

Online Choice Architecture

How digital design can harm competition and consumers

Discussion Paper



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Contents

	<i>Page</i>
Forewords	i
Executive summary	iii
1. Introduction	1
2. How authorities have addressed choice architecture	8
3. Taxonomy of OCA practices	14
4. Harm to consumers and competition from OCA practices	24
5. Cross-cutting topics	40
6. Future direction	46
7. Conclusions	52
Annex: Non-exhaustive summary of cases involving harmful OCA	54

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Forewords



Andrea Coscelli

Chief Executive

The rise of digital markets creates a new world of possibilities for consumers. It also brings new challenges to ensure consumers are protected and can enjoy the benefits of these new technologies.

Businesses' increasing ability to design their interactions with consumers through online choice architecture is a key challenge. Businesses invest considerably in understanding their customers and optimising interactions for their strategic goals. There is a growing consensus in the UK – John Penrose's report, BEIS's Reforming Competition and Consumer Policy consultation, the Furman review – and abroad that consumer and competition regimes need to keep pace with these developments.

The CMA has already started to adapt. We have set up the Digital Markets Unit (in shadow form) to oversee a new regulatory regime for the most powerful digital firms. To prepare, we have recently conducted, and continue to conduct, several digital market studies, including digital advertising, mobile ecosystems, and music streaming. We have targeted consumer enforcement where the design of online platforms can cause harm, including on social media influencers, online reviews, and the purchase of PCR testing services.

We recently invested in creating a cross-cutting Data, Technology, and Analytics unit, including a Behavioural Hub. This team expands our organisational capability to identify and address technical and consumer behaviour issues, and it is playing a key role in many ongoing cases.

This paper discusses the current CMA thinking in this important area for our ongoing programme of competition and consumer enforcement. Other regulators, like the Financial Conduct Authority, have taken behavioural issues to heart, through initiatives such as the Consumer Duty, and many businesses in response have conducted behavioural audits of their consumer-facing operations. Businesses, if not doing so already, should consider – through audits, self-assessment or other compliance programmes – whether their conduct complies with competition and consumer protection law.

We hope that this paper will also contribute to the international discussion on these important issues, and act as a prompt for deeper collaboration with Government departments and authorities in the UK and abroad.



Amelia Fletcher

Senior Independent Director

In recent decades, consumers have increasingly moved online to make their purchasing decisions. In many ways, this is a good thing. Consumers can make their choices from a far greater range of products than any one shop can carry, they can draw on a plethora of readily available product information and ratings, they can be aided in their decisions by suggestions from recommender systems, and they do not face the pressure of having to deal with pushy salespeople.

Not everything is so rosy, however. There is growing recognition that despite the huge range of choice available online – and to some extent because of it – consumers' purchasing decisions can be substantially influenced by the way in which choices are presented. Such framing can be useful in helping 'nudge' consumers towards better decisions, but it can also lead them astray. Concerns in this area are sometimes referred to 'dark patterns' or 'sludge'.

This paper provides a valuable and timely overarching review of this important area and contributes to enhancing our understanding of the potential harm that can arise from online choice architecture. It not only considers the direct harm to consumers from making suboptimal choices, but also the indirect consumer detriment that can arise via the impact of distorted consumer choice on the nature and extent of competition in markets. Multiple examples from UK and international case experience bring these issues alive.

The paper also outlines a novel taxonomy of practices, showing online choice architecture can affect not only the choice structure facing consumers, but also the information they use and the pressure they can face in their decision making. It discusses how any distortions arising may be amplified through the machine learning on which recommender systems and other online decision-making tools are based.

Critically, the paper explains why online choice architecture is relevant to both consumer protection policy and competition policy. Moving forward, we should expect it to play an ever-greater role in consumer and competition enforcement activity, and to create new challenges in the design of remedies in digital markets.

There remains, however, a vital need for more research. While there is a wealth of evidence on some of the biases and practices described, there is less evidence on others and even less on how these play out in terms of real-life market outcomes. This paper should be seen as a significant stepping-stone on the journey to a fuller understanding of these critical issues.

Executive summary

What is choice architecture?

1. We spend ever more time online – working, learning, shopping, browsing and socialising. This shift means we increasingly find ourselves influenced by the design of websites, apps and devices. Within online environments, businesses can design and control every aspect of their interactions with us to an extent that is unprecedented in traditional brick-and-mortar businesses. Such design, deliberately or unintentionally, leads us towards certain decisions and actions.
2. Those who design – the user experience and interaction designers, the content designers and the marketers – can be thought about as **choice architects**, and the design of the environment they create is the **choice architecture**.¹ Common examples of choice architecture include the order of products in search results, the number of steps needed to cancel a subscription, or whether an option is selected by default. A growing body of research suggests that such elements affect consumers and markets in significant ways.²
3. Choice architecture is a neutral term. A well-designed website, app or digital service built with consumers' interests in mind will help consumers choose between suitable products, make transactions faster, and recommend new relevant products or services. However, choice architecture can also hide crucial information, set default choices that may not align with our preferences, or exploit our attention being drawn to scarce products.
4. Although businesses have always sought to influence their consumers, the dramatic shift towards online markets brings new challenges: we interact differently with the digital world, where we can buy products, access information, and speak to strangers around the world from our sofa. The speed and scale of data collection, experimentation, and targeted personalisation available to businesses online also facilitates the development and optimisation of choice architecture in real time.³ In addition, in some contexts, as the CMA

¹ Thaler, R. H., Sunstein, C. R., & Balz, J. P. (2013). Choice architecture. In *The Behavioral Foundations of Public Policy* (pp. 428–439). Princeton University Press; Johnson, E. (2022). *The Elements of Choice: Why the Way We Decide Matters*. Oneworld Publications.

² For example, see Tversky, A., & Kahneman, D. (1974). Judgment under Uncertainty: Heuristics and Biases. *Science*, 185(4157), 1124–1131; Spiegler, R. (2011). Bounded rationality and industrial organization. *Oxford University Press*; Bar-Gill, O. (2012). Seduction by contract: Law, economics, and psychology in consumer markets. *Oxford University Press*; Van Der Lee, J. R., Cuijpers, D., Bloois, M. D., Mastop, J., Heesch, W. V., & Steenbergen, E. F. V. (2021). Ethical design: Persuasion, not deception. *Journal of Digital & Social Media Marketing*, 9(2), 135-148; Mathur, A., Acar, G., Friedman, M. J., Lucherini, E., Mayer, J., Chetty, M., & Narayanan, A. (2019). Dark patterns at scale: Findings from a crawl of 11K shopping websites. *Proceedings of the ACM on Human-Computer Interaction*, 3(CSCW), 1-32.

has observed, choice architecture is integrated with the use of algorithms, such as when determining which results are displayed in search.⁴

5. Expert practitioners and commentators are increasingly recognising choice architecture as being pivotal to legal and economic arguments about compliance with consumer protection and competition law.⁵ Understanding online choice architecture is thus key to the work of the Competition and Markets Authority (CMA) and of any future statutory Digital Markets Unit in the UK.

Scope and purpose of this paper, and the accompanying Evidence Review

6. This paper and the accompanying Evidence Review focus on how businesses' and designers' use of **online choice architecture (OCA)** can potentially cause harm.
7. In this paper we provide an overview of the role OCA plays in consumer and competition protection issues. We present a taxonomy of 21 OCA practices, summarise the existing academic evidence on how they work, and illustrate the potential harm they can cause using case studies of investigations and other work by the CMA and others.⁶ The accompanying Evidence Review provides a detailed summary of the available academic literature and official reports on each of the practices in the taxonomy.
8. We intend both papers to be of interest to competition and consumer professionals within and outside regulators, those advising businesses and academics, as well as others who are interested in the intersection of OCA, behavioural science, design, marketing, and data science. The papers are intended to provoke discussion and debate, exploring hypotheses for how these practices could be understood and addressed from a consumer and competition perspective.
9. The papers are not intended to act as guidance for businesses and their advisers, or to determine how the CMA will act in future cases and investigations where OCA plays a role. Each case would be assessed on its merits. As we continue to learn more about the use of OCA and its effects on consumers and competition, we expect that our approach will grow and adapt accordingly.

³ Willis, L. E. (2020). Deception by Design. *Harvard Journal of Law & Technology*, 34(1), 115-190.

⁴ Competition and Markets Authority (CMA). (2021). [Algorithms](#).

⁵ For example, see Chicago Booth. (2019). [Stigler Committee on Digital Platforms: Final Report](#); Day, G., & Stemler, A. (2020). Are Dark Patterns Anticompetitive? *Alabama Law Review*; Financial Conduct Authority (FCA). (2013). [Applying Behavioural Economics at the Financial Conduct Authority](#); The Netherlands Authority for Consumers & Markets (ACM). (2019). [Protection of the Online Consumer Boundaries of Online Persuasion](#).

⁶ The case studies should not, unless otherwise stated, be taken as indicating that the businesses involved broke the law.

A taxonomy of OCA practices

10. We have outlined a possible taxonomy of OCA practices that could be used by consumer and competition authorities to help recognise, categorise and explain the impact of practices. It draws on a range of existing academic taxonomies, categorising practices according to whether they affect **choice structure** (the design and presentation of options), **choice information** (the content and framing of information provided), and **choice pressure** (through indirect influence of choices) (see Section 3 for more detail).
11. While the academic literature suggests some practices are almost always harmful (marked with *), others may be harmful only in certain circumstances. Most of these practices can be used beneficially and often are. For example, without the use of defaults (designed to be easily changed), consumers could be overwhelmed by numerous active choices with substantial time and resource costs.

Table 1: A taxonomy of OCA practices

Choice structure	Choice information	Choice pressure
Defaults Ranking Partitioned pricing Bundling Choice overload and decoys* Sensory manipulation* Sludge* Dark nudge* Virtual currencies in gaming Forced outcomes*	Drip pricing* Reference pricing Framing Complex language* Information overload*	Scarcity and popularity claims Prompts and reminders Messengers Commitment Feedback Personalisation

Online choice architecture and types of harm

12. Below we discuss three (non-exhaustive) specific types of harm to consumers and competition related to OCA practices (see Section 4 for more detail).
13. First, OCA can distort consumer behaviour. Influenced by OCA, consumers may purchase unneeded or unsuitable products, spend more than they want to, receive poor value items or services, choose inferior sellers or platforms, or search less for alternatives.
14. Second, OCA can weaken or distort competition. Because OCA can distort consumer behaviour, it can shift businesses' incentives to compete on product attributes that benefit the consumer, such as quality and total price paid, towards less beneficial attributes, such

as price displayed upfront or pressure to buy.⁷ This can weaken or distort competition on the merits of the products and may result in poorer quality, more expensive products, less efficient markets, and reduced trust.

15. Third, OCA can maintain, leverage or exploit market power. OCA may be particularly problematic where a business has market power because the business can use OCA to maintain, leverage or exploit their market position.⁸

Where can online choice architecture have greater impact?

16. OCA practices are often not used in isolation, and tend to have stronger effects when they are combined. For example, the same product may be made visually salient using colours, may appear to be scarce through limited stock claims, and may appear first in a search query.⁹ OCA practices are also often combined with hyper-granular data collection of consumers' online behaviour and machine learning algorithms, which can increase their impact and potentially exacerbate harm.¹⁰
17. There are also important consumer-side factors that can affect the impact of OCA practices. While it seems likely that all of us display behavioural biases,¹¹ some consumers may be more susceptible to OCA practices or more likely to experience harm (for example, people in certain situations or with certain personal characteristics that make it difficult to make informed choices).¹² Additionally, some OCA practices are rarely consciously noticed, but they may work just as effectively even when recognised. (See Section 5 for more detail on these cross-cutting topics.)

⁷ Lindsey-Mullikin, J., & Petty, R. D. (2011). Marketing tactics discouraging price search: deception and competition. *Journal of Business Research*, 64(1), 67-73; Bordalo, P., Gennaioli, N., & Shleifer, A. (2021). *Saliency* (No. w29274). National Bureau of Economic Research.

⁸ Day, G., & Stemler, A. (2020). Are Dark Patterns Anticompetitive?. *Alabama Law Review*, 72, 1.

⁹ For example, the CMA had concerns around online hotel booking websites using a combination of partitioned pricing, reference pricing, ranking and scarcity claims to influence customer decision making. Fung, S. S., Haydock, J., Moore, A., Rutt, J., Ryan, R., Walker, M., & Windle, I. (2019). Recent Developments at the CMA: 2018–2019. *Review of Industrial Organization*, 55(4), 579-605.

¹⁰ CMA. (2021). [Algorithms](#).

¹¹ Stango, V., & Zinman, J. (2020). We are all behavioral, more or less: A taxonomy of consumer decision making (No. w28138). *National Bureau of Economic Research*.

¹² CMA. (2019). [Consumer vulnerability: challenges and potential solutions](#); for an example of situational vulnerability, see CMA. (2020). [Funerals market investigation](#).

Next steps at the CMA

18. To help us to continue tackling problems caused by harmful OCA, we will build on the existing knowledge and actions highlighted in this paper with a programme of work.

This work will include:

- (a) *Addressing OCA practices through our ongoing work.* The CMA will continue to challenge OCA practices that mislead and harm consumers or undermine their trust and confidence in online markets. We will use our full range of powers and tools when doing so, including enforcement cases that set important precedents and deter unfair practices, as well as guidance to support businesses in ensuring they comply with the law, as appropriate.
- (b) *Seeking to determine the prevalence of harmful OCA practices.* The work will tackle outstanding questions, including the prevalence of harmful OCA practices in different UK sectors, using a combination of behavioural science, data science and other methods.
- (c) *Working in partnership with others to refine our view of OCA practices.* The CMA will continue its programme of engagement with interested organisations and individuals on issues relating to OCA. This includes continued bilateral and multilateral engagement with other authorities and regulators, including the European Commission.
- (d) *Raising consumer and business awareness of OCA practices.* The CMA has already launched a campaign to raise consumer awareness around harmful practices,¹³ and it intends to conduct further initiatives to raise awareness across relevant groups.

¹³ CMA. (2022). [The Online Rip-Off Tip-Off](#).

1. Introduction

Key insights

- **OCA is the design of the online environment where consumers interact with businesses.**
- **OCA affects consumer behaviour and can both benefit and harm consumers.**
- **OCA related harms can survive in competitive markets.**

- 1.1. Choice architecture describes the contexts in which people make decisions and how choices are presented to them.¹⁴ In online settings, choice architecture is the environment in which users act, including the presentation and placement of choices and the design of interfaces.
- 1.2. Online choice architecture (OCA) can be designed to help consumers, or alternatively, in ways that result in harm. For example, OCA that is positive for consumers might include a quick and seamless returns process, prominent and relevant recommendations for further products or services, and opportunities for consumers to commit to beneficial future actions. However, here, and in the accompanying Evidence Review, we explore how **OCA can cause harm**; that is, how and when practices can distort consumer decision making, weaken competition, and enable businesses to strengthen or exploit market power.¹⁵
- 1.3. Sometimes, the same underlying practices can produce positive and negative effects. For example, a default, such as pre-installed internet security settings, can help consumers avoid computer viruses and stay safe online. However, a default enrolment into a subscription for anti-virus protection may not be in all consumers' interests; some consumers could end up paying for subscriptions they do not want or need, which may in turn increase a business's market share beyond what its products merit in terms of price and quality.
- 1.4. In this section, we provide an introduction to OCA, why it affects consumer behaviour, and why harmful OCA may persist in competitive markets. In Section 2, we discuss some previous examples of how authorities in the UK and abroad have tried to address concerns involving OCA.
- 1.5. Then in Section 3, we put forward a taxonomy of 21 OCA practices, into which potentially harmful practices could be organised, including practices that aim to influence consumers through the **structure** in which choices are presented, the **information** that is presented, and the **pressure** applied to consumers' choices. We provide an overview of the academic evidence on how they work, the effect they can have on consumers, and the potential harm they can cause. The Evidence Review goes into more detail on each of

¹⁴ Thaler, R. H., Sunstein, C. R., & Balz, J. P. (2013). Choice Architecture. In E. Shafir (Ed.), *The Behavioral Foundations of Public Policy* (pp. 428-439). Princeton University Press.

