Department for Business, Innovation, Science and Trade

REVEALING REALITY

Online Choice Architecture Mapping

Research findings report on the prevalence and frequency of Online Choice Architecture on online shopping platforms

November 2026

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Executive summary

Background and methodology

Online Choice Architecture (OCA) refers to how online environments are designed to shape user decision-making. While OCAs can support navigation and decision-making, they may also influence behaviour in ways that are not aligned with users' interests.

This research aimed to map the prevalence and nature of potentially harmful OCAs across a range of e-commerce platforms. The focus was on identifying where and how these features appear within typical shopping journeys, rather than measuring harm directly.

A total of 630 standardised shopping journeys were replicated across seven e-commerce platforms, with a spread across different devices, products, and user personas. Journeys were systematically coded using a structured and iteratively developed codebook of OCA types and sub-types, capturing the presence and characteristics of OCAs at each stage of the shopping journey. A proportion of journeys were double-coded to ensure inter-coder consistency.

Findings should be interpreted given certain methodological considerations and limitations. This includes the fact that the standardised shopping journeys were restricted to a predefined set of products, platforms, and journey stages. There was also some variation arising from platform design and technical constraints. The research also focused on mapping the prevalence and presentation of OCAs, rather than measuring user experiences, behavioural impacts, or harm.

Key findings

- OCAs were highly prevalent across all platforms, with an average of 15.7 different types observed per journey. Several OCA types appeared on almost all journeys, including reviews and ratings (encountered on 100% of journeys), framing (100%), popularity claims (99%), sludge (99%), and similar products (99%).
- Other OCAs varied significantly in their prevalence on different platforms, such as gamification (ranging from 0% to 99% in prevalence on different platforms), pop-ups and prompts (0% to 87%), and partitioned pricing (1% to 84%).
- OCAs also varied in their prevalence across different stages of the journey. For instance, while reviews and ratings were most prevalent at the 'product page' (with 96% prevalence at this stage), feedback was the most prevalent when adding the item to cart (81% prevalence), and at the home page after checkout, personalisation was the OCA encountered most often (49% prevalence).
- For some OCAs, their prevalence varied significantly on journeys carried out on different devices. For instance, ranking was more prevalent on web journeys (encountered on 100% of web journeys vs. 91% of app journeys), while commitment was more prevalent on app journeys (91% vs. 71% on web).

- Although harm was not directly measured, some OCAs were perceived by researchers carrying out the coding as potentially more harmful, particularly where they felt overwhelming, misleading, or reduced users' sense of control. Others appeared to be used in ways that could be primarily beneficial to users of the platform, rather than acting in the best interest of the retailer.

Implications

This research provides a foundation for further work exploring how OCAs affect user outcomes. Future research should focus on user experiences and vulnerability factors, to better understand the relationship between OCA practices and potential harm.

Background and methodology

Background and objectives of the research

Online Choice Architecture (OCA) describes 'the environment in which users act and make decisions, including the presentation and placement of choices and the design of interfaces.'[1] In the online marketplace context, this includes the ways that the design and display of information and functionalities may influence how users make decisions when shopping.

As a term or concept, 'Online Choice Architecture' is neutral and does not, in itself, convey any judgement about whether its effects are positive or negative. In some ways, OCAs can be used positively to help users, for example, by drawing the user's attention to more relevant products, or by streamlining the shopping process or minimising friction throughout the journey.[2] However, OCAs also hold the potential for user detriment, for instance through increasing pressure on the user to purchase, or through minimising information about the terms of the purchase.

For this research, the Department for Business, Innovation, Science and Trade (BIST) commissioned Revealing Reality, an independent research agency, to collect data on the prevalence and nature of potentially harmful OCA practices across a range of online shopping platforms. It should be noted that this research did not aim to quantify the harm caused to users, however some reflections on the factors that might contribute to user detriment are provided from page 109.

This research builds on previous work that has explored OCA, including work by the Competition and Markets Authority (CMA) exploring its potential harm to competition and consumers,[1] work by Citizen's Advice exploring the disproportionate harm to some consumers,[3] and work by BIST looking more specifically at the prevalence and harm of defaults.[4] In contrast to this previous work, the current research aims to investigate OCA at scale, considering a broad range of different OCA practices and quantifying them using systematic recording techniques.

Research design

To allow for meaningful statistical comparisons across different shopping journeys, a total of 630 standardised shopping journeys were replicated across seven different online shopping platforms (resulting in 90 journeys per platform).

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[1] GOV.UK - Online Choice Architecture: How digital design can harm competition and users

[2] GOV.UK - Online choice architecture

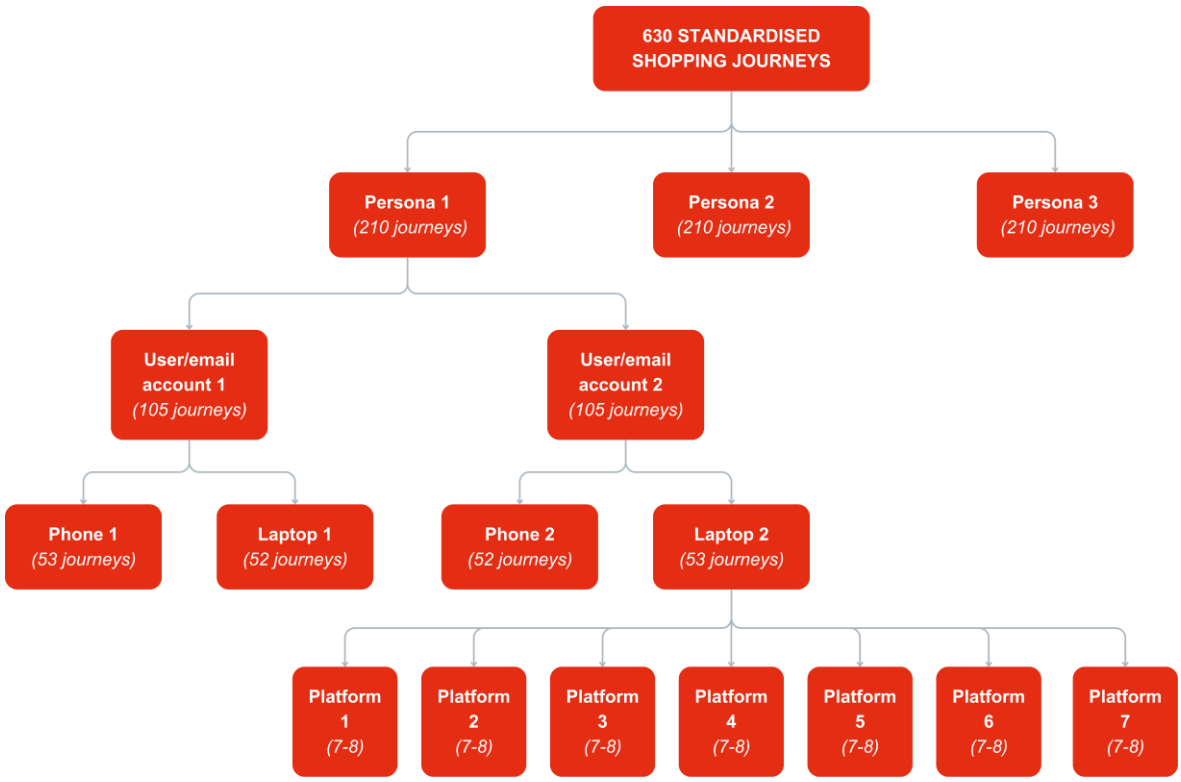
[3] Citizen's Advice - Review of Online Choice Architecture and Vulnerability Report July 2024

[4] GOV.UK - Research into Potentially Harmful Online Choice Architecture

Journeys were carried out across web and app interfaces on six of the seven platforms, with an even split across different devices. One platform was classified as primarily app-based, and so on this platform journeys were only carried out on the app, though with the same number of journeys carried out overall as on other platforms. To increase the representativeness of typical user journeys, a random spread across different variables was allocated:

- 10 products (with a spread across different product categories: sports top, book, hair mask, headphones, cat pet brush, vitamins, air fryer, baby cot, pens, backpack)
- Three user personas (two accounts per persona, with a spread across age, gender, and location)
- Searching journeys vs. browsing through categories
- Journeys carried out in the app version on a mobile phone vs. on the website version using a laptop[5]

The spread of the 630 journeys across user personas, devices, and platforms, is shown in the following figure. Overall journeys were evenly spread across the three personas, the two accounts per persona, the two devices, and the seven platforms.



[5] Note that for one platform, the app version was deemed to be the primary version used by a majority of users. For this platform, only app journeys were carried out.

The research process

1. Development and piloting

BIST developed the initial framework for coding (the systematic recording of observations according to a predefined classification system), based largely on the CMA's taxonomy of online choice architecture[6]. This resulted in a 'codebook' of 25 high-level OCA types, which was used in the early stages of the research. For each high-level OCA type, the codebook further specified a number of follow-ups to be coded, allowing the capture of additional detail about the specific presentation of each type of OCA that was seen (hereafter, these will be referred to as 'sub-types' of OCAs).

Initially, 10 e-commerce platforms were selected for exploration in this research, chosen by BIST based on internal policy conversations. The platforms selected were of interest as they were leading players within the UK context, or rapidly growing among UK users, and included social media platforms with e-commerce elements.

In October 2025, an initial piloting of 22 standardised journeys was undertaken to test and iterate the codebook and research process, ensuring accuracy and efficiency in coding.

After piloting, the decision was made to only include social media platforms with a specific marketplace element, and with minimal user-to-user variability, leading to a final sample of seven e-commerce platforms. Further changes were also made to the codebook, with some additional OCAs incorporated.

2. Audit

Prior to the main coding phase, researchers undertook an audit of more standardised platform information components, exploring where and how these features were presented across the different platforms. The features explored were:

- terms and conditions
- product safety information
- returns information
- seller location
- sponsored items

3. Recording

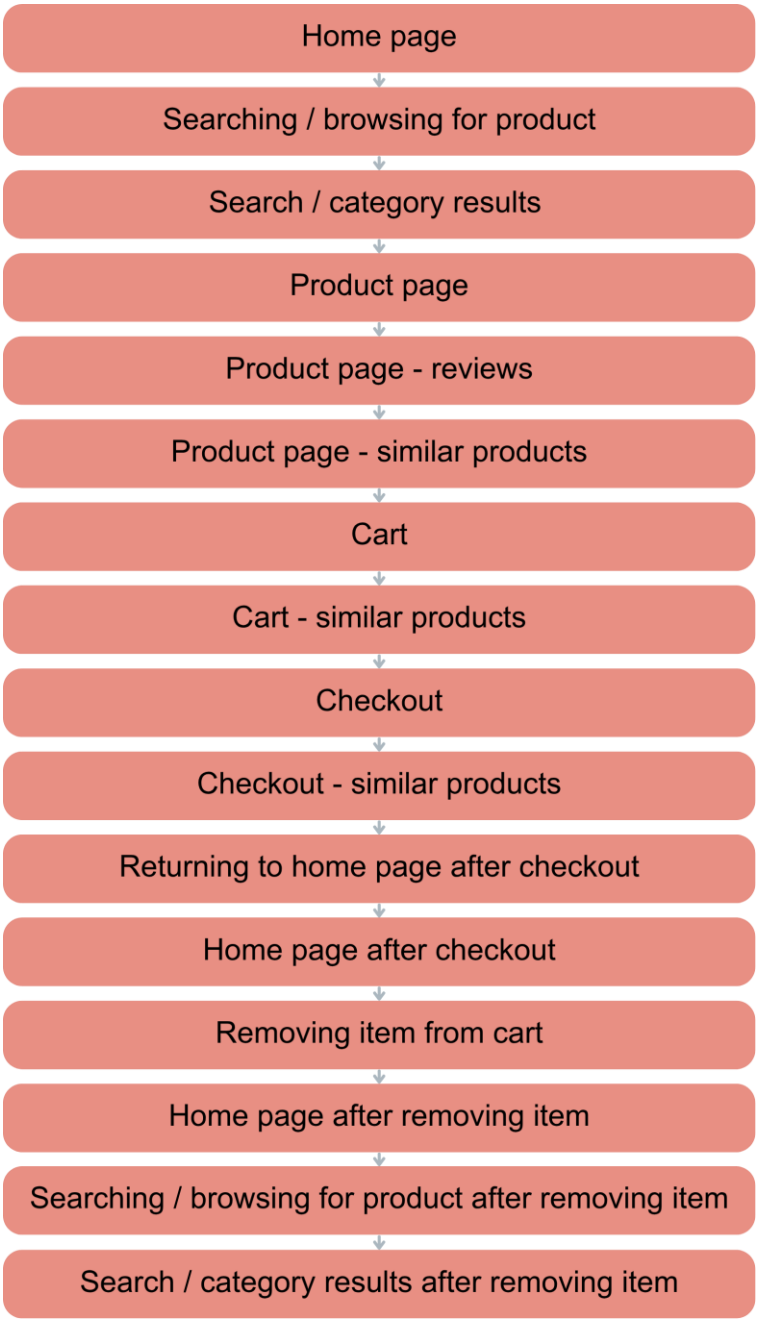
For the main research, 630 simulated shopping journeys were recorded across the seven platforms. The aim was to mimic the different steps a user might make while purchasing an item on such e-commerce platforms, whilst also including some additional steps to trigger specific

[6] GOV.UK - Evidence review of Online Choice Architecture and user and competition harm

OCAs to occur. For example, it was observed during piloting that some OCAs would occur when the user left the checkout process; this step was therefore included as a later stage in the journey.

