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CHOICE ARCHITECTURE FOR END USERS IN THE DMA

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ABOUT CERRE

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FOREWORD

In the dynamic landscape of EU digital platforms regulation, we are at a focal point of discussions shaping the future of implementation of the Digital Markets Act – arguably one of the most important pieces of legislation of the current times' digital policy sphere.

With the DMA aiming for contestability and fairness in digital markets, designated gatekeeper platforms are set to unveil their compliance plans in March 2024. The European Commission, in its unique role as an enforcer, will lead the work of determining non-compliance and ensure that the DMA fulfils its ambitious goals.

However, the success of implementation will depend on the principles on which the new law will be applied. This CERRE report recommends that the DMA implementation process should be guided by the substantive principles of effectiveness, proportionality, non-discrimination, legal predictability, and consistency with other EU laws. Furthermore, the Commission will have to approach enforcement taking into account the procedural principles of responsive regulation and participation, due process, and ex ante and ex post evaluation. The report then applies those principles to series of specific DMA obligations: choice architecture, horizontal and vertical interoperability and data related obligations.

It is also essential to agree on how the Commission, gatekeepers, and third parties will engage with each other. The DMA provides a model of compliance which is not based solely on deterrence; instead, the gatekeepers are encouraged to and will comply by engaging co-operatively with the Commission and third parties. However, it is still up for question how this principle will be applied, what it expects from the stakeholders, and how the Commission itself will exercise its deterring powers to enforce compliance.

On top of it all, this CERRE DMA edition is also proposing a set of quantitative measurement indicators, so-called output indicators, each relating to a particular obligation or set of obligations, in order to better understand the impact of obligations on the relations between gatekeepers and third parties. These quantitative indicators will not represent specific targets or thresholds against which compliance should be assessed. They will neither attempt to measure the effect of changes in conduct on market outcomes for users nor, more generally, competition. These quantitative measures will be added to other evidence, such as complaints or qualitative representations from affected parties, including gatekeepers, which the Commission will consider in its compliance assessments.

This report was written in the framework of a 8-month-long, multi-stakeholder CERRE initiative entitled the 'DMA Compliance Forum' that created a neutral and trusted platform and facilitated dialogue among CERRE members and academics to contribute to the effective and proportionate enforcement of the regulation.

Bruno Liebhaberg, CERRE Director General

1. EXECUTIVE SUMMARY

"Choice architecture" is a neutral term, which simply describes the way in which information and choices are presented to end users. This can include a wide variety of aspects relating to how choices are 'framed', including the number and ordering of options, whether any options are set as 'defaults' or made more prominent, the information provided at the time of choice, the information and screen provided prior to that choice (which can have 'priming' effects), the wording, the timing and frequency of choices, illustrations, and colours used, and so on.

Why does this matter? Because it is well understood that **these elements can steer user decision-making, subtly but powerfully**. Indeed, in some situations, this steering may be sufficiently strong that users are not even aware that they have a choice, a phenomenon which is sometimes referred to as 'dark patterns'.

In this report, we consider the importance of choice architecture design for effective compliance with the EU Digital Markets Act (DMA).[1]

First, we explain why choice architecture is important for such compliance. We then provide some overarching principles for effective compliance to guide the gatekeepers in ensuring that their choice architecture is designed in a compliant way.

Why is choice architecture important for compliance?

The DMA is heavily informed by a variety of highly prevalent and well-understood behavioural insights. For example:

- We know that end users are likely to choose the pre-installed browser or search engine and then stick with it, reflecting *default and status quo* effects respectively. To address this, Article 6(3) requires gatekeepers with proprietary browsers and/or search engines to ensure that consumers are given an active choice upfront. It also requires that gatekeepers make it easy to switch default settings more generally.

- We know that end users are most likely to choose the first or most prominent option in any ranking, reflecting *ranking* and *salience* effects respectively. This gives rise to a risk that gatekeepers could leverage their core market position into a related service by ranking the latter more highly and prominently than rival options. To address this, Article 6(5) prohibits gatekeepers from engaging in such self-preferencing in ranking.

- A number of DMA provisions require that end users be able to carry out certain actions *easily*, reflecting the concern that users can be deterred by complexity.

[1] This issues paper builds on the 2022 CERRE paper "DMA switching tools and choice screens", which set out several issues of scope and implementation in relation to various elements of the DMA which involved issues of choice architecture. Published as a section in de Streel, A. et al (2023), "Effective and Proportionate Implementation of the DMA". Available at: https://cerre.eu/publications/effective-and-proportionate-implementation-of-the-dma-3/.

These provisions all essentially relate to the gatekeepers' design of choice architecture. But the DMA goes further; it requires that gatekeepers not only comply with its provisions, but that it does so in a way that is effective in achieving the objectives of the DMA: contestability and fairness.

This is also relevant because **contestability and fairness both require users to make effective choices between the options available**, reflecting their relative value. And this will only occur if they make their decisions in the context of a suitable choice architecture. If they don't, and users instead stick with the gatekeepers' services even where these are less good, this will not facilitate the sort of dynamic and innovative environment that the DMA is seeking to achieve.

Thus, the design of suitable choice architecture is intrinsic to effective compliance with the DMA. But what does this mean in practice?

Overarching principles for effective compliance

For assessing the design of compliant choice architecture, we identify and discuss three legal principles and three economic principles.

The three legal principles we propose are: **effectiveness, proportionality, and non-discrimination** (that is, ensuring that choice architecture does not favour the gatekeeper).

A key issue highlighted in relation to proportionality is the potential tension between contestability and user autonomy.

For example, consider the browser choice screen that users must receive under Article 6(3). If the proprietary option is put top of the list of choices, then we would expect most users to choose it, implying little impact on contestability. On the other hand, if we prioritised contestability, the best approach might be to make the proprietary option fairly hard to find (for example, below the scroll), but this might make it hard to find for users that actively want this option, which could in turn harm user autonomy.

