versa. See Chapter 4 for details.
[23] There are a large number of third-party apps available to users switching, including: MobileTrans App; SHAREit – Transfer & Share; Xender; Send Anywhere; Copy My Data; and Smart Transfer, among others. In addition, the main UK manufacturers offer build-in tools and apps to facilitate data and app transfers, such as: Samsung's Smart Switch app, Google's cable solutions, Google's cloud, Apple's Move to iOS, Huawei's Phone Clone app. Google also told us that it is 'developing an iOS app called "Switch to Android" to help users transition from iPhone to Android devices'. Based on publicly available information, we understand Google has now released this app. See Google's unlisted Switch To Android iOS app helps you move from an iPhone to Android - The Verge, last accessed on 19 April 2022. Moreover, Samsung's Smart Switch can also transfer content with a cable (see Smart Switch | Apps & Services | Samsung UK) and we understand that Google has recently extended the cable solution to other Android manufacturers, which can use this as an alternative.

recognizable by the Android [operating system]'. Samsung also told us that 'when Smart Switch transfers photos from another [operating system] device to the Samsung Gallery app of a new Samsung device, the image data is transferred in its original form (with the exception of "Live Photo" on iOS which are first converted into the "Motion Photo" format which is understandable by [Samsung] devices), while some metadata of the photo […] are converted into a format understandable by the Android [operating system].'

- Apple told us that data transferred from an Android device is 'transferred to a user's new iPhone onto an equivalent native application in a ready to use format and stored locally'.

34. However, the extent of the data which can be transferred may vary. Market participants told us that there are various options available to users for transferring data and apps, including cable, cloud-based and direct wifi options. The extent of any transfer of data and apps can vary according to the tool selected.

35. While we have heard that users prefer to transfer their data wirelessly or from cloud backups, we understand that, for users switching from iOS to Android, there are limitations to the data that can be transferred via wifi and cloud options. This is because we heard that Apple does not offer necessary APIs to enable third-party direct wifi switching options to transfer some of the data that can instead be transferred via cable options.

36. As a result, for users switching from iOS to Android, cable options are currently the most comprehensive option available to users. We have heard that these, however, are also subject to limitations. In particular:

- users that do not have the right cable will be unable to copy their data through this method;

- copying data via a cable drains both devices' battery power, and they cannot be charged during the copying process (as the cable required to complete the transfer is inserted into each device's charging port); and

- to transfer particular types of data, manufacturers and developers of cable switching options rely on Apple APIs that are not officially supported by Apple and could be depreciated at any time without notice.

37. We understand the Samsung Smart Switch app enables customers switching to a Samsung device to transfer a wide range of data, including photos and

messages stored on Apple iMessage.[24] This can be done using a wireless connection or a USB cable.[25] Samsung also told us that 'The re-installation functionality [of the Smart Switching app] works for those apps of which both iOS and Android versions are available. For users switching from an iOS device, Smart Switch checks the apps installed on the old iOS device and whether an Android version of such apps are available on the Google Play Store, and if available, re-installs such Android version apps to the extent possible on the users' new Samsung device.'

38. Apple offers the Move to iOS app which 'permits the transfer of […] photos and photo albums, contacts, calendars, SMS/MMS messages, accessibility settings, videos, files, locally stored non-DRM audio media, web bookmarks, and the user's Google account login name'. Apple also told us that the Move to iOS app 'will automatically download the free iOS version of any app that appears in the top 20,000 apps in the App Store, by downloads, which the user had downloaded on their Android device'.

39. Huawei told us that some data, such as alarm clock settings and notes from notepads apps, cannot be transferred when switching from iOS. Huawei also told us that 'the ability of the Phone Clone app to collect information on which apps the user had installed on their old device will vary depending on whether a user is switching from an iOS or an Android device.' According to Huawei, 'This difference is driven by the fact that Android provides developers with greater access to public APIs than iOS.'

40. Google offers various switching solutions to users, including (i) via a cable; (ii) via the Cloud; and (iii) direct wifi.