Some journey stages were separated out to allow separate exploration of the OCAs which appear in specific areas of those stages. For example, the similar products seen on the product page, cart, or checkout were separated out into a separate journey stage. Throughout this report, these distinct journey stages will be referred to using labels such as ‘product page – similar products’. Similarly, on the product page, researchers were instructed to click ‘see all reviews’ where possible. This has also been separated out into a distinct journey stage, labelled ‘product page – reviews’.

Outline of the stages that researchers took on each shopping journey



For later journey stages (from ‘returning to home page after checkout’ onwards), since these largely involved revisiting a stage from earlier in the journey, only the presence of new or additional OCAs was coded. The OCAs coded at these journey stages therefore represent the changes that took place over the course of the journey.

The devices used for web journeys were laptops running Windows 11, while app journeys were carried out on Samsung Galaxy smartphones running Android 16. To minimise the influence of software- and hardware-related factors on OCA prevalence, several variables were controlled for in the research design. These included:

- **cookie settings** (researchers selected ‘accept all cookies’, if asked to set a preference)
- **privacy settings** (all device/system-level privacy settings were set to default with ‘ad personalisation’ or ‘ad tracking’ turned on)
- **browser** (Google Chrome was used for all journeys carried out on the platform website)
- **notification settings** (researchers agreed to receive notifications, if asked to set a preference)
- **app/device updates** (all devices and apps were updated to latest OS and app versions at the beginning of the research)
- **location settings** (VPNs were used, with the location set to the persona’s location, with location settings turned ‘on’ on all devices)
- **browser history** (factory-reset devices were used for initial set-up, with each persona assigned their own device and email account to ensure browsing history from other personas did not influence OCA prevalence)

The initial recording phase took place between November and December 2025. Some journeys were re-recorded between January and February 2026 to ensure standardisation across journeys, since some of the initial recordings had slight variation in their journey structure with some journey stages being missing.

4. Coding

From December to February 2026, the 630 shopping journeys were coded, with further observations noted by the team of coders throughout the process.

The coding approach was to code all OCAs they saw at each journey stage. Each high level OCA was only coded once per journey stage, but if that OCA was seen multiple times at a journey stage, coders would answer follow-up questions for all the individual instances of the OCA that were seen at that journey stage.

There were some exceptions to this approach. If an instance of an OCA remained consistent throughout the journey, such as an OCA which appeared in the menu bar throughout the journey, researchers only coded this once, at the first journey stage where it was seen.

10% of journeys were double coded, with the coding compared to establish the degree of inter-coder consistency. Overall, the initial average rate of consistency across coders was 80%.[7] Following double coding, initial coding was revisited to address all inter-coder discrepancies that had been identified.

[7] Subjective OCAs were included for the double coding comparisons, which may have led to lower overall consistency rates. For an explanation of why these OCAs were classified as ‘subjective’, please see page 12. Reviews of the double coded data indicated that discrepancies between coders primarily reflected isolated instances where OCAs had been missed, rather than differences in the ways in which coders were interpreting and identifying OCAs. A further discussion of the methodological challenges that this research has brought to light is provided on page 114 under ‘Implications for future research’.

The codebook

On the following pages, a summary of the final codebook is shown, including a short description of each high-level OCA type, alongside a mock-up of what this might look like.

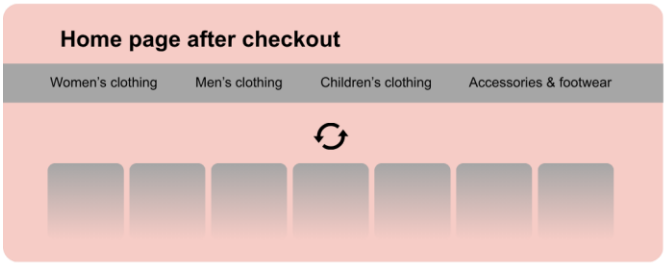
Over the course of this research, the codebook was refined through several iterations, with new OCAs and sub-types incorporated as they were identified. This iterative development began at the research design stage and continued throughout the pilot phase and in the early stages of coding.

Some OCAs were classified as ‘subjective’ in coding, as it was more difficult to define these clearly in a way that would enable consistency between coders, with researchers noting that perceiving their presence inherently relied on a subjective sense of the impact of the OCA.

For instance, *choice overload* was defined as ‘too many’ options being presented, which inherently relies on a subjective assessment of what is excessive. The other subjective OCAs were *complex language, decoys, sensory manipulation.* These subjective OCAs have been excluded from the main analysis in this research and have been analysed separately. For clarity, they are shown in blue boxes in the following codebook summary.

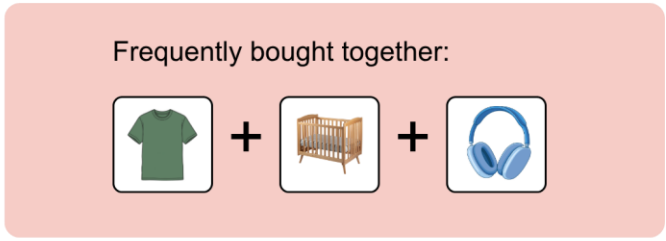
AUTOMATED ACTIONS

The website/app does something automatically without any action from the user.



BUNDLING

Multiple products are grouped together for sale in a single 'package', typically at a special price.



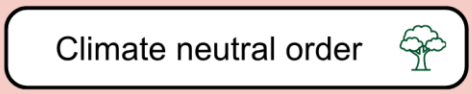
CHOICE OVERLOAD *

Too many options are shown, making decision-making more difficult.



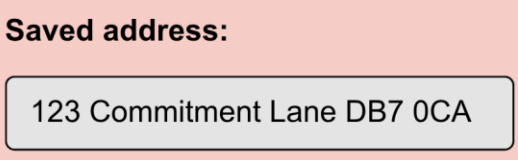
CLIMATE PLEDGES / SUSTAINABILITY

Claims related to the climate or sustainability.



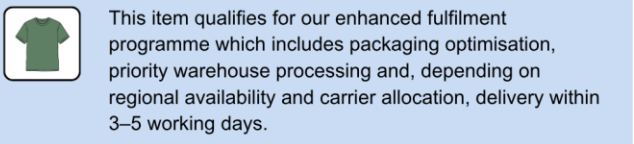
COMMITMENT

The platform uses data about user behaviour to encourage further shopping behaviours in the future.



COMPLEX LANGUAGE *

Information is made hard to understand with jargon or confusing terms.



COUPONS

The platform offers discount coupons that users can claim to reduce the price of an item.

20% off with code: OCA26

DECOYS *

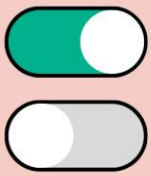
An option is added to make another option look better, e.g. by making the option look like it's a bargain. The 'target' option is the product the platform is trying to get you to buy.

Option A	Option B	Option C
Price: £6	**Price: £10**	**Price: £9.50**
Spec: basic features only	Spec: all features	Spec: fewer features than B

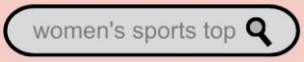
DEFAULTS

A choice for the user that benefits the retailer is either automatically pre-set or heavily implied in some way.

Preset



Implied



DRIP PRICING

Only part of the price is shown upfront, with additional costs appearing without warning later on in the purchasing journey.

Product page



£5.99

Checkout



£8.99 including delivery

FALSE CLAIMS

A claim made by the platform is factually incorrect or impossible to carry out.

Cart



free gifts!

Checkout

+ £9.99 delivery

FEEDBACK

The user is given feedback after making a choice or purchase.



FORCED OUTCOMES

The platform changes or restricts a user's options without explicit permission or without giving them a choice to change it.

minimum spend: £10

FRAMING

The use of language to influence decisions, including where certain products / items are framed differently to others in order to make them more appealing.



FREE delivery!

GAMIFICATION

A 'gamified' shopping experience is created through the use of virtual currencies, progress bars, spinners, etc.

Spend £2.97 more for free delivery!

MESSENGERS

The user is offered a platform on which they can communicate with a specific person, group, or AI chatbot.



Need help?

NUDGE / DARK NUDGE

The platform removes steps from the shopping process or minimises information about costs or terms to encourage more impulsive decision-making.

Buy it now

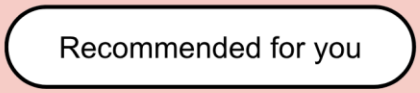
PARTITIONED PRICING

Costs are broken into parts without a clear headline price, meaning the consumer has to add up these separate costs themselves to figure out how much they will be charged.

Price: £5.99 + £2.99 postage

PERSONALISATION

The platform uses data to personalise offers to the users' specific traits like their location or previous shopping activity.



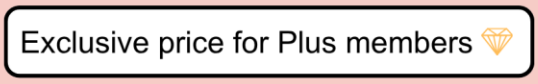
POPULARITY CLAIMS

Messages about high popularity of an item, including how many others bought or liked something.



PREMIUM VERSION

The user is offered a premium version of the platform.



POP-UPS AND PROMPTS

Pop-ups or prompts informing users about something like a sale or promotion, or encouraging them to perform an action which is likely to benefit the retailer.



RANKING

Options are shown in an order that is specified by the retailer.



REFERENCE PRICING

The retailer makes a price look more attractive by highlighting how the original price has been reduced in some way.

~~RRP:£100~~ -25% £75

REVIEWS AND RATINGS

Reviews and ratings are shown.



SCARCITY CLAIMS

Messages about limited supply or time.

Hurry! Sale ends soon

SENSORY MANIPULATION *

Visual features, haptic feedback, sounds, or design features are used to draw attention to specific options, steer consumers to specific choices, or reinforce actions.

Standard delivery - £4.99

Premium delivery - FREE with account

SIMILAR PRODUCTS

Different categories of similar or recommended products are presented to the user.

Others also bought:



SLUDGE

The platform uses extra steps, barriers, or friction that make it harder for the user to do something that is undesirable to the retailer.

To proceed to checkout, please sign in:

email or username

continue

Key definitions

Types of OCA: The high-level categories of OCA coded in this research, for example defaults, ranking, and so on.

Sub-types of OCA: The specific presentation of each type of OCA seen, for example, for defaults, whether it was implied or preset, whether it was default delivery options, default item spec, and so on.

Prevalence: The proportion of journeys on which an OCA was present one or more times, regardless of how many times it was seen (that is, the prevalence of defaults would be the proportion of all journeys on which at least one default was seen).

Frequency: The number of times an OCA appeared (in this research, frequency includes the proportion of journey stages encountered at, and whether it was seen once or multiple times at each journey stage).

Considerations and methodological limitations

Throughout this report, certain considerations should be kept in mind:

- This research explored the prevalence and frequency of potentially harmful OCAs. It should be noted, however, that the prevalence and frequency of an OCA do not equate to its potential for harm. No data on harm was collected for this research, though some observations and implications for future research are provided from page 109.
- Most OCAs consisted of different sub-types, which means that their presentation can vary both within and across journey stages. For some OCAs, this includes variation in terms of the likely potential for harm to the user. For instance, one sub-type of defaults is *implied defaults*, whereby your attention is drawn to one option over another (for example, the 'Buy now' button over the 'Go to cart' button), while another sub-type is *sneaking-into-the-basket*, whereby items are automatically added to the cart without any action from the user.
- All estimates of prevalence from this dataset are likely to be an underestimate – the intent of some OCAs is to hide or draw your attention away from things, meaning these were easier for researchers to miss while coding.
- The aim was to be as standardised and representative as possible. This included using set journey stages, VPNs, fully reset devices, and a randomised spread of personas, products, and devices. However, technical issues encountered on platforms meant that there was some variation in the use of VPNs, different email domains, and which accounts were used (on some platforms, several accounts were made per persona due to initial accounts being blocked). Similarly, only 10 products were explored for this research, meaning representativeness may be limited, and that it was not always possible to find certain items on some platforms, meaning some browsing journeys were switched to searching, and on

other journeys a similar but related item was opted for instead (for example, air fryer trays were selected as opposed to an air fryer).