We conclude that it is useful to think about the proportionality principle as **requiring gatekeepers to comply with the DMA while respecting end user autonomy**.

The three economic principles proposed are:

- first, that gatekeepers should employ the 'attend, access, assess, act' (4 As) choice framework;
- second, that they should **carry out *ex ante* testing** to demonstrate the expected impact of their choice architecture; and
- third, that they should also evaluate this impact *ex post*.

The 4As choice framework is useful in thinking through the various steps in end users decision-making, and we discuss how it is important to consider the choice architecture relevant to each of these steps. For example:

- For those provisions that require the gatekeeper to mandate choice, it is important that end users give this choice sufficient *attention*. This will be more likely if the choice is prominent, well-timed, and impossible to skip.
- It is important that end users are able to *access* relevant settings in an intuitive and easy way, or perhaps multiple alternative ways.
- End users will need to be able to *assess* the available options effectively, which in turn means the information provided must be not only true, but also 'graspable'; there should be sufficient information but not too much; and there should not be any unfair framing that favours the gatekeeper's service, in terms of defaults, prominence, rankings, and so on.
- End users should be able to *act* on their choice easily, without having to make any further changes to their settings, without facing disproportionate warnings, and without facing nudges or prompts to change their minds. They may be encouraged to try an alternative option if they are informed that their choice is reversible.

None of this is straightforward. The impact of different choice architectures will be highly context-dependent. This is in turn why testing – both *ex ante* and *ex post* – will be so critical to effective compliance.

2. CHOICE ARCHITECTURE IN THE DMA

2.1. What is Choice Architecture?

"Choice architecture" is a neutral term, which simply describes the way in which information and choices are presented to end users. This can include a wide variety of aspects relating to how choices are 'framed', including the number and ordering of options, whether any options are set as 'defaults' or made more prominent, the information provided at the time of choice, the information and screen provided prior to that choice (which can have 'priming' effects), the wording, the timing and frequency of choices, illustrations, and colours used, and so on.[2]

Why does this matter? Because it is well understood that **these elements can steer user decision-making, subtly but powerfully**.[3] Indeed, in some situations, this steering may be sufficiently strong that users are not even aware that they have a choice. Such effects are especially important in relation to the digital gatekeepers.

First, we know that **many end users are inexpert in the choices** they will need to make on digital platforms and that decision-making can be a mental burden, with people typically disinclined to spend significant time or energy in making choices. This can lead to end users being disinclined to act at all, sometimes called the "status quo effect".

[2] The DMA in fact refers to 'interface design' rather than choice architecture. We treat these terms as synonymous in this context.

[3] For the relevant evidence on a variety of behavioural effects relevant to competition, see CMA (2022), *Online Choice Architecture: How digital design can harm competition and end users*, Discussion Paper.

It can also lead to end users utilising a variety of decisional short cuts, sometimes known as heuristics, which in turn mean that their choices may be influenced by the way in which options are framed. This can lead to a variety of other well evidenced effects such as the "default effect" (the tendency to accept the default), the "ranking effect" (the tendency to choose higher ranked options), the "salience effect" (the tendency to choose more salient or prominent options), and so on.

Second, we know that the digital gatekeepers are well-positioned to identify and implement choice architectures that most effectively steer end users in the way that the gatekeeper desires. They have full control over the choice environment that lies between end users, on the one hand, and business users and third-party services, on the other. They are also able to finetune that environment through extensive testing. This includes trialling different interface designs on live users, rather than in an artificial test environment, using analytical techniques such as A/B and multivariate testing.

This meticulous design of the choice architecture facing end users can have **positive effects**. For example, we know that online platforms put substantial effort into designing their systems in a user-friendly way. They seek to ensure that end users enjoy a smooth consumer[4] journey, without having to make too many active choices, and the product works well 'out of the box'. It is simply not realistic to ask end users to make choices 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 simply 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 perhaps start using rules of thumb or making mistakes, if they were forced to make a series of decisions about the detailed design of their user interface. They may even be deterred from using the product (or from switching product) entirely.

In general, many of the design decisions made by gatekeepers will be *fixed*, in the sense that end users cannot alter them even if they wish to do so. But some decisions, particularly in relation to software options, remain *flexible*, in that the gatekeeper will set a 'default' but end users retain the option to alter this. While there are benefits to retaining such flexibility, the associated choice architecture is critical to its overall effect. For example, choice architecture can have **negative effects** if it steers users towards a gatekeeper's own services when these are not necessarily the user's preferred options, or if it is difficult for users to alter the settings. When choice architecture has such negative effects, it is sometimes referred to as containing "**dark patterns**". And these can affect all users, not just more vulnerable users.[5]

Behavioural insights are relevant to the impact of such dark patterns. For example, we know that many end users – having been provided with a default option – will **simply adopt it (the "default effect") and will not revisit that decision (the "status quo effect")**. Users may also perceive the default option to be an implicit endorsement or recommendation by the gatekeeper. This effect will tend to be

[4] Note that we use the terms 'consumer' and 'end user' interchangeably throughout this document as, for the purposes of the issues discussed, the two concepts are broadly the same. Where there is any divergence, however, the wording should be taken to refer to 'end users', since this is the term used in the Digital Markets Act.

[5] Zac, A. et al (2023), "Dark Patterns and Online Consumer Vulnerability", *Centre for Competition Law and Policy Working Paper,* CCLP(L)55.

exacerbated if end users are unaware that they can change their default, if it is unclear how to do so, or if doing so involves a long and complex process.

Adopting and sticking with the gatekeeper's proprietary service can be detrimental to end users if they would be better off with an alternative option. Perhaps more critically (especially in the context of the DMA), it **can be harmful for competition**. If a gatekeeper makes its own proprietary service the default option, third-party rivals will struggle to gain end-user attention or gain market share.