    - The cable solution is offered on certain Pixel devices.[26] It allows users to transfer free apps, photos and videos, contacts, calendars, files and folders, message history,[27] call history, music,[28] display and accessibility settings, and home screen layout.

    - The cloud solution involves 'uploading the user's data to the cloud from their old device, then signing into the same cloud storage solution on their

[24] We note, however, that, as iMessage messages need to be converted to 'traditional SMS/MMS formats', some of the features and data might be lost post transfer.
[25] See Smart Switch | Apps & Services | Samsung UK.
[26] According to Google, models that support this functionality include Pixel6Pro, Pixel6, Pixel5a, Pixel5, Pixel4a, Pixel4, Pixel3, and Pixel3a.
[27] For iMessage transfers, this is subject to some limitations. We heard that SMS and MMS protocols do not support the full range of content that iMessage does. So, while most users will get the majority of their message history restored, it will not be like for like.
[28] This is with the exception of FairPlay content, which cannot be transferred.

new device.' The data that can be transferred using the cloud includes contacts, calendar events and photos and videos.

- The direct wifi solution involves 'directly transferring data wirelessly between two devices'. The following data, however, do not currently transfer when using a wifi solution: free apps, message history, call history, display and accessibility settings, home screen layout, and email accounts.[29]

Survey evidence

41. Our survey found that, in 2022, 38% of iOS Marginal Users and 14% of Android Marginal Users stated that they were concerned about losing data when switching operating system as one of the reasons why they did not switch device.[30] Further, for all iOS Non-Switchers, 10% rated losing data when transferring to Android as the *most important* factor in their decision not to switch – this was the fourth most important reason overall (out of 18).[31] For all Android Non-Switchers, only 1% rated losing data when transferring to Android as the *most important* factor in their decision not to switch – this was the ninth most important reason overall (out of 18).[32]

42. When instead considering Switchers, our survey found that:

    - 13% were very or fairly dissatisfied with the process of transferring data from their old phone;
    - 17% were very or fairly dissatisfied with transferring music; and
    - 8% were very or fairly dissatisfied with accessing apps from the old phone to the new phone.[33]

43. This is consistent with survey evidence highlighted by Apple.

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[29] While music can be transferred, Google currently does not currently transfer music in its direct wifi solution.
[30] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Table 18. These percentages are slightly lower for iOS and Android Non-Considers, at 28% and 10%, respectively – see Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, accompany Data Tables, Q.20 'Which of the following reasons explain why you didn't consider switching to/buy/get an iPhone/Android smartphone?'.
[31] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figure 28.
[32] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figure 29.
[33] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figure 39.

Conclusion

44. On balance it appears that a significant number of users are concerned that it may be difficult or impossible to transfer data such as contacts, messages, and passwords, as well as apps, to a new device. While some users may feel confident using guidance, switching apps and tools to manage this process, others will not and may find that these approaches do not transfer all the data that they require to their new device easily or reliably. This is likely to discourage switching or impose, for example, time costs on switchers as they resolve any resulting issues.

45. Our survey data indicates that iOS users in particular perceive that switching could impose such costs, and, because of concerns around transferring data and apps after switching, a large proportion of iOS users are deterred from switching operating system. We find that this perception is weaker among Android users. This finding is consistent with the evidence that only cable options allow for a relatively comprehensive data and apps transfer post-switching, while other options, such as direct wifi and cloud transfer, do not currently allow for a smooth transition.[34]

46. The evidence is equally consistent with a finding that data and app transfer is a stronger perceived barrier than an actual barrier. The evidence submitted, for example, clearly sets out that cable options are (at least currently) a viable and effective solution for iOS users intending to switch to Android. However, we acknowledge that there appear to still be some limitations associated with cable transfer.

47. With respect to whether users may lose access to preferred third-party apps after switching, we consider that the availability of most popular apps on both Android and iOS ecosystems makes this unlikely to act as a significant barrier to switching.[35]

[34] For example, iOS users might invest some time upfront to assess how easy or difficult data and app transferring is when considering switching to Android and might be particularly disincentivised by some of the limitations discussed above.
[35] This finding is consistent with our survey results, which shows that the availability of apps is of a low priority in users' purchasing decisions and is not often cited as a barrier to switching.