¹⁵ This paper considers harm to consumers and markets, and not harm online more generally, such as from exploitative or abusive material. In addition, while this paper focuses on how OCA practices may affect consumers, it is also plausible to consider that businesses, through the individuals that run them, might themselves be subject to OCA practices used by other businesses.

these 21 practices, summarising the academic research on their effect on consumer behaviour, the behavioural mechanisms through which they operate, the potential harms caused, and the remedies that could address these harms.

- 1.6. In Section 4, we set out the potential harms the use of OCA practices can have on consumers and competition. We illustrate these harms by highlighting four specific OCA practices and discussing the role they played in previous consumer or competition investigations or cases. In Section 5, we briefly discuss four cross-cutting topics relevant to the effectiveness of OCA and the potential harm caused.
- 1.7. In Section 6, we discuss some of the possible remedies available to authorities to reduce the harm caused by OCA practices, and to improve outcomes for consumers and competition. We also highlight some of the remaining gaps in understanding and research. Finally, in Section 7, we discuss conclusions and some of the next steps the CMA intends to take.

Why OCA affects consumer behaviour

- 1.8. Consumers generally try to make good purchasing decisions, to use sensible strategies to choose between options, and to exit bad deals. However, people's lives are complicated: we have limited time, energy and resources to devote to searching for the lowest price or figuring out which product is the highest quality. We therefore frequently rely on heuristics or 'rules of thumb' to make decisions: for example, visiting only certain websites, focusing on certain product features, or buying products when they appear to be on special offer.
- 1.9. These natural tendencies mean we are susceptible to certain **behavioural biases**. For example, we intuitively tend to weigh losses higher than equivalent gains, and to prioritise the present over the future. We are also strongly influenced by context, including sometimes superfluous or misleading information like 'recommended' prices or inferior products added to a choice set.¹⁶
- 1.10. Biases mean we may end up paying more than we should, get worse products, give away more of our data, or stop searching for alternatives prematurely.¹⁷

¹⁶ For example, see Kahneman, D. (2011). *Thinking Fast and Slow*. New York: Farrar, Straus and Giroux.; Kahneman, D. & Tversky, A. (1974). Judgment under uncertainty: heuristics and biases. *Science*, 185, 1124-1131.; Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, 47(2), 263–91.; Kahneman, D., and Tversky, A. (1981). The Framing of Decisions and the Psychology of Choice. *Science*, 211, 453-458.; DellaVigna, S. (2009). Psychology and Economics: Evidence from the Field. *Journal of Economic Literature*, 47, 315-372.

¹⁷ Dambe, K., Hunt, S., Iscenko, Z., & Brambley, W. (2013). Applying behavioural economics at the Financial Conduct Authority. *FCA Occasional Paper*(1); Heidhues, P. & Köszegi, B. (2008). Competition and Price Variation When Consumers Are Loss Averse. *American Economic Review*, 98(4), 1245-68.

As a result, there is a growing wealth of research into how features of our environment, beyond prices, can have a tangible impact on economic decisions and outcomes.¹⁸

- 1.11. Most consumers exhibit multiple behavioural biases, such as present bias, loss aversion and overconfidence, which tend to be relatively stable over time.¹⁹ However, there are substantial variations across individuals in the number of biases displayed, even within similar demographic groups.²⁰
- 1.12. Behavioural biases can be exacerbated in the online world.²¹ Research suggests that people often behave differently online: we are quicker to act, have shorter attention spans, scan and skim rather than read, and are more likely to rely on the recommendations of strangers.²² Online, people may routinely hand out their contact details, transaction history and even more sensitive personal data in exchange for ‘free’ things, whereas in person, they might be more likely to turn such deals down.
- 1.13. There are also several differences in how online markets operate compared to offline markets that can influence how consumers behave.²³ We can now buy products and access information within minutes from the sofa. While providing clear benefits, these seamless and expedient processes may induce more impulsive, and therefore harmful, purchasing behaviour by consumers.
- 1.14. Online interactions and services have extended further into our social interactions and media consumption. In some cases, this expands markets to the benefit of consumers, including by facilitating social interactions or providing wider access to media. However, it can also lead to the commercialisation of these interactions, as well as more intensive advertising exposure, particularly when we are more susceptible or vulnerable.

¹⁸ For example, see Mertens, S., Herberz, M., Hahnel, U. J., & Brosch, T. (2022). The effectiveness of nudging: A meta-analysis of choice architecture interventions across behavioral domains. *Proceedings of the National Academy of Sciences*, 119(1); Bertrand, M., Karlan, D., Mullainathan, S., Shafir, E., & Zinman, J. (2005). What's Psychology Worth? A Field Experiment in the Consumer Credit Market. National Bureau of Economic Research.

¹⁹ Stango, V., & Zinman, J. (2020). *We are all behavioral, more or less: A taxonomy of consumer decision making* (No. w28138). National Bureau of Economic Research; Stango, V., & Zinman, J. (2020). *Behavioral biases are temporally stable* (No. w27860). National Bureau of Economic Research.

²⁰ Stango, V., & Zinman, J. (2020). *We are all behavioral, more or less: A taxonomy of consumer decision making* (No. w28138). National Bureau of Economic Research; Chen, M. K. (2013). The effect of language on economic behavior: Evidence from savings rates, health behaviors, and retirement assets. *American Economic Review*, 103(2), 690-731.

²¹ For example, see The Behavioural Insights Team. (2020). [The behavioural science of online harm and manipulation, and what to do about it](#).

²² For example, see Firth, J., Torous, J., Stubbs, B., Firth, J. A., Steiner, G. Z., Smith, L., ... & Sarris, J. (2019). The “online brain”: how the Internet may be changing our cognition. *World Psychiatry*, 18(2), 119-129; Benartzi, S., & Lehrer, J. (2015). *The Smarter Screen: What Your Business Can Learn from the Way Consumers Think Online*. Hachette UK; Duggan, G. B., & Payne, S. J. (2011, May). Skim reading by satisficing: evidence from eye tracking. *In Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 1141-1150); Delgado, P., Vargas, C., Ackerman, R., & Salmerón, L. (2018). Don't throw away your printed books: A meta-analysis on the effects of reading media on reading comprehension. *Educational Research Review*, 25, 23-38.

²³ Danish Competition and Consumer Authority. (2020). [New Opportunities and Challenges for Consumers in Digital Markets](#); Digital Regulation Project. (2021). [Consumer Protection for Online Markets and Large Digital Platforms](#). Policy Discussion Paper No. 1.

- 1.15. When shopping or searching online, we must also rely more heavily on information provided by strangers because we cannot always inspect product quality before purchasing. Platforms now integrate social information, such as reviews and popularity, into their infrastructure to stimulate purchasing, which, if presented misleadingly, can make it difficult for consumers to know who and what to trust.
- 1.16. The online environment and related technologies also give businesses the necessary control to personalise and optimise nearly every aspect of their interactions with consumers.²⁴ A business can adjust how and when it presents choices to different consumers, depending on their characteristics or past behaviours. It can also show thousands of consumers slightly different versions of a website (including different types of OCA) and measure how those perform (including through A/B testing or field trialling²⁵). Such experimentation and optimisation can be aided by algorithms, which analyse the impact of the design of the environment²⁶ based on millions of data points from consumers ('clickstream data'), including time spent on the page, buttons clicked and subsequent actions.
- 1.17. As with other product offerings and design features, benefits to businesses from OCA practices can also be good for consumers. Sophisticated optimisation of OCA practices can enable businesses to make more accurate recommendations for things to watch or buy,²⁷ create seamless payment processes, and remind consumers to update and renew their products. However, businesses' incentive to use these practices may sometimes come at the expense of consumers or competing businesses.

²⁴ Willis, L. E. (2020). Deception by Design. *Harvard Journal of Law & Technology*, 34(1), 115-190.

²⁵ A/B tests allow businesses to test different versions of a website simultaneously to determine the most effective version for a given outcome (such as clicks or purchases). Field trials involve randomly assigning consumers or businesses to different groups, who either experience business-as-usual (the control group) or a different version of a product or service (the treatment groups). The differences in consumer behaviour and outcomes can then be measured and compared statistically between groups.

²⁶ CMA. (2021). [Algorithms](#).

²⁷ Gomez-Uribe, C. A., & Hunt, N. (2015). The Netflix Recommender System: Algorithms, business value, and innovation. *ACM Transactions on Management Information Systems (TMIS)*, 6(4), 1-19.

OCA in competitive markets

- 1.18. As with traditional marketing practices (to which some OCA practices bear considerable resemblance), there is an important distinction between OCA practices that ‘influence’ and those that ‘mislead’. Competition practitioners have historically tended to regard marketing practices that aim to persuade as pro-competitive, particularly when they allow good products to thrive without foreclosing rivals.²⁸ But, there is also a rich history of issues in traditional marketing practices where businesses cross the line between influencing and misleading, such as making fraudulent claims or exerting undue pressure.
- 1.19. However, the nature of online markets suggests that OCA practices used harmfully have the potential to take these challenges to another level, while introducing a range of new issues. For example, some academics have argued that the personalisation at scale and intense systematisation made possible by digital markets create the potential for deceptive practices and market manipulation through OCA that was previously not feasible, either intentionally or unintentionally.²⁹
- 1.20. There are several reasons why harmful OCA practices may persist, even in competitive markets with engaged consumers.
- 1.21. First, consumer awareness of OCA practices tends to be low, and even when consumers are aware, they may still be influenced.³⁰ Therefore, businesses that prioritise a transparent choice architecture approach and are upfront about future costs may be disadvantaged if a sufficient proportion of consumers fails to notice their rivals’ opaque future costs.³¹
- 1.22. Second, digital markets often exhibit network externalities – the more users a platform has (be it a social media website, a peer-to-peer marketplace or a search engine), the more valuable that platform is to other users. Where OCA practices are used to unfairly acquire or retain consumers in markets with network externalities, they can make it harder for rivals or entrants to compete.

²⁸ Day, G., & Stemler, A. (2020). Are Dark Patterns Anticompetitive? *Alabama Law Review*, 72, 1.

²⁹ Calo, R. (2013). Digital market manipulation. *George Washington Law Review*, 82, 995; Willis, L. E. (2020). Deception by Design. *Harvard Journal of Law & Technology*, 34(1), 115–190.

³⁰ Smith, N. C., Goldstein, D. G., & Johnson, E. J. (2013). Choice without awareness: Ethical and policy implications of defaults. *Journal of Public Policy & Marketing*, 32(2), 159-172.; Di Geronimo, L., Braz, L., Fregnan, E., Palomba, F., & Bacchelli, A. (2020, April). UI dark patterns and where to find them: a study on mobile applications and user perception. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (pp. 1-14).; Loewenstein, G., Bryce, C., Hagmann, D., & Rajpal, S. (2015). Warning: You are about to be nudged. *Behavioral Science & Policy*, 1(1), 35-42.

³¹ Gabaix, X., & Laibson, D. (2006). Shrouded attributes, consumer myopia, and information suppression in competitive markets. *The Quarterly Journal of Economics*, 121(2), 505-540.

- 1.23. Third, the potential profitability of certain harmful OCA practices can lead to competition among businesses on how to use those practices most effectively (a 'race to the bottom'). If enough businesses, or sufficiently powerful businesses, adopt similar OCA, this could ultimately reshape the market in a way that might further harm consumers. As a result, some research suggests that where businesses can deliberately make products complicated and consumers are influenced by behavioural biases, competition can make outcomes for consumers worse.³²
- 1.24. Finally, there can be significant asymmetries in the amount of information held by businesses and consumers. Businesses can gather detailed information about how consumers respond to practices to set new standards for engagement (such as requiring that consumers hand over personal data in exchange for key services). On the other hand, consumers often have limited information or understanding about how and when their personal data is collected and used.
- 1.25. These features of markets are not necessarily unique to OCA, and some may be addressed in consumer law. However, not all OCA practices are, or can be, explicitly covered in legislation, and these features are important context to understand how to practically address the use of OCA.
- 1.26. We also note that it is not always the case that choice architects set out to harm consumers through specific OCA practices. In many cases, they may be responding to widespread practice in the market or be unaware of the impact of the practices they use. However, the impact is often the same, regardless of intention. For this reason, within this paper and the Evidence Review, we do not differentiate between intentional and unintentional applications.

³² Hunt, S., Stewart, N., & Zaliauskas, R. (2015). [Two plus two makes five? Survey evidence that investors overvalue structured deposits](#). FCA Occ. Paper (9); Gabaix, X., Laibson, D., Li, D., Li, H., Resnick, S., & de Vries, C. G. (2016). The impact of competition on prices with numerous firms. *Journal of Economic Theory*, 165, 1-24.

2. How authorities have addressed choice architecture

Key insights

- OCA has played a role in previous consumer and competition cases in the UK and abroad. This role is expected to increase as we learn more about how OCA affects consumers and markets.
- There are an increasing number of examples where legislation specifically addresses problems rooted in OCA.

- 2.1. OCA practices are increasingly a feature of digital consumer and competition investigations, as well as private legal action, around the world. OCA practices are also increasingly explicitly labelled as such by authorities: for example, the CMA's consumer investigations into two anti-virus software companies highlighted the role behavioural science and OCA played in how businesses were operating.³³ In other cases, OCA practices are not explicitly labelled but an understanding of choice architecture might sit at the heart of an argument about market power.³⁴ We set out some examples below, alongside a more comprehensive list in the Annex.
- 2.2. The examples set out in this paper should not be read as statements of the law, nor of the positions the CMA will take in future as OCA practices and the potential for harm develops. They are indications of concerns that have arisen in previous investigations or cases by public authorities and how they were examined and addressed in those cases. In some instances, matters were resolved by businesses making commitments about their future practices but without admissions of liability.

Consideration of OCA practices in public investigations and private actions

- 2.3. Several CMA market studies have explored the effect of OCA practices when assessing potential harm. This includes investigating theories of harm that involve the weakening of competition or the exploitation of market power by some businesses.
 - (a) Defaults in search engines and data privacy formed part of the CMA's analysis and related recommendations for potential remedies within the final report of the Online Platforms and Digital Advertising Market Study;³⁵
 - (b) Ranking and listing of results of comparison sites were discussed in the CMA's report on its Digital Comparison Tools Market Study;³⁶ and
 - (c) Barriers to switching related to OCA were discussed in the CMA's interim report on the Mobile Ecosystems market study, including in relation to operating systems (eg Apple to Android), pre-installed and default browsers and apps, Apple's data privacy prompts for consumers, and app store designs.³⁷

³³ CMA. (2021). [Anti-virus Software](#).

³⁴ For example, see European Commission (EC). (2018). [CASE AT.40099](#) Google Android.

³⁵ CMA. (2020). [Online Platforms and Digital Advertising Market Study](#).

³⁶ CMA. (2016). [Digital Comparison Tools Market Study](#).

³⁷ CMA. (2021). Mobile Ecosystems Market Study. [Interim Report](#).

2.4. For example: The CMA has also examined OCA practices and their impact on consumers in various consumer protection cases across a range of sectors and businesses. These include:

- (a) hotel bookings, where potential concerns involved false scarcity claims, misleading ranking, reference pricing and drip pricing;³⁸
- (b) car rental, where our concerns included drip pricing and the choice information given to consumers;³⁹
- (c) furniture retailers, where we investigated issues including the possible use of misleading reference pricing;⁴⁰
- (d) secondary ticket sellers, where the concerns we looked at included the use of false scarcity claims and the choice information given to consumers;⁴¹
- (e) online gambling, where our concerns included the use of ‘sludge’ and the potential for bonus promotions to be designed in ways that commit people to repeat wagering;⁴² and
- (f) cloud computing, where potential concerns included default settings.⁴³

2.5. OCA practices are increasingly recognised in competition law investigations by public authorities and in the sphere of private legal actions, for example:

- (a) The European Commission’s investigation of alleged self-preferencing by Google Shopping drew on empirical behavioural evidence on the impact of ranking within search results on consumer behaviour. Third party commentary on the case also discussed the potential underlying behavioural mechanism of salience.⁴⁴
- (b) Behavioural evidence about the impact of defaults and the potential role of choice screens for search engine use was a feature of the European Commission’s investigation of Google Android.⁴⁵

³⁸ CMA. (2017). [Online Hotel Booking](#).