- The time period for recording was around Black Friday / Christmas, which may have led to increased OCAs. Due to the high cognitive burden of obtaining complete standardisation of journey stages, some journeys were re-recorded in January/February in order to ensure all key journey stages had been captured, however minor differences in journey stages remain for some recordings (some journeys are missing less crucial, later journey stages, such as 'home page after checkout').[8]
- As discussed, some journey stages were separated out to allow separate exploration of the OCAs which appear in specific areas of those stages – for instance, the similar products seen on the product page were treated as a distinct journey stage labelled 'product page – similar products'. As a result, not all journey stages were encountered on every journey (for instance, if there were no similar products at checkout, then the 'checkout – similar products' journey stage did not take place).
- Due to standardisation of journey stages, it was not possible to fully explore some OCAs, for example, for partitioned pricing, researchers coded all add-ons but were not able to see if the headline price would have been displayed once the add-on was selected.
- Similarly, the standardised journey structure means that the data collected for this research may not fully represent the prevalence and frequency of OCAs across these e-commerce platforms. There are other parts of the platform, for instance features accessed through the user's account, which may contain further OCAs. The data from this research should therefore be treated as a simulation of what a user might experience when purchasing an item on an e-commerce platform. A real user's experience of these platforms is likely to extend beyond this simulation
- Though the aim of the codebook was to be as extensive as possible, with several rounds of iteration incorporating new instances of OCAs not previously included, an 'other' option was kept in the codebook for some OCA follow-ups, to account for the possibility that certain sub-types had not been included as an option. Wherever possible, researcher observations on the types of OCAs classified in this way are summarised throughout the report.
- The follow-ups specifying the sub-types of an OCA were an additional step, coded once the presence of the OCA had already been noted. In a small number of instances these follow-ups were not coded by researchers. As a result, base sizes for all follow-ups may not always be reflective of the total number of journey stages at which each OCA type was encountered.

[8] In total, 23 shopping journeys were affected by missing journey stages. Note that these issues were spread across all the e-commerce platforms explored for this research, with no more than seven journeys on a single platform impacted.

In spite of the methodological challenges mentioned above, a valuable methodological approach has been developed, which could be applied in similar future research. Through continual iterative refinement, this research achieved a high level of inter-coder consistency and has enabled the systematic mapping of OCA prevalence across platforms.

Statistical testing

Throughout this report, we have only carried out statistical comparison where base sizes are at least 30. We will only use the word ‘significant’ to refer to statistically significant findings at the 95% confidence interval.

Audit findings

Prior to the main coding phase, an audit of more standardised platform information components was carried out, exploring terms and conditions, product safety information, returns information, seller location, and sponsored items. The findings across platforms are summarised in this section.

Terms and conditions

Each platform tended to present their terms and conditions (T&Cs) in a standardised way. For example, on some platforms, T&Cs were included on the product page, within the product or delivery information. Across platforms, however, there was variation in the specific placement and presentation of T&Cs. For example, some platforms used a navigation bar at the bottom of the website, which was persistent throughout the journey, while other platforms included T&Cs as a clickable link on the checkout page. The following example mock-up below illustrates these two different examples of the presentation of T&Cs.



Product safety information

Across platforms, product safety information was typically displayed on the product page. Within each platform, this information was usually presented in a standardised way. For example, most platforms presented safety information on the product page alongside other important information such as T&Cs or store details, as shown in the mock-up below, while on one platform product safety information was seen in the navigation bar at the bottom of the website.



However, for some platforms there was variation within the platform, as the inclusion of safety information was not consistently provided for all products, and appeared to instead be either included or not at the discretion of the seller.

Returns information

Across platforms, returns information was typically available on the product page, for example, as a section on the product page alongside T&Cs and safety information, as seen in the mock-up below.



Within each platform, returns information tended to be presented in a standardised way, with some platforms additionally presenting this on the home page, others at checkout, and others in a navigation bar at the bottom of the page. However, for some platforms there was variation between different products, with returns information not being available for all products.

Seller location

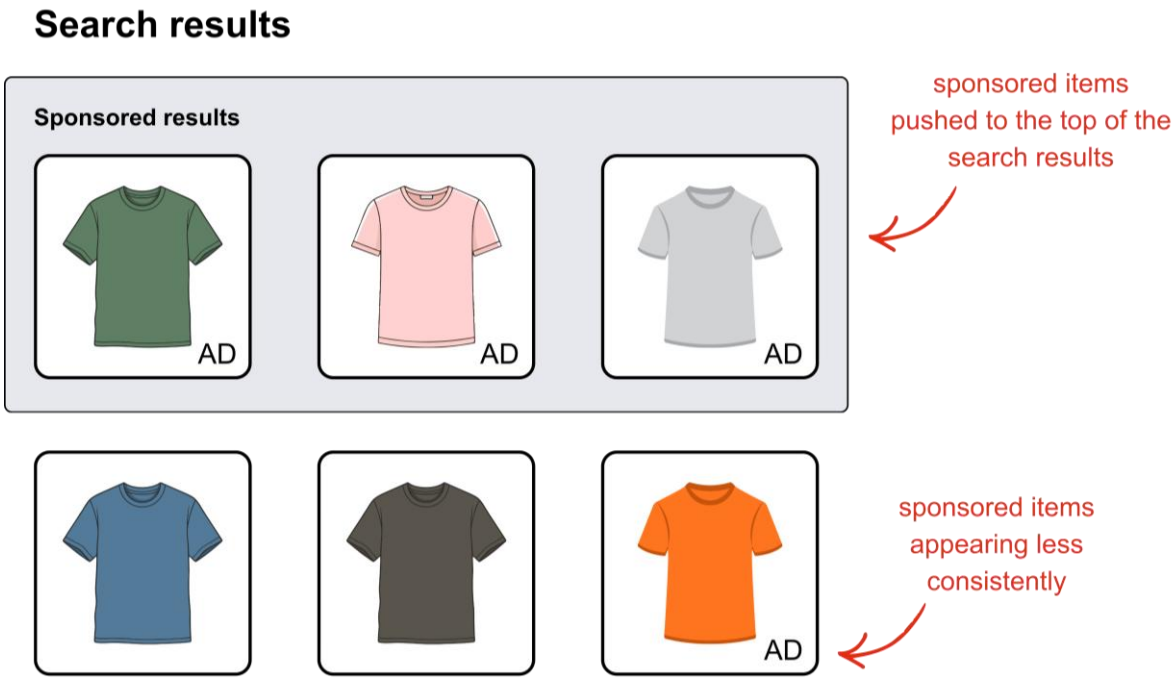
Of the platforms where seller location was available for all products, this information was presented in a standardised way, such as in a drop-down menu next to product information and T&Cs, as shown in the mock-up below.



However, on platforms where seller location was not seen for all products, there was variation in how it was presented. For example, for some products the seller information would be directly accessible on the product page, while for others the product page contained a link to the seller's page, through which the seller location could be found.

Sponsored items

Sponsored items usually appeared at the search/category results stage across platforms. However, within this stage there was some variation in the presentation of sponsored items. On around half of the platforms explored, sponsored items were consistently presented at the top of the search results, whereas on other platforms, they appeared in a less consistent order in the search/category results and sometimes were not seen at all. These two different ways of presenting sponsored products are demonstrated in the mock-up below.



On one platform, no sponsored items were encountered on any of the journeys carried out for the audit.

Overall prevalence and frequency of OCAs

This section contains data on the overall prevalence and frequency of different types of OCA across the 630 standardised shopping journeys. This includes the proportion of journeys on which each OCA appeared at least once, the average number of different types of OCAs seen on journeys, the proportion of journey stages each OCA was encountered on, and how often they appeared *once* or *multiple times* on journey stages where they were seen. A breakdown of the OCAs whose prevalence varied the most across platforms is also provided. As noted in the background and methodology section, an OCA's prevalence and frequency do not equate to its harm.

Journeys contained an average of 15.7 different types of OCA, which was relatively consistent across platforms

The average number of types of OCA seen on journeys was 15.7. Across the different e-commerce platforms explored, this average was fairly consistent, ranging from 14.1 to 17.4 across the different platforms explored.

Every journey contained multiple different types of high-level OCA types. The minimum number of different types of OCAs seen on a journey was 10, with the maximum being 21 out of a possible 27 types of OCA.

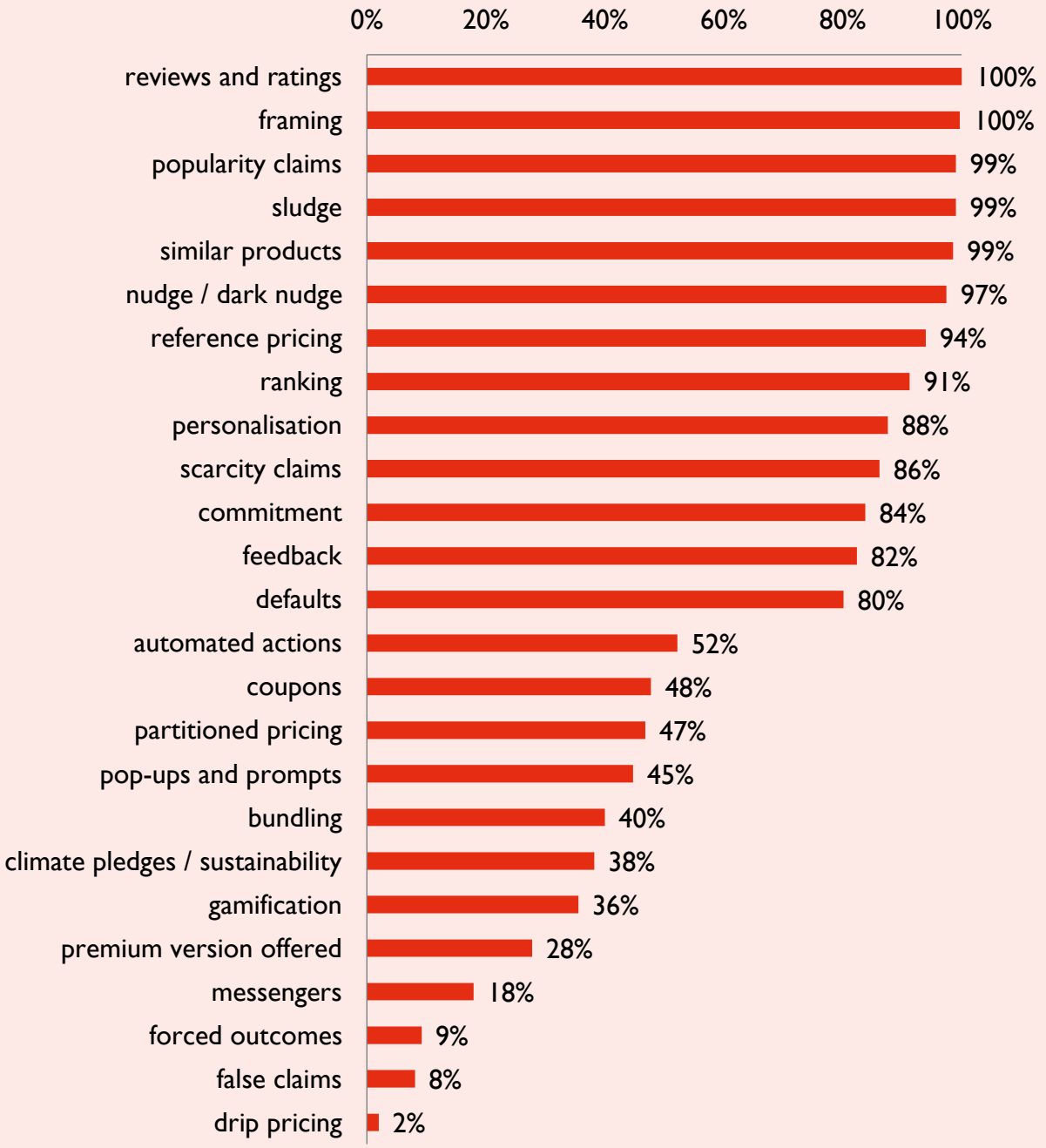
Reviews and ratings, framing, popularity claims, and *sludge* were the most prevalent OCAs across the 630 journeys

Some of the types of OCAs explored were encountered on almost all of the 630 journeys, including r*eviews and ratings*, *framing*, *popularity claims*, *sludge*, *similar products*, and *nudge / dark nudge*. The prevalence of these types of OCA ranged from 97% to 100%.

A further seven OCAs were present on the majority of journeys, with prevalence ranging from 80% to 94%, including *reference pricing* and *defaults*.

The remaining 12 OCAs were less prevalent across all journeys, occurring on between 2% (*drip pricing*) and 52% (*automated actions*) of the 630 shopping journeys.

Average overall prevalence of different types of OCA across all journeys



Base n=630 journeys, chart shows the proportion of journeys on which each OCA was encountered at least once.

For some OCAs, prevalence varied significantly across different e-commerce platforms

There were 10 OCAs for which there were a high number of significant differences in prevalence between different platforms, as well as one OCA for which a large majority of encounters occurred on just one platform.[9] It should be noted that on one platform, journeys were only carried out using the app version, with no journeys carried out on the website using a laptop.