Similar issues can arise if the gatekeeper favours its own products or services in other arenas where end users have a choice, such as in-app stores or online marketplaces. For example, we know that rankings can have a positive effect in helping end users choose from a wide range of options.[6] But equally, we know that end users are more inclined to choose higher ranked or more salient options (the "ranking effect" and "salience effect"). Thus, self-preferencing by a gatekeeper can take the form of ranking its own products or services more highly, making them more prominent as options, or otherwise 'priming' end users to select the gatekeeper's services.

2.2. Relevant DMA provisions

Given the important positive benefits of some key elements of choice architecture, the DMA does not seek to change the situation entirely. **Default settings and rankings are not prohibited. Rather, the DMA seeks to limit the extent to which the gatekeeper has an intrinsic competitive advantage and to expand the role of consumer choice in some specific ways**.

In fact, the DMA includes provisions that address choice architecture design issues in relation to three core contexts.

1. **Enabling end user choice**: Provisions that simply require the gatekeeper to *enable* end user choice.
2. **Mandating end user choice**: Provisions that further require the gatekeeper to *mandate* end users to make a choice.
3. **Enabling third parties to offer choice:** Provisions that require the gatekeeper to *enable third parties* to offer end user choice or even mandate it.

The key provisions that relate to **enabling end user choice** are:[7]

[6] For a discussion of both positive and negative implications of recommender systems, see Fletcher A et al (2023), "Recommender Systems and Supplier Competition on Platforms", forthcoming in *The Journal of Competition Law and Economics*. Available on SSRN.

[7] **Article 6(7)** is not listed here, as it contains no explicit role for end user choice. However, the requirement for "effective interoperability" arguably requires that third party providers of services and hardware, interoperating with the gatekeeper's CPS, are placed on an equal footing to the gatekeeper's own services in terms of providing and communicating choices for end users. This provision will be discussed in detail in another paper in this series.

- *Article 5(5):* End users should be allowed to access and use, through the gatekeeper's core platform services (CPS), any content, subscriptions, features, etc, that they have acquired directly from a third-party business user when using their app.
- *Article 6(3):* End users should be able to easily uninstall apps.
- *Article 6(3):* End users should be easily able to change default settings on gatekeeper's operating system (OS), virtual assistant, and web browser, where these otherwise steer end users to services provided by the gatekeeper.
- Article 6(4): End users should be able to install and effectively use third party apps and app stores, using a gatekeeper's OS, without using the relevant CPS (i.e. app store) of that gatekeeper.
- *Article 6(4):* End users should be able to set that downloaded app or app store as their default easily.
- *Article 6(6):* End users should not be restricted in their ability to switch between, and subscribe to, different apps that are accessed using the gatekeepers' CPS.
- *Article 6(9):* End users should be able to port their data, including to third parties where this has been authorised by the end user.
- *Article 6(13):* The conditions for an end user terminating a CPS may not be disproportionate and must be exercisable without undue difficulty.
- *Article 7(7):* End users must remain free to decide whether they make use of the new interoperability of interpersonal communications services, to be introduced under Article 7.

The key provisions that relate to **mandating end user choice** are:

- *Article 5(2):* Gatekeepers may not process, combine or cross-use end users' personal data or sign them into new services, unless the end user has been presented with a specific choice and provided consent.[8]
- *Article 6(3):* 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.

The key provisions that relate to **enabling third parties to offer choice** are:

[8] This article is discussed within another paper in this series, so we do not list it here. (see de Streel, A. and G. Mont (2023) "Data-related obligations in the DMA: remedy design and link to other EU rules", CERRE draft issues paper). Choice architecture issues are relevant to such consents, as discussed in a recent joint paper by the UK Competition and Markets Authority (CMA), Information Commissioner's Office (ICO) and Digital Regulation Cooperation Forum (DRCF). See CMA/ICO/DRCF (2023) Harmful design in digital markets: How Online Choice Architecture practices can undermine consumer choice and control over personal information.

- *Article 5(4):* Gatekeepers must allow third parties, free of charge, to communicate and promote offers to end users, and to conclude contracts with those end users, regardless of whether they use the gatekeeper's CPS to do so.
- *Article 6(4):* The gatekeeper shall not prevent downloaded third-party apps and app stores from prompting end users to consider setting their app or app store as their default.

It should be noted that there are many more requirements relating to enabling choice than to mandating it. This reflects the fact that many end users will not want to be forced to make choices, while others will proactively wish to make them.

It should also be noted that enabling, and even mandating, end user choice is not the same as imposing specific choices on those end users. If an end user is given a fair and effective choice and still opts for the gatekeeper's services, this should not be viewed as noncompliant with the DMA. On the other hand, given that end users are likely to have diverse preferences, zero take-up of alternative options might at least raise questions as to the effectiveness of the choice architecture.

3. THREE LEGAL PRINCIPLES FOR CHOICE ARCHITECTURE DESIGN UNDER THE DMA

It is important to read the above provisions in the context of the wider DMA regulatory framework, and in particular in relation to three core legal principles of effectiveness, proportionality, and non-discrimination.

3.1. Effectiveness

Central to the DMA is a focus on **effectiveness**. In particular:

- Article 8 (on compliance) 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.
- A number of specific Article 6 provisions also mention the need for effectiveness.[9]

As discussed above, suitable choice architecture will be critical to the effectiveness of the DMA in achieving fairness and contestability, since both require users make effective choices between the options available, reflecting their relative value. If users instead stick with the gatekeepers' services, even where these are less good, this will not facilitate the sort of dynamic and innovative environment that the DMA is seeking to achieve.

This expressly prohibits any circumvention behaviour that undermines effective compliance, and notably:

[9] Articles 6(4), 6(7), 6(9), and 6(10). For further discussion on this, see Fletcher, A. (2022). "Behavioural insights in the DMA: A good start, but how will the story end?". *Competition Policy International*.