Managing subscriptions across devices

Potential to act as a barrier to switching

48. As detailed below, multiple respondents set out views on whether challenges to managing subscriptions could constitute barriers to switching between iOS and Android or vice versa. They commented on whether:

    - users may have to repurchase or resubscribe to paid-for apps and in-app content if they cannot recover their pre-existing accounts after switching to a new ecosystem; and

    - users may not be able to manage pre-existing subscriptions to paid-for apps and in-app content after switching to a device that uses a different operating system.

Respondents' views and evidence

49. App developers indicated that Apple's policies in relation to in-app purchases (IAP) prevent developers from requiring users to link developer accounts to their Apple ID. While app developers can prompt users to link their accounts, the European Publishers Council stated that, if users choose not to do so, developers have no means to know whether switchers to Android have paid for a subscription on iOS. As set out in Appendix H, users currently have no alternative to Apple IAP for purchasing apps and in-app content.

50. Google stated that Google Play's billing system policies do not constrain developers from requiring app users to link their Android app to a developer account, which they could access from an iOS device if they choose to switch. However, it considered that, for users of most apps, there is no risk of losing access for paid-for content after switching, as 97% of apps on Android do not offer paid downloads, in-app content, or subscription sales.

51. Multiple app developers noted that users who have active subscriptions bought on the Apple App Store cannot manage these subscriptions on a device that uses a different mobile operating system. As such, to be able to manage their subscriptions on a new operating system, a user would need to cancel subscriptions on their prior device before switching and re-purchasing them. [One developer] stated that some users may be charged for subscriptions they cannot use if they switch from an iOS to an Android device before cancelling or managing through Apple a subscription they have bought through Apple IAP. Epic Games noted that switchers may have, for example, multiple annual subscriptions bought on iOS that expire at different times,

necessitating their cancellation and re-purchase because they would not be manageable on Android.

52. In contrast, Apple considered that any barriers to switching arising from the transfer of data, apps or managing subscriptions are limited.

53. With respect to managing subscriptions across devices, Apple stated that neither subscriptions bought through Apple IAP, nor Google Play, can be transferred to the other company's billing management system after switching. It considered that users would understand the need to cancel their current subscriptions and re-subscribe through another provider. However, it noted that some users may wish to continue paying for a subscription through their prior payment method (linked to their Apple ID) and to access the paid-for app or in-app content via the web or an Android app.

Survey evidence

54. Our survey found that, in 2022, 12% of iOS Marginal Users and 2% of Android Marginal Users stated that they were concerned about losing paid-for subscriptions and content in apps after switching.[36] Notably, no one referred to concerns over losing paid-for subscriptions and in app content as the *most important* reason for not switching. Yet, we note that in 2021, only [10-20]% of iOS users actually had at least one subscription to a third-party app, while this has been increasing over time.[37] As such, while the current evidence suggests only a few users perceived this as a barrier to switching, its impact may become more material if the take-up of subscriptions continue to grow.

55. When instead considering Switchers, we found that:

- 8% were dissatisfied with accessing paid-for subscriptions (purchased on the old phone) on their new phone; and
- 10% were dissatisfied with managing subscriptions (purchased on the old phone) on the new phone.[38]

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[36] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Table 18. This is lower for iOS Non-Considerers, at 5%, and slightly higher for Android Non-Considerers, at 3% – see Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, accompany Data Tables, Q.20 'Which of the following reasons explain why you didn't consider switching to/buy/get an iPhone/Android smartphone?'.
[37] This is calculated as the ratio between all iOS users with at least a subscription to a third-party app (snapshot at December 2021) and the total number of iOS transacting accounts in 2021. Given that not all iOS users perform a transaction in their device (eg some users may not download an app or make a payment in the device) the reported percentages may overstate the number of users with at least one subscription.
[38] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figure 39.

56. This is consistent with survey evidence highlighted by Apple. Again, given only [10-20]% of iOS users have at least one subscription to a third-party app this might be a greater actual concern for the relatively small subset of users with a subscription.

