

Implementing the DMA: The role of behavioural insights

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Key points:

- *This article provides an overview of the role of behavioural insights in the implementation of the Digital Markets Act ('DMA'), a key plank of the EU's digital markets strategy.*
- *The effectiveness of several DMA provisions will in practice depend on their impact on end user choices and the way in which the designated gatekeepers design the choice architecture within their user interfaces will be critical for this.*
- *We provide some overarching considerations relating to this design and then discuss the relevance for specific DMA provisions of some key well-documented behavioural effects such as saliency effects, ranking effects, default effects, social cues, choice overload, information overload, choice fatigue, obfuscation and shrouding, complexification, framing effects and timing effects.*

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- *Our focus is on highlighting the potential issues, including in relation to circumvention risks, and we note where empirical testing by the gatekeepers is likely to be useful in order to demonstrate their compliance with the DMA.*

I. Introduction

Insights into how consumers behave in real world settings are critical to understanding whether competition is working effectively, if not, why not and how it could be improved. The relevance of behavioural insights to competition policy has gradually become clear in recent years as more and more cases involve an implicit or explicit assessment of behavioural considerations.

So far behavioural insights have played a role in market studies, such as the Competition and Markets Authority's Mobile Ecosystems Market Study (2022)³ or the Australian Competition and Consumer Commission's Digital Platforms Inquiry (2019),⁴ both of which discussed, *inter alia*, the impact of pre-installations and default settings on user behaviour in the context of Google's and/or Apple's services. Behavioural insights have also played a role in a few antitrust cases such as the European Commission's Google Shopping case (2017)⁵ or the Italian competition authority's Amazon logistics case (2022),⁶ both of which considered the impact of saliency of certain options on consumers' decisions. In addition, courts have started to build on behavioural evidence. For instance, behavioural economists testified at the Federal Court of Australia in 2021 in a case involving Google's notifications on changes to account settings,⁷ in the 2023 US Department of Justice case against Google,⁸ and the UK's Competition Appeal Tribunal agreed in 2022 to accept an expert witness statement from a behavioural economist in a collective action against British Telecom.⁹

As the examples above demonstrate, behavioural insights are particularly relevant in the context of digital services. However, it has become apparent that traditional antitrust and merger control alone are insufficient to tackle the concerns in relation to large digital platforms,

³ Available at <https://www.gov.uk/cma-cases/mobile-ecosystems-market-study>.

⁴ Available at <https://www.accc.gov.au/inquiries-and-consultations/finalised-inquiries/digital-platforms-inquiry-2017-19>.

⁵ European Commission (2017), *Google Search (Shopping)*, Case AT.39740.

⁶ Autorità Garante Della Concorrenza E Del Mercato, 'A528 – Italian Competition Authority: Amazon fined over 1,128 Euros for Abusing its Dominant Position', Press Release 9 December 2021.

⁷ Compass Lexecon: 'Google Defeats Deceptive Practices Claim in Australian Litigation', Press Release 12 January 2023.

⁸ *U.S. and Plaintiff States v. Google LLC [2020]*, Evidence from Prof. Antonio Rangel, exhibit number UPXD101 (<https://www.justice.gov/atr/us-and-plaintiff-states-v-google-llc-2020-trial-exhibits>).

⁹ See at <https://globalcompetitionreview.com/article/behavioural-economist-give-novel-evidence-in-uk-class-action>.

including those related to behavioural insights, and as a result, various jurisdictions have been considering introducing *ex ante* regulation. The first of these regulations to become law is the European Union’s Digital Markets Act (‘DMA’).

The aim of the DMA is (i) to ensure that a small set of large and critical online platforms (‘gatekeepers’) behave in a fair way towards their business users and (ii) to promote contestability in markets where gatekeepers have entrenched positions, as well as in related markets. To this end, it contains a collection of provisions that set out what gatekeepers must and must not do.