- Article 13(4) makes specific reference to the importance of behavioural techniques and interface design for effective compliance, while Article 13(6) prohibits gatekeepers from making choices unduly difficult, including "by offering choices in a non-neutral manner" or subverting end users' "autonomy, decision-making, or free choice via the structure, design, function or manner of operation of a user interface."[10]

3.2. Proportionality

Proportionality is also relevant to the implementation of the DMA. This is clear within the DMA itself (see Article 8 and Recital 29). Proportionality plays a role in the limited defences provided within the DMA obligations.[11] There is also a general principle of proportionality in EU law.[12] The DMA should thus be interpreted as requiring gatekeepers to implement the provisions above in a way that is effective but not disproportionate in achieving the objectives of the DMA.

But what does this mean in practice? What it clearly does not mean is that gatekeepers are free not to comply with the DMA provisions if their costs of doing so exceed the expected benefits in terms of fairness or contestability. This would be inconsistent with the rule-like nature of the provisions and the lack of any explicit efficiency defence within the DMA. A better reading of the proportionality principle is that **the interpretation and implementation of the DMA's obligations should not exceed what is necessary to achieve its objectives**.

But what does this mean in the context of choice architecture design? We know that it is difficult, if not impossible, to design choice architecture that is fully effective in driving good decision-making, let alone contestability or fairness. As such, the most that can really be hoped for, in the context of choice architecture design, is not contestability and fairness but *more* contestability and fairness. But this might in turn suggest that the principle of proportionality has limited relevance to choice architecture design, since it is hard to think of measures that would *go beyond* what is necessary to comply. Nonetheless, there seems to be one key element of choice architecture design where the proportionality principle seems very relevant. This relates to how well the choice architecture delivers end user autonomy.

There can potentially be a **tension between promoting contestability and end user autonomy**. Consider, for example, the requirement under Article 6(3) whereby a designated browser must offer end users an upfront choice of search engines, and not just default them into using its proprietary

[10] Note that there is similar reference to interface design in the Digital Services Act (Article 25(1)): "Providers of online platforms shall not design, organise or operate their online interfaces in a way that deceives or manipulates the recipients of their service or in a way that otherwise materially distorts or impairs the ability of the recipients of their service to make free and informed decisions."

[11] For example, Article 6(4) requires gatekeepers to allow the installation and effective use of third-party apps and app stores that can be accessed separately from the gatekeeper's core platform service. However, the gatekeeper may nonetheless take measures to protect the security and integrity of its own hardware and software, so long as they are 'strictly necessary and proportionate'. The same applies to interoperability obligation at Articles 6(7). Article 7(7) includes a similar proportionality measure in relation to interoperability of communications services, which refers not only to integrity and security but also privacy.

[12] 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'.

search engine. But how is this to be designed, and in particular how should the gatekeeper's own service be ranked? In practice, there is likely to be a spectrum of possible options.

- At one end of the spectrum, it could theoretically be argued that, given the popularity of the gatekeeper's proprietary search engine, it should be ranked first on the list of options as this would best enable end users to choose their favoured option. However, this seems unlikely to be compliant with the DMA. The current popularity of specific search engines reflects over a decade of users being steered towards those services. Ranking these tops is unlikely to be effective in disrupting the status quo and enhancing contestability. Given the existence of strong 'ranking effects' – whereby users are more likely to choose a higher ranked option – end users would be highly likely to select the proprietary option.

- At the other end of the spectrum, given the very strong incumbent position of such a proprietary search engine, it could be argued that the impact on contestability would be maximised if it was made really quite difficult for end-users to find that proprietary search engine. This might, for example, be achieved by completely randomising the ordering across a wide range of options. This would arguably be good for contestability but less good for end user autonomy.

This raises the question of where on this spectrum the DMA expects gatekeepers to locate themselves in terms of the measures they take. **We consider that it is useful to think about the proportionality principle as requiring gatekeepers to comply with the DMA while respecting end user autonomy**. What does this mean in practice? Gatekeepers should certainly not seek to exploit behavioural insights to undermine user autonomy. However, they should also not be expected to limit end user autonomy unduly, in the name of contestability or fairness.[13]

In the example above, if the proprietary search engine was made too difficult to find, this could in fact be detrimental for those end users who would prefer this option. This would seem to act counter to the weight placed by the DMA on interface design not subverting or impairing user autonomy.[14] It is therefore arguably disproportionate to require gatekeepers to design their choice architecture in this way. How might proportionality be achieved in practice? Ideally, the chosen ranking approach would enable users who specifically want the gatekeeper's service to find it, but otherwise promote contestability to the largest extent possible. One natural option might be an alphabetical listing. However, while this would be easy to use and thus good for end user autonomy, it risks favouring those providers who happen to lie higher up the ranking alphabetically.

Empirical testing should be useful in identifying where the right balance is struck. For example, if those users who specifically want a proprietary search engine are found to be able to identify and

[13] Note that end user autonomy does not appear to be covered by the DMA objective of 'fairness', since this seems to relate only to the relationship between gatekeepers and their business users. See Recital 33.

[14] Recital 60 and Article 13(6).

choose this option even when it lies 'below the fold, then this would arguably strike the right balance.[15] If not, some form of stratified randomisation may be more appropriate (whereby the top, say, 5 options are listed first, but their order randomised, then the same for the next 5, and then the same for any 'long tail').

3.3. Non-discrimination in Choice Architecture

There is a real risk of gatekeepers self-preferencing in their design of choice architecture. This can take many different forms, from making its proprietary service a default, to ranking it highly, to making it the most prominent option, to making it easier to access (for example, requiring fewer clicks), to 'priming' users by preceding the choice with screens that focus on the gatekeeper, and so on.

While there is no general principle of non-discrimination (or neutrality) within the DMA, there are two key reasons for considering it as a core principle, at least in relation to choice architecture.