The OCAs with these statistically significant differences were:

- **Automated actions** (total sample prevalence = 52%, ranging from 13% to 93% across different platforms)
- **Coupons** (total sample prevalence = 48%, ranging from 27% to 80% on different platforms)
- **Partitioned pricing** (total sample prevalence = 47%, ranging from 1% to 84% on different platforms)
- **Pop-ups and prompts** (total sample prevalence = 45%, ranging from 0% to 87% on different platforms)
- **Bundling** (total sample prevalence = 40%, ranging from 1% to 100% on different platforms)
- **Climate pledges / sustainability** (total sample prevalence = 38%, ranging from 0% to 97% on different platforms)
- **Gamification** (total sample prevalence = 36%, ranging from 0% to 99% on different platforms)
- **Premium version offered** (total sample prevalence = 28%, ranging from 0% to 100% on different platforms)
- **Messengers** (total sample prevalence = 18%, ranging from 0% to 66% on different platforms)
- **Forced outcomes** (total sample prevalence = 9%, ranging from 0% to 6% on most platforms, but with 57% prevalence on one platform)
- **False claims** (total sample prevalence = 8%, ranging from 0% to 31% on different platforms)

When OCAs were present on a journey, they occurred at an average of approximately 2 out of the 17 journey stages[10]

OCAs that were observed at least once on a journey occurred at an average of 11% of journey stages.

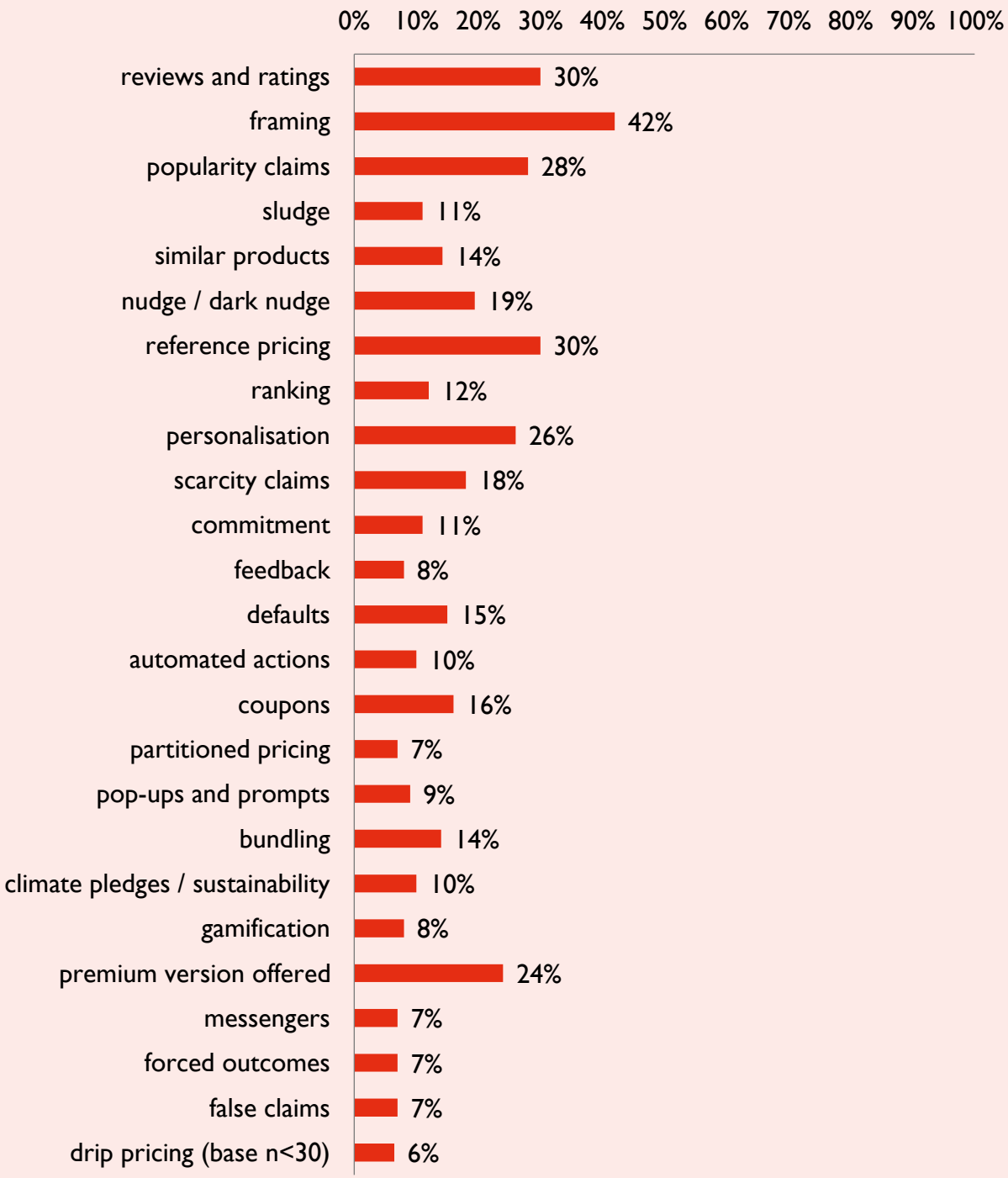
[9] For each OCA, t-tests were conducted to assess statistically significant differences in prevalence across platforms. Ten OCAs showed a great degree of variation, each with ten or more statistically significant pairwise differences between platforms. For forced outcomes, there was one platform which had significantly higher prevalence than all other platforms, and which accounted for 88% of all recorded journey stages involving this OCA.[9]

[10] Note that not all journeys will have contained all 17 journey stages. The proportions in this section have been calculated using the specific number of journey stages encountered on each journey.

The OCAs that were seen on the highest number of different journey stages included *framing*, *reviews and ratings*, and *reference pricing*, being encountered on between 30% and 42% of journey stages on the journeys where they were encountered.[11]

[11] Some OCAs may be less likely to appear frequently throughout a journey, as they are more relevant at certain journey stages. For instance, drip pricing can only be encountered once the user reaches checkout, meaning it would only ever be coded at one journey stage throughout the journey.

Average proportion of journey stages each OCA was encountered on



Base n=11-630 journeys on which each OCA was encountered.

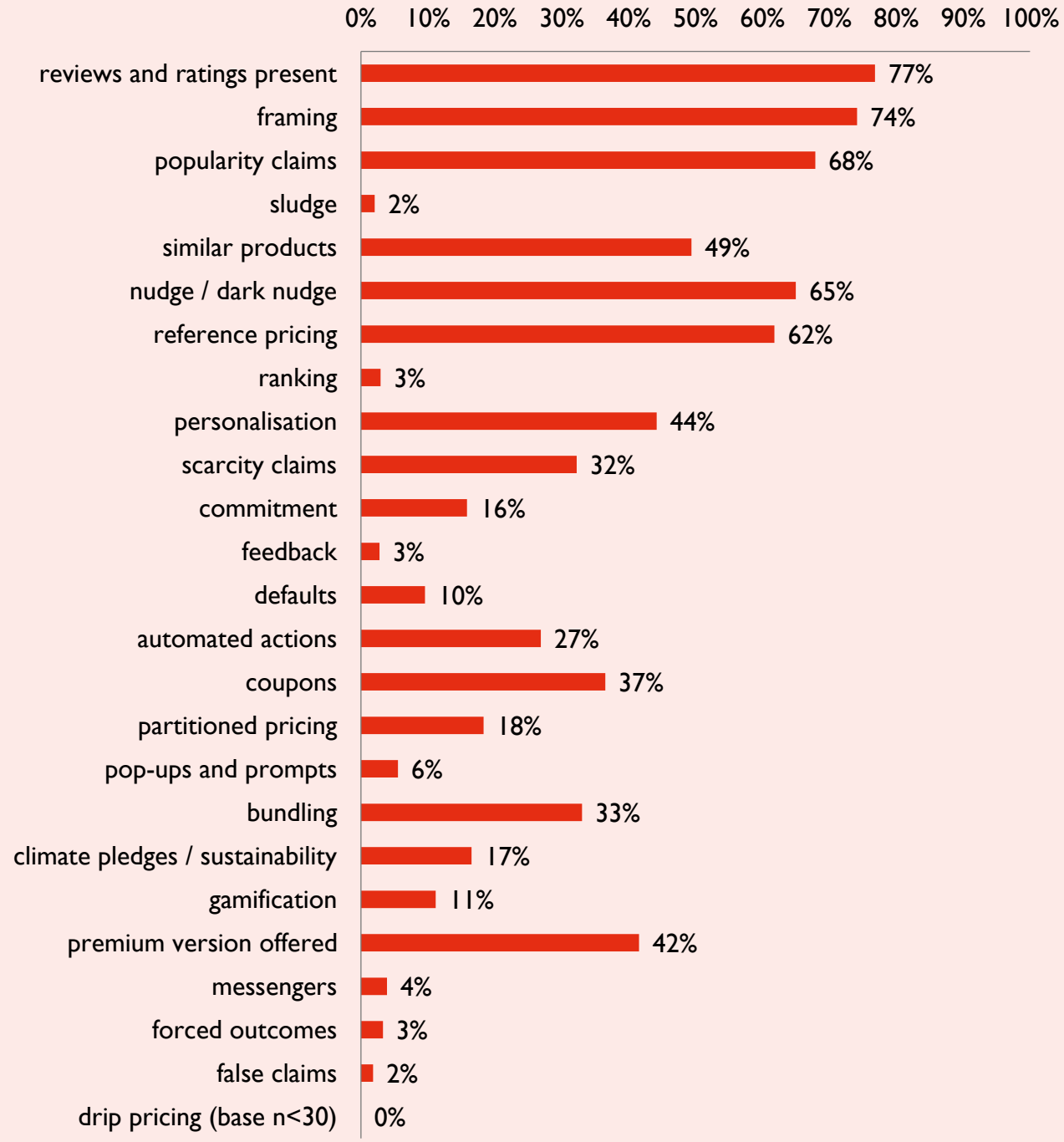
***Reviews and ratings*, *framing*, and *popularity claims* were the OCAs that most often occurred frequently when they were encountered at a journey stage**

Reviews and ratings, *framing*, and *popularity claims* were the OCAs that were most likely to be seen *multiple times* when they were encountered at a journey stage, with the proportion of journey stages at which this was coded ranging from 68% to 77%.[12]

Some OCAs that were highly prevalent across all journeys, such as *sludge* and *ranking*, were rarely seen *multiple times* at a specific journey stage. The proportion of stages where *sludge* was seen *multiple times* was 2%, and for *ranking* this proportion was 3%, in contrast with their overall prevalence of 99% and 91% respectively.

[12] Some OCAs may inherently be more likely to appear frequently at some journey stages. For instance, OCAs like reference pricing are attached to individual product prices, meaning at any journey stage containing multiple products (for example at 'search/category results') it is highly likely that this OCA will also be encountered multiple times.

On journey stages where different types of OCAs were present, the proportion of journey stages where they were encountered 'multiple times'



Base n=11-4083 journey stages at which each OCA was seen.

OCA sub-types

For each high-level OCA type, follow-ups were specified, allowing the capture of additional detail about the specific presentation of each type of OCA that was seen. This section presents a breakdown of these specific sub-types of OCAs, in order of the overall prevalence of each OCA across the 630 standardised shopping journeys.

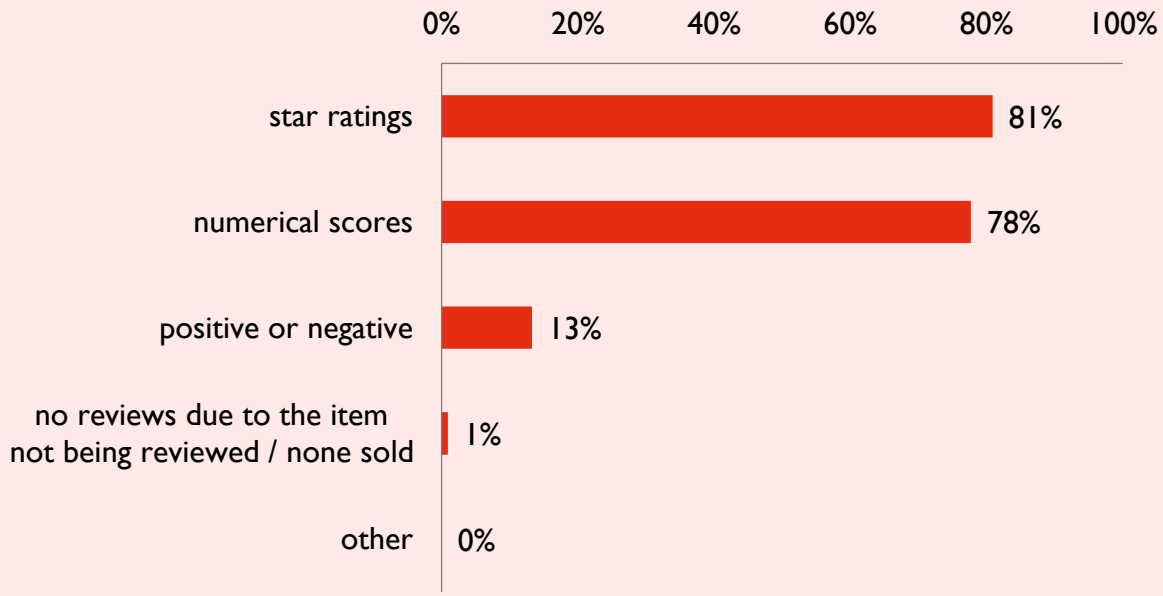
Reviews and ratings: *Reviews and ratings are shown*

- **Prevalence of reviews and ratings:** Reviews and ratings were encountered on 100% (630) of the 630 standardised shopping journeys.
- **Frequency of reviews and ratings:** On journeys where reviews and ratings were seen, they were seen on an average of 30% of journey stages. At each journey stage where they were seen, they were encountered *multiple times* 77% of the time.