³⁹ CMA. (2017). [Car Rental Intermediaries](#).

⁴⁰ CMA. (2014). [Investigations into the use of Misleading Reference Pricing by Certain Furniture and Carpet Businesses](#).

⁴¹ CMA. (2012). [Secondary ticketing websites](#).

⁴² CMA. (2019). [Online gambling](#).

⁴³ CMA. (2015). [Cloud Storage: Consumer Compliance Review](#).

⁴⁴ See European Commission (EC). (2017). [CASE AT.39740 Google Search \(Shopping\) and Case Study 4](#).

⁴⁵ European Commission (EC). (2018). [CASE AT.40099 Google Android](#).

- (c) A number of class-action lawsuits in the United States centre on harmful OCA practices used by businesses, including:
- (i) *Nichols vs. Noom Inc.*, on default auto-renewal and friction to cancel a weight-loss app;⁴⁶
 - (ii) *Sherman vs Facebook Inc.*, an attempt to get Facebook to pay consumers for their data obtained by ‘deceptive’ means through an investigation of antitrust injury;⁴⁷ and
 - (iii) *Rattner vs. Tribe App Inc.*, in which contacts of the app’s customers were spammed by marketing texts without consent.⁴⁸

Changes to the law

- 2.6. Considerable cross-sector work has been undertaken or is in progress that has or may lead to changes in the law to address the use of OCA practices. That work is at different stages in different places.
- 2.7. In the UK, the Penrose report on consumer choice and competition, of February 2021, recommended that the CMA carry out a market investigation into sludge.⁴⁹ In 2021, the Department for Business, Energy and Industrial Strategy (BEIS) published a consultation paper, suggesting that further research into the scale and prevalence of harm from OCA practices could help to design measures to tackle them. These measures could include, for example, adding to the list in Schedule 1 to the Consumer Protection from Unfair Trading Regulations 2008 (CPRs) of practices that should always be considered unfair.⁵⁰

⁴⁶ United States District Court. (2021). [WL 621079 3](#) Mojo NICHOLS, Susan Brewster, Duane Dea, Maryanne Deracleo, Karen Kelly, Rebecca Richards, Jennifer Sellers, and Stacy Spencer, Individually and on Behalf of All Others Similarly Situated, Plaintiffs, v. NOOM, INC., Artem Petakov, and John Does 1 to 5, Defendants.

⁴⁷ United States District Court. (2020). [WL 7250781](#) Vickie SHERMAN, Lezah Neville-Marrs, Katherine Loopers, and Jarred Johnson, individually and on behalf of all others similarly situated, Plaintiffs, v. FACEBOOK, INC., a Delaware corporation headquartered in California, Defendant.

⁴⁸ United States District Court. (2017). [WL 6764354](#) Alexander M. RATTNER, individually and on behalf of all others similarly situated, Plaintiff, v. TRIBE APP, INC., a foreign corporation, Defendant.

⁴⁹ Penrose, J. (2021). [Power to the People](#)

⁵⁰ Department for Business, Energy, and Industrial Strategy (BEIS). (2021). [Reforming Competition and Consumer Policy](#) (paragraph 2.45).

- 2.8. In its response to BEIS’s consultation, as well as to the government’s Draft Online Safety Bill, the CMA has proposed a clarification of what is required of online platforms under the CPRs. In particular, the CMA proposed to make explicit the extent to which platforms must protect consumers from unfair conduct by the platform or business users who access consumers through the platform.⁵¹
- 2.9. The government has consulted on proposals to establish, on a statutory basis, a Digital Markets Unit within the CMA, with duties to promote competition by addressing the sources of market power in digital markets and the economic harms that result from the exercise of that market power.⁵² The government plans for the Digital Markets Unit to have powers to designate businesses with substantial and entrenched market power, in at least one digital activity, as having Strategic Market Status (SMS). The Digital Markets Unit will have powers to apply an enforceable code of conduct to businesses with SMS, setting out how they are expected to behave, and promoting fair trading, open choices and trust and transparency.
- 2.10. The Digital Markets Unit will also have powers to make pro-competitive interventions to open up digital markets to greater competition. Drawing from the CMA’s existing market study reports,⁵³ we can already identify that businesses with potential SMS use OCA in ways that may exploit market power and cause harm, for example, in relation to personalised advertising. Understanding the current and future use of OCA will be critical to the Digital Markets Unit’s work, including where relevant to setting code requirements and considering pro-competitive interventions.
- 2.11. In some US states, laws have already been created or amended to address specific harmful OCA practices. This includes new laws in Vermont⁵⁴ and California⁵⁵ that aim to prevent consumers from becoming stuck in subscription traps by ensuring an upfront choice for consumers about whether to sign up for a subscription or a fixed term instead. These laws also mandate transparency obligations on businesses. These changes are too recent to assess their efficacy.
- 2.12. The European Commission has adopted proposals for the Digital Markets Act, which will impose a suite of regulatory obligations on digital ‘gatekeepers’ who provide at least one

⁵¹ CMA. (2021). [Reforming Competition and Consumer Policy](#) (paragraphs including 2.96 and 2.130); CMA. (2021). [OSB0160 Draft Online Safety Bill Call for Evidence, CMA Response](#).

⁵² Department for Digital, Culture, Media & Sport (DCMS) and Department for Business, Energy and Industrial Strategy (BEIS). (2021). [A new pro-competition regime for digital markets](#).

⁵³ For example, see CMA. (2020). [Online Platforms and Digital Advertising Market Study](#).

⁵⁴ Davis Wright Tremaine LLP. (2018). [Vermont Enacts Nation’s Most Stringent Automatic Renewal Law](#).

⁵⁵ Fossbytes. (2021). [What Are Dark Patterns? Why The California Ban Makes Sense](#).

‘core’ platform service (such as online intermediation services, online search engines, video sharing platform services, and social networking services).⁵⁶ Those obligations include refraining from treating their own products and services more favourably in search rankings, and not combining personal data sourced from core platform services with personal data from any other services offered by the gatekeeper or third parties (some of which may have implications for OCA practices).⁵⁷ Other authorities, such as the Dutch Autoriteit Consument & Markt⁵⁸ and Swedish Konsumentverket,⁵⁹ have consulted on guidelines for businesses or published position papers on this topic.

⁵⁶ A provider of a core platform service will be designated a ‘gatekeeper’ if three quantitative thresholds are met – it has a significant impact on the internal market; it operates a core platform service that serves as an important gateway for business users to reach end users; and it enjoys an entrenched and durable market position.

⁵⁷ European Commission. (2020). [Proposal for a Regulation of the European Parliament and of the Council on contestable and fair markets in the digital sector \(Digital Markets Act\)](#).

⁵⁸ The Netherlands Authority for Consumers & Markets (ACM). (2019). [Protection of the Online Consumer Boundaries of Online Persuasion](#).

⁵⁹ Konsumentverket. (2021). [Barriers to a Well-functioning Digital Market](#).

3. Taxonomy of OCA practices

Key insights

- OCA practices can be grouped in a range of different ways and for the purposes of this paper they are divided into three broad types: choice structure, choice information and choice pressure.
 - Choice structure is how choices are presented to consumers.
 - Choice information is the information provided to consumers when presenting choices.
 - Choice pressure is how consumers' choices may be indirectly influenced.
- There is a wealth of research into the mechanics of these practices but less research on how they play out in markets.

Our approach to developing a taxonomy of OCA practices

- 3.1. Below and in the Evidence Review paper, we outline a taxonomy of 21 OCA practices, including those that could potentially cause harm, that are commonly used by businesses online. This taxonomy may help consumer and competition authorities to recognise, categorise and explain the impact of harmful practices. It is informed by several taxonomies from the academic literature, particularly Münscher, Vetter, & Scheuerle's taxonomy.⁶⁰ The taxonomy we outline divides practices into those that affect **choice structure, choice information** and **choice pressure**.
- 3.2. We note that choice structure, information and pressure are often interlinked in any given context, and as such, some practices may involve elements of multiple categories. We also note that choice architects in companies may use different terminology to describe OCA, reflecting different priorities for those who design, develop and implement OCA in the market.
- 3.3. The taxonomy has some crossover with other concepts that have been discussed by practitioners, regulators and academics. The three most prominent concepts are **dark patterns**⁶¹, a set of (deliberately) manipulative practices identified by user experience (UX) designers; **sludge**⁶², which makes it hard for consumers to act in their interests (such as adding friction to cancellation processes); and **dark nudges**⁶³, which make it easy for consumers to take action that is not in their interests (such as one-click purchases). Figure 1 shows the overlap of these concepts.

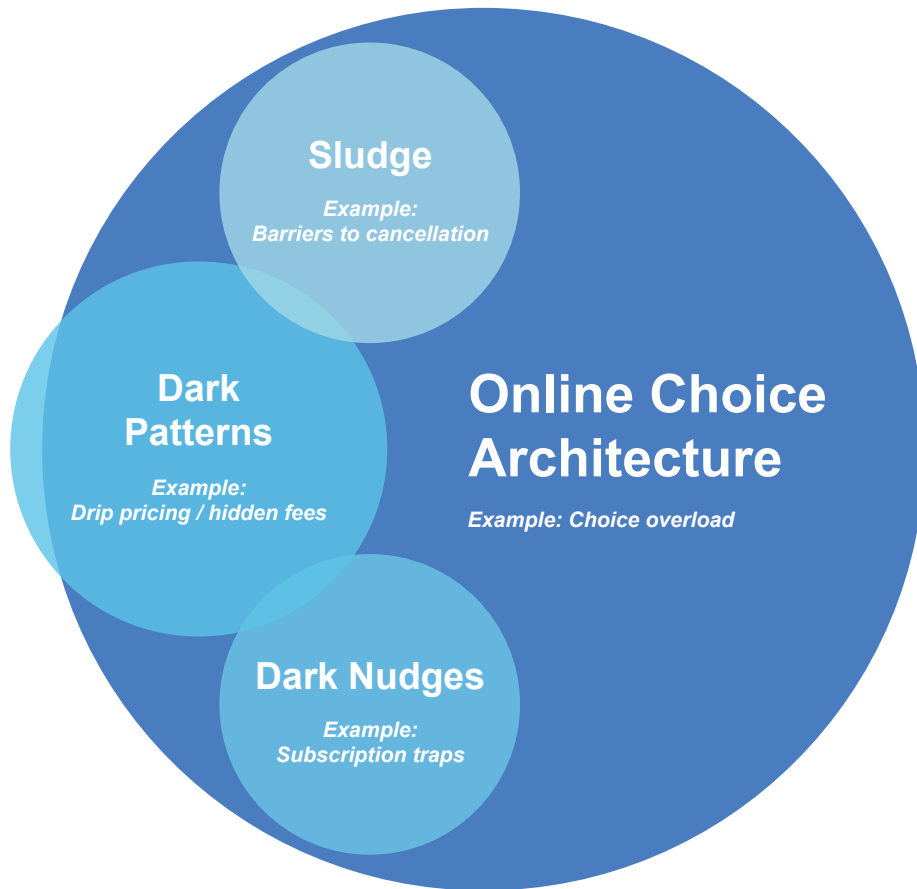
⁶⁰ Münscher, R., Vetter, M., & Scheuerle, T. (2016). A review and taxonomy of choice architecture techniques. *Journal of Behavioral Decision Making*, 29(5): 511-524.

⁶¹ The term 'dark patterns' was coined by Harry Brignull: for examples, see [What are Dark Patterns?](#).

⁶² Sunstein, C. R. (2020). Sludge audits. *Behavioural Public Policy*, 1–20.

⁶³ Campione, C. (2020). The dark nudge era: Cambridge Analytica, digital manipulation in politics, and the fragmentation of society.

Figure 1: Overlap between OCA and other concepts



3.4. In this work, we have used a definition of OCA that is broader than each of these concepts. We have included practices that can be beneficial to consumers (although we focus our discussion on harmful applications), as well as non-deliberate uses of OCA practices that may cause harm. Some practices, such as those codified within dark patterns, are likely to be harmful or deceptive all the time (for example, drip pricing), whereas others can be harmful in certain circumstances (for example, ranking). A few dark patterns fall outside the OCA taxonomy because they do not involve choice architecture (for example, friend spam where automatic messages are sent to members of a user’s network without their permission).

Summarising the academic evidence underlying OCA practices

3.5. In fast-evolving digital markets, many academic papers and other reports use a range of sources to support arguments about harmful OCA, including news reports and expert interviews. For this paper and the Evidence Review, we prioritise research from peer-reviewed academic journals or reports by consumer and competition authorities. In future work, we may seek more sources to update our analysis, including industry reports, research by consumer groups, news articles and other commentary, particularly in areas where there is currently limited research.

- 3.6. Below we provide a brief overview of the three categories of OCA practices we have included in the taxonomy (choice structure, choice information and choice pressure) and the academic evidence underlying them. We also show the full list of the practices considered in each category, and ratings of the strength of existing academic evidence underlying them. In the Evidence Review, we summarise the available academic evidence in more detail for each of the 21 OCA practices.
- 3.7. Our Evidence Review found more academic evidence for the impact of some practices than others. For example, there has been substantial empirical research into the effect that drip pricing can have on consumers' decisions, including by the CMA's predecessor, the Office for Fair Trading (OFT).⁶⁴ Similarly, we found evidence that defaults and ranking have strong empirical effects on consumer behaviour, particularly when used by businesses with market power. Conversely, relatively little is set out in academic evidence about how businesses may exploit consumers' commitments or use feedback harmfully.
- 3.8. These evidence strength ratings are an assessment of the extent and quality of available academic research relating to each practice identified as part of the Evidence Review. While indicative, the ratings should not be seen as conclusive (see the Table 2 note, below, for an explanation of the evidence standards used). Any particular case would be considered on its merits and by reference to the evidence relating to it.
- 3.9. More broadly, the taxonomy and other discussions around OCA practices in this paper and the accompanying Evidence Review are not intended to represent a rigid framework for the assessment of particular practices and harms, a statement of the CMA's priorities and investigative approaches, or guidance on existing consumer and competition law. Instead, they aim to give an overview of academic literature and action by consumer and competition authorities in this area, and contribute to the emerging international discussion among lawyers, economists and business professionals on how OCA plays a role in consumer markets.

Choice structure

- 3.10. Choice architects can choose how choices are structured, including which options consumers can or are likely to see, how cognitively challenging or time consuming it is to make a choice, how different options are ranked or presented, and what happens once a consumer has chosen (see Table 2 for a summary). Choice structure can be used in ways that are harmful to consumers and competition, such as setting default choices that are not in consumers' best interests, changing the order or appearance of search results to self-preference the business, or making it difficult for consumers to make decisions by using confusing virtual currencies or by overloading choices.

⁶⁴ Office for Fair Trading. (2010). [Online targeting of advertising and prices](#). A market study.

- 3.11. There is strong evidence that choice structure practices change consumer decisions. There is reliable evidence from the academic literature and competition cases that defaults and ranking exert a strong effect on consumer behaviour, as well as affecting competition.⁶⁵ Forcing outcomes, including adding items to shoppers' baskets without their consent or 'bait and switch' deals, can potentially be particularly harmful, since they can be costly to consumers and reduce their autonomy. For this reason, some iterations of this practice are already banned in the UK under Schedule 1 of the CPRs, as well as in other jurisdictions.
- 3.12. Other potential remedies for harms arising from choice structure include ensuring consumers are given active, meaningful choices; ensuring ranking and other visual features are not misleading; and reducing (or increasing) friction where it may benefit consumers.

Table 2: Choice structure OCA practices

OCA practice	Description	Evidence ¹
Choice structure		
Defaults	The choice architect applies a predefined setting that the consumer must take active steps to change.	★★★★
Ranking	The choice architect displays the order of options in a particular way.	★★★
Partitioned pricing	The choice architect presents individual price components without sharing the total or estimated total costs with the consumer.	★★★
Bundling	The choice architect groups two or more products and/or services in a single 'package' at a special price.	★★★
Choice overload and decoys²	The choice architect provides too many options to compare.	★★★
	The choice architect adds an option to the choice set to make the other option(s) look more attractive to the consumer.	