The first is the language within Article 6(5) and also the associated Recital (52):

- *Article 6(5):* Prohibition on self-preferencing in ranking (and related indexing and crawling); and requirement to apply transparent, fair, and non-discriminatory conditions to such ranking.
- *Recital 52: "Ranking should in this context cover all forms of relative prominence, including display, rating, linking or voice results and should also include instances where a core platform service presents or communicates only one result to the end user. To ensure that this obligation is effective and cannot be circumvented, it should also apply to any measure that has an equivalent effect to the differentiated or preferential treatment in ranking."*

The second is the wording in *Article 13(6)* – mentioned above – which prohibits gatekeepers from making choices "*unduly difficult, including by offering choices in a non-neutral manner*" or subverting end users' "*autonomy, decision-making, or free choice via the structure, design, function or manner of operation of a user interface*."

Together, these elements cover the most possible types of choice architecture relevant to the DMA and suggest that **non-discrimination** should be viewed as a **core principle in relation to choice architecture**.

In practice, **non-discrimination can be a complex concept to apply**. Any choice architecture will, by its nature, have more prominent and less prominent options and thus have an effect in steering end users' choices. This is especially likely to be true where there are many available options. As such, and noting the contestability and fairness objectives of the DMA, we propose that this concept should in

[15] A recent experiment commissioned by BEUC found that placing a gatekeeper' service 'below the fold' was useful in encouraging users to explore other options, while not deterring those who were keen to choose that service. BEUC (2023) Examining the Design of Choice Screens in the context of the Digital Markets Act.

practice be construed as meaning '**avoiding discrimination that favours the gatekeeper'** and this is the interpretation we assume below. [16]

To achieve this, **two elements are involved**:

- *The design element***:** Designing the choice architecture itself so that it is **steering users as little as possible** (noting that it is impossible to entirely prevent all such steering); and
- *The allocation element:* Ensuring that **access to the more popular positions** within the choice architecture is **allocated in a non-discriminatory manner**.

These two elements are complementary and both are important.

In relation to the allocation element, we note that there are also a variety of complex issues arising. For example, Article 6(5) clearly prohibits gatekeepers from using criteria that directly favour their own products and services. But what about criteria that indirectly favour them? For example, suppose that an online marketplace bases its rankings partly on speed of delivery, a factor that it believes its customers value highly, but that this in turn advantages products utilising that marketplace's highly effective proprietary logistics service. Does this count as non-discriminatory? How could this be demonstrated empirically? As discussed elsewhere, paid-for rankings raise especially complex issues in this context.[17]

Given these issues arising in relation to the **allocation element**, we consider that there is likely also to be a benefit in seeking to increase non-discrimination within the **design element** of the choice architecture. This design element is the core focus of this paper.

4. THREE ECONOMIC PRINCIPLES FOR CHOICE ARCHITECTURE DESIGN UNDER THE DMA

A key challenge for the various DMA provisions outlined above is that their effectiveness in delivering the objectives of the DMA depends critically on the extent of their impact on end user behaviour. For example, enabling end users to switch their defaults will only be effective in enhancing contestability if end users take advantage of these options.

But as has already been highlighted, there are a variety of behavioural factors that can restrict consumers from making effective choices, or indeed from making choices at all. Fletcher and Vasas (2023)[18] discuss several relevant behavioural insights in some detail. These include ranking effects, saliency effects, default effects, status quo effects, framing effects, social cues, obfuscation and

[16] Note that discrimination in the context of online platforms is sometimes also referred to as "intermediation bias". This was discussed in a 2019 CERRE paper on which this current paper builds. (Feasey, R. and J. Krämer (2019) "Implementing Effective Remedies for Anti-Competitive Intermediation Bias on Vertically Integrated Platforms", *CERRE Report*.

[17] See fn. 16. Also, Fletcher, A. et al (2023). "The Effective Use of Economics in the EU Digital Markets Act". *Jour. of Competition Law & Economics*, forthcoming.

[18] Fletcher, A. and Z. Vasas (2023). "Implementing the DMA: The role of behavioural insights." Forthcoming in *The Oxford Review of Economic Policy*. Forthcoming in *The Oxford Review of Economic Policy.* Working Paper available on SSRN.

shrouding, information overload, choice fatigue, complexification, and timing effects. These can, for example, lead to users failing to choose the option most ideal for them, and instead sticking with the default or status quo option; choosing the highest ranked, most salient, or least complex option; or simply making mistakes. These effects can all be exacerbated when users have limited time, cognitive bandwidth, capability, context, or motivation. A key conclusion of that paper is that the **design of choice architecture can therefore be critical to the extent – and quality – of consumer choice activity, and thus to the effectiveness of the DMA** in achieving its objectives.

But what does this mean more generally in terms of key principles for choice architecture design? In this section, we propose three key principles for choice architecture design under the DMA. Specifically, that gatekeepers should employ the 'attend, access, assess, act' choice framework, carry out *ex ante* testing, and evaluate impact *ex post*.

4.1. Employ the 'Attend, Access, Assess, Act' Choice Framework

When examining potential barriers to effective end user choice, we consider that it will be important to employ the '*Attend, Access, Assess, Act*' framework of consumer choice, also known as the '4 As' framework.[19] This will be key to ensuring that the choice architecture adopted is appropriately targeted at effectiveness, proportionality, and non-discrimination.

This framework highlights that end users go through four key steps when making choices:

1. They clearly need to **attend** to (or engage with) the market in the first place.
2. They then need to **access** information about the products (goods or services) available in the market.
3. They then need to **assess** that information, in terms of making comparisons across the various products and determining which best suits their preferences.
4. Finally, they need to **act** on that information, by purchasing or switching to their preferred product, and thereafter using it.

This framework is useful in focusing attention on ensuring that each step is working well. In the following, we utilise it to draw some lessons for each of the categories of provision described in Section 2.2.

Note that the first step (attend) is not necessarily relevant to those DMA provisions that relate to enabling end user choice, as these provisions apply to end users who are already actively seeking to make a choice. However, the other three steps clearly apply, and all steps apply to the provisions relating to mandating end user choice.

4.1.1. Enabling end user choice

[19] See Fletcher, A. (2021). "Disclosure as a tool for enhancing consumer engagement and competition." *Behavioural Public Policy, 5*(2), 252-278. Note that an early version of this framework was developed by the UK Office of Fair Trading (now the Competition and Markets Authority).