The aim of this article is to provide an overview of the role of behavioural insights in this context. The effectiveness of several DMA provisions will in practice depend on their impact on end user choices and the way in which the designated gatekeepers design the choice architecture within their user interfaces will be critical for this.

We provide some overarching considerations relating to this design and then discuss the relevance for specific DMA provisions of some key well-documented behavioural effects, such as saliency effects, ranking effects, default effects, social cues, choice overload, information overload, choice fatigue, obfuscation and shrouding, complexification, framing effects and timing effects.¹⁰ These effects are all relevant to the way in which options are presented to end users – the so-called ‘choice architecture’. The design of the choice architecture can have a substantial impact on the choices end users make.

Such behavioural effects can arise in two ways in the context of the implementation of the DMA. First, they can inherently hinder the effectiveness of provisions in delivering contestability and fairness. This is critical because effectiveness is central to the DMA. Article 8 requires that gatekeepers ensure that implementation is effective in achieving the aims of the specific provisions and also the objectives of the DMA – fairness and contestability. Article 13

¹⁰ We mostly refer to these as behavioural ‘effects’, rather than ‘biases’ as the relevant behaviours may well be rational given the personal cost of complex decision-making. In this article we take as given a firm understanding of existing behavioural literature, and do not seek to explain and evidence each of the behavioural effects we discuss. For supporting background literature, see OECD (2022), Integrating End user Behaviour Insights in Competition Enforcement, OECD Competition Policy Roundtable Background Note; CMA (2022), Online Choice Architecture, How digital design can harm competition and end users, Discussion Paper; and Amelia Fletcher (2023), The Role of Behavioural Economics in Competition Policy, Draft chapter for Cambridge Handbook on the Theoretical Foundations of Antitrust and Competition Law (Cambridge University Press, forthcoming 2024).

expressly prohibits any circumvention behaviour that undermines effective compliance. A number of specific provisions also mention the need for effectiveness.¹¹

Second, there is potential for gatekeepers to exploit behavioural effects strategically to weaken the impact of the provisions in driving contestability and fairness. Such conduct would likely constitute circumvention, and thus breach Article 13.

Gatekeepers need to consider carefully how best to implement the DMA's provisions to ensure effectiveness, while the Commission needs to be alert to the risk of circumvention. Behavioural insights will be relevant in both cases. In this article, we first provide some overarching considerations that are relevant to the two ways in which behavioural effects can arise in the context of the DMA (Section 2). We then consider (in Section 3) a set of more specific issues relating to three categories of obligations:

- i. Provisions that require the gatekeeper to impose certain end user actions;
- ii. Provisions that require the gatekeeper to enable certain end user actions; and
- iii. Provisions that require the gatekeeper to allow certain business user actions.

For each of these, we discuss which behavioural insights are relevant and highlight potential pitfalls that could arise during implementation. We then conclude.

We note that the practical application of behavioural insights within the DMA may require the empirical testing of different interface designs. It is beyond the scope of this article to provide guidance on how to best implement such design and testing, but we highlight where it would be useful.

II. Overarching considerations

We start by providing some overarching considerations that are not necessarily linked to specific provisions, but which are nevertheless relevant to the implementation of the DMA.

¹¹ For a discussion on this, see Amelia Fletcher (2022), *Behavioural insights in the DMA: A good start, but how will the story end?*, Competition Policy International.

The first point to make is that ‘**choice architecture**’ is a **neutral term**.¹² Choice architecture simply describes the way in which information and choices are presented to end users, including the number and ordering of options, wording, illustrations, etc. It is well understood that these elements can steer user decision-making, subtly but powerfully.¹³

Online platforms are well-placed to experiment extensively with their choice architecture to ensure that it steers decision-making in a desired way. Such steering can either help or hinder users in making effective decisions, depending on the platform’s design choices. The effective implementation of the DMA will require designated gatekeepers to make changes to some key elements of their choice architecture, with a view to steer end users towards decisions that help achieving fairness and contestability.