Conclusion

57. The evidence gathered suggests that most users do not perceive managing subscriptions across devices after switching operating system as a barrier to their switching decision. Only a small proportion of survey respondents (including both Marginal Users and Non-Considerers alike) referred to concerns on losing paid-for subscriptions and in-app content as a reason for not switching. Furthermore, the survey evidence suggests that most users are satisfied with the process of managing and accessing paid-for subscriptions when switching. These results are consistent with the fact that only a relatively low proportion of users currently have a subscription to a third-party app – however the issue may be substantial for those individuals for which it is relevant.

The availability and characteristics of first-party apps, services and other devices

Potential to act as a barrier to switching

58. Apple and Google make first-party apps and services available to users of their mobile operating systems. Many are pre-installed on devices. First-party apps and services may offer, for example, functionality that users expect from the device or additional in-app content: examples include Apple's iMessage and Apple Music and Google's Chrome browser and Google Maps app. Apple makes a small number of first-party apps and services available on Android devices, while Google makes most of its core apps and services available on iOS devices (we discuss these differing approaches below).

59. Apple and Google also sell other first-party devices, which purchasers may use in conjunction with mobile devices or which may share integrated functionality with mobile devices. Examples include the Apple MacBook and Mac computers, the iPad, Apple Watch, AirPod headphones and Android tablets, Google's Nest smart speakers, cameras and thermostats. iOS users may be able to use their mobile device in conjunction with a Google-manufactured connected device and vice versa.

60. As detailed below, respondents set out different views on whether the availability and characteristics of first-party apps, services and devices may pose barriers to switching:

- if preferred first-party apps and services would be unavailable to users after switching;
- if users may lose access to shared functionality between first-party apps, services and connected devices; and
- if users would have a worse experience of interacting with friends' and family's devices after switching.

Respondents' views and evidence

61. Various respondents considered that the availability and characteristics of Apple's first-party apps, services and devices constituted a barrier to switching from iOS to Android. No equivalent concerns were raised about barriers to switching from Android to iOS.

62. Respondents noted that:

- Almost all of Apple's first-party apps and services are unavailable on Android devices.[39] Thus iOS users would lose access to them on their mobile device if they switch to Android.
- Users of multiple Apple devices may lose access to shared functionality between first-party apps, services and connected devices if they switch mobile operating system. This could worsen their quality of experience when using other Apple devices. For example:
  - Some first-party connected devices cannot be used in conjunction with Android devices (eg Apple Watch).
  - Some apps and connected devices offer limited functionality when used on or with Android devices (eg AirPods).
  - Users may no longer be able to use the same first-party apps on their choice of devices (eg they may no longer be able to use their preferred messaging app on their mobile, tablet and laptop).[40] There is evidence

[39] Apple stated that only Apple Music, Apple TV+, DarkSky Weather and Shazam are available as apps across a range of non-iOS devices (however we note that DarkSky Weather is not available on Android). Apple stated that it makes Apple TV+ and Apple Music available across a range of non-iOS devices because users expect them to be available in this way. iOS apps and services not available on Android (alongside DarkSky Weather) include the App Store, Apple Arcade, Apple Books, Apple Pay, Apple News+, iTunes Store and iMessage.
[40] For example, iMessage can be accessed on iPhones and MacBooks.

of high levels of ownership of Apple products and connected devices among UK iPhone owners: our survey shows that 83% iPhone users have at least one other Apple product, with 63% having an iPad, 35% an Apple MacBook or Mac computer, 32% the AirPods, 31% the Apple Watch, and 13% Apple Smart home devices.[41]

- Users may take account of how Apple devices may offer a better quality of experience than Android devices when interacting with Apple devices owned by friends or family. The features of iMessage may also make using a new Android device harder. Examples include:

  – Android users sending number-based interpersonal messages to iOS users will reach the iOS device via Short Message Service (SMS) / Multimedia Messaging Service (MMS) technology, because Apple has not adopted the Rich Communications Standards (RCS) protocol for iMessage. By contrast, iOS users may send number-based messages to other iOS users via a faster, encrypted iMessage service that permits functionality (eg message effects and group chat functions) unavailable when communicating with an Android user. We heard that Apple's practices impair communications sent between non-iOS device users and iMessage users via SMS / MMS.[42]