As highlighted above, several DMA provisions are designed to make it easier for end users to make choices, whether this be to utilise third party services, to change default settings, to download third party apps and app stores, to port data, or to switch or terminate services. The **access, assess** and **act** steps are all relevant here.

Access

First, end users must be able to **access** relevant information about options. In the context of the DMA provisions, this means that, for any choice, it should be:

- clear that a choice can be made;
- clear that a choice can be reversed;
- easy to find **where** the choice can be made; and
- clear **what the options are**. Note that these choices may be binary (e.g. switch/don't switch) or multiple (e.g. choice of search engine)

For example, in the context of some of the relevant articles listed above, this could mean:

- *Article 6(3):* The option to uninstall apps should be easy to access (for example by pressing on an app's icon) and the consumer journey should be the same for third party apps as for proprietary apps.
- *Article 6(3)/6(4):* It should be straightforward for users to find where to change the default settings on gatekeeper's operating system, virtual assistant, and web browser. There should be no distinction on the basis of how the app (or app store) was downloaded. Note that making access straightforward may involve allowing multiple routes of access. For example, if a user wishes to alter the default web browser used by their voice assistant, this should arguably be possible to achieve via the settings for the web browser and also via the settings for the voice assistant.
- *Article 6(4):* Any third-party apps and app stores that have been downloaded not through the gatekeeper's own services should be located alongside (and usable in the same way as) those that have.
- *Article 6(6):* It should be straightforward for end users to switch between, and subscribe to, apps that are accessed using the gatekeepers' CPS. Proprietary apps and third party apps should be treated in the same way.
- *Article 6(9):* It should be clear to end users how to port their data in relation to any particular service. If consumers are asked to confirm that they understand that a third party will be

porting their data, this should be straightforward. It should also be straightforward to terminate the porting arrangement at any point.

- *Article 6(13):* It should be straightforward for an end user to find where to terminate a CPS.

Assess

Second, consumers should be able to **assess** the available choices, on a reasoned and undistorted basis. This is as true for both binary choices as it is for choices with multiple options. Note that this will naturally require the provision of information, in relation to both the context of the choice being provided and the options available. It also requires that the choice architecture allows for non-discriminatory choice. This in turn means that:

- Information provided should be both **true and 'graspable'** by an average end user. It should avoid language that is too long, complex, or legalistic to be easily understood when going through the user journey.
- There should be **sufficient information** about the options to help in making a reasoned choice. Where relevant, this should include information about the consequences of the choice, including its reversibility. For example, what happens if an end user uninstalls an app? There should not, however, be too much information as this could create information overload, but consideration should be given to including shortcuts (to further information if required).
- Consideration should be given to whether decision-making is likely to be most effective when choices are **binary** ('make this service my default' vs 'retain my current default') or when they include **multiple options** ('which of these services would you like to make the default?').
- The options should not be ranked, made prominent, made the 'default', or otherwise **framed** in a way that unfairly favours the proprietary or default or status quo offering (or indeed any other offering).
- The extent of choice should reflect the **full range of options available** (whether pre-installed or downloaded) without consumers having to carry out any additional actions.
- All language should strike a **neutral tone**. It should avoid instilling undue concern, uncertainty or doubt. Any **warnings should be accurate and not disproportionately prominent**.

Act

Finally, consumers should be able to **act** on their assessment. That is, they should not be deterred from choosing their preferred option, or from sticking with it. For example,

- There should be **simple and easy navigation**, with no unnecessary steps, delays or friction in the user journey.
- The complexity of making choices (numbers of clicks, warnings, and so on) should **not differ between proprietary and third-party** options.
- Where a default setting could impact multiple access points (for example, a search engine default), the end user should be able to change the default **across all access points at once**.
- It should be clear that any choice is **reversible**, and any such reversion should be easy. (This will tend to encourage action, as opposed to cautious inaction).
- Any action (e.g. to change default) should **not be undermined by** the gatekeeper then **prompting** the end user to change back (or switching the end user back without asking).
- Products and services chosen should then **work automatically**, without end users having to make further changes to settings.
- There should be **no nudges or prompts** about the greater interoperability, or superior performance, of the gatekeepers' own services.

These various requirements are widely applicable to the various provisions listed above.

4.1.2. Mandating end user choice

The above all apply in situations of 'mandated user choice', but so does an additional aspect of decision-making, the need to ensure that end users **attend** to the need to make a choice.

This is especially relevant in the context of the **active choice of default settings** required under Article 6(3). This provision is designed to deal with the natural tendency of end users to accept the default option (default effect) and then stick with it (status quo effect), even when there are alternative options that would suit them better.

However, just providing a prompt to make a choice may not actually be enough to drive active choice, especially if users are focused on doing something else. For example, if an end user opens up a particular browser to do a search and is then prompted to choose a search engine or browser, they may well opt to do this as quickly as possible – to get on with the search – rather than seriously considering the choice.[20]

In this context, the key issues are likely to be:

[20] For example, the Mozilla research cited above found evidence that interrupting the user flow in this way substantially increased the extent to which users retained the pre-installed default. See fn. 21.

- **Prominence and clarity of the active choice**: Is it possible for users to click through it so fast that they barely notice it, or to skip it entirely?

- **Extent of choice**. It is important that the number of options should not be unduly limited as this not only limits access by third parties but also risks creating 'scarcity effects' whereby users infer value from the mere scarcity of an option.[21]

- **Extent of information***:* As above, it is important that the information provided is true and 'graspable', genuinely aiding decision-making while avoiding information overload. This is especially important in the context of mandated choice screens, given that end users will not have proactively sought out the choice. It is important that they understand the choice they are being asked to make, as well as the options. It may be important that the options include short descriptions and logos.[22] Social cues, such as user rankings, may be valuable, but take care to ensure that these do not unduly favour incumbents.