Secondly, default effects – whereby people tend to stick with a pre-selected option – are strong and prevalent. Defaults can have negative consequences for end users if they steer them towards options that are in the gatekeeper’s interest, but not in their own. This can also be harmful for contestability and unfair to business users. However, **defaults can also be helpful**. They allow end users to focus on those few key choices that really matter to them. It is not realistic to ask end users to make an active choice in relation to the many different design options that a gatekeeper’s service might incorporate. Not only do end users not have the required expertise, but also there would just be too many decisions. End users would likely end up exhibiting ‘choice fatigue’ (i.e. becoming mentally exhausted by having to make too many decisions) and start using rules of thumb or making mistakes. They may be deterred from using the product (or from switching product) entirely. By pre-selecting default settings, firms can simplify users’ decisions which would otherwise be complex, and users benefit from this.

Perhaps reflecting this key behavioural insight, the DMA does not seek to remove default settings entirely, but rather to expand the potential for end users to choose third parties as the default option in a small number of specific instances. The DMA does this in two ways. First, for three key services (browser, virtual assistant and search engine), gatekeepers must ask end users to make an active choice of default service (Article 6(3)). Second, at a more

¹² The DMA in fact refers to ‘interface design’ rather than choice architecture. We treat these terms as synonymous in this context.

¹³ See, for example, CMA (2022), *Online Choice Architecture: How digital design can harm competition and end users*, Discussion Paper.

general level, gatekeepers must make it easy for end users to switch their default options if they wish to do so, and gatekeepers must enable third parties to prompt end users to make this choice (Articles 6(3) and 6(4)).

Thirdly, there is an overarching question as to how far the DMA expects firms to go in enhancing contestability before the measures become disproportionate. The importance of such proportionality is clear within the DMA itself (see Article 8) and there is also a general principle of proportionality in EU law.¹⁴

In some cases, a clear line can be drawn. For example, Article 5(5) enables end users to acquire services from third parties directly without using the distribution services of gatekeepers. However, it clearly does not require gatekeepers to encourage end users to acquire services in this way, or even to emphasise this option. This is true, even though such encouragement or emphasis might reasonably be expected to generate greater contestability. But this line is not always so easy to draw. For some provisions, there will be a **spectrum of measures that gatekeepers could take**. At one end of the spectrum, the gatekeeper could simply ensure that it does not strategically exploit a behavioural bias. At the other end, the gatekeeper could proactively seek to overcome intrinsic behavioural barriers to end user engagement, for example by requiring the user to make more active choices than are formally required under the DMA. When the line is unclear, it is not currently obvious where the DMA expects gatekeepers to locate themselves on this spectrum.

Fourthly, our view is that the DMA provisions will likely to be more **effective when they aim to prevent firms from strategically exploiting behavioural biases** (such as stopping firms deliberately making side-loading difficult) as opposed to when they seek to solve an inherent demand side issue (such as trying to overcome end user inertia by making switching easy). This may be relevant to how much impact we can realistically expect the DMA to make. For instance, it would arguably not be right to conclude that gatekeepers failed to comply if there was no increase in the rate of switching but gatekeepers had made switching as easy as reasonably possible (applying proportionate measures).

¹⁴ Art. 5(4) TEU provides that ‘Under the principle of proportionality, the content and form of Union action shall not exceed what is necessary to achieve the objectives of the Treaties’.

Fifthly, it is important to recognise that **changes to today's choice architecture may not reverse the harm arising from past anticompetitive choice architecture**. Once a particular service has become established with users, they may well stick with this option even if they might not have chosen it initially absent the choice architecture then in place. This means that some of the most popular gatekeeper services are likely to retain a strong market position despite the introduction of active default choice and prompts to change defaults. As such, we might expect the DMA to have a larger impact on markets that are still expanding (such as voice assistants).