  – iOS users may need to manually disable iMessage, via their iOS device or online, to be able to receive messages sent to their number on an Android device.[43]

63. Apple stated that:

- With respect to the availability of its first-party apps and services: investing in developing these only for Apple's own products enables it to offer a better user experience.[44] It stated that its devices achieve unmatched levels of performance, privacy and security because of this

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[41] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figure 21.
[42] We heard that Apple's practices affect iOS and Android users' ability to communicate vis SMS / MMS in several ways: messages are delivered slowly and less reliably; users cannot include high-quality images and videos; certain features are hidden or not available (such as read receipts, knowing when someone is typing a message, the ability to "like" messages); group chat functionality is limited; and users often pay cellular network charges. Moreover, we have heard that cross-platform messaging using SMS/MMS technologies weakens users' security and privacy – for example, we understand that cross-platform chats cannot be encrypted. Google told us that they have made attempts to make cross-platform messaging easier on its Android messaging app, Messages for Android, for example by displaying message reactions via emojis instead of as text and allowing users sharing videos from Messages for Android to iOS via the Google Photos app.
[43] Dr Greig Paul and Dr James Irvine, Response to the Statement of Scope, 25 July 2021, p.5-6.
[44] We note that evidence was cited in a case brought by Epic Games against Apple (Epic Games, Inc. v Apple Inc., United States District Court, Northern District of California, Case No. 4:20-cv-05640-YGR-TSH), relating to practices on Apple's App Store, which suggested that some Apple employees considered that the non-availability of iMessage on Android would discourage switching away from Apple's ecosystem. See Epic Games, Inc vs Apple Inc, Findings of Fact and Conclusions of Law Proposed by Epic Games, 2021, paragraph 58, p. 15.

tight integration. The availability of Apple's apps and services solely on Apple's products serves to differentiate them in the competitive device market. Apple also stated that they may generate no revenue in themselves, so that it would be irrational to offer them on competing mobile devices.

- With respect to potential loss of access to shared functionality between first-party apps, services and connected devices: Apple stated that its connected devices offer interoperability with third-party devices and services to the extent possible and are operable on a standalone basis. In the case of the Apple Watch, Apple stated that it would be constrained technically from enabling users to access the Apple Watch's full functionality from a third-party device. For example, it stated that the watch's battery life relies on the use of proprietary technologies to pair with an iPhone for network connectivity and tasks such as receiving calls on the same number.

- With respect to the quality of experience of Android devices when interacting with others' Apple devices: Apple suggested that it has not adopted the RCS protocol for number-based messaging because RCS is a new technology and that it is unclear how effective it will be. Apple also noted that alternative third-party messaging services are available on Android and iOS. Finally, Apple noted concerns that incorporating RCS into iMessage would result in a worse experience for users. In particular, RCS does not meet Apple's security requirements and given Google's approach to privacy, its control of RCS could lead to RCS being used by Google to engage in unwanted advertising on iMessage, which Apple considers would erode the quality of the service.

Survey evidence

64. Our survey found that, in 2022, 44% of iOS Marginal Users stated, as a reason for not switching, 'because I have other devices linked to my phone/operating system (iOS)'.[45] This is the most frequently quoted reason for not switching (out of a total of 18 reasons), and also the *most important* reason for 20% of all iOS users.[46]

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[45] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Table 18. This figure is slightly higher for iOS Non-Considerers, at 52% – see Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, accompany Data Tables, Q.20 'Which of the following reasons explain why you didn't consider switching to/buy/get an iPhone/Android smartphone?'.
[46] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figure 28 and accompany Data Tables, Q.20 'Which of the following reasons explain why you didn't consider switching to/buy/get an iPhone/Android smartphone?'.