- **Non-discrimination across options**: If one option is particularly prominent or ranked highly, users are especially likely to choose it, especially if they are in a rush and not focussed. This can also relate to information provided before the choice screen that has the effect of 'priming' the user to accept a particular option.

- **Timing of the choice**: Is it provided at a point where users are likely to consider it relevant and likely to spend time thinking about the options?

    - It is useful that, on the date the DMA comes into force, this should act as a trigger for all relevant device users to receive the required choice prompt. This will provide a useful window within which third parties can market their services more widely, thereby helping users to make a considered choice.[23]

    - After that, on an ongoing basis, the best time to present options may well be at the point of setting up a new device, since users are more likely to be in the right mindset at that point.

- **Information provided to the user immediately prior to making the choice:** Is the choice provided at a time when the end user has seen the name and logo of the gatekeeper on the

[21] At the other extreme, if there are too many options, there could be a risk of choice overload. This can potentially be overcome through the use of 'ordered groups' (eg the 5 most popular options first, followed by the remaining options). However, recent experimental research commissioned by Mozilla found no evidence of such choice overload. See Mozilla (2023), Can Browser Choice Screens Be Effective? Experimental Analysis of the Impact of their Design, Content and Placement.

[22] The BEUC research referred to at footnote 15 also found that end users were more inclined to choose the gatekeeper's service in the absence of logos. Their interpretation of this finding was that "*When users are unable to locate their preferred option immediately, they may feel disorientated and become even more resolute in finding a familiar choice*".

[23] In this context, it is important that prior views of existing choice boxes are not accepted as relevant for DMA compliance.

several screens preceding the choice? If so, this may have an unhelpful 'priming' effect on their choice.

- **Frequency of the active choice:** If consumers are asked to make the same choice too often, they may exhibit choice fatigue. However, given the importance of ensuring that the DMA is effective in driving contestability, there would be merit in their being asked on a reasonably frequent basis (so long as they retain the gatekeeper's proprietary service). At a minimum, it is important that users are asked *every time* they set up a device. That is, even if users choose to use their previous settings, they should still be required to re-consider their choice of default browser, search engine, and virtual assistant (as relevant).

- **Ability to ask to be prompted again:** if the timing is not good, end users may prefer to delay the choice rather than make it too quickly. In this case, an option to 'ask me again tomorrow' (or such) may be valuable. However, it is important that this option is not over-used. For example, users should not be encouraged to procrastinate indefinitely. Moreover, providing such an option at the set-up stage could result in users delaying the decision to a time when they are even less likely to make a considered choice. This would not be helpful for compliance.

4.1.3. Enabling third parties to offer choice

For those provisions which are designed to enable third party service providers to offer choice to users (Articles 5(4) and 6(4)), much of the above will apply. But in addition, two other issues arise:

- The ability of third parties to control the content and format of the choice.

- The frequency of prompts/communications.

The content and format of the choice are clearly relevant to ensuring that end users are able to *access* and *assess* the options, and are not steered towards choosing (*acting*) any particular option in an unduly discriminatory way. The frequency of prompts is relevant to ensuring that end users *attend* to the available choice at all.

Given the DMA's objectives of fairness and contestability, one might think it would be **appropriate for third parties to control the content and format of these choices, and also their frequency**, since they will have a strong incentive to encourage end users to consider their service as a default. However, this is a situation where the discussion above relating to end user autonomy may be relevant. In terms of format, there may be benefits to end user comprehension if they always receive such prompts in broadly the same format. Moreover, there is some risk that third parties design their prompts to induce end users to make choices that are not in their own interest.

Likewise, in terms of frequency, if users are subjected to overly frequent prompts, they may suffer the effects of badgering or notification fatigue, becoming less attentive and more likely to make mistakes. In our previous paper, we highlighted the risk of third party "slamming" whereby end users are effectively switched without even noticing (as has sometimes occurred in telecoms markets). It is

unlikely that responsible services would behave in this way, as it would likely harm their reputation, but less responsible services could be less restrained.

There is a **difficult balance** to be struck here. To the extent that any harmful conduct by third parties breaches other regulations (such as consumer law), the gatekeeper should have the power (and indeed a duty) to address such conduct. However, to the extent that such conduct is legal (but harmful), it may make most sense for third parties to retain overall control but within certain parameters set by the gatekeeper (and these would in turn need to be objective and proportionate). Equally, if the gatekeepers do retain control over the format, it is important that there is some potential for third party customisation.

Finally, in order to ensure that prompts are well-framed to generate effective end user decision-making, it is important that third parties able to target them specifically at users that have not already set their service as a default. It is also important that the prompt takes users directly to the relevant choice screen, as opposed to the general settings menu which they may find hard to navigate.

4.2. Carry out Ex Ante Testing to Assess Likely Impact

Given that compliance with the DMA requires ensuring effectiveness of measures in delivering contestability and fairness, it is important that this is assessed empirically.

As should be clear from the discussion so far, the effectiveness of different choice architecture designs will depend critically on how well they enable effective end user decision-making. And while there is substantial general evidence underpinning certain behavioural insights ('status quo effects', 'default effects', 'prominence effects'), it can be hard to know how significant a role such effects are liable to play in any particular choice context. Moreover, many of the design issues highlighted have a 'goldilocks' aspect, in that end users need just enough (e.g. information to allow reasoned choice) but not too much (e.g. to avoid information overload). At the same time, as we have also discussed, it is also important that choice architecture respects the autonomy of end users, even if their choices happen to be bad for themselves and/or contestability. This further complicates the design of effective choice architecture. This means that **experimental *ex ante* testing will be critical, if choice architecture is to be designed that is genuinely effective, proportionate, and non-discriminatory**.

Such *ex ante* testing can take three key forms:

- **Lab experiments:** These are not necessarily done in the laboratory – they are often done online – but they involve participants being asked to make choices in a more clearly experimental context. The participants know they are part of an experiment and that the choices aren't real (albeit they may be given real incentives, most usually in the form of cash). The attention they give to their decision-making may therefore be rather different from that of real end users in a real context, which can affect the extent of behavioural effects observed.