Sixthly, Article 13 **prohibits circumvention, including via behavioural techniques** such as presenting choices in a non-neutral manner. This is an important element of the DMA. Not only does it help to ensure that gatekeepers implement measures in an effective way, it also restricts their ability to undermine effectiveness through the strategic use of additional actions. For instance, suppose that an end user has chosen a third-party service as its default. There is no specific DMA provision that would stop a gatekeeper sending frequent prompts to that end user to consider reverting to the gatekeeper's service. However, since this may well lead to an end user eventually agreeing to revert – either by mistake, or to stop the prompts – such conduct might reasonably be viewed as circumvention and thus prohibited under Article 13. The same is likely to be true if the gatekeeper were to issue warnings that unduly discourage end users from taking certain actions, such as side-loading apps.

Finally, the DMA's objectives are contestability and fairness towards business users, but not towards end users. This gives rise to a risk that gatekeepers could implement provisions in a way that is effective in terms of the stated objectives but not so positive for end users. For example, contestability might in principle be best achieved by ranking options for default services randomly within choice boxes, since this will not unduly favour the gatekeeper's existing service. However, end users may prefer a popularity-based ranking – which would be less good for contestability – since they can find their preferred service more easily. Although fairness to end users is not a core objective of the DMA, the overarching proportionality requirement of the law arguably means that **the preferences and autonomy of end users should be respected**.

III. Specific issues arising from behavioural insights

We now turn to considering some more specific issues arising from behavioural insights. Some DMA provisions are clearly designed to address issues that reflect behavioural insights. For example, we know that the behavioural tendency of end users to stick with default options has – in the past – contributed to gatekeepers developing strong and entrenched positions in critical markets and leveraging these positions into new markets. DMA provisions that seek to address such problems, through targeting default settings, are clearly in scope for this article. However, we also consider below provisions which are not necessarily directly linked to behavioural insights but where such insights could still be relevant to their effective implementation.

On this basis, we discuss three categories of DMA provisions.¹⁵

- i. Provisions that require the gatekeeper to impose certain end user actions;
- ii. Provisions that require the gatekeeper to enable certain end user actions; and
- iii. Provisions that require the gatekeeper to allow certain business user actions.

Under each category, we set out the relevant provisions and then seek to identify the key behavioural insights that are likely to be relevant to the effective implementation of these provisions.

We note that the DMA includes a prohibition on self-preferencing in ranking (Article 6(5)) which is potentially relevant across all three of these categories, as it applies in any situation where the gatekeeper offers the end user a choice of options, and where the gatekeeper itself provides a service. It is, however, particularly critical for the design of the active choice screen required by Article 6(3). The first sub-section below covers the requirement to offer a choice screen, and hence we discuss the implications of Article 6(5) there.

¹⁵ We cover provisions that are focussed directly on contestability. We do not discuss provisions that are primarily seeking to strengthen existing end user data protection rights (such as the data collection/use provisions of Article 5(2) and the data portability provision of Article 6(9)), albeit we recognise that these changes may also have an effect on contestability. Some of the thinking set out in this article would be relevant for such privacy-related provisions as well.

A. Provisions that require the gatekeeper to impose certain end user actions

In this section we discuss the only DMA provision that requires the gatekeeper to go beyond the requirement to enable end user actions and positively ensure that end users make an active choice:

- Gatekeepers **must prompt end users**, at first use of search engine, virtual assistant and web browser, **to choose a default option** for this service from a selection of the main available providers (Article 6(3)).

We consider that the following behavioural insights are relevant in the implementation of this provision.

Ranking effects (visualisation): It is well-documented that people are more likely to choose options that are ranked higher, and that they have a very strong tendency towards picking the highest ranked option. This means that the ordering of options within any choice screen is important for the observed outcomes as all rankings will tend to favour certain options and disadvantage others. The DMA's prohibition of self-preferencing (under Article 6(5)) reflects exactly these concerns. It is relevant to any situation in which the gatekeeper presents end users with a ranking of options, at least one of which is provided by the gatekeeper.