Where *reviews and ratings* were seen, this most often involved *star ratings* or *numerical scores*

At the journey stages where reviews and ratings were present, this tended to involve *star ratings* (81% of stages) or *numerical scores* (78%), with a smaller proportion of journey stages involving binary *positive/negative ratings* (13%).

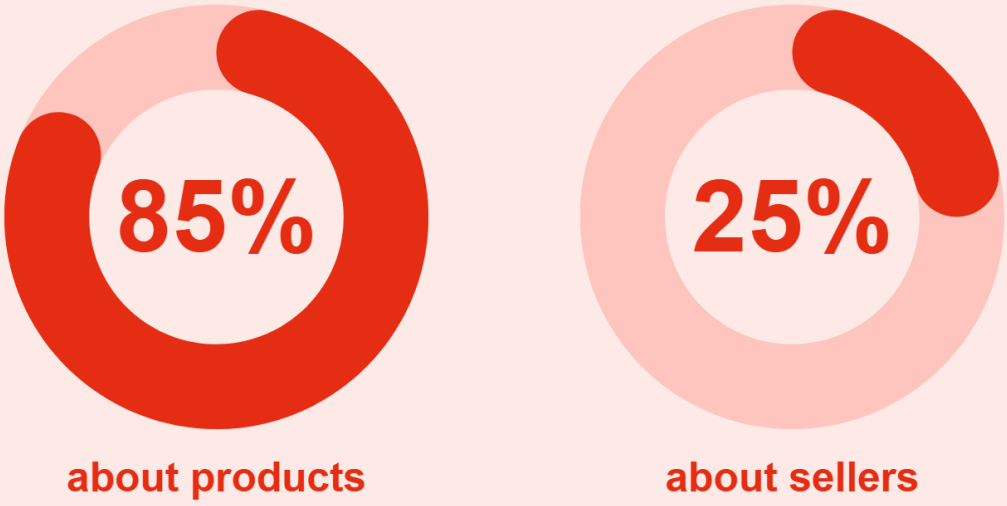
Of the journey stages where reviews and ratings were present, the proportion involving different specific sub-types of reviews and ratings



Base n=2,933 journey stages at which reviews and ratings were encountered, for which data for this follow-up was available.

Of the journey stages in which reviews and ratings were seen, these tended to involve reviews and ratings about products (85% of stages), with a smaller proportion of these journey stages relating to sellers (25%).

Of the journey stages where reviews and ratings were present, the proportion of journey stages at which they were related to products and sellers



Base n=2,886 journey stages at which reviews and ratings were encountered, for which data for this follow-up was available.

An example mock-up of the sub-types of reviews and ratings that were seen on online shopping platforms is shown below.



Of the 2,933 journey stages where reviews and ratings were encountered, an artificial intelligence (AI) summary of reviews was seen at 2% of the journey stages.

Reviews and ratings did not typically occur on a *banner* or *pop-up*, with 98% of the 2,933 total journey stages being seen on the platform page itself.

When reviews and ratings were encountered on journeys, they often co-occurred with other OCAs

Reviews and ratings that were encountered at some journey stages appeared in tandem with a number of other OCAs, such as reference pricing, popularity claims, and coupons. Below is an example mock-up of reviews and ratings presented alongside these OCAs on one product in the 'search/category results' stage. At journey stages like this, multiple products were often seen side-by-side, each having a similar combination of these different OCAs attached to them.

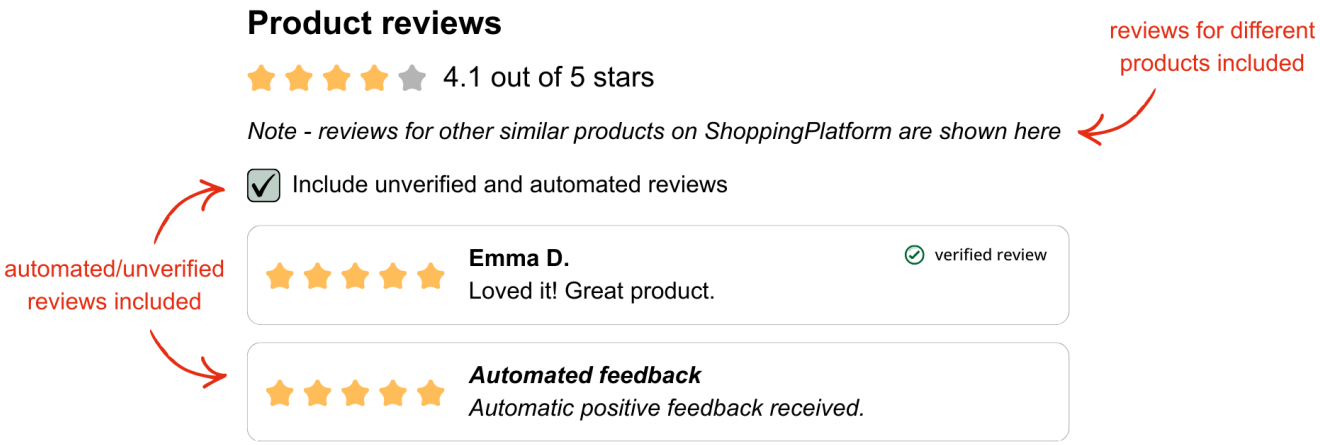


On some platforms, automated/unverified reviews, or reviews for entirely different products, were included by default on the product page

On 544 journeys, it was possible to 'see all reviews' while on the product page. On 10% of these journeys, automated or unverified reviews (a sub-type of defaults) were included automatically.

On other journeys, it was observed that reviews shown on the product page automatically included reviews for different products on the platform that were similar in some way, for instance, reviews for another backpack being shown on the product page of a backpack.

An example mock-up of these different types of reviews and ratings being included by default is shown below.


Product reviews
4.1 out of 5 stars
reviews for different products included
Note - reviews for other similar products on ShoppingPlatform are shown here
Include unverified and automated reviews
automated/unverified reviews included
Emma D.
verified review
Loved it! Great product.
Automated feedback
Automatic positive feedback received.

Framing: *The use of language to influence decisions, including where certain products/items are framed differently to others in order to make them more appealing*

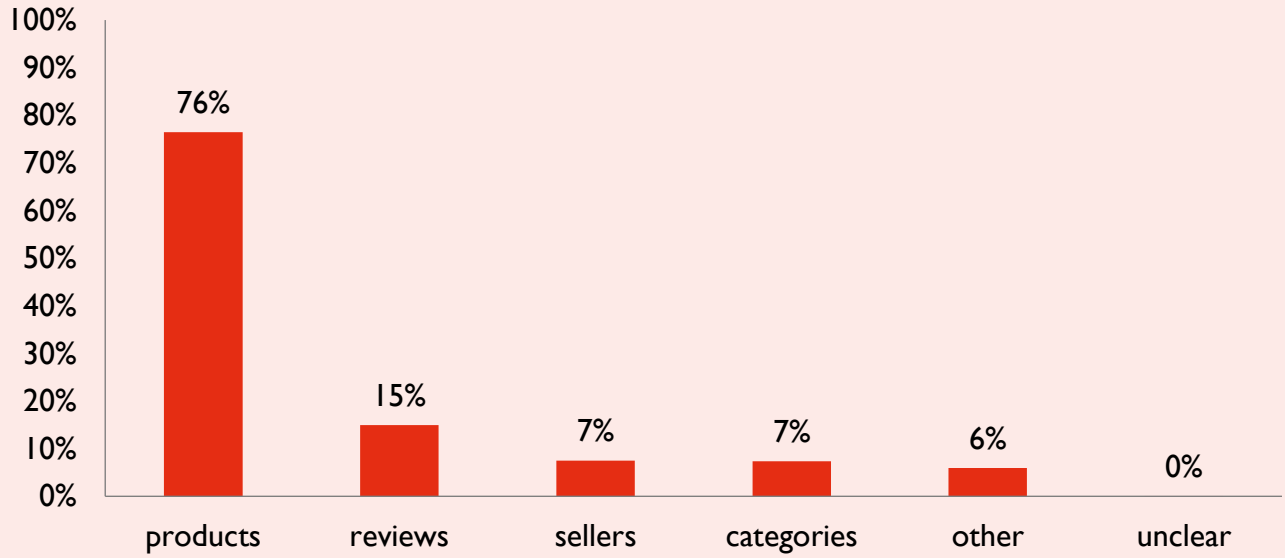
- **Prevalence of framing:** Framing was encountered on 100% (628) of the 630 standardised shopping journeys. Across platforms, this proportion ranged from 98% to 100%.
- **Frequency of framing:** On journeys where framing was seen, it was seen on an average of 42% of journey stages. At each journey stage where it was seen, framing was observed *multiple times* 74% of the time.

Where framing was seen, this most often involved *positive/gain framing*

Of the journey stages where framing was observed, 98% of stages included *positive/gain framing* whilst only 4% involved *negative/loss framing, confirm shaming, or anticipatory guilt*.

When framing occurred, it most often related to products (76% of the journey stages where framing was present), followed by reviews (15%), with framing about sellers and categories each accounting for 7%.

Of the journey stages where framing was present, the proportion of journey stages at which framing was related to products, reviews, sellers, and categories

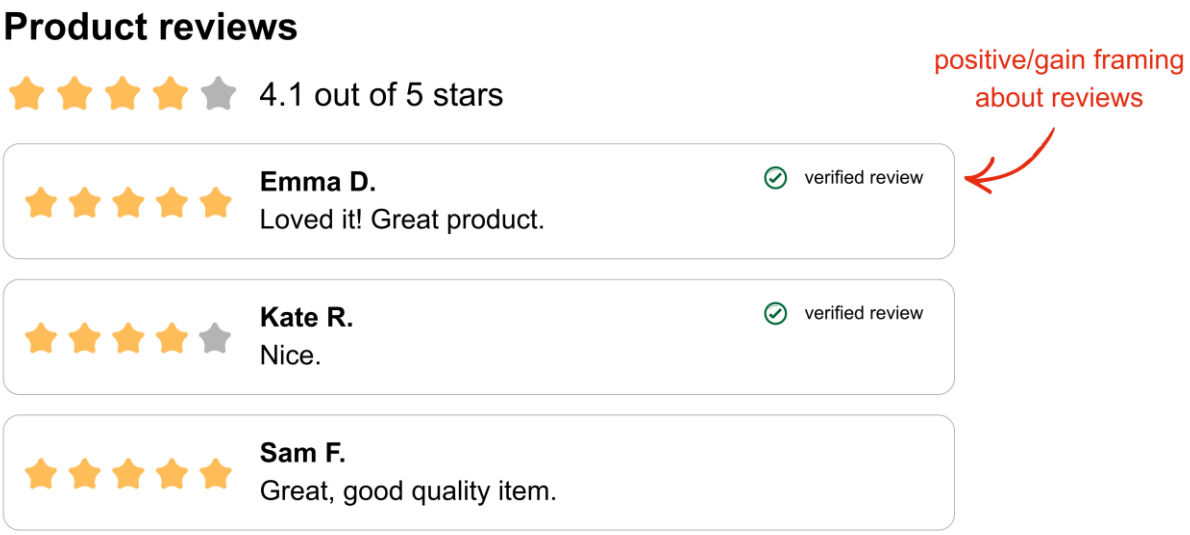


Base n=4,054 journey stages at which framing was encountered, for which data for this follow-up was available.

Below is an example mock-up of *positive/gain framing* which was encountered on journeys in relation to both a product and a seller.



In the context of reviews, researchers noted that framing tended to involve messages about a review being verified, as seen in the mock-up below.



Framing was primarily seen embedded within the platform page (86% of journey stages), while on 9% of journey stages where framing was seen this involved framing on *banners*, with 6% involving framing on *pop-ups*.

At some journey stages, framing tended to co-occur with other OCAs

As discussed with reviews and ratings, framing was another type of OCA that often appeared in tandem with other OCAs, such as popularity claims, reference pricing, and framing. At journey stages such as ‘search/category results’, these types of OCAs often appeared multiple times across each of the products being presented on the page.

An example mock-up of the co-occurrence of framing with multiple other OCAs on a product at ‘search/category results’ can be found on page 37.