⁶⁵ For example, see Jachimowicz, J. M., Duncan, S., Weber, E. U., & Johnson, E. J. (2019). When and why defaults influence decisions: A meta-analysis of default effects. *Behavioural Public Policy*, 3(2), 159-186; Agarwal, A., Hosanagar, K., & Smith, M. D. (2011). Location, location, location: An analysis of profitability of position in online advertising markets. *Journal of Marketing Research*, 48(6), 1057-1073.

Sensory manipulation ²	The choice architect employs visual, aural, and tactile features to steer consumers towards certain options.	★★★
Sludge ²	The choice architect creates excessive or unjustified friction that makes it difficult for consumers to get what they want or to do as they wish.	★★★
Dark nudge ²	The choice architect makes it easy or removes friction for consumers to make inadvertent or ill-considered decisions.	★★★
Virtual currencies in gaming	The choice architect creates elements of a virtual currency to be used as a substitute for the 'real-world' currency.	★★
Forced outcomes ²	The choice architect changes the outcome without giving consumers a choice.	★★

¹ The evidence measure is taken from Ruggeri, Linden, Wang, Papa, Afif, Riesch & Green's (2020)⁶⁶ table of evidence standards, also known as THEARI (Theoretical Empirical Applicable Replicable and Impact) rating system. These standards are intended to support communicating the strength of empirical evidence to policymakers. For example, 1-star evidence rating (Theoretical) means that a concept has been discussed but lacks empirical validation; 2-star evidence rating (Empirical) means that a concept has been validated but lacks more robust data; 3-star evidence rating (Applicable) means that results are taken from controlled, reasonably powered trials; 4-star evidence rating (Replicable) means that the results have been successfully replicated in terms of setting, procedure and measurement; and 5-star evidence rating (Impact) means that result insights have been implemented and applied at scale.

² These practices are usually or always considered harmful, according to the existing academic literature reviewed in this paper. It is important to highlight that not all practices listed above are necessarily harmful by nature; some of them can have a positive or negative effect, depending on the conditions under and the context in which they are used. Additionally, those not suggested as usually or always harmful may be problematic in any particular case.

⁶⁶ Ruggeri, K., Linden, S., Wang, C., Papa, F., Afif, Z., Riesch, J., & Green, J. (2020). Standards for evidence in policy decision-making. *Nature Research Social and Behavioural Sciences*.

Choice information

- 3.13. Choice architects can also choose what information they provide to consumers when presenting choices (see Table 3 for a summary of practices). This information often includes basic details about a product or service, such as the price, features, dimensions or ingredients. Such information can be framed in ways that highlight certain aspects over others, or choice architects can make it harder to understand or access information or hide it until consumers have gone further through the process. For example, businesses can make it difficult for consumers to engage with terms and conditions by using complex legal language or adding unnecessary information.
- 3.14. Manipulating choice information can reduce consumers' ability to understand and evaluate key pieces of information, such as price or terms and conditions, which can distort consumer decision making out of line with their preferences and weaken competitive pressure.
- 3.15. There is strong evidence that manipulating choice information can affect consumer choices, particularly with respect to reference and drip pricing.⁶⁷ There is also evidence that drip pricing can cause market-wide effects, meaning that businesses compete on headline prices rather than total cost.⁶⁸ While there is significant evidence that framing (highlighting certain aspects over others) can affect decisions, framing can bring benefits as well as potential harm.⁶⁹ Conversely, information overload is almost always harmful because it disempowers and confuses consumers.⁷⁰
- 3.16. Potential remedies for choice information practices usually aim to ensure accurate, unbiased information is provided at key points of consumers' decision-making processes. However, these information-provision remedies may need to be supplemented by other types of remedies where there are behavioural biases or other limitations in consumers' ability to engage with information.

⁶⁷ See eg Office for Fair Trading. (2010). [Online targeting of advertising and prices](#). A market study.

⁶⁸ Gabaix, X., & Laibson, D. (2006). Shrouded attributes, consumer myopia, and information suppression in competitive markets. *The Quarterly Journal of Economics*, 121(2), 505-540.

⁶⁹ Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational behavior and human decision processes*, 76(2), 149-188.

⁷⁰ Fletcher, A. (2016). The Role of Demand-Side Remedies in Driving Effective Competition: A Review for Which? Centre for Competition Policy. CMA.

Table 3: Choice information OCA practices

OCA practice	Description	Evidence ¹
Choice information		
Drip pricing ²	The choice architect initially shows only part of the price and reveals the full price of the product or service at later stages of the consumer journey.	★★★★
Reference pricing	The choice architect displays a previous (or future) price with the current price, which makes the current price look more attractive.	★★★★
Framing	The choice architect decides how any decision-related information is described or presented to a consumer.	★★★
Complex language ²	The choice architect makes information difficult to understand by using obscure word choices and/or sentence structure.	★★★
Information overload ²	The choice architect gives a consumer too much information about a product or service such that information about the most relevant attributes is difficult to find and access.	★★★
The notes from Table 2 above also apply to this table.		

Choice pressure

- 3.17. Choice architects can exert pressure on consumers to make certain choices using indirectly related factors, such as consumers’ habits, time pressure or trusted messengers (see Table 4 for a summary of practices). There is good evidence that choice pressure can affect decisions. However, there is generally less existing academic research on them in the context of consumer harm than on choice structure or information practices.
- 3.18. Where they are fake or misleading, the scarcity or popularity claims and messengers (such as fake reviews) can be particularly harmful, and a large body of academic research shows that both practices affect consumers’ decision making, and may lead to impulsive or unsuitable purchases, with a consequent weakening of competition. Concerns about both practices have been the subject of consumer enforcement action

(often resolved by the businesses concerned giving the CMA undertakings about their practices without admission of liability) and there are calls to change the law in the UK to prevent fake reviews.⁷¹

- 3.19. How businesses might exploit commitment and habit (encouraging consumers to commit to future consumption or create a habit of consuming) or feedback (providing consumers with information about how they have used a product) is relatively under-researched in the academic literature on harmful OCA practices. In fact, while there is evidence that commitment and feedback do have the potential to change behaviour, most of the studies on these practices explore the potential positive benefits, rather than any potential harm.
- 3.20. Options for remedies vary considerably between practices, but generally aim to ensure consumers are not unduly pressured in decision making, and that the information and tools provided, if these practices are used, are relevant, genuine and valuable for consumers.
- 3.21. While we have described this section in terms of choice pressure, we recognise each OCA practice in this section can also have benefits (for example, providing relevant feedback about product usage or allowing users to leave genuine product reviews).

Table 4: Choice pressure OCA practices

OCA practice	Description	Evidence ¹
Choice pressure		
Scarcity and popularity claims	The choice architect informs consumers about limited stock, limited time to buy, or high popularity of an item.	★★★
Prompts and reminders	The choice architect contacts the consumer to induce an action and/or follow up on a previous interaction.	★★
Messengers	The choice architect provides a platform on which a specific person or group can communicate with consumers.	★★
Commitment	The choice architect facilitates commitment by consumers to a particular behaviour in the future.	★★

⁷¹ CMA. (2017). [Online Hotel Booking](#); Department for Business, Energy & Industrial Strategy (BEIS). (2021). [Reforming Competition and Consumer Policy](#).

Feedback	The choice architect provides consumers with feedback.	★★
Personalisation	The choice architect uses data to personalise offers.	★★
The notes from Table 2 above also apply to this table.		

3.22. In the Evidence Review, we describe each of these 21 practices in turn and summarise the academic research on their effect on consumer behaviour, the behavioural mechanisms through which they operate, and potential remedies. This paper does not cover all 21 practices, but we pick out four key ones below, each illustrated within a case study. For each, we explore the key findings from the Evidence Review, and the role of the practice within an investigation, including the remedies that were applied.

3.23. It is important to note that practices are rarely used in isolation. In most contexts, authorities including the CMA will consider a number of practices as well as how they might interact. This is noted, where relevant, in the case studies below.

4. Harm to consumers and competition from OCA practices

Key insights

- OCA can distort consumer behaviour, and cause them to buy more than they want, at higher prices and after searching less.
- OCA can weaken or distort competition by incentivising businesses to compete on attributes and invest into innovation that does not benefit consumers.
- OCA can help businesses maintain, leverage and exploit market power by making it easier to retain customers or redirect them within digital ecosystems.

4.1. In this section, we set out three potential harms to consumers and competition resulting from the use of OCA practices, that they can: i) distort consumer behaviour; ii) weaken or distort competition; or iii) maintain, leverage or exploit market power. We illustrate the potential for each of these harms with a case study from a previous consumer or competition investigation or case where our concerns centred on one or more OCA practices.

Harm 1: OCA can distort consumer behaviour

- 4.2. Harmful OCA practices implemented by any business, regardless of market power, have the potential to distort consumer behaviour and decision making. Influenced by OCA, people may purchase unneeded or unsuitable products, spend more than they want to, receive poor value items or service, choose an inferior seller or platform, or search less for alternatives.
- 4.3. As well as their influence on purchasing decisions, in digital markets OCA practices may also be designed to induce data disclosures, increase product engagement, and encourage sharing amongst social networks. This can lead to other non-financial types of harm, such as unwanted marketing advances, privacy invasion, reduced enjoyment or excessive use.
- 4.4. People may be more susceptible to OCA practices and vulnerable to harm due to personal characteristics (such as age, health or wealth) or being in certain situations (such as if they have lost their job or experienced a bereavement).⁷²
- 4.5. In several CMA cases, including those into online hotel bookings⁷³ and car hire⁷⁴, we have examined concerns about a variety of OCA practices that have the potential to distort consumer decision making, including complaints of false scarcity claims, misleading reference pricing (a false or misleading “was” price to make the “now” price look better value), and ordering search results by commission paid without disclosing this fact.⁷⁵

⁷² CMA. (2019). [Consumer vulnerability: challenges and potential solutions](#).

⁷³ CMA. (2017). [Online Hotel Booking](#).

⁷⁴ CMA. (2017). [Car Rental Intermediaries](#).

⁷⁵ In both cases, the firms gave the CMA undertakings to address our concerns. There were no findings that they had broken the law.

Example OCA practice 1: Scarcity claims

What are scarcity claims?

- 4.6. There is considerable evidence that consumers react to scarcity and divert their attention to information where they might miss opportunities.⁷⁶ Businesses may make use of this psychological mechanism by highlighting when products are about to run out (eg “only 2 left!”) or holding a time-limited sale or offer. Sometimes, they may also make claims about a product’s popularity among customers (eg “25 customers are looking at this product”).
- 4.7. Where such claims are true, they can help consumers to avoid missing out on a genuinely scarce product and potentially overcome procrastination. However, false or misleading scarcity claims, such as countdown clocks that reset or stock claims that are exaggerated or unsubstantiated, can put undue pressure on consumers to act.
- 4.8. Numerous experiments and studies find an effect of scarcity claims on click-through rates, purchase, perceived value, and favourability towards businesses who offer them.⁷⁷ There is mixed evidence for whether supply-framed claims (eg “only 2 left!”) or demand-framed claims (eg “25 customers are looking at this product”) are more effective, though both show strong effects when applied by businesses to consumers.⁷⁸
- 4.9. Most theories examining the effectiveness of scarcity claims centre on the time pressure that is created. This time pressure induces consumers to rely on heuristics (mental shortcuts), like limiting focus to a restricted set of attributes⁷⁹ or deciding based on habit.⁸⁰ Competition and social norms may also increase the desirability of the object and may make consumers feel that they are ‘smart shoppers’ or that they have ‘won’ a bargain.⁸¹ Finally, consumers might take up an offer to minimise the uncertainty of passing it up.⁸²

⁷⁶ Cialdini, R. B. (2008). *Influence* (5th ed.). Pearson.

⁷⁷ Aggarwal, P., Jun, S. Y., & Huh, J. H. (2011). Scarcity messages. *Journal of Advertising*, 40(3), 19-30.; Wang, E. Y., Fong, L. H. N., Lo, N. S. T., & Shi, F. (2021). My deal expires soon: Can time restriction and exclusivity induce clickthrough in hospitality promotional offers?. *International Journal of Hospitality Management*, 92, 102711.; Aggarwal, P., & Vaidyanathan, R. (2003). Use it or lose it: purchase acceleration effects of time-limited promotions. *Journal of Consumer Behaviour: An International Research Review*, 2(4), 393-403.

⁷⁸ Teubner, T., & Graul, A. (2020). Only one room left! How scarcity cues affect booking intentions on hospitality platforms. *Electronic Commerce Research and Applications*, 39, 100910; Huang, H., Liu, S. Q., Kandampully, J., & Bujisic, M. (2020). Consumer responses to scarcity appeals in online booking. *Annals of Tourism Research*, 80, 102800.

⁷⁹ Lye, A., Shao, W., Rundle-Thiele, S., & Fausnaugh, C. (2005). Decision waves: consumer decisions in today's complex world. *European Journal of Marketing*.

⁸⁰ Wood, W., & Neal, D. T. (2009). The habitual consumer. *Journal of Consumer Psychology*, 19(4), 579-592.

⁸¹ Cialdini, R. B., & Trost, M. R. (1998). *Social influence: Social norms, conformity and compliance.*; Babakus, E., Tat, P., & Cunningham, W. (1988). Coupon redemption: A motivational perspective. *Journal of Consumer Marketing.*; Bawa, K., & Shoemaker, R. W. (1987). The coupon-prone consumer: some findings based on purchase behavior across product classes. *Journal of marketing*, 51(4), 99-110.

⁸² Sugden, R., Wang, M., & Zizzo, D. (2015). *Take it or leave it: Experimental evidence on the effect of time-limited offers on consumer behaviour* (No. 15-19). School of Economics, University of East Anglia, Norwich, UK.

How can scarcity claims cause harm, and how could harm be remedied?

- 4.10. False or misleading scarcity claims can change the behaviour of consumers and cause them harm. For example, Sugden, Wang and Zizzo (2019) found in an experiment that customers who took timed deals rather than waiting to see wider options ended up worse off than those who waited.⁸³ They also found that participants' behaviour did not improve with experience, suggesting that consumers may find it hard to protect themselves by avoiding or ignoring such claims in future.
- 4.11. False scarcity claims may not just harm consumers financially. They can lead consumers to having a negative attitude towards shopping, to consider fewer brands, and to have lower satisfaction with their choices.⁸⁴ Over the longer term, this practice can damage trust in markets because consumers will learn to ignore these claims, meaning that when a product is truly scarce, the seller will not be able to credibly communicate this information. All these factors can also weaken competition, for example, by reducing overall search and shopping around.⁸⁵
- 4.12. Using false time scarcity to elicit immediate decision making is already banned under Schedule 1 of the CPRs.⁸⁶ Other types of false or misleading scarcity claims – for example, some coders have found examples of claims where stock numbers are randomly generated⁸⁷ – may distort consumer decision making in similar ways and could warrant further remedial action.

Case study 1: Online hotel bookings

Scarcity claims, alongside other OCA practices, played a role in an investigation by the CMA into the online hotel booking sector launched in 2017.⁸⁸ The online hotel bookings sector had engaged consumers (because booking a holiday is generally a positive experience), which is usually good for competition. However, the CMA was concerned that the use of false or misleading scarcity claims, and other OCA practices could undermine this engagement and, indirectly, reduce competition.⁸⁹ An example image of these practices is shown below in Figure 2.

⁸³ Sugden, R., Wang, M., & Zizzo, D. (2015). *Take it or leave it: Experimental evidence on the effect of time-limited offers on consumer behaviour* (No. 15-19). School of Economics, University of East Anglia, Norwich, UK.

⁸⁴ Rizkalla, A. N. (1989). Sense of time urgency and consumer well-being: testing alternative causal models. *ACR North American Advances*.

⁸⁵ Aggarwal, P., & Vaidyanathan, R. (2003). Use it or lose it: purchase acceleration effects of time-limited promotions. *Journal of Consumer Behaviour: An International Research Review*, 2(4), 393-403.