However, it is not always clear what constitutes self-preferencing in this context, especially where many end users have been using the gatekeeper's services and may even prefer them. Ordering based on current popularity, or another criterion that favours the gatekeeper's service, could potentially be justified on the basis of end user preferences. But would this constitute self-preferencing? Arguably it should, at least in the context of the DMA, as ranking on this basis is unlikely to achieve contestability.

At the other end of the scale, however, a randomised order might potentially go too far, since end users might struggle to find their preferred service. A purely alphabetic ordering would resolve this issue, but might lead to service providers competing to rename their services to appear higher in the list. Stratified randomisation (whereby the top-tier providers are listed first in a random order, and then the second-tier providers also in a random order) might be an approach that strikes an appropriate balance. We consider that user testing would be needed to

really understand the pros and cons of these differing ranking approaches for effective contestability.

Saliency effects (visualisation): Even if the gatekeeper's own service is not ranked the highest, there may be other ways that could favour the gatekeeper's service within the choice box. For example, the gatekeeper could make its own service more salient (for example made bold). There is nothing explicit within Article 6(3) which would prohibit such design, and Article 6(5) is not obviously relevant since such self-preferencing would not take the form of ranking. Nonetheless, this conduct is likely to contravene the anti-circumvention provision of Article 13 and the general requirement that measures should be effective in achieving contestability.

Further, there is a risk that a gatekeeper could adjust its choice architecture depending on its ranking to ensure that it gains as much benefit from saliency effects as possible. For example, if it is ranked #1, saliency effects might lead it to use a vertical list, where ranking effects are likely to be strongest, whereas if it is ranked lower, it may opt for a horizontal arrangement. Would this count as circumvention?

Default effects (the 'do nothing' option): As discussed, people have a tendency to stick with the default option. This is relevant for the choice screen design too. If the choice screen is to be effective in driving contestability, it is important that the gatekeeper does not frame its service as the default option.

Choice overload (number of options): If there are too many options in the choice screen, end users may be more likely to use a rule of thumb (such as choosing the first service on the list or the most familiar provider) and the measure may not achieve the desired impact. On the other hand, restricting the number of options can also harm contestability if it limits the ability of third-party providers to be included and thus access end users. Testing would be useful for identifying the impact of varying the number of choices on end user decision-making. Again, stratified randomisation might be a useful solution, allowing a higher number of options while limiting choice overload.

Virtual assistants raise particular complexities in terms of choice overload. Offering multiple options is necessarily a more clunky process when these are provided orally, rather than on a screen where end users can quickly scan through the list. Thus, when end users make

choices *via* a virtual assistant, it may be justifiable to include fewer options. However, this does imply making an important trade-off, as it would also limit the extent to which the changes open up the market to third-party providers.

Information overload (quantity of information): Too much information can overwhelm people, and lead to them making less effective decisions (or even disengaging completely). At the same time, too little information can also be harmful for their ability to make meaningful choices. Thus, there is a balance to be struck here. In the context of a choice screen, this might militate against including relatively long descriptions of each option, and suggest providing short and easily graspable descriptions (perhaps providing the ability for enthusiastic end users to click and learn more). Again, testing may be useful in identifying the type and extent of information that really supports active and informed end user choice.

Framing effects (choice of language): The choice of language that the gatekeeper includes alongside and within the choice screen is also likely to influence end users' decisions. For example, the gatekeeper could use language that encourages end users to select its service by overemphasising the risks associated with selecting an alternative service. In our view, such framing would likely constitute circumvention under Article 13.

Social cues: In making decisions, people are frequently affected by the views of others. For online choices, such 'social cues' can include reviews, average ratings and the number of ratings each service received. Including such measures within the choice screen could have a positive impact on its effectiveness, to the extent that such reviews and ratings convey useful information, and could help enable third-party providers to gain a positive reputation. However, there is also a risk that displaying such data could tip the playing field in favour of the gatekeeper, thus reducing the effectiveness of the choice screen in achieving contestability. Overall, we would suggest that choice screens should focus on metrics where third-party providers have the potential to perform well (such as average ratings) rather than those where the gatekeeper has an inherent advantage due to its past market position (such as number of ratings).