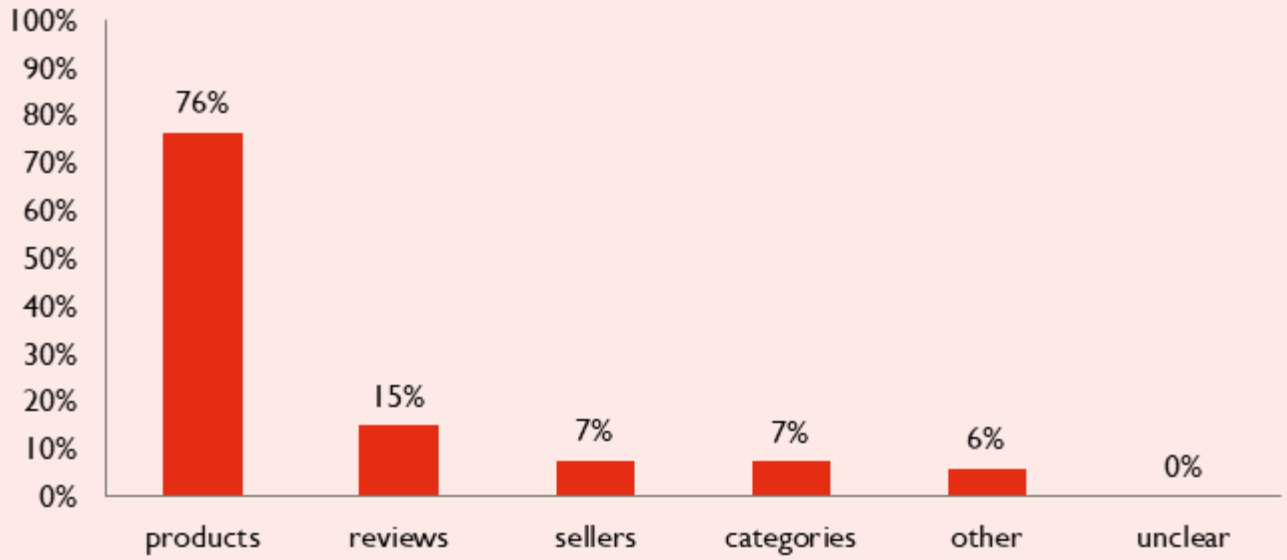
Popularity claims: *Messages about high popularity of an item, including how many others bought or like something*

- **Prevalence of popularity claims:** Popularity claims were encountered on 99% (624) of the 630 standardised shopping journeys. Across platforms, prevalence ranged from 97% to 100%.
- **Frequency of popularity claims:** On journeys where popularity claims were seen, they were observed on an average of 28% of journey stages. At each journey stage where they were seen, they were encountered *multiple times* 68% of the time.

Where popularity claims were seen, they mostly included an *activity message* or a *popularity message*

Of the journey stages where popularity claims were seen, they mostly consisted of *activity messages* (63%) or *popularity messages* (58%), with a smaller proportion involving *vague* popularity claims (10%).

Of the journey stages where popularity claims were present, the proportion involving different specific sub-types of popularity claims



Base n=2,735 journey stages at which popularity claims were encountered, for which data for this follow-up was available.

Below is an example mock-up of the different sub-types of popularity claims shown on a product page.



Of the journey stages where popularity claims were encountered, they most often included claims about products (93%), with fewer encounters involving claims about sellers (15%) or categories (5%).

Of the journey stages where popularity claims were present, the proportion of journey stages at which they were related to products, sellers, and categories



Base n=2,715 journey stages at which popularity claims were encountered, for which data for this follow-up was available.

These different sub-types of popularity claims appearing in relation to a product and a seller are demonstrated in the mock-up below



Of the 2,738 journey stages where popularity claims were encountered, 97% of the stages involved popularity claims that were on the page itself, while 2% included popularity claims on *pop-ups* and 1% on *banners*.

Popularity claims were typically seen alongside a number of other OCAs

As with framing and reviews and ratings, at some journey stages popularity claims were often observed co-occurring with other OCAs, each being attached to several individual products being presented at that stage. For an example mock-up of popularity claims working in tandem with other types of OCA, please see page 37.

Sludge*: The platform uses extra steps, barriers, or friction that make it harder for the user to do something that is undesirable to the retailer*

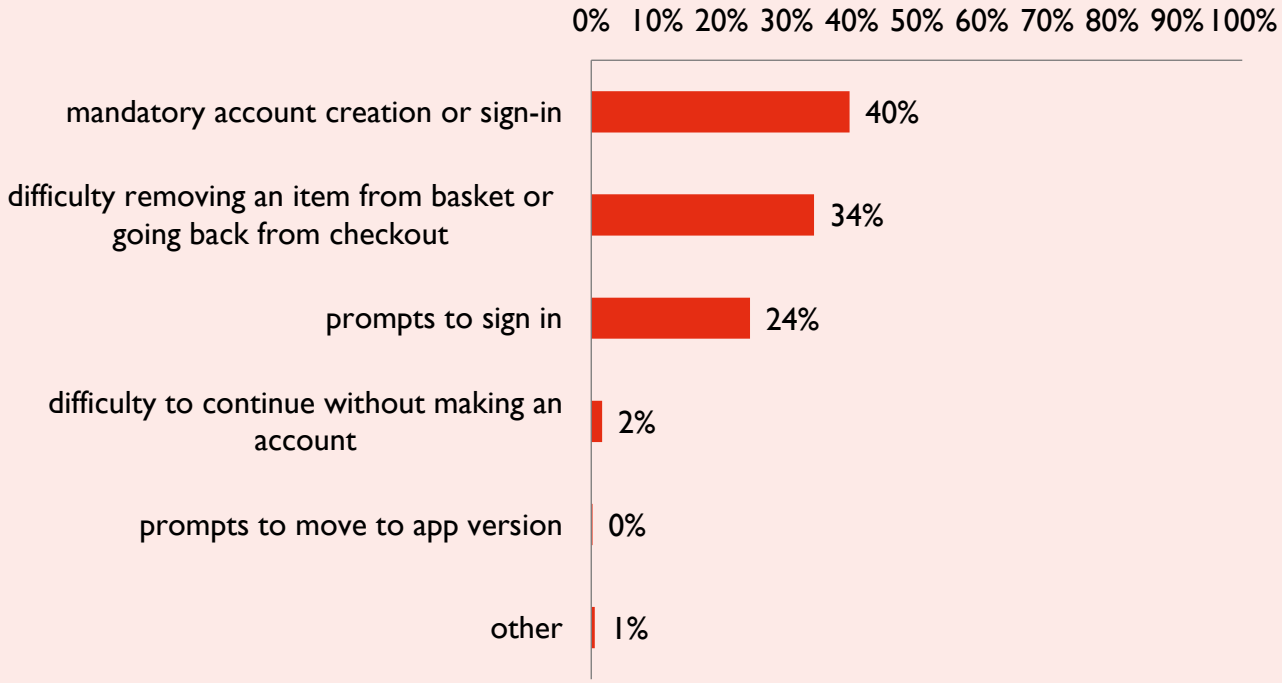
- **Prevalence of sludge:** Sludge was encountered on 99% (624) of the 630 standardised shopping journeys. This prevalence ranged from 98% to 100% across platforms.
- **Frequency of sludge:** Sludge was encountered on an average of 11% of journey stages. At each journey stage where it was seen, sludge was observed *multiple times* 2% of the time.

Where sludge was seen, this most often involved mandatory *account creation* or *sign-in*

Of the 1,066 journey stages where sludge was found, 40% involved *mandatory account creation or sign-in*.[13] Non-mandatory *prompts to sign-in*, by comparison, appeared on 24% of these journey stages.

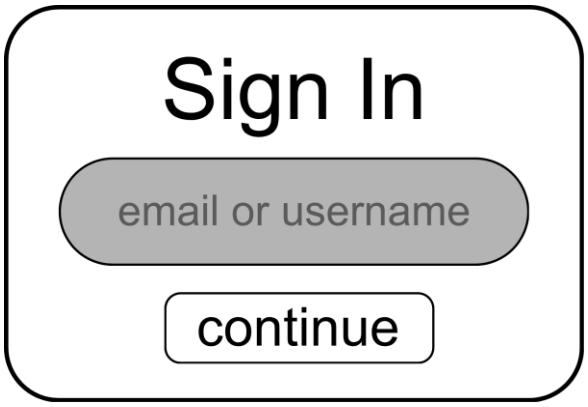
[13] The prevalence of this sub-type of sludge varied across different platforms, being encountered on just 14% of journey stages involving this OCA on one platform and on 91% of journey stages for another.

Of the journey stages where sludge was present, the proportion involving different specific sub-types of sludge



Base n=1,066 journey stages at which sludge was encountered, for which data for this follow-up was available.

The mock-up below shows what these prompts to sign in might look like, whether mandatory or not.



The second most common type of sludge was *difficulty removing an item from basket or going back from checkout*. This type of sludge, seen in the mock-up below, occurred on around a third (34%) of the 1,066 journey stages where sludge was found.



Unlike most other OCAs, sludge was observed occurring on a *pop-up* more often (62% of journey stages) than being found on the page itself (38%).

Sludge often co-occurred with different sub-types of framing

Researchers noted that *difficulty removing an item from basket or going back from checkout* sometimes co-occurred with both *positive/gain framing* and *negative/loss framing, confirm shaming, or anticipatory guilt.* This co-occurrence often appeared on a pop-up, therefore creating friction on the user's journey.

In the below mock-up, these types of framing are shown in the context of a pop-up which might appear when trying to leave checkout before completing the purchase.



Similar products: *Different categories of similar or recommended products are presented to the user*[14]

- **Prevalence of similar products:** Similar products were observed on 99% (621) of the 630 standardised shopping journeys. Across platforms, this proportion ranged from 93% to 100%.
- **Frequency of similar products:** On journeys where similar products were seen, they occurred on an average of 14% of journey stages. Similar products were observed *multiple times* 49% of the time at each journey stage they were seen.

Where similar products were seen, this most often involved *similar* and *personalised recommendations*

Of the journey stages where similar products were encountered, over half (52%) of these included *similar recommendations*, followed by 43% containing *personalised recommendations*[15], and 26% involving *sponsored products*. On just under a quarter of journey stages (22%), this involved *broader categories*, whereby typical shopping categories such as 'All', 'Women's clothing', or 'Accessories' would be recommended to the user.

Smaller proportions of these encounters involved item recommendations based on *social proof*, such as 'best-selling' items, *infinite types of similar products*, whereby new categories of similar products continually appeared as the user scrolled down the page, or categories of *endorsed products* were seen.

[14] The categories of products being recommended are typically based on the product the user is currently viewing. They tend to appear with a specific category name and are often presented to the user lower down on the product page, cart, or checkout.

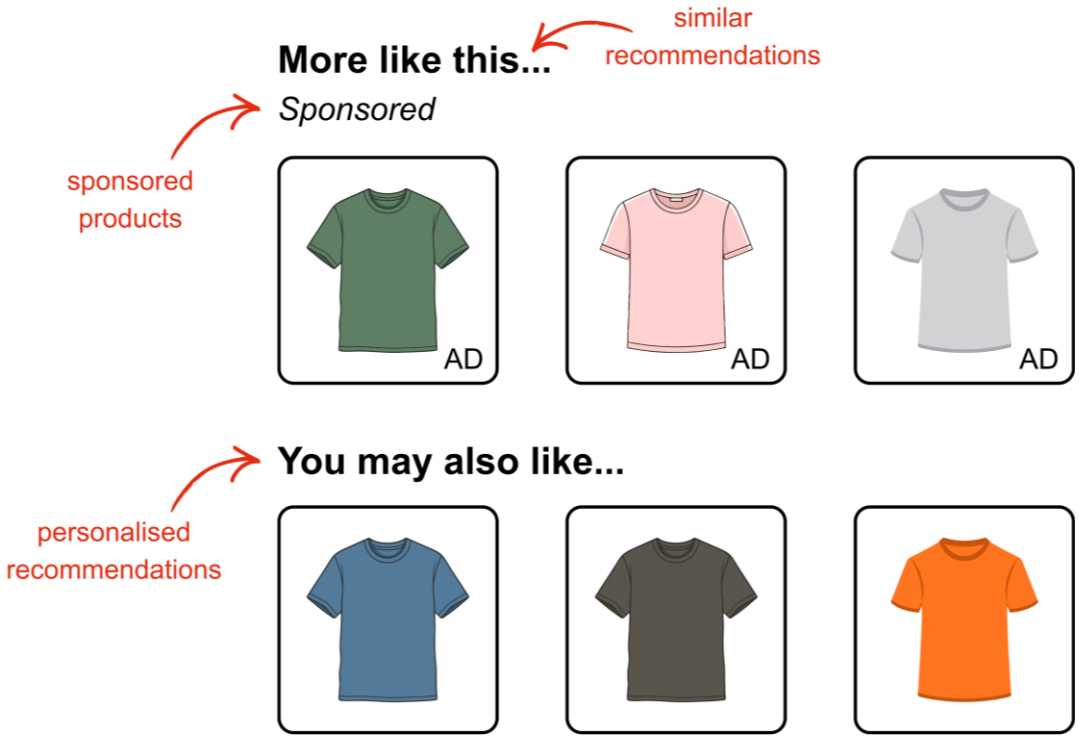
[15] Note that it is not possible to determine whether the items being recommended to the user were in fact personalised. In coding for the presence of *personalised recommendations*, researchers recorded instances where the language used in the category title indicated the items were personalised, for example, 'Recommended for you', 'Based on your recent search history', and so on.