- **Field trials:** These are also known as 'randomised controlled trials' (RCTs) or 'A/B' or 'multivariate testing'. They involve trialling different options with real end users, in real choice environments, who are unaware they are part of an experiment, and analysing their reactions.

- **End user surveys:** Surveys can provide useful directional indicators of how end users may be expected to react to particular measures, and can also be valuable for collecting qualitative information. However, it should be noted that there can often be a substantial difference between end users' stated intentions and preferences and their actual behaviour. Surveys can be especially valuable in following up lab experiments or field trials, for example by asking participants whether they are content with the option they chose or the information they were provided with. Note that field trials and lab experiments can usefully be supplemented with survey questions, for example, to elicit how the end user feels about the choice they have made, the options they were given, and how these were framed. Such survey responses can be especially valuable for assessing whether there has been any restriction of end user autonomy (as discussed above).

Of these three approaches, field trials tend to deliver the most realistic results[24], but they can typically only realistically be done by the gatekeepers, who thus control the experimental framework. Field trials may also be of limited value in assessing the effectiveness of different choice architecture options unless they are coupled with surveys. Third parties are most likely to need to rely on consumer surveys or lab experiments. These are less realistic but can generate cleaner results and important insights. Indeed, given that participants in laboratory experiments are typically relatively focused on the process, any mistakes they make may well be amplified in more realistic situations.

Under the DMA, gatekeepers are required to provide annual compliance reports. Since assessing compliance will necessarily involve assessing the effectiveness of choice architecture in achieving the objectives of the DMA, these reports **should be transparent about what the gatekeepers have done to test this and their rationale for the choice architecture then adopted**.[25]

Of course, testing takes time, and thus it may be unrealistic to expect the gatekeepers to have fully tested all aspects of their choice architecture prior to the implementation of the DMA. However, such testing can be continued over time.

The gatekeepers are the only parties that can carry out live field trials, and thus **they must have primary responsibility for this testing**. However, given the importance of ensuring that the testing probes the right questions, the **Commission will wish to oversee the testing programme – or nominate independent third parties** to do so – and may wish to approve and suggest changes to it.

[24] For a deeper discussion of the pros and cons of these three techniques, see Vasas, Z. (2023) "Do nudges increase consumer search and switching? Evidence from financial markets," *Behavioural Public Policy*, 7(3), 808-824.

[25] A number of past CERRE Reports have made similar proposals for the increased *ex ante* testing of interventions. For example Feasey, R. and J. Krämer (2020) "Implementing effective remedies for anti-competitive intermediation bias on vertically integrated platforms", *CERRE*; and Kramer, J,. (ed) (2020), "Digital markets and online platforms New perspectives on regulation and competition law", *CERRE* (see preface).

Input from interested third parties through market testing will also be critical, and it would be valuable for the Commission to consider how this can be best achieved.[26]

In this context it is noteworthy (and positive) that the DMA compliance report template[27] requires gatekeepers to report, for each measure: "*any type of market analysis or testing, in particular A/B testing or consumer surveys, that have been carried out to estimate the expected impact of the measure on the [DMA's] objectives*". The template also emphasises that the Commission may require specific testing in order to verify compliance. This could involve any or all of the three techniques described above.

In addition, the Commission and **third parties** may also wish to carry out their own *ex ante* testing, both to understand the likely impact of measures taken by the gatekeepers and more specifically to inform the Commission's oversight of the gatekeepers' own testing programmes.

2.1. Evaluate impact ex post

However, *ex ante* testing may not be possible in all cases. Even where it is, it may not provide an accurate view of likely impact. As such, to ensure that the DMA measures are effective, proportionate, and non-discriminatory, it will also be important for the gatekeepers (and third parties too where possible) to evaluate their impact *ex post*. This should enable learning about what works and what doesn't and thereby enhance the impact of the DMA in achieving its objectives going forward.

This need for ex post assessment is again reflected in the DMA's compliance report template, which also asks to see any analysis carried out in relation to actual impact.

A number of possible output indicators related to gatekeeper compliance in relation to choice architecture are discussed in CERRE's separate work on 'DMA Output Indicators."[28] This discussion is not revisited here. However, while those indicators will allow for the development of a basic and consistent picture of impact across gatekeepers, they will not be enough to fully assess the impact of different choice architecture designs. In order to ensure that they are complying effectively with the DMA, **the gatekeepers should also thus consider collecting and analysing additional *ex post* evidence.**

This may include:

- ***Ex post* evidence on the impact of different choice architecture designs:** For example, were all end users shown the same warnings in relation to downloading third party apps and app stores? If not, how many end users were shown each warning? And how many of these carried on regardless and completed the process?

[26] The UK CMA's experience in relation to market testing Google's Privacy Sandbox initiative may provide useful inspiration here.

[27] Commisstion Template for Compliance Report, Art.2.1.2. (ii) (o), see https://digital-markets-act.ec.europa.eu/template-compliance-report-under-digital-markets-act-published-2023-10-09_en.

[28] Feasey, R. and A. de Streel (2023). "DMA Output Indicators", CERRE draft issues paper. https://cerre.eu/wp-content/uploads/2023/07/CERRE-Draft-Issue-Paper-DMA-Output-Indicators.pdf

- **Consumers survey evidence**: For example, for a set of end users who received a choice screen, what proportion found it (i) comprehensible, (ii) useful, and (iii) engaging? What choices did they make? How hard did they think about it? Was this a new choice or the option they already used on a previous device? Are they happy with their choice? Do they intend to reconsider their choice within the next few months? Did they even notice they had a choice?
- **Retention evidence:** For example, of those end users who set an alternative to the gatekeeper's service as their default, how many of them had changed their default back within a year?

For all of the above, and where possible, it would also be valuable to collect figures from before any changes in choice architecture take place, to better enable the assessment of the impact of those changes.

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