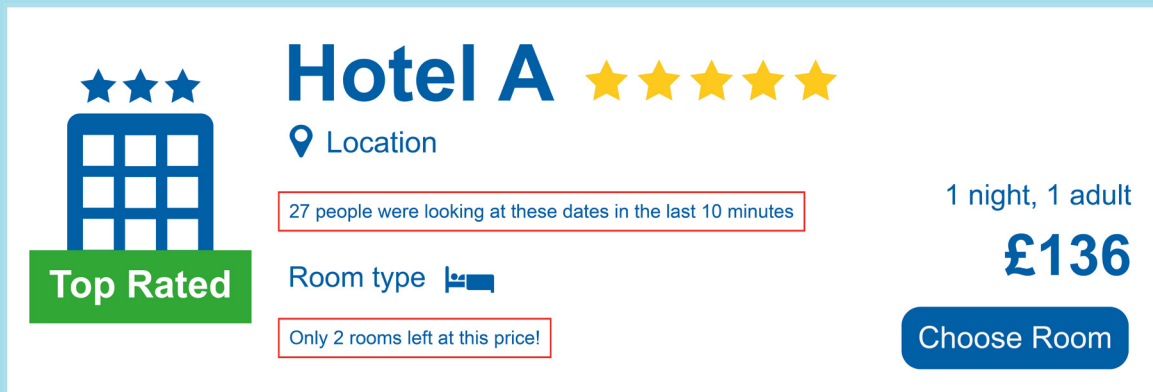
⁸⁶ The Consumer Protection from Unfair Trading Regulations 2008, [Schedule 1](#).

⁸⁷ For examples, see: <https://www.darkpatterns.org/>

⁸⁸ CMA. (2017). [Online Hotel Booking](#).

⁸⁹ Fung, S. S., Haydock, J., Moore, A., Rutt, J., Ryan, R., Walker, M., & Windle, I. (2019). [Recent Developments at the CMA: 2018–2019](#). *Review of Industrial Organization*, 55(4), 579-605.

Figure 2: An illustration of an online hotel booking page with scarcity claims



The CMA was concerned that some platforms used untrue or misleading scarcity claims to create a false impression of limited hotel availability and rush consumers into making a booking decision. For example, the CMA investigated whether the demand-framed scarcity claims about other people viewing the hotel sometimes included those looking for different dates or different room types, and whether the claims sometimes used vague language like “right now”.⁹⁰ The CMA was also concerned that supply-framed scarcity claims about the number of rooms left were sometimes based on incomplete information, and that there could be rooms available for the same hotel on other platforms. Another concern was whether ‘sold out’ hotels were also shown within search results to increase the impression of limited availability, potentially inducing feelings of loss aversion in consumers.

In addition to scarcity claims, the CMA also investigated the use of several other OCA practices in potentially misleading ways, including reference pricing (by showing a more expensive weekend room rate as a comparator for a weekday rate) and ranking of search results (by allowing businesses to pay commission for higher visibility).

The CMA considered all the evidence gathered in its investigation. Our view was that the use of misleading scarcity claims and other OCA practices could cause harm not only to consumers, but also to competition, by limiting comparability between businesses and increasing search costs.⁹¹ Following the CMA’s action, while they did not admit liability, the platforms agreed to make their popularity and availability messaging more precise and truthful, to avoid creating the impression that a hotel was more popular or had worse availability than was actually the case. They also agreed not to show ‘sold out’ rooms in an artificially inflated position in the ranking.

⁹⁰ Fung, S. S., Haydock, J., Moore, A., Rutt, J., Ryan, R., Walker, M., & Windle, I. (2019). [Recent Developments at the CMA: 2018–2019](#). *Review of Industrial Organization*, 55(4), 579-605.

⁹¹ Fung, S. S., Haydock, J., Moore, A., Rutt, J., Ryan, R., Walker, M., & Windle, I. (2019). [Recent Developments at the CMA: 2018–2019](#). *Review of Industrial Organization*, 55(4), 579-605.

Harm 2: OCA can weaken or distort competition

- 4.13. Distorting consumer behaviour in turn can lead to our second harm: OCA can weaken or distort the competitive process by shifting the incentive to compete on product attributes that benefit the consumer, such as quality and price, towards less relevant or beneficial attributes, such as salience.⁹²
- 4.14. Businesses may find it easier and cheaper to focus on harmful OCA practices (which often require small tweaks to existing online environments) as a means of raising profits than improving their product offering or investing in research and development.⁹³ This weakens competition on the merits of the products and ultimately may result in poorer quality, more expensive products, less efficient markets, and reduced trust in markets. In this section, we discuss the competition implications of the inappropriate use of OCA practices, taking drip pricing as an example, and present a case study on airlines.

Example OCA practice 2: Drip pricing

What is drip pricing?

- 4.15. Since consumers often focus on headline prices, showing the total price in increments – ‘dripped’ through the purchase process – can affect consumer behaviour. Additional fees, compulsory or optional, may be obfuscated and therefore not noticed.⁹⁴ Even when consumers who have experienced drip pricing are aware of the total price and are given the option to change their selection, many do not, despite being dissatisfied.⁹⁵
- 4.16. The wealth of academic evidence on this practice is also mirrored by an increasing focus on the role of drip pricing in consumer and competition cases and studies. For example, concerns about drip pricing featured in CMA and OFT cases and studies into pricing practices⁹⁶, hotel bookings⁹⁷, car rental⁹⁸ and PCR testing⁹⁹ as well as a range of

⁹² Lindsey-Mullikin, J., & Petty, R. D. (2011). Marketing tactics discouraging price search: deception and competition. *Journal of Business Research*, 64(1), 67-73; Bordalo, P., Gennaioli, N., & Shleifer, A. (2021). Salience (No. w29274). National Bureau of Economic Research.

⁹³ Heidhues, P., Köszegi, B., & Murooka, T. (2016). Exploitative innovation. *American Economic Journal: Microeconomics*, 8(1), 1-23.

⁹⁴ The Netherlands Authority for Consumers and Markets (ACM). (2021). [Effective Online Information](#): Studies into the Improvement of Online Disclosures for Consumers.

⁹⁵ Santana, S., Dallas, S. K., & Morwitz, V. G. (2020). Consumer reactions to drip pricing. *Marketing Science*, 39(1), 188-210.

⁹⁶ The Office of Fair Trading (OFT). (2009). [Advertising of Prices](#).

⁹⁷ CMA. (2017). [Online Hotel Booking](#).

⁹⁸ CMA. (2017). [Car Rental Intermediaries](#).

⁹⁹ CMA. (2021). [Open letter to PCR Providers: Compliance with Consumer Protection Law](#).

international cases and rules, including the FTC's hotel resorts fees investigation¹⁰⁰ and the US Department of Transportation's airline advertising rules.¹⁰¹

- 4.17. The effectiveness of drip pricing lies in several psychological mechanisms. Once a consumer is psychologically committed to a purchase or course of action, abandoning it may cause feelings of uncertainty, dissatisfaction and cognitive dissonance. Businesses may also use drip pricing to draw consumers in on a low headline rate, then rely on the extra effort that would be required for them to go back and find an alternative, such that consumers accept the price increasing later in the purchase process.
- 4.18. These mechanisms draw on several behavioural biases, including anchoring (people tend to anchor on initial price information and fail to fully adjust their view of the price as additional fees are revealed), sunk cost fallacy (people tend to continue with a process if they have invested time or effort, such as exploring a product or providing their personal details), and the endowment effect (people tend to place a higher value on objects they own, or have imagined owning).

How can drip pricing cause harm, and how could harm be remedied?

- 4.19. Drip pricing has been shown in several experimental, theoretical and real-world contexts to lead consumers to buy more, overspend, underestimate the total price, make mistakes when searching, and be less happy with their purchases.¹⁰²
- 4.20. In addition to the harm to individual consumers, who may spend more than they intend, choose unsuitable products and waste their time – not to mention reducing trust in brands, markets or e-commerce – drip pricing can also weaken competition by making it difficult to compare prices across sellers. Since consumers are more likely to choose products based on characteristics they find most salient, businesses will tend to compete harder on those characteristics and less hard on less salient characteristics.¹⁰³
- 4.21. As a result, in some markets we may see plenty of competition on upfront price, which is highly salient, but little to no competition on mandatory add-ons, which are less salient at the point of purchase. For example, the printer industry competes heavily on price for

¹⁰⁰ Federal Trade Commission (FTC). (2017). [Economic Analysis of Hotel Resort Fees](#).

¹⁰¹ US Department of Transportation. (2011). [Enhancing Airline Passenger Protections](#).

¹⁰² Blake, T., Moshary, S., Sweeney, K., & Tadelis, S. (2021). Price salience and product choice. *Marketing Science*; Dertwinkel-Kalt, M., Köster, M., & Sutter, M. (2019). To buy or not to buy? Shrouding and partitioning of prices in an online shopping field experiment.; Huck, S., & Wallace, B. (2015). The impact of price frames on consumer decision making: Experimental evidence. *Experimental evidence*, 1-47.; Robbert, T., & Roth, S. (2014). The flip side of drip pricing. *Journal of Product & Brand Management*.

¹⁰³ Fletcher, A. (2019). The EU Google Decisions: Extreme Enforcement or the Tip of the Behavioral Iceberg? *Competition Policy International*.

the initial machine, but less so on cartridges whose price is much less salient at the initial point of purchase.¹⁰⁴ Where there are enough consumers who do not detect and avoid drip pricing, competitive pressures may also not be sufficient to incentivise businesses to educate or provide more upfront price information to consumers.¹⁰⁵

- 4.22. Many drip pricing interventions involve requiring businesses to set out the total cost, including all essential elements at the earliest possible opportunity. This is the approach taken by the CMA's investigations into hotel bookings¹⁰⁶ and car rentals¹⁰⁷ as well as the US Department of Transportation's rules for airlines.¹⁰⁸ When the number of dripped fees is uncertain when the consumer is choosing, yet these dripped fees are a substantial source of revenue for the business, businesses could be required to disclose an estimated price that the consumer is likely to pay over time.
- 4.23. Other remedies to aid comparison could include market interventions, such as standardising the presentation of pricing information for particular products or within industries. This can be used for otherwise comparable products where consumer understanding or engagement is low, for example, some types of financial services.¹⁰⁹ However, due to its effectiveness and ubiquity, drip pricing is often unlikely to be rectified solely through transparency interventions that stop short of requiring the total price to be presented instead.

¹⁰⁴ Gabaix, X., & Laibson, D. (2006). Shrouded attributes, consumer myopia, and information suppression in competitive markets. *The Quarterly Journal of Economics*, 121(2), 505-540.

¹⁰⁵ Gabaix, X., & Laibson, D. (2006). Shrouded attributes, consumer myopia, and information suppression in competitive markets. *The Quarterly Journal of Economics*, 121(2), 505-540.

¹⁰⁶ CMA. (2017). [Online Hotel Booking](#).

¹⁰⁷ CMA. (2017). [Car Rental Intermediaries](#).

¹⁰⁸ US Department of Transportation. (2011). [Enhancing Airline Passenger Protections](#).

¹⁰⁹ EUR-Lex. (2019). [Regulation \(EU\) 2019/2088 of the European Parliament and of the Council on Sustainability Related Disclosures in the Financial Services Sector](#).

Case study 2: Airline payment card surcharges

There is substantial precedent in tackling drip pricing via enforcement cases and market studies. For example, following the Advertising of Prices Market Study¹¹⁰ and a super-complaint from Which?,¹¹¹ the Office for Fair Trading (OFT) – predecessor of the CMA – launched a number of cases against airlines that charged additional fees for making a payment by debit card in 2012.¹¹²

The OFT was concerned that consumers were being misled about the level and the existence of payment card surcharges. The airlines under investigation were charging consumers an additional fee for making a payment by debit card, but that fee was not included in the headline price (drip pricing). Further, the airlines were not presenting their charges for payment by credit card in a clear and transparent manner, but rather in multiple separated categories (partitioned pricing). The outcome of the investigation was that all airlines within scope made changes to their pricing practices, by including debit card charges in all headline prices, and by presenting optional credit card fees clearly and transparently.¹¹³

Harm 3: OCA can maintain, leverage or exploit market power

- 4.24. OCA practices can help businesses that have market power to maintain their position unfairly by limiting competition or squeezing rivals out. For example, a business that wishes to increase or maintain its high market share through customer retention may use practices like default auto-renewal followed by high levels of sludge (excessive friction stopping consumers taking action in their interests) to prevent customers from switching away.
- 4.25. OCA practices can also be used by businesses to leverage a position of market power in other markets, or to exploit their customers.¹¹⁴ Such exploitation of market power may lead to poor outcomes for consumers, such as higher prices and lower quality or value for money, unfair contracts, compulsory data sharing, and limited options for switching.

¹¹⁰ The Office of Fair Trading (OFT). (2009). [Advertising of Prices](#).

¹¹¹ The Office of Fair Trading (OFT). (2011). [Retailers' Surcharges for Paying by Credit or Debit Card](#).

¹¹² The Office of Fair Trading (OFT). (2012). [Airlines: Payment Card Surcharges Investigation](#).

¹¹³ The Office of Fair Trading (OFT). (2012). [Payment Surcharges Response to the Which? super-complaint](#). The cases were resolved by the firms involved giving undertakings that they would change their practices. There were no findings that they had broken the law.

¹¹⁴ Day, G., & Stemler, A. (2020). Are Dark Patterns Anticompetitive?. *Alabama Law Review*, 72, 1.

4.26. Below we describe two OCA practices that can be used to maintain, leverage or exploit market power, each with a relevant case study. The first case study looks at how defaults can be used to help businesses to maintain high market share. The second looks at how businesses can use ranking to leverage market power by self-preferencing search results.

Example OCA practice 3: Defaults

What are defaults?

4.27. Defaults are one of the strongest and most reliable practices that influence consumer behaviour.¹¹⁵ They can include default settings (like privacy or security features), default choices (like ‘standard’ products or automatically selected add-ons), default brands (like the browsers or apps that come pre-installed with electronic devices) or default renewal of subscriptions. A comprehensive statistical analysis (called a ‘meta-analysis’) of 58 academic studies into defaults found that a pre-selected default option is on average 27% more likely to be selected out of two options than if there were no default option.¹¹⁶ Because behavioural experiments of this nature commonly report low single-digit percentage effect sizes resulting from interventions,¹¹⁷ this is a large effect.

4.28. So, why are defaults so effective? First, they require less effort than making an active choice.¹¹⁸ This means that consumers who are in a hurry, not interested, or who have other demands on their cognition are more likely to stick with a default than to change it. Second, a default might imply endorsement or a recommendation by the choice architect, or that most consumers have chosen it.¹¹⁹ Finally, defaults may lead consumers to act as if they have already chosen the default option (called the ‘endowment effect’) and, consequently, they use the default as a reference point to construct their preferences.¹²⁰ In fact, defaults are so powerful that, even when consumers are told they are about to be defaulted to a random choice, they can strongly influence important decisions.¹²¹

¹¹⁵ Jachimowicz, J. M., Duncan, S., Weber, E. U., & Johnson, E. J. (2019). When and why defaults influence decisions: A meta-analysis of default effects. *Behavioural Public Policy*, 3(2), 159-186; Smith, N. C., Goldstein, D. G., & Johnson, E. J. (2013). Choice without awareness: Ethical and policy implications of defaults. *Journal of Public Policy & Marketing*, 32(2), 159-172.

¹¹⁶ Jachimowicz, J. M., Duncan, S., Weber, E. U., & Johnson, E. J. (2019). When and why defaults influence decisions: A meta-analysis of default effects. *Behavioural Public Policy*, 3(2), 159-186.

¹¹⁷ For examples, see DellaVigna, S., & Linos, E. (2020). RCTs to scale: Comprehensive evidence from two nudge units (No. w27594). *National Bureau of Economic Research*.

¹¹⁸ Smith, N. C., Goldstein, D. G., & Johnson, E. J. (2013). Choice without awareness: Ethical and policy implications of defaults. *Journal of Public Policy & Marketing*, 32(2), 159-172.

¹¹⁹ Jachimowicz, J. M., Duncan, S., Weber, E. U., & Johnson, E. J. (2019). When and why defaults influence decisions: A meta-analysis of default effects. *Behavioural Public Policy*, 3(2), 159-186.