Of the journey stages where similar products were present, the proportion involving different specific sub-types of similar products



Base n=1,377 journey stages at which similar products was encountered, for which data for this follow-up was available.

Below is an example mock-up of different sub-types of similar products.



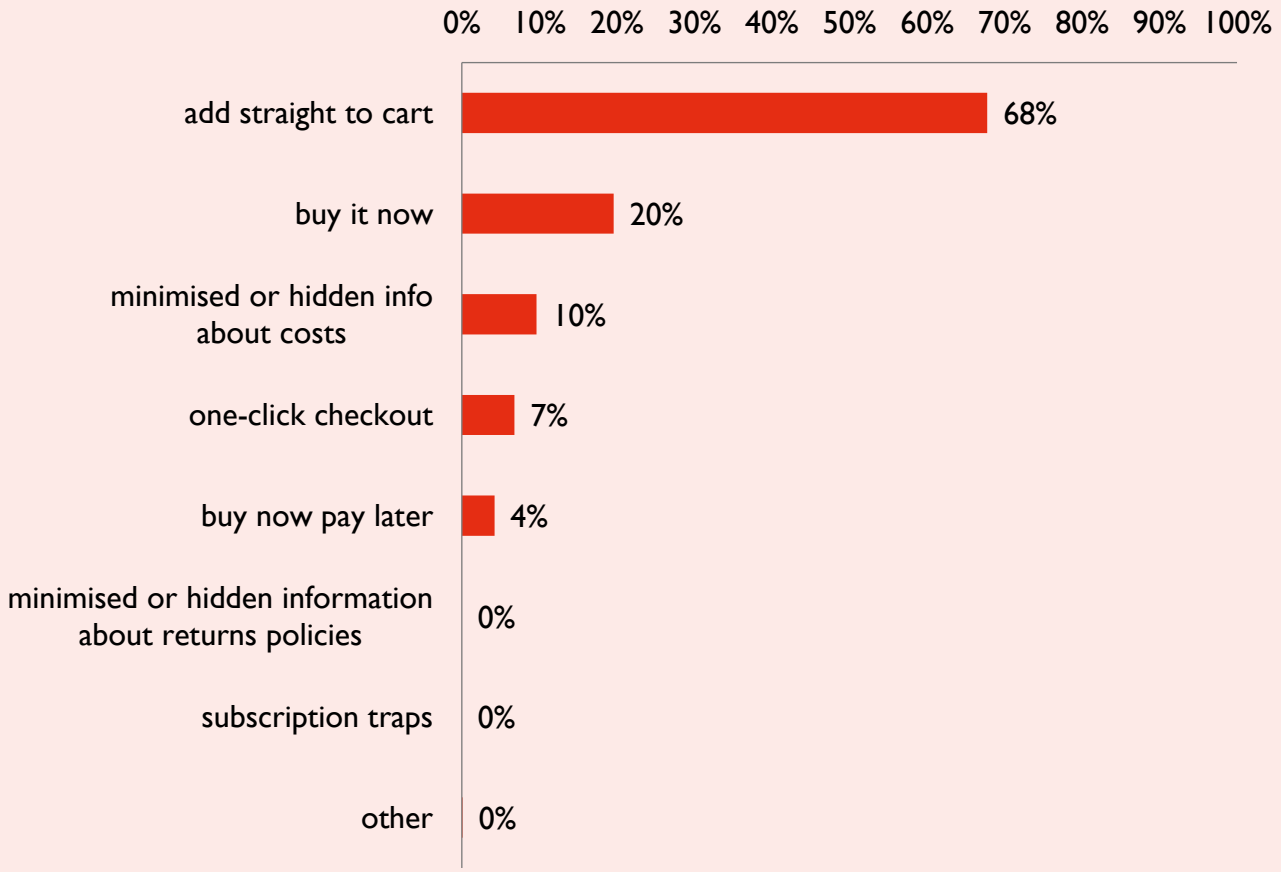
Nudge / dark nudge: *The platform removes steps from the shopping process or minimises information about costs or terms to encourage more impulsive decision-making*

- **Prevalence of nudge / dark nudge:** Nudge / dark nudge was observed on 97% (614) of the 630 standardised shopping journeys. Across platforms, this prevalence ranged from 90% to 100%.
- **Frequency of nudge / dark nudge:** On journeys where nudge / dark nudge was seen, it occurred on an average of 19% of journey stages. Nudge / dark nudge was observed *multiple times* 65% of the time at each journey stage it was seen.

Where nudge / dark nudge was seen, this most often involved an option to *add straight* to *cart or buy it now*

Of the journey stages where nudge / dark nudge was seen, most tended to involve an option to *add straight to cart* (68% of stages) or *buy it now* (20%).

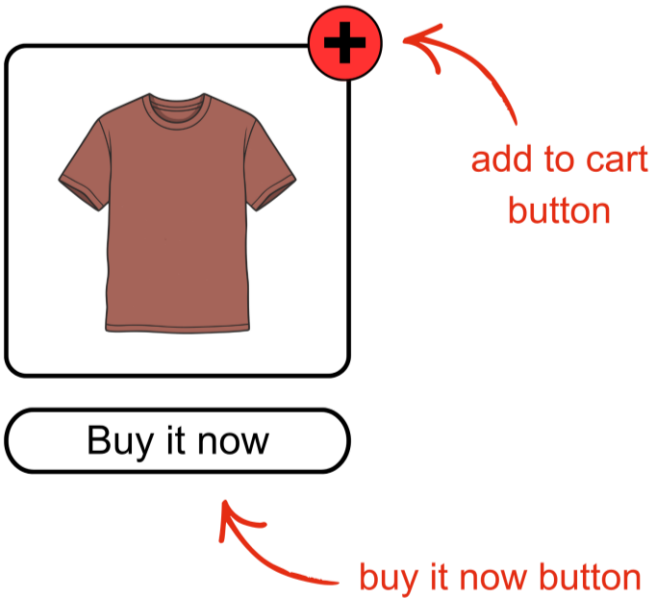
Of the journey stages where nudge / dark nudge was present, the proportion involving different specific sub-types of nudge / dark nudge



Base n=1,863 journey stages at which nudge / dark nudge was encountered, for which data for this follow-up was available.

Of the 1,866 total journey stages where nudge / dark nudge was seen, they most often involved nudges embedded on the page (93% of stages), rather than on a *banner* (2%) or *pop-up* (4%).

The mock-up below illustrates how the *add straight to cart* and *buy it now* buttons were presented on certain platforms.



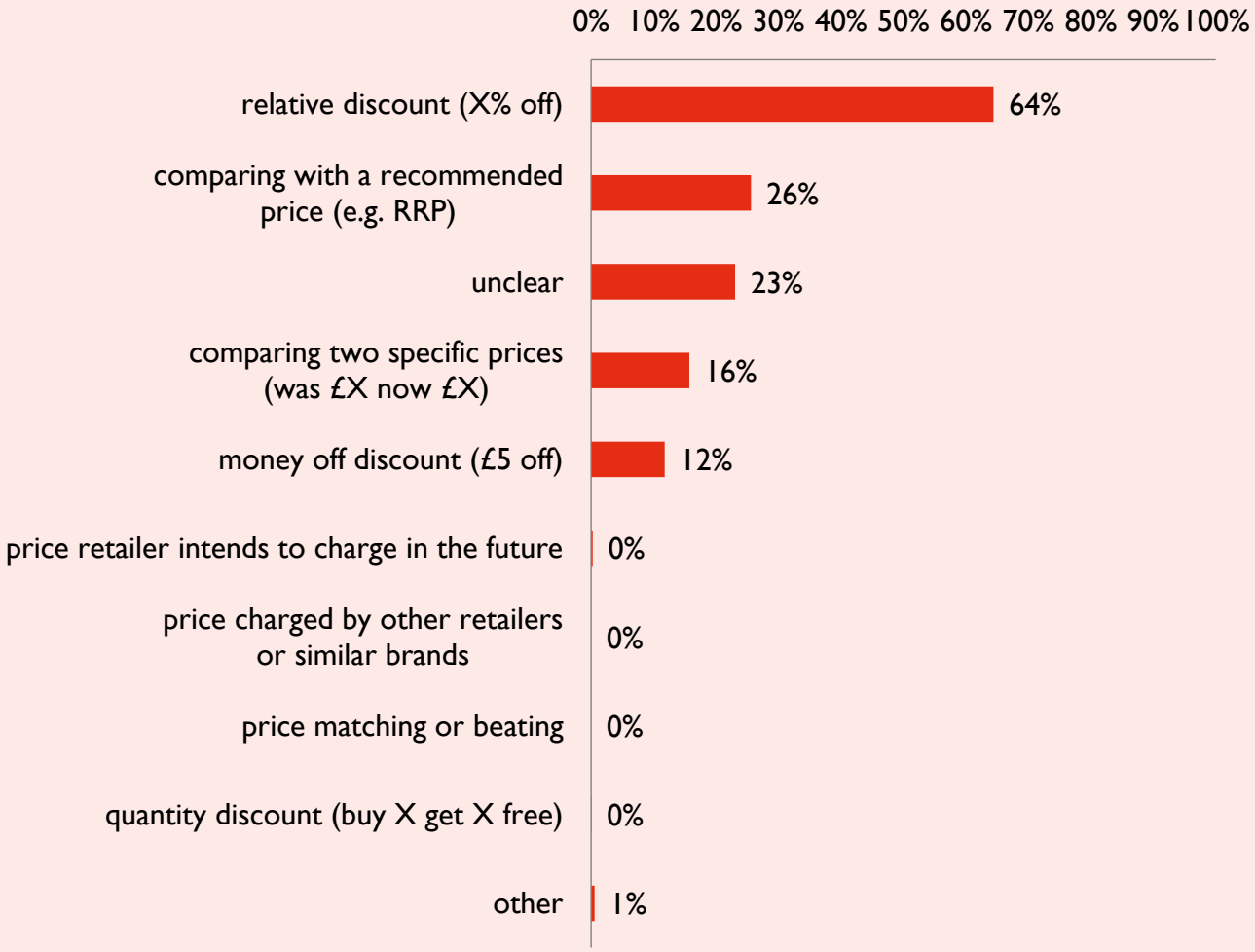
Reference pricing: *The retailer makes a price look more attractive by highlighting how the original price has been reduced in some way*

- **Prevalence of reference pricing:** Reference pricing was present on 94% (592) of the 630 standardised shopping journeys, with the average prevalence across platforms ranging from 77% to 100% across platforms.
- **Frequency of reference pricing:** On journeys where reference pricing was observed, it occurred on an average of 30% of journey stages. Of these journey stages, reference pricing was found *multiple times* 62% of the time.

Reference pricing most often occurred in the form of *relative discounts*, involving a percentage reduction in price

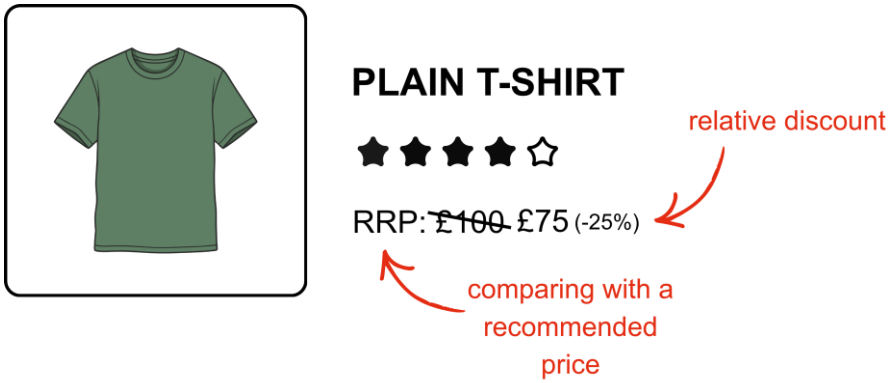
Of the journey stages where reference pricing was seen, 64% appeared as a *relative discount*, where a percentage amount off an original price is shown. The second most common type of reference pricing seen on these journey stages involved *comparing with a recommended price*, which includes, for example, a comparison with the recommended retail price (RRP). This sub-type of reference pricing was present on 26% of the journey stages where this OCA was encountered.