Obfuscation and shrouding (quality of information): Unclear or confusing information can distort or deter end user action, as can 'shrouding' of relevant information (making it less visible). In the context of a choice screen, for example, consumers might have more confidence

in choosing a third-party provider if it was clear that all available options met basic security and integrity standards, and that the choice was easily reversible. By corollary, they may be more inclined to stick with the gatekeeper if the gatekeeper shrouds or makes this information less clear.

Complexification (ease of process): It is well understood that facing too much friction can deter consumers from making choices.¹⁶ For example, multiple choice screens could put off end users, and increase their inclination to choose randomly (or at least, less effectively) just to get through the process. The clear intention within Article 6(3) is that the end user's active choice of default setting should be easy, but this is not explicitly stated. If, for example, end users who chose a third-party service were required to go through a series of further screens, providing further information, each of which required them to confirm their choice, that could undermine the easiness of changing defaults. Again, in our view, such choice architecture design would likely constitute circumvention under Article 13.

Choice fatigue: The DMA specifies that the gatekeeper needs to prompt the end user to make an active choice of default search engine, virtual assistant and browser 'at first use'. However, it does not prohibit the gatekeeper from introducing additional prompts at a later stage. This gives rise to a risk that the gatekeeper could target such prompts at those end users who initially chose a third-party provider, but not those who chose the gatekeeper's service. Such asymmetry could have significant effects. We know that having to make too many choices can lead to choice fatigue, and as a result, end users may either make mistakes or select a service that they believe will stop further prompts. If favouring the gatekeeper, such asymmetric use of prompts would likely breach Article 13.

Timing effects: Where end users are expected to react to something (such as a prompt or choice box), the timing of its appearance can really matter. End users are more likely to make careful decisions if notifications appear at a point when they are more open to thinking about the choice. If such notifications appear when end users are busy, or trying to do something else, they are unlikely to engage properly and may make poor choices.

¹⁶ Richard Thaler and Cass Sunstein, the original authors of the influential 2008 book 'Nudge', refer to the deliberate creation of such friction as 'sludge'.

We note that the term ‘first use’ in Article 6(3) is not entirely clear. For example, should the active choice box be introduced during the set-up of the phone, or the first time that a relevant service is opened? Whilst this is primarily a legal issue, the question of which interpretation is likely to be most effective in catching end users at a time when they are willing to consider the options may influence the courts’ views. While the answer to this question is not immediately obvious, empirical testing could provide valuable input.

Finally, in the above discussion, we have not considered the possibility that gatekeepers may charge a fee to third-party providers for inclusion in the choice box. This is because we are not persuaded that such charging would be consistent with ensuring that the provision is effective in achieving contestability, given the ‘double pocket’ problem (whereby the gatekeeper would be paying itself). However, we note that paying for inclusion may be less of a problem in this regard than paying for ranking, prominence or default within the choice box, given the powerful impact such factors can have on end user decision-making.

B. Provisions that require the gatekeeper to enable certain end user actions

In this section we discuss provisions that require the gatekeeper to enable certain end user actions. These include enabling end users to:

- **Acquire** services from business users without using the gatekeeper’s core platform services (Article 5(4));
- **Access and use**, through the gatekeeper’s core platform services, content and services acquired from business users (Article 5(5));
- **Un-install** apps (Article 6(3));
- **Change default settings** on gatekeeper’s operating system, virtual assistant and web browser (Article 6(3));
- **Install** third-party apps and app stores (Article 6(4));
- **Set** downloaded apps and app stores as their **default** (Article 6(4));
- **Switch** between apps and services (Article 6(6)); and
- **Terminate** core platform services (Article 6(13)).