¹²⁰ Dinner, I., Johnson, E. J., Goldstein, D. G., & Liu, K. (2011). Partitioning default effects: why people choose not to choose. *Journal of Experimental Psychology: Applied*, 17(4), 332.

¹²¹ Loewenstein, G., Bryce, C., Hagmann, D., & Rajpal, S. (2015). Warning: You are about to be nudged. *Behavioral Science & Policy*, 1(1), 35-42.

How can defaults cause harm, and how could harm be remedied?

- 4.29. Defaults can be extremely valuable and can help consumers to make good choices with minimal or no effort, particularly where consumers have limited time or ability to engage with the huge number of choices they have to make day to day. However, they can also be problematic: for example, consumers may end up sharing more data than they intend, buying unsuitable products, or setting up subscriptions when they wanted only one-off purchases. Since consumers are less likely to change the default once set, default options can also affect consumers' ability to shop around and compare options, which may benefit incumbent businesses that acquire the least active customers or the most useful data first.
- 4.30. Defaults may also be combined with other OCA practices to make them more effective, including sludge (making it hard to change the default), forced outcomes (overriding or seeking to push the consumer to change a default reset by a consumer), framing (not accepting a default may be presented as being risky or unusual), and messengers (data on default acceptance by consumers may be provided, which reinforces the default as the social norm and majority choice). The CMA's Online Platforms and Digital Advertising Market Study in 2020 noted that data privacy defaults that underpin personalised advertising were difficult to change, with consumers needing to take multiple steps that were not obvious.¹²² In addition, the study found evidence that less technically savvy consumers found it harder to change defaults in this context.
- 4.31. There are several ways that authorities can try to remedy problematic defaults. One is to specify the need for a default that the regulator finds would be in the interests of consumers, or less likely to cause harm. For example, as part of the General Data Protection Regulation, both the UK and the EU prohibit the use of pre-ticked boxes to obtain consent for processing personal data.¹²³ This requirement allows a default, but that default restricts businesses from processing personal data.
- 4.32. Another potential remedy is to require businesses to ensure that consumers make an active choice. Forcing active choice might involve presenting a 'choice screen', in which consumers must choose between a number of providers, or inserting a mandatory question with a decision, for example, about privacy preferences.

¹²² CMA. (2020). Online Platforms and Digital Advertising Market Study. [Appendix X: assessment of pro-competition interventions to enable consumer choice over personalised advertising](#).

¹²³ Information Commissioner's Office (ICO). [Guide to the UK General Data Protection Regulation \(UK GDPR\)](#).

- 4.33. However, the effectiveness of active choice as a remedy is hugely dependent on the nature of the choice and its design. An active choice does not in itself make it meaningful or one that actually gives consumers what they might want, had they not been constrained by what is on offer. For example, giving active choices between many items in situations where consumers have little knowledge or prior preferences can increase the burden on consumers and might cause them to disengage.¹²⁴
- 4.34. Authorities may want to consider whether mandating a default may be a more effective remedy than forcing active choice. One way to resolve this is to test choice screens or other active choice intervention through user experience research and field trials, to ensure they do improve consumer choice in the way that is intended.

Case study 3: The role of defaults set by Google

One powerful default, which has been extensively investigated by the CMA and other authorities, is the default search engine that is pre-installed on mobile devices and browsers. In the UK, the CMA's Online Platforms and Digital Advertising Market Study¹²⁵ found that Google was set as the default search engine for at least 94% of mobile devices manufactured and for over 99% of mobile browsers used.¹²⁶

Although consumers could switch to another search engine by changing the device's settings, in practice, very few did, and many people may not know how to do so. Suggested reasons included the perceived quality of Google's search engine or the implied endorsement from the default. Google paid just under £1.2 billion to mobile manufacturers in 2019 to be the default search engine in the UK across devices and browsers, the substantial majority of which was paid to Apple to be the default on the Safari browser. This was a level of payment that some competitors said they would not be able to match. The study found that the default had negative effects on competition, helping Google to shore up its position as the largest and most revenue-generating search engine, while creating a feedback loop, making it more difficult for competitors to grow their user bases and improve their search quality, to become a more credible competitor to Google.

The CMA's market study explored some potential remedies to improve competition and counteract the strong effect of default search engines, including restricting Google or others from making default arrangements with device manufacturers and browsers, introducing choice

¹²⁴ Chernev, A., Böckenholt, U., & Goodman, J. (2015). Choice overload: A conceptual review and meta-analysis. *Journal of Consumer Psychology*, 25(2), 333-358.

¹²⁵ CMA. (2020). Online Platforms and Digital Advertising Market Study. [Final report](#).

¹²⁶ CMA. (2020). Online Platforms and Digital Advertising Market Study. [Appendix H: Default Positions in Search](#).

screens that allow users to select from a list of search engines when setting up a device or at other crucial moments, and reducing the ability to monetise defaults.¹²⁷

Following the European Commission's 2018 finding¹²⁸ (under appeal) in its Android case, Google introduced a choice screen on all new Android phones and tablets in the European Economic Area, including the UK, allowing users to select a search engine default.

The CMA has highlighted that there is a benefit of choice screens to consumers in and of themselves (in consumers being free to exercise choice). As we noted in our Mobile Ecosystems market study interim report, however, there may be limits to the impact of providing choice screens on consumers' choices of search engine. For example, in the year to 31 August 2021 in the UK, almost all users choose Google Search in instances where they saw the choice screen Google introduced.¹²⁹ As of 1 September 2021, Google has introduced an updated choice screen that allows more search services to participate for free.

As discussed above, frequently the power of choice architecture such as defaults may need additional or complementary remedies beyond changes to the choice architecture. For example, in relation to search defaults, the CMA recommended that the Digital Markets Unit, if it is given statutory powers following the government's consultation, should be empowered to explore:

- (i) restricting Google's ability to acquire the default position on Apple mobile devices in the UK and to monetise defaults; and
- (ii) supply-side remedies, including opening access to Google's search data to others, to help them develop competitive products and reduce Google's dominant position.¹³⁰

¹²⁷ CMA. (2020). Online Platforms and Digital Advertising Market Study. [Appendix V: assessment of pro-competition interventions in general search.](#)

¹²⁸ European Commission (EC). (2003). [CASE AT.40099](#) Google Android.

¹²⁹ CMA. (2021). Mobile Ecosystems Market Study. [Interim Report](#) (Chapter 5).

¹³⁰ CMA. (2020). Online Platforms and Digital Advertising Market Study. [Appendix V: assessment of pro-competition interventions in general search.](#)

Example OCA practice 4: Ranking

What is ranking?

- 4.35. Because we read top to bottom and traditionally place summary or headline information at the top of documents, our attention is often automatically drawn towards items appearing at the top of a list or first in a sequence.¹³¹ As a result, academic research shows that across several contexts (and particularly online), items appearing (ranked) at the top of the list are more likely to be clicked and chosen.¹³²
- 4.36. The effectiveness of ranking shares many psychological mechanisms with defaults (and indeed, ordering and ranking effects may be considered a weaker form of default), including reduced effort,¹³³ salience¹³⁴ and beliefs about quality or relevance, such that items appearing higher perform better.¹³⁵
- 4.37. Although consumers often have the option to filter or reorder a list, in practice, most do not make use of that option. For example, the CMA, working with the market researchers Kantar, found that of those consumers who had used a comparison website in the previous three months, only 28% had re-ordered their results.¹³⁶ Similarly, a study commissioned by the European Parliament (2011) showed that consumers do not use filtering tools fully, and instead use the top results as a reference point to compare against subsequent results.¹³⁷

How can ranking cause harm, and how could harm be remedied?

- 4.38. Because information has to be presented in some order or other, the choice architect can influence consumer attention and, subsequently, behaviour. Logically, businesses might care about their position in lists, with significant effort dedicated to improving rankings in search engine results or comparison site listings. This can include changing the wording of websites to persuade algorithms of their relevance (known as 'search engine optimisation' or SEO), or paying fees to become 'featured' or 'sponsored' (known as 'paid ranking').

¹³¹ Becker, S. L. (1954). Why an order effect. *Public Opinion Quarterly*, 18(3), 271-278.; Miller, J. M., & Krosnick, J. A. (1998). The impact of candidate name order on election outcomes. *Public Opinion Quarterly*, 62(3), 291-330.

¹³² Ghose, A., & Yang, S. (2009). An empirical analysis of search engine advertising: Sponsored search in electronic markets. *Management science*, 55(10), 1605-1622.; Yang, S., & Ghose, A. (2010). Analyzing the relationship between organic and sponsored search advertising: Positive, negative, or zero interdependence? *Marketing science*, 29(4), 602-623.; Agarwal, A., Hosanagar, K., & Smith, M. D. (2011). Location, location, location: An analysis of profitability of position in online advertising markets. *Journal of Marketing Research*, 48(6), 1057-1073.

¹³³ Ghose, A., Goldfarb, A., & Han, S. P. (2013). How is the mobile Internet different? Search costs and local activities. *Information Systems Research*, 24(3), 613-631. ¹³⁴ Wang, B. (2017). Ranking and salience. Available at SSRN 2922350.

¹³⁵ Brown, C. L., & Krishna, A. (2004). The skeptical shopper: A metacognitive account for the effects of default options on choice. *Journal of Consumer Research*, 31(3), 529-539.

¹³⁶ CMA & Kantar Public. (2017). Digital Comparison Tools: Consumer Research, [Final Report](#) (page 140).

¹³⁷ European Parliament (EC). (2011). [Consumer Behaviour in a Digital Environment](#) (page 68).

- 4.39. Such activities, including paid ranking, may mean that lists are no longer ordered by quality or relevance, potentially leading to worse consumer decisions, lower trust in results and a distortion of competition, in which better quality results may not prevail.
- 4.40. Where a business has substantial market power, especially where the platform providing the ranking acts as a key access point for consumers, the lack of competitive pressure can also create an incentive for businesses to favour results that it has a financial interest in, beyond sponsored ranking (which may be ‘self-preferencing’). Third-party businesses may therefore be unable to improve their search ranking or may find it difficult to draw customers away from the incumbent. Consumers often browse no further than the first page of results,¹³⁸ so such practices can result in less choice, potentially weakening competition and innovation.
- 4.41. If competition concerns about a business are identified, any appropriate remedy will need to take account of the dynamics of the market and the circumstances of the case at hand (for example, the prevalence of sponsored listing business models in the market). Consumer-facing remedies could include explaining how lists are constructed (including disclosing paid ranking), although there is some evidence from research that these types of disclosures are not always well understood or used by consumers and it may be necessary to construct them carefully.¹³⁹

Case study 4: Positioning and ranking of search results in the European Commission Google Shopping case

An illustration of how OCA can be used is the European Commission’s antitrust case into Google Shopping in 2017.¹⁴⁰ The Commission found that Google abused its dominance as a search engine to give its own comparison shopping service prominent placement, while demoting rivals in the search results (even the highest ranked rival appeared on average on page four).¹⁴¹

Drawing on a range of sources, including search data, financial data, experiments and surveys, the Commission highlighted evidence that consumers click far more often on results that are more visible (the 10 highest ranking search results receive approximately 95% of all

¹³⁸ CMA. (2017). [Online Search: Consumer and Firm Behaviour – A Review of the Existing Literature](#).

¹³⁹ The Netherlands Authority for Consumers & Markets (ACM). (2021). [Sponsored Ranking and Exploration of its Effects on Consumer Welfare](#); Lewandowski, D., Kerkmann, F., Rümmele, S., & Sünkler, S. (2018). An empirical investigation on search engine ad disclosure. *Journal of the Association for Information Science and Technology*, 69(3), 420-437.

¹⁴⁰ European Commission (EC). (2017). [CASE AT.39740 Google Search \(Shopping\)](#).

¹⁴¹ European Commission (EC). (2017). [Antitrust: Commission fines Google €2.42 billion for abusing dominance as search engine by giving illegal advantage to own comparison shopping service](#)

clicks on generic search results).¹⁴² The Commission therefore concluded that Google had given its own comparison service a significant advantage compared to rivals on the basis of giving it more prominent placement on the search page. The Commission fined Google €2.4 billion for abusing its dominance, in breach of EU antitrust rules.¹⁴³

Taking a behavioural economics perspective, Amelia Fletcher highlighted that this decision effectively relies on saliency bias, “whereby individuals typically decide on the basis of what is most obvious or prominent to them”.¹⁴⁴ She also argued that platforms using misleading ranking to influence consumer behaviour exploit the platform’s “competitive bottleneck” position in reaching their customers, illustrating how the use of OCA can interact with market power in antitrust cases.¹⁴⁵

Google made changes to comply with the European Commission’s decision, including an operational separation of Shopping and search, and auctioning high-ranking slots to rival comparison shopping services. Subsequently, third parties have commented on the effectiveness of these changes.¹⁴⁶ Google also appealed against the decision, but the Commission’s decision, including the fine, was upheld by the EU General Court in November 2021.¹⁴⁷ Google has since appealed the General Court’s judgment to the Court of Justice of the EU.

¹⁴² European Commission (EC). (2017). [Antitrust: Commission fines Google €2.42 billion for abusing dominance as search engine by giving illegal advantage to own comparison shopping service](#)

¹⁴³ European Commission (EC). (2017). [Antitrust: Commission fines Google €2.42 billion for abusing dominance as search engine by giving illegal advantage to own comparison shopping service](#)

¹⁴⁴ Fletcher, A. (2019). [The EU Google Decisions: Extreme Enforcement or the Tip of the Behavioral Iceberg?](#). Competition Policy International.

¹⁴⁵ Fletcher, A. (2019). [The EU Google Decisions: Extreme Enforcement or the Tip of the Behavioral Iceberg?](#). Competition Policy International.

¹⁴⁶ Höppner, Thomas. (2020). [Google's \(Non-\) Compliance with the EU Shopping Decision](#).

¹⁴⁷ [Judgment of 10 November 2021, Google LLC v European Commission, T-612/17, EU:T:2021:763](#)

5. Cross-cutting topics

Key insights

- Research on the prevalence of harmful OCA indicates that it is widespread.
- Research indicates that awareness and learning are generally not sufficient to protect consumers from harmful OCA.
- Consumers may be more vulnerable to OCA practices in certain contexts and markets.
- Algorithms are often jointly deployed with specific OCA practices.

5.1. In addition to the specific OCA practices and case studies we explore above, several cross-cutting topics are also relevant to the effectiveness of OCA and the potential harm caused. Below, we discuss four, including:

(a) Prevalence

(b) Awareness and learning

(c) Vulnerability

(d) Algorithms

5.2. The Evidence Review provides a more detailed discussion of these, as well as further cross-cutting topics including privacy, consumer attention and digital business models.

(a) Prevalence

5.3. Reflecting the growing general awareness of OCA practices,¹⁴⁸ academics and authorities have recently started to research the prevalence of OCA practices online, for example:

(a) Mathur et al. (2019) identified a set of harmful OCA practices (which they categorised as “dark patterns”), including sneaking unasked-for items into shoppers’ baskets, greying out legitimate options so that users are less likely to click on them, and false popularity and scarcity claims. The authors then identified dark patterns on more than 11% of 11,000 popular shopping websites using a semi-automated crawling method. They noted that this estimate is likely to be conservative because many dark patterns could not be identified through this method.¹⁴⁹

(b) Di Geronimo, Braz, Fregnan, Palomba and Bacchelli (2020) identified dark patterns on 95% of the 240 free Android apps they analysed in the US Google Play Store within the first 10 minutes of using them.¹⁵⁰ On average, each app used seven different practices.

¹⁴⁸ Which?. (2021.) Dark Patterns: [How Consumer Choices are Manipulated Online](#).

¹⁴⁹ Mathur, A., Acar, G., Friedman, M. J., Lucherini, E., Mayer, J., Chetty, M., & Narayanan, A. (2019). Dark patterns at scale: Findings from a crawl of 11K shopping websites. *Proceedings of the ACM on Human-Computer Interaction*, 3(CSCW), 1-32.

¹⁵⁰ Di Geronimo, L., Braz, L., Fregnan, E., Palomba, F., & Bacchelli, A. (2020, April). UI dark patterns and where to find them: a study on mobile applications and user perception. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (pp. 1-14).