65. As expected, the importance of other devices for Android users (both Marginal Users and Non-Considerers) is less stark. Overall, 25% of all Android users mentioned other devices as a reason why they did not switch – 17% among Marginal Users and 27% for Non-Considerers Users.[47]

66. We also find a clear difference in the proportion of iOS users (31%) who rate 'compatibility with personal smart devices' as an important factor in their smartphone purchase decision compared with Android users (15%). Moreover, 21% of iOS users state 'compatibility with personal smart devices' among their three most important factors in their smartphone purchase decision compared to 7% of Android users.[48]

67. When instead considering Switchers, we find that only 8% of all users are very or fairly dissatisfied with the process of connecting to other devices post-switch.[49] However, survey results also suggest that users switching away from iOS have a lower proportion of iOS devices compared to other Apple users and that users switching away from Android have a higher proportion of iOS devices compared to other Android users.[50] This is consistent with other devices being a pull factor towards the iOS ecosystem and might explain why switchers do not see other devices as an actual barrier.

68. Family and friends using the same operating system is also often referred to by users as a reason why they decide not to switch. This is particularly the case for iOS users, with 33% of iOS Marginal Users mentioning 'my friends and family use the same OS' as reason for not switching.[51] In contrast only 7% of Android Marginal Users referred to friends and family using Android as a reason for not switching.[52]

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[47] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Table 18. Other devices are quoted as the *most important* reason for not switching by 3% of all Android users this is the eighth most important reason overall (out of 18).
[48] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figures 5, 6 and 7. Overall, compatibility with other devices is the fourth most important reason for purchasing or choosing a devices out of a total of 12.
[49] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figure 39.
[50] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Pages 34 and 35.
[51] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Table 18. This is 32% for iOS Non-Considerers – see Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, accompany Data Tables, Q.20 'Which of the following reasons explain why you didn't consider switching to/buy/get an iPhone/Android smartphone?'. This could suggest interoperability matters for iOS users. However, an alternative interpretation is that Apple users are generally more 'bought into' the Apple ecosystem, do not want to lose out on sharing features (eg AirDrop, Family Sharing) and there is a brand perception/loyalty that ties them in. We note that both interpretations are consistent with limited effective competition.
[52] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Table 18. This figure is slightly higher for Non-Considerers at 9%- see see Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile

69. Finally, considering the availability of first-party apps, our survey evidence suggests that this is not seen as reason for not switching by the majority of users. In detail:

- Only 9% of iOS Marginal Users and 6% of Non-Considerers quoted 'iOS has access to a wider range of mobile apps' as reason for not switching. Considering Android users, these percentages are 10% and 18%, respectively.[53]

- Only 9% of iOS Marginal Users and 6% of Non-Considerers refer to 'I use apps not available on Android' as a reason for not switching. For Android users, Marginal Users and Non-Considers that refer to 'I use apps not available on iOS' are 6% and 9%, respectively.[54]

Conclusion

70. In the round, we consider that the availability and characteristics of other devices and family and friends using the same operating system pose significant perceived barriers to switching, particularly for users switching from iOS to Android. Survey evidence shows that 'having other devices linked to my phone' is the most mentioned reason for not switching by Apple users – this shows the importance of Apple's wider ecosystem of devices to users' choice of mobile device.[55] Given the high proportion of iOS users that own multiple Apple devices[56] and the potential replacement cost of devices such as smart watches, this barrier is likely to affect significant numbers of users.

71. However, our survey evidence also found a lack of user concerns regarding the loss of access to Apple's first-party apps. This outcome is UK-focused and could indicate that UK users are accustomed to using alternatives (eg WhatsApp), unlike in other jurisdictions where iMessage or FaceTime may be locking users into iOS.

Ecosystems Market Study', dated June 2022, accompany Data Tables, Q.20 'Which of the following reasons explain why you didn't consider switching to/buy/get an iPhone/Android smartphone?'.
[53] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Table 18 and accompany Data Tables, Q.20 'Which of the following reasons explain why you didn't consider switching to/buy/get an iPhone/Android smartphone?'.
[54] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Table 18 and accompany Data Tables, Q.20 'Which of the following reasons explain why you didn't consider switching to/buy/get an iPhone/Android smartphone?'.
[55] Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Figure 26.
[56] For example, our survey indicates that 83% of iPhone users have at least one other Apple product. Accent Report 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', dated June 2022, Page 34.