Some of these end user actions involve a binary (yes/no) choice whereas others involve a choice between multiple alternatives. Binary choice is relevant for setting downloaded apps or app stores as default, un-installing apps and terminating core platform services. Multiple choice

decisions may be relevant for changing default settings, installing third-party apps and app stores or switching between apps. For multiple choice decisions, many of the insights discussed in the previous section in relation to the active choice screen remain relevant.

We note that whether end users face a binary or a multiple choice decision can depend on how they get to the decision point. For instance, if end users have downloaded an app and receive a prompt asking whether they want to set it as default, this would be a binary choice. On the other hand, if end users wanted to change their default app (without having received a specific prompt), they may need to choose from a screen that lists several alternatives.

The wording of the DMA in relation to several of these provisions requires that end users should be able to carry out actions “easily” or “without undue difficulty”. We interpret this to mean that the gatekeeper should eliminate friction as much as possible, which includes designing the choice architecture of these decisions in a way that does not rely on behavioural insights to make them less effective. However, as discussed above, it probably does not go as far as requiring gatekeepers to apply nudges in order to try to overcome inherent behavioural biases such as inertia.

An exception is the wording of Article 5(5) which does not contain “easily” or any other expression that would imply that behavioural insights have to be taken into account. However, we would expect the overall objective of effectiveness within the DMA to imply that this provision should be interpreted as requiring gatekeepers to take behavioural considerations into account in its design.

We consider that the following behavioural insights are relevant in the implementation of these provisions.

Saliency effects (visualisation): The saliency of particular options can have a strong impact on the likelihood of end users proceeding with them. Building on this insight, the gatekeeper could limit the impact of a number of provisions that are designed to enable end user action through making the option to proceed with the action less salient. For example, gatekeepers could list the option to un-install apps, change default settings, terminate services, etc. in small font, light colours, with limited colour contrast and so on. This would likely impact end users’ uptake of such actions, and thus effectiveness. Likewise, asymmetric saliency – when saliency varies depending on whether the action would favour the gatekeeper or a third

party's services – would also raise concerns. This may well be viewed as circumvention, breaching Article 13.

That said, it is also clear that not everything on a screen can be salient. Getting an appropriate degree of salience for such actions may not be straightforward, and testing different approaches could be valuable.

Information overload (quantity of information): As above, providing too much information on the background to, and consequences of, the relevant user action could lead to end users disengaging with the process and potentially abandoning it in its entirety. On the other hand, providing some information may be necessary to aid their decision-making. Again, results of empirical testing could input into getting this balance right.

Obfuscation and shrouding (quality of information): Gatekeepers may have an incentive to obfuscate or shroud relevant information. If the information provided is unclear or confusing, end users are more likely not to follow through. Shrouding or obfuscation could be a concern for most of these provisions in relation to (i) the existence of the option to make a change, (ii) how to make the change, (iii) the fact that any such decision is reversible and (iv) that the change can be considered relatively safe. If information on these points is hidden, or not readily available, that would likely reduce the effectiveness of the relevant provisions.

Complexification (ease of process): The gatekeeper could structure the settings in a way that the location of the settings for un-installing, switching, terminating, etc. is unintuitive, or requires end users to carry out a large number of steps, and maybe even to have to think hard on which button to press to proceed. In such cases we might expect a larger proportion of end users to abandon the process of making a change, which would in turn harm the effectiveness of these provisions.

In addition, these provisions may be less effective if the ongoing process of using third-party subscriptions or downloaded apps is more complex than using the gatekeeper's proprietary services. It is important that third-party subscriptions are not unduly complex to renew or that updates are no harder for downloaded third-party apps than for apps that end users acquire *via* the gatekeeper's own app store.

Framing effects (choice of language): Any language that puts pressure on end users not to carry out an action that involves switching away from the gatekeeper's service could indeed steer end users away from trying out third-party services. Similarly, warnings that make the impression that end users will be penalised in some way or overemphasise possible negative consequences are likely to reduce the impact of the provisions on enhancing contestability.