(c) An International Consumer Protection Enforcement Network (ICPEN) global sweep found that over one-fifth of the 1,300 websites reviewed by ICPEN members appeared to involve one or more examples of harmful practices.¹⁵¹

- 5.4. While it appears that practices are prevalent, particularly in digital settings, there are still gaps in knowledge, particularly in relation to the sectors where OCA is most prevalent. Subject to legal constraints, there could be opportunities for authorities to fill in some of these gaps.
- 5.5. Content and indicators of potentially problematic OCA practices could be automatically collated from websites. This exercise is likely to require some manual scoping and cross-validation (as in Mathur et al.'s dark patterns web-crawl above), and may be challenging for certain types of practices (such as those that can be observed only after a consumer has made a purchase). However, if designed well, it could help estimate the prevalence of OCA in different sectors, while avoiding the potential biases from relying on consumers' complaints or self-reported awareness.¹⁵²
- 5.6. Where information-gathering powers are available, authorities can also use businesses' internal customer data and research findings to understand the prevalence of OCA and its likely effectiveness. For example, in 2020, the US Federal Trade Commission issued orders to nine social media and video streaming services seeking data about how they collect, use and present information.¹⁵³ Similarly, in the online hotel bookings investigation, the CMA analysed a range of information obtained from the firms under investigation.¹⁵⁴

(b) Awareness and learning

- 5.7. Awareness of some OCA practices tends to be low. When encountering a harmful OCA practice, such as a dark pattern, most individuals are unlikely to realise they were under the influence of a bias or heuristic that drove their decision making.¹⁵⁵ Furthermore, many people who are being influenced do not spontaneously notice the presence of a practice that aims to nudge them. Where people are aware of practices being used, they tend to

¹⁵¹ CMA. (2019). [A global approach to consumer protection online](#).

¹⁵² For example, consumers might be more likely to complain for certain product types or if there is media interest, while markets with a higher proportion of consumers with lower socioeconomic status might receive less complaints. See Raval, D. (2020). Whose voice do we hear in the marketplace? Evidence from consumer complaining behavior. *Marketing Science*, 39(1), 168-187.

¹⁵³ Federal Trade Commission (FTC). (2020). [FTC Issues Orders to Nine Social Media and Video Streaming Services Seeking Data About How They Collect, Use, and Present Information](#).

¹⁵⁴ CMA. (2017). [Online Hotel Booking](#).

¹⁵⁵ Di Geronimo, L., Braz, L., Fregnan, E., Palomba, F., & Bacchelli, A. (2020). UI dark patterns and where to find them: a study on mobile applications and user perception. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (pp. 1-14).

assume that these would not affect them, or assume that others will be more influenced, suggesting overconfidence.¹⁵⁶

- 5.8. Consumers may also encounter transparency and disclosure of information at the time of purchase. There is, however, relatively little evidence that greater transparency through disclosing the presence of choice architecture techniques at the point of final decision making reduces consumers' propensity to be influenced.¹⁵⁷ In fact, giving more information in the form of disclosures at a later stage only can often backfire, for example, leading to information overload,¹⁵⁸ making consumers unduly more trusting¹⁵⁹ or causing consumers to switch off and avoid engaging in the market altogether.¹⁶⁰
- 5.9. Consumers may also still be influenced, even when they are aware that OCA is being used and are given an opportunity to make a different choice.¹⁶¹ It can therefore be helpful to separate awareness and impact when researching OCA practices. If consumers are already aware and say so, for example through market research, this does not necessarily mitigate the impact of harmful OCA practices.
- 5.10. Making consumers aware is therefore not always sufficient to protect them from harm. For this reason, measures to improve awareness of practices are often combined with other initiatives, including offering consumers the tools to avoid harm and – in the most serious cases – enforcement action by public authorities. Testing remedies can also help with this, as can building an understanding of consumer behaviour into the design of disclosures.¹⁶² Where there is strong evidence of harm, banning or restricting practices may be more effective.

¹⁵⁶ For example, see Johnson, E. (2022). *The Elements of Choice: Why the Way We Decide Matters*. Oneworld Publications; and Bang, H., Choi, D., Wojdyski, B. W., & Lee, Y. I. (2019). How the level of personalization affects the effectiveness of personalized ad messages: the moderating role of narcissism. *International Journal of Advertising*, 38(8), 1116-1138.

¹⁵⁷ Australian Securities and Investments Commission (ASIC) and the Dutch Authority for the Financial Markets (AFM). (2019). [Disclosure: Why it shouldn't be the Default](#); LeBoeuf, R. A., & Shafir, E. (2003). Deep thoughts and shallow frames: On the susceptibility to framing effects. *Journal of Behavioral Decision Making*, 16(2), 77-92.; Bang, H. M., Shu, S. B., & Weber, E. U. (2018). The role of perceived effectiveness on the acceptability of choice architecture. *Behavioural Public Policy*, 4(1), 50-70.

¹⁵⁸ Persson, P. (2018). [Attention manipulation and information overload](#). *Behavioural Public Policy*, 2(1), 78-106.

¹⁵⁹ De Meza, D., Irlenbusch, B., & Reyniers, D. J. (2010). *Disclosure, trust and persuasion in insurance markets*.

¹⁶⁰ T Mullet, L Smart & N Stewart. (2018). [Blackbird's alarm call or nightingale's lullaby?](#) The effect of tweet risk warnings on attractiveness, search, and understanding, FCA Occasional Paper (47).

¹⁶¹ Loewenstein, G., Bryce, C., Hagmann, D., & Rajpal, S. (2015). Warning: You are about to be nudged. *Behavioral Science & Policy*, 1(1), 35-42.

¹⁶² Fletcher, A. (2021). Disclosure as a tool for enhancing consumer engagement and competition. *Behavioural Public Policy*, 5(2), 252-278.

(c) Vulnerability

- 5.11. There are also important ways in which people can be particularly vulnerable, either due to their relatively stable personal characteristics (such as age, health or wealth) or more temporary circumstances (such as unemployment, bereavement, or experiencing scarcity of time, money or social connection).¹⁶³
- 5.12. Harm caused by OCA practices can also disproportionately affect vulnerable consumers, for example, because they: i) are less able to bounce back from a financial loss or negative feelings; ii) may not be sufficiently confident to complain, return items or access compensation; and iii) may be less able to learn from, and avoid, the same experience in future.¹⁶⁴ As a result, many consumer laws make provision for ‘vulnerable’ or ‘targeted’ consumers.¹⁶⁵
- 5.13. Vulnerable consumers might also be targeted by businesses using harmful OCA practices. For example, there is evidence from Australia that some short-term credit products are structured to appeal to vulnerable consumers and that online scams might have been more prevalent during the pandemic.¹⁶⁶ OCA practices used by businesses that rely on repeated engagement, such as gambling or gaming, can be particularly harmful for people at risk of addiction or who are less able to make good decisions, for example, because of age or health.¹⁶⁷
- 5.14. There are various remedies that could tackle OCA practices affecting vulnerable consumers. For example, businesses could make greater efforts to identify and support vulnerable consumers, change their targeting policies, develop products or services such as budgeting or self-control tools, and add friction to deter impulsive purchases.¹⁶⁸

¹⁶³ CMA. (2019). [Consumer vulnerability: challenges and potential solutions](#); FCA. (2018). [FCA Mission: Approach to Consumers](#); Britainthinks. (2018). [Getting a Good Deal on a Low Income](#); Ofgem. (2019). [Consumer Vulnerability Strategy](#); Shah, A. K., Mullainathan, S., & Shafir, E. (2012). Some consequences of having too little. *Science*, 338(6107), 682-685.

¹⁶⁴ Money and Mental Health. (2020). [Convenience at a Cost: Online Shopping and Mental Health](#).

¹⁶⁵ Office of Fair Trading (OFT). (2008). [Consumer Protection from Unfair Trading](#).

¹⁶⁶ Australian Financial Complaints Authority (AFCA). (2019). [Using the Product Intervention Power: Short term Credit](#); Money and Mental Health. (2020). [Caught in the Web: Online Scams and Mental Health](#).

¹⁶⁷ For example, see Money and Mental Health Institute. (2020). [A Safer Bet? Online Gambling and Mental Health](#).

¹⁶⁸ Money and Mental Health. (2020). [Convenience at a Cost: Online Shopping and Mental Health](#).

(d) Algorithms

- 5.15. This paper and the accompanying Evidence Review add to the CMA's existing publication, which discusses the interaction between OCA and algorithms.¹⁶⁹
- 5.16. The development of automated algorithms enables businesses to put data to use at speed and scale in ways that drive many elements of consumers' online experiences.¹⁷⁰ For example, algorithms lie at the heart of search engines: some are used to scrape and catalogue key information from webpages, while others decide the order in which search results are ranked. Algorithms therefore play an important role in how the OCA of search engines appears to consumers, influencing which results appear, and which are in the most salient positions for consumers. The use of algorithms can therefore benefit consumers but also has the potential to exploit OCA in ways that may harm consumers or competition.¹⁷¹
- 5.17. These technologies enable businesses to optimise their interactions with consumers, including increasing the effectiveness of OCA through personalisation.¹⁷² Consumers might be presented with personalised product recommendations based on their browsing history (known as 'recommender systems'), or the content and timing of prompts and reminders that increase the likelihood of engagement.
- 5.18. Some businesses are even starting to use algorithms to make decisions automatically on behalf of consumers, such as rounding up payments to contribute to savings or auto-playing recommended music and films. While algorithmic personalisation can bring benefits, such as helping consumers find relevant products faster, it can also potentially lead to harm, such as privacy invasion,¹⁷³ opaque personalised pricing,¹⁷⁴ discrimination against personal characteristics,¹⁷⁵ or reduced information diversity.¹⁷⁶

¹⁶⁹ CMA. (2021). [Algorithms](#).

¹⁷⁰ CMA. (2021). [Algorithms](#).

¹⁷¹ For example, see CMA. (2020). Online Platforms and Digital Advertising Market Study. [Appendix P: specialised search](#) ("Exploiting search algorithms" section).

¹⁷² For example, see Dalecke, S., & Karlsen, R. (2020). Designing dynamic and personalized nudges. In *Proceedings of the 10th International Conference on Web Intelligence, Mining and Semantics* (pp. 139-148).

¹⁷³ For example, see Dwyer, C. A. (2009). *Behavioral targeting: A case study of consumer tracking on levis.com*.

¹⁷⁴ For example, the CMA contributed to the OECD paper on personalised pricing: OECD. (2018). [Personalised Pricing in the Digital Era](#).

¹⁷⁵ For example, see Ali, M., Sapiezynski, P., Bogen, M., Korolova, A., Mislove, A., & Rieke, A. (2019). Discrimination through optimization: How Facebook's ad delivery can lead to biased outcomes. *Proceedings of the ACM on Human-Computer Interaction*, 3(CSCW).

¹⁷⁶ For example, see Zanker, M., Rook, L., & Jannach, D. (2019). Measuring the impact of online personalisation: Past, present and future. *International Journal of Human-Computer Studies*, 131, 160–168.

6. Future direction

Remedies

- 6.1. The range of ways in which OCA can be used and cause harm is wide, varied and growing, and so, necessarily, is the world of possible remedies. Selecting the right type and combination of remedies depends heavily on the specific issue at hand, existing compliance with legislation and the regulatory powers available.
- 6.2. OCA has already played a role in many previous cases conducted by the CMA and other authorities, including work that resulted in a joint document published in 2018 by the CMA and the Financial Conduct Authority (FCA) discussing consumer-facing remedies.¹⁷⁷
- 6.3. We highlight below some non-exhaustive insights that apply to remedies related to OCA. We also highlight remedies relevant to individual practices from the academic literature in the Evidence Review. This discussion should not be read as limiting the remedies that the CMA may recommend, seek to obtain through the courts, or impose in any particular case.

Insight 1: Some harmful OCA practices can be prohibited by legislation

- 6.4. Some harmful OCA practices are already specifically prohibited within existing consumer and competition legislation. For example, some practices, such as using false time pressure to elicit immediate decision making or making an invitation to purchase products at a specified price with the intention of promoting a different product (bait and switch), are automatically considered 'unfair' in all circumstances and are prohibited under Schedule 1 to the CPRs.¹⁷⁸ In addition, the CPRs also contain principle-based prohibitions on misleading and aggressive practices, under which some OCA practices are likely to fall, even if not specifically banned under Schedule 1.
- 6.5. The UK government has proposed adding the commission, incentivisation or failure to address fake consumer reviews to Schedule 1 in its consultation on Reforming Competition and Consumer Policy of 2021.¹⁷⁹ Furthermore, subject to the outcome of the government's consultation on the regulation of digital markets and any subsequent legislation, banning or restricting the use of OCA practices could be incorporated into the Digital Markets

¹⁷⁷ FCA and CMA. (2018). [Helping people get a better deal: learning lessons about consumer facing remedies](#). See also CMA. (2013). [Guidelines for market investigations](#) (Part 4).

¹⁷⁸ The Consumer Protection from Unfair Trading Regulations 2008. [Schedule 1](#).

¹⁷⁹ Department for Business, Energy & Industrial Strategy (BEIS). (2021). [Reforming Competition and Consumer Policy](#).

Unit's enforceable codes of conduct or pro-competitive interventions.¹⁸⁰ To illustrate, the CMA's Online Platforms and Digital Advertising Market Study set out potential principles of 'fairness by design' that a Digital Markets Unit could require platforms to apply when presenting choices to consumers about sharing their data for personalised advertising.¹⁸¹

Insight 2: Information-based remedies can have limits

- 6.6. Information-based remedies (such as transparency and disclosure remedies) aim to ensure people have timely access to relevant information when making purchase or consumption decisions. For example, they can address information asymmetries between consumers and businesses, improve consumers' awareness and understanding of available products, encourage reputation-based competition, and facilitate product comparison through standardisation and personalisation.
- 6.7. Yet consumers have to not only be able to access information, but also to be able to assess and act on it.¹⁸² As we and others have previously highlighted,¹⁸³ information-based interventions alone therefore may not always be sufficient to significantly shift consumer behaviour. That may be because the disclosure has not been carefully designed or because the presence of behavioural biases or other barriers to engagement inherently limits the extent to which consumers can take on and act on this information.¹⁸⁴ However, information-based interventions such as consumer campaigns can serve many different purposes, including making people aware of the trends in certain practices and enabling them to say no to businesses that use them. Such remedies therefore need careful design.

Insight 3: Behavioural and data science can be valuable to identify and remedy OCA

- 6.8. Behavioural and data science can help to identify and contextualise OCA practices, explain how they work, inform analysis on compliance with existing legislation, advise on the collection of data, and apply research methods to investigate harm and test potential remedies.

¹⁸⁰ Department for Digital, Culture, Media & Sport (DCMS) and Department for Business, Energy and Industrial Strategy (BEIS). (2021). [A new pro-competition regime for digital markets](#), paragraph 82.

¹⁸¹ CMA. (2019). [Appendix Y: Choice Architecture and Fairness by Design](#).

¹⁸² FCA and CMA. (2018). [Helping people get a better deal: learning lessons about consumer facing remedies](#).

¹⁸³ See FCA and CMA. (2018). [Helping People Get a Better Deal: Learning Lessons About Consumer Facing Remedies](#).

¹⁸⁴ For example, there is some evidence that simply providing more information can negatively affect competition if it is provided in an unhelpful or disengaging format. See Persson, P. (2018). Attention manipulation and information overload. *Behavioural Public Policy*, 2(1), 78-106; and FCA. (2015). [CP15/32: Smarter Consumer Communications: Removing certain ineffective requirements in our Handbook](#).

6.9. Several consumer and competition authorities, including the CMA, have set up interdisciplinary teams of psychologists, behavioural economists, data scientists and researchers from other disciplines.¹⁸⁵ For example, the CMA has used behavioural and data science to identify and analyse OCA practices in a number of cases, including the Online Platforms and Digital Advertising market study¹⁸⁶ and the Mobile Ecosystems market study.¹⁸⁷

Insight 4: Testing can help to design effective remedies and understand their impact

6.10. Although not always necessary or feasible, remedies can benefit from quantitative and qualitative testing before and during full implementation to improve their design, estimate their potential impact on outcomes (including unintended consequences), and identify whether further remedies are needed.¹⁸⁸ Some relevant research methodologies include:

- (a) Qualitative research¹⁸⁹
- (b) Surveys¹⁹⁰
- (c) User-centred design¹⁹¹
- (d) Field trials¹⁹²
- (e) Quasi-experimental methods¹⁹³ and
- (f) Online experiments.¹⁹⁴

¹⁸⁵ See Faisal Naru's Tweet summarising institutions implementing behavioural science at https://twitter.com/faisal_naru/status/1027162896340578304, and Public Technology. (2019). [Regulator creates nudge-theory team to protect consumers online.](#)

¹⁸⁶ CMA. (2020). [Online Platforms and Digital Advertising Market Study.](#)

¹⁸⁷ CMA. (2021). [Mobile Ecosystem Market Study.](#)

¹⁸⁸ FCA and CMA. (2018). [Helping People Get a Better Deal: Learning Lessons About Consumer Facing Remedies.](#)

¹⁸⁹ Including consumer focus groups, workshops and interviews.

¹⁹⁰ For example, surveys were used as part of CMA. (2016). [Digital Comparison Tools Market Study.](#)

¹⁹¹ Iterative processes that involve users throughout to understand and meet their needs.

¹⁹² Field trials involve real-life testing of interventions (also called randomised controlled trials or RCTs). A simple trial would randomly assign consumers or businesses to two groups, where one group experiences business-as-usual (the control group), while the other groups (the treatment groups) experience different versions of the proposed remedy. The differences in consumer behaviour and outcomes can then be measured, and differences between the groups can be compared statistically. For an example of a field trial recommended by the CMA, see Financial Conduct Authority. (2018). [Time to act: A field experiment on overdraft alerts.](#)

¹⁹³ Quasi-experimental approaches also aim to measure the impact of interventions in real life, but use approaches other than random assignment to create a plausible control group from business data and control for other factors. For an example, see The Netherlands Authority for Consumers and Markets (ACM). (2021). [Paid Ranking: Effects on Consumer Welfare.](#)

¹⁹⁴ In online experiments, participants are recruited, assigned to groups seeing different scenarios and then asked to make incentivised decisions or answer questions. For example, see Danish Competition and Consumer Authority (KFST). (2021). [Consumers Benefit from Visually Salient Standardized Commercial Disclosures on Social Media.](#)

6.11. The government is currently consulting on the CMA's future statutory powers to order trialling of potential remedies during a Market Investigation Reference (MIR),¹⁹⁵ and similarly on the proposed Digital Markets Unit's approach to implementing pro-competitive interventions.¹⁹⁶

Gaps: what we don't know

6.12. The study of OCA practices is a truly multidisciplinary field, with evidence from behavioural economics, psychology, data science, marketing, and industry testing (for example, conversion optimisation), all offering important and relevant insights. However, there are some areas where further evidence and research could be valuable.

6.13. In particular, it would be useful to understand more about the prevalence of particular practices and particularly in which sectors, industries and modalities they might be concentrated. This can help to target efforts to investigate and tackle breaches of the law and harm to consumers and competition.

6.14. While there is strong evidence of the effectiveness of many practices, it can be difficult for academic researchers to explore harm, including its scale and nature, without access to internal data and information from businesses who use these practices. For this reason, a lot of the empirical academic research comes from online experiments. While every effort is made to make situations and tasks as realistic as possible, it can be difficult to investigate wider forms of harm – for example, on competition or on society – outside of the experiment's outcomes. This is where internal data and information from businesses' own testing can be crucial in measuring longer term and wider impacts, including harm.

6.15. Although there is significant and increasing recent attention and enforcement action on this topic, there is also scope to take action to address OCA practices more effectively. Because practices and the environment in which they are used have changed so quickly, some commentators have noted that parts of consumer law would benefit from being clarified, updated and future proofed.¹⁹⁷ Having more flexibility to restrict,

¹⁹⁵ For more detail on the consultation, see the BEIS [Reforming Competition and Consumer Policy consultation document](#).

¹⁹⁶ For more detail on the consultation, see the Gov.uk webpage: [A new pro-competition regime for digital markets](#).

¹⁹⁷ Penrose, J. (2021). [Power to the People](#).

ban or create conditions on the compliant use of practices, as considered in the BEIS Reforming Competition and Consumer Policy consultation,¹⁹⁸ would be a positive first step in this direction.

- 6.16. More use of behavioural research methods as applied by specialist teams, including field trials, as advocated in the UKCN Consumer Facing Remedies report,¹⁹⁹ would be useful to test potential remedies to improve competition. Incorporating a focus on OCA practices within market studies and antitrust cases can also help to explain market changes and harm.

¹⁹⁸ Department for Business, Energy & Industrial Strategy (BEIS). (2021). [Reforming Competition and Consumer Policy](#).

¹⁹⁹ FCA and CMA. (2018). [Helping People Get a Better Deal: Learning Lessons About Consumer Facing Remedies](#).

7. Conclusions

- 7.1. OCA is of great importance to consumer and competition authorities. Used in certain ways, it can cause harm to consumers and competition, as well as to help businesses maintain, leverage and exploit a dominant position. While many choice architecture practices have been observed over years of marketing efforts, the sheer scale and efficiency of testing, targeting and applying them online creates a genuinely different proposition. Businesses can vary the way they present information and choices and apply pressure at the click of a button or even automatically, with different consumers seeing different versions of websites or apps. These changes can be informed by a wealth of unseen data on consumer behaviour held by businesses.
- 7.2. Harmful OCA remains a key area of focus for the CMA, and we will more actively investigate practices that may harm consumers or competition using the full range of powers available to us. We encourage businesses, if not doing so already, to conduct compliance programmes, including behavioural audits or other forms of self-assessment, to determine whether their use of OCA is consistent with consumer protection and competition law.
- 7.3. This paper also marks the launch of further CMA work to bolster existing research and learning from past cases, in particular, focusing on gaps in our collective knowledge about scale, prevalence and harm. This work is likely to include using data-led research methods to investigate and explore questions about the prevalence of practices within and across sectors, their differential effects across consumers, and the consumer and competition harm caused.

Annex: Non-exhaustive summary of cases involving harmful OCA

Case

Online hotel booking

Authority

CMA (UK)

Description

The CMA launched a consumer law investigation into the largest businesses active in the hotel online booking sector in October 2017. The investigation focused on how businesses present information, and whether it is truthful and communicated in a clear and transparent manner. The investigation looked into various online choice architecture practices undertaken by hotel booking sites which could be used to mislead consumers including ranking of search results, scarcity claims, reference pricing, and hidden charges. As part of this investigation, in June 2018, the CMA launched enforcement action against several hotel booking sites it considered to be breaching consumer protection law and served warning letters to various other sites asking that they review their terms and practices to ensure they are in compliance with the law. In February 2019, the companies under investigation by the CMA committed to refrain from using certain online choice architecture practices. This included improving transparency on how their default listings were ranked, in particular, the fact that commission paid by hotels could affect the ranking. Furthermore, in September 2019, a large number of other hotel booking websites operating in the UK (including TripAdvisor, Airbnb and Google) signed up to CMA's sector-wide [principles](#) to ensure that information displayed by them on their websites comply with consumer protection law.

Practices²⁰⁰

Ranking, scarcity or popularity, reference pricing, partitioned pricing, drip pricing

²⁰⁰ For all cases in this Annex, these are the categories of OCA practices considered in the relevant case or study. Unless otherwise stated, a reference to a practice does not necessarily mean that the businesses concerned engaged in that practice or breached the law.

Case

Car rental intermediaries

Authority

CMA (UK)

Description

In 2018 the CMA reviewed the practices of [40 online car rental brokers, meta-search providers and travel agents](#) to assess whether they were breaching consumer law as part of an industry-wide review of car rental intermediaries. This work followed an earlier CMA investigation in 2017 of the five major car rental firms regarding hidden charges and unexpected fees. In addition to securing voluntary changes across the sector, the CMA took enforcement cases against three businesses. These investigations concluded when the parties under investigation signed undertakings that they would improve their price transparency practices. This included adding all compulsory charges in to their car hire quotes, showing all relevant information about consumers' liabilities, and setting up processes to verify the accuracy of information sent by their suppliers.

Practices²⁰⁰

Drip pricing, partitioned pricing

Case

Online platforms and digital advertising market study

Authority

CMA (UK)

Description

The CMA launched a market study into online platforms and the digital advertising market in the UK in July 2019. The market study aimed to assess: the market power of Google and Facebook in search and social media respectively, if consumers have sufficient control over the use of their data by online platforms, and whether platforms' market power can distort competition in the digital advertising market. With regards to the implications of online choice architecture practices on consumer behaviour, the final report of the market study published in July 2020 noted the strong impact of pre-set defaults on consumers' choice of search engine. Further, the study found that default settings and the choice architecture of data privacy choices - including the difficulty in changing default settings, framing of choices, some information presented as more prominent than the rest, and lengthy and complex privacy policies and terms - impact consumers' ability to control the use of their data by online platforms. The market study proposed certain choice architecture principles ('[Fairness by Design](#)') for the design of data privacy choices by online platforms with Strategic Market Status (SMS) to enhance consumer control over their data and recommended that the newly formed Digital Markets Unit (DMU) be empowered to review the implementation of these principles.

Practices²⁰⁰

Defaults, framing, sludge, sensory manipulation, information overload, complex language

Case

Anti-virus software

Authority

CMA (UK)

Description

The CMA launched an enforcement investigation into anti-virus software firms, Norton and McAfee, in 2018 due to concerns about whether their business practices and terms and conditions related to the automatic renewal of subscriptions were fair to consumers. The investigation assessed key features of the auto-renewal policy of these firms including whether consumers were enrolled into auto-renewal by default, if they could easily exit the auto-renewal, their understanding of aspects of the auto-renewal contracts and their entitlement to refunds. The enforcement cases concluded with the anti-virus firms under investigation signing undertakings agreeing to implement changes that will make it easier for consumers to understand and exit automatically renewing contracts and provide consumers whose contracts have auto-renewed increased refund rights including pro-rata refunds and an easier process for claiming refunds.

Practices²⁰⁰

Defaults, sludge, complex language

Case

Online reviews

Authority

CMA (UK)

Description

In May 2020, the CMA opened an investigation into various major websites that display online reviews to assess if the systems they have in place for detecting and removing fake and misleading reviews are adequate. CMA's concerns include whether the websites have sufficient measures for detecting suspicious patterns of reviews such as when the same reviewer reviews an unlikely range of products, for tackling incentivised reviews and for dealing with businesses manipulating the presentation of reviews about their products and services, for instance, by moving positive reviews for one product to another product in order to inflate its product rating. Subsequently, in June 2021, the CMA opened formal enforcement cases against Amazon and Google owing to concerns that their measures for dealing with fake and misleading reviews are not sufficient to protect consumers. These cases are ongoing.

Practices²⁰⁰

Messengers, framing

Case

Investigations into the use of misleading reference pricing by certain furniture and carpet businesses

Authority

OFT/CMA (UK)

Description

In 2012, the OFT launched several investigations into furniture and carpet retailers over concerns that they were using misleading reference pricing. Following the OFT investigation, the retailers committed to implement changes to their pricing policy to ensure that that reference prices displayed by them were not misleading to consumers. After succeeding the OFT in April 2014, the CMA continued to monitor pricing practices in the carpet and furniture sector.

Practices²⁰⁰

Reference pricing

Case

Airlines: payment card surcharges investigation

Authority

OFT (UK)

Description

In September 2011, the OFT opened an investigation into the airline industry to assess the prevalence of drip pricing and partitioned pricing practices in payment card surcharges, which could mislead customers about the true value of services. The investigation focused on 14 airlines which had not voluntarily implemented changes consistent with OFT's recommendations set out in its [response to the Which? Super complaint](#) on payment surcharges in the passenger transport sector. The investigation was concluded when the airlines within scope committed to making changes to address the OFT's concerns, either through formal undertakings or through voluntary changes, including removing additional fees for using debit cards and making transparency changes to their websites and advertising.

Practices²⁰⁰

Drip pricing, partitioned pricing

Case

Social Media Endorsements

Authority

CMA (UK)

Description

In August 2018, the CMA launched a consumer enforcement investigation into concerns that social media influencers were not appropriately disclosing when they had received 'payments', including rewards such as gifts and loans, to endorse goods or services. This could potentially mislead social media users who, unable to identify a paid promotion, might believe the endorsement was made because they wanted to personally endorse the product or service and not as a result of a commercial relationship. In January 2019, 16 influencers provided undertakings requiring them to clearly disclose in their social media posts when they have received payments or any other rewards for endorsing a product or service. In October 2020, Facebook (now Meta) committed to the CMA to improve its measures to deal with hidden advertising on its Instagram platform.

Practices²⁰⁰

Messengers

Case

Mobile ecosystems market study

Authority

CMA (UK)

Description

In June 2021, CMA launched a market study over concerns that Apple's and Google's duopoly over the supply of operating systems, app stores and web browsers, together forming the mobile ecosystems, is harming users, and restricting competition in digital markets. With regards to the implications of online choice architecture practices on user behaviour, the interim report for the study, published in December 2021, provisionally found that [pre-set defaults and pre-installations](#), along with the potentially complex user journey for changing default settings, play an important role in users' choice of browser. Furthermore, the interim report also noted that the [choice architecture of data privacy choices](#) - including framing of information related to the choice, ordering of options, information length and salience of information - could impact user decision-making.

Practices²⁰⁰

Defaults, sludge, framing, ranking, information overload, sensory manipulation

Case

Google Android

Authority

European Commission (EC)

Description

In 2018, the European Commission fined Google €4.34 billion for its conduct in relation to the Android mobile operating system and certain mobile ‘apps’ and services, which it held breached competition law. The Commission found that Google acted anti-competitively in four respects, including by tying the pre-installation of the Google Search app with the Play Store and the tying of Google Chrome with the Play Store and the Google Search app. The decision stated that pre-installations can have an impact on users’ choice of search and browser apps, owing to the status quo bias, which makes them less likely to look for, download and use alternative options when the default delivers functionality to a satisfactory level. The Commission’s decision ordered Google to bring the anti-competitive conduct to an end in an effective manner within 90 days of the decision. Google has appealed the decision to the General Court.

Practices²⁰⁰

Defaults

Case

Google Shopping

Authority

European Commission (EC)

Description

In 2017, the European Commission fined Google €2.4 billion in a decision that found that Google had abused its market dominance as a search engine by giving its own comparison-shopping service prominent placement, while demoting rivals in the general search results pages. The Commission found that product searches made using Google's search engine, displayed results from Google's own comparison shopping service with enhanced features at or near the top of the first general search page, whilst dedicated algorithms made competing comparison shopping services prone to having their ranking reduced in Google's general search pages. The decision also ordered Google to stop the anticompetitive conduct within 90 days of the decision and refrain from any measure that has the same or an equivalent object or effect. Google appealed the decision; however, it was [upheld by the European General Court](#) in 2021. Google has since appealed the General Court's judgment to the Court of Justice of the EU.

Practices²⁰⁰

Sensory manipulation, ranking, defaults

Case

Microsoft Choice Screen

Authority

European Commission (EC)

Description

In 2009, the European Commission accepted commitments from Microsoft following concerns that the tying of Internet Explorer with Windows could be harming competition and reducing consumer choice. In its commitments decision the Commission stated that Internet Explorer enjoyed a distribution advantage over other web browsers and that there were barriers for consumers to downloading competing web browsers from the internet. The commitments included making available in the European Economic Area a "choice screen" enabling users to choose which web browser(s) they wanted to install in addition to, or instead of, Internet Explorer for five years. The commitments decision stated that the choice screen would be populated through a pop-up box which prompted Windows customers to make an active choice of the 12 most widely used browsers. In 2013, the EC fined Microsoft €561 million for failing to comply with the commitment to offer the choice screen from May 2011 until July 2012.

Practices²⁰⁰

Defaults, Inertia, forced outcomes, sludge, dark nudges (making the choice to use internet explorer easy), ranking