Default effects: Default effects could relate to the choice architecture generally (as discussed above) but could also be more specific. Suppose, for example, that software updates have the effect of over-writing past user choices and resetting defaults back to the gatekeeper's service. This could seriously hamper the effectiveness of the relevant provisions.

Finally, we note that it is not entirely clear what default services Article 6(3) relates to. There are many default settings intrinsic to the services offered by gatekeepers to end users. In considering this question, it may be relevant to determine which defaults really matter in terms of contestability and thus where end user choice can make a real difference. Obvious examples where it might be helpful to offer choice of default setting include the calendar, map, and email services.

C. Provisions that require the gatekeeper to allow certain business user actions

In this final section we cover provisions that require gatekeepers to allow certain actions by business users, in particular facilitating communication between the business user and the end user. These include:

- The provision that gatekeepers must allow **business users to communicate and promote offers to end users** and to contract with those users without using the gatekeeper's core platform services (Article 5(4)); and
- The provision that gatekeepers must allow **business users to prompt end users to set downloaded apps or app stores as their default** (Article 6(4)).

As a preliminary observation, it is unclear to us whether the Article 6(4) requirement to allow third-party prompts applies only to "sideloaded" apps (as per the previous sentence of the provision) or also to apps downloaded *via* the gatekeeper's own app store – this requires clarification. Again, we would hope that the interpretation would be influenced by what best achieves the overall contestability objective.

We consider that the following behavioural insights are relevant in the implementation of these provisions.

Saliency effects and shrouding: To the extent that it controls the choice architecture around third-party prompts and promotions, the gatekeeper may have an incentive to limit their saliency, as end users are less likely to focus on less salient notifications. Likewise, if there are important elements of these prompts that might give end users additional confidence (such as confirmation that the apps meet minimum standards for integrity and security), then making these less salient (or shrouding them) could harm contestability.

Timing effects: As mentioned above, we know that the timing of prompts can be critical to their impact. The gatekeeper could potentially influence the timing of third-party prompts such that they appear when end users are less likely to act (for example, when they are clearly focussed on other things, and the prompt seems like a nuisance).

Framing (choice of language): To the extent that the gatekeeper can influence the design of prompts, there is a risk that it could frame them in a way that discourages end user action. For example, gatekeepers could include risk warnings, discouraging end users from acting on the prompts, without allowing the third-party provider to explain the security and integrity measures that the third-party provider (or the gatekeeper) has taken.

Choice fatigue: The provisions do not specify when and with what frequency gatekeepers should allow business users to send prompts or communications to end users. It may be counterproductive to allow third parties to send prompts with such frequency that end users suffer choice fatigue and either make mistakes or end up agreeing to use a particular third-party service just to stop receiving notifications. On the other hand, unduly limiting the number of prompts may make it less likely that the user receives a prompt at a good time for responding. Again, the balance may prove tricky to get right, but user testing could be useful. The risk of choice fatigue raises the question of whether end users should have an option not to receive any more prompts – this could help avoiding choice fatigue but could also limit the effectiveness of the provision.

IV. Concluding remarks

Behavioural insights have clearly influenced the development of the DMA and have been embedded within it both explicitly and implicitly, across several of the key provisions.

In this article, we have highlighted some key behavioural insights that we consider relevant for the design of the gatekeepers' online choice architecture. Under the DMA, the gatekeepers are responsible for demonstrating compliance and we believe they should be expected to show how their implementation has taken account of the behavioural insights listed above.

We have not, however, sought to design specific rules for implementation. We believe that a number of clarifications are still required, for example on how far gatekeepers are expected to go in addressing behavioural biases of end users. Moreover, as we have emphasised throughout, the appropriate implementation of several provisions requires that gatekeepers carry out empirical testing. Evidence of such testing will be necessary to assess whether gatekeepers have done enough to comply with the DMA provisions from a behavioural perspective.