Of the journey stages where reference pricing was present, the proportion involving different specific sub-types of reference pricing

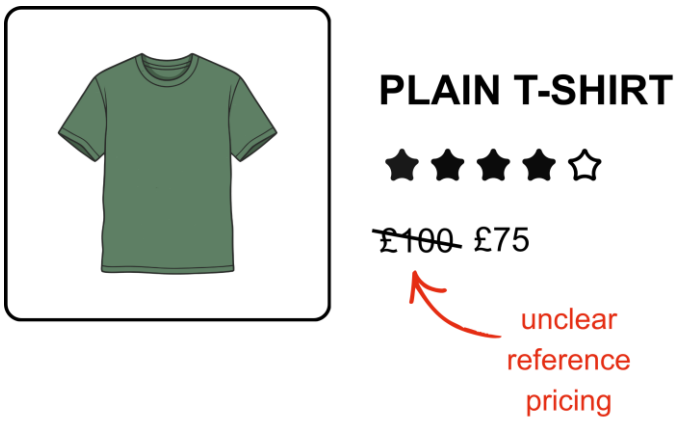


Base n=2,726 journey stages at which reference pricing was encountered, for which data for this follow-up was available.

Below is an example mock-up of two sub-types of reference pricing working alongside each other.



On nearly a quarter of the journey stages that contained reference pricing (23%), a struck-through price was shown with no explanation or context (coded as *unclear*) making it impossible for the user to know what the discount relates to. The mock-up below shows what this type of reference pricing looks like.



Of the journey stages where reference pricing appeared, it almost always appeared embedded on the page (94% of stages) with some occurrences also involving reference pricing on *banners* (4%) and *pop-ups* (2%).

Reference pricing often appeared alongside other OCAs

Where reference pricing was encountered, it often appeared alongside other types of OCAs, particularly on journey stages at which multiple different products were presented at once. The other types of OCAs that would appear together with reference pricing include popularity claims, coupons, and framing. For an example mock-up of these OCAs working in tandem please refer to page 37.

Ranking: *Options are shown in an order that is specified by the retailer*

- **Prevalence of ranking:** Ranking was present on 91% (575) of the 630 standardised shopping journeys, ranging in its average prevalence from 67% to 100% across platforms.
- **Frequency of ranking:** On journeys where ranking was observed, it occurred on an average of 12% of journey stages. Of these journey stages, ranking was found *once* 97% of the time.

A majority of ranking that was seen was in relation to reviews

Of the journey stages at which ranking was observed, 59% involved ranking of reviews, 32% of products, and 9% of categories.

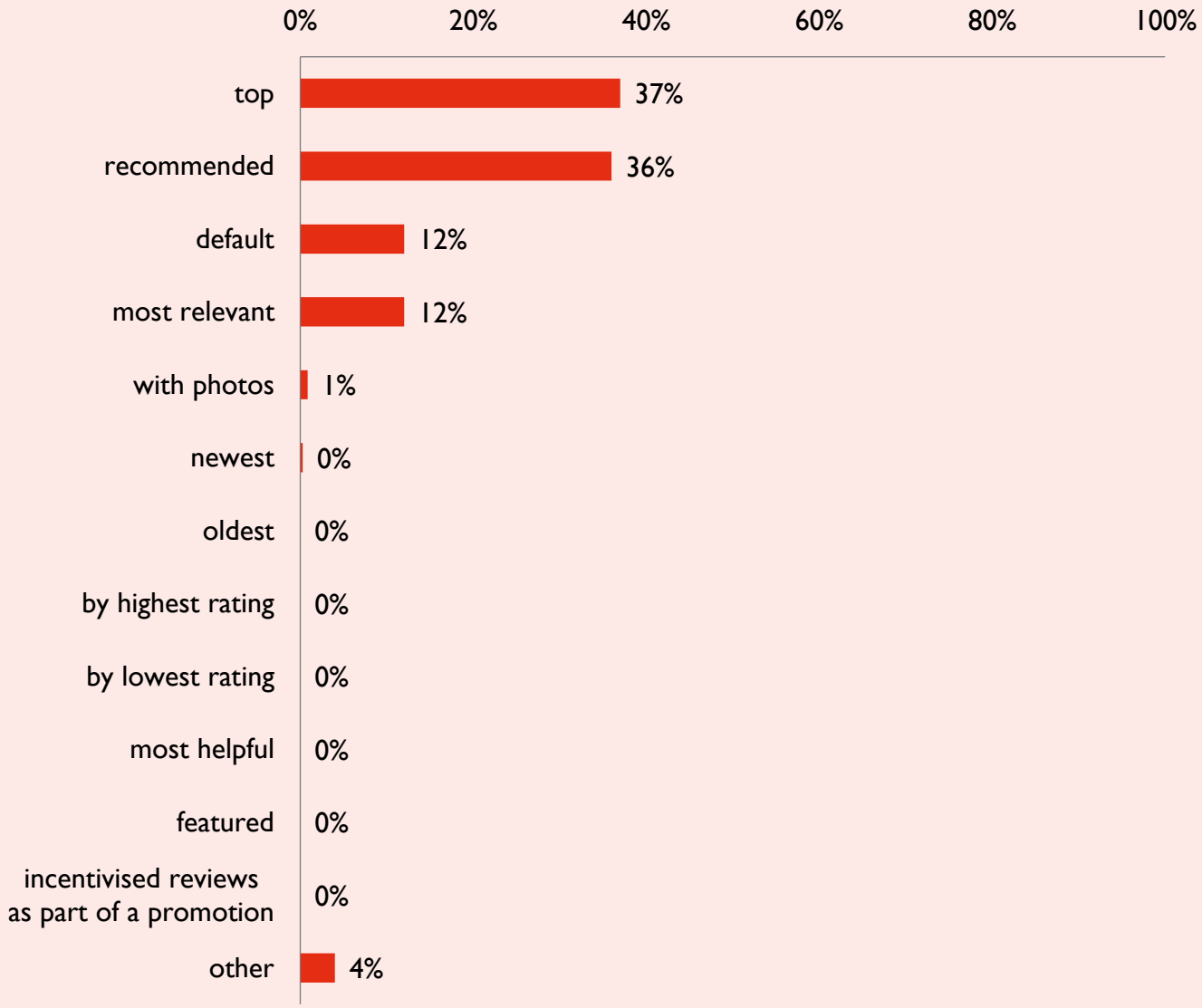
Of the journey stages where ranking was present, the proportion of journey stages at which they were related to products, reviews, and categories



Base n=1,096 journey stages at which ranking was encountered, for which data for this follow-up was available.

When ranking was seen in relation to reviews, these journey stages most often included ranking by *top* reviews (33% of stages) or *recommended* reviews (32%).

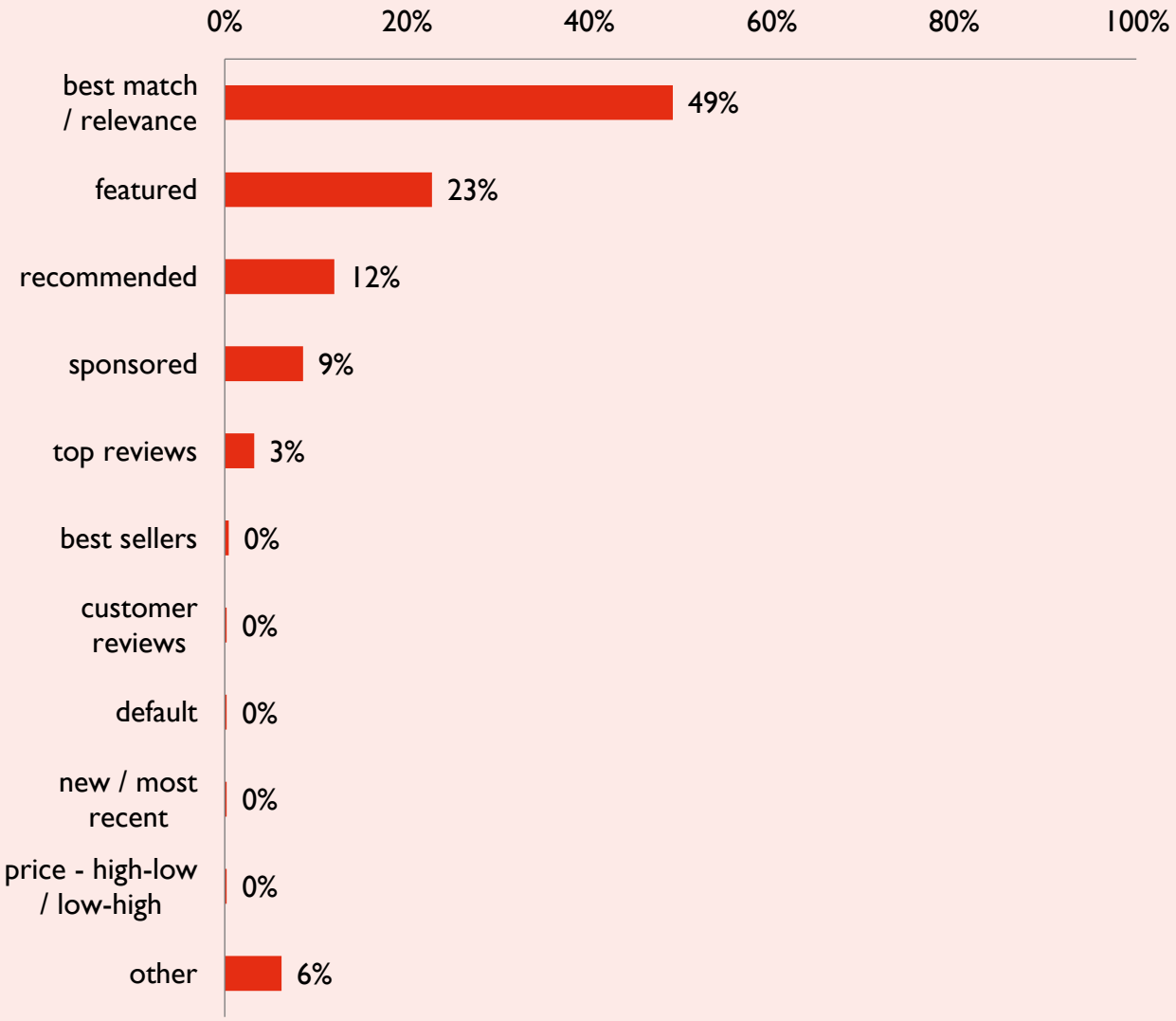
Of the journey stages where ranking of reviews was present, the proportion involving different specific sub-types of ranking



Base n=646 journey stages at which ranking of reviews was encountered, for which data for this follow-up was available.

Of the journey stages where ranking of either products or categories was observed, this by contrast most often included ranking by *best match/relevance* (49% of stages), followed by *featured* (23%) and *recommended* (12%) ranking respectively.

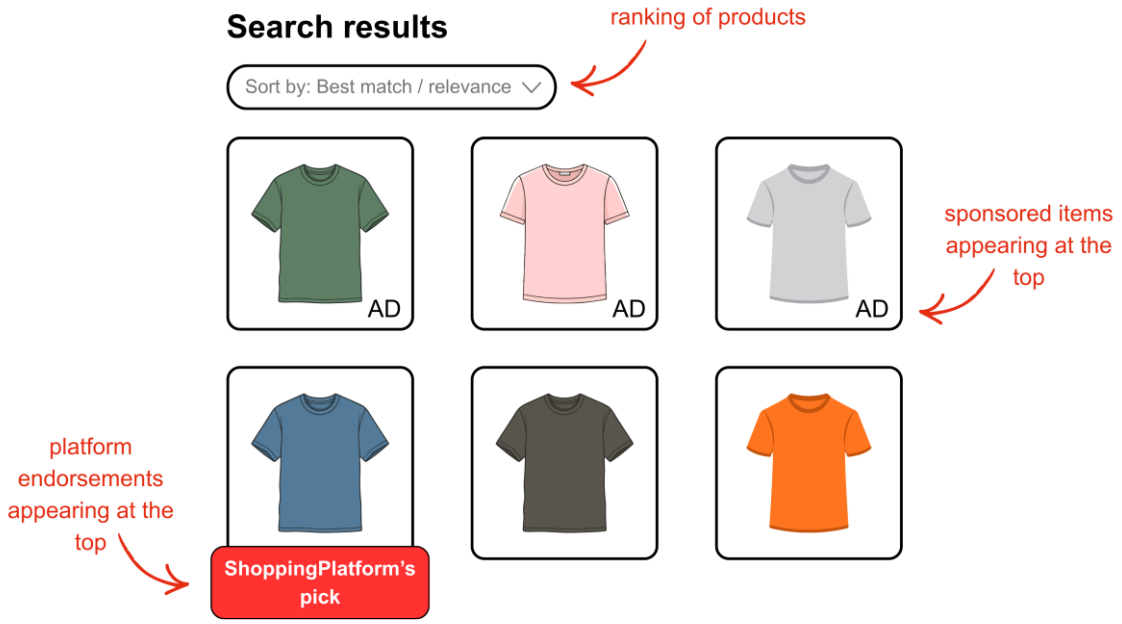
Of the journey stages where ranking of products or categories was present, the proportion involving different specific sub-types of ranking



Base n=466 journey stages at which ranking of products or categories was encountered, for which data for this follow-up was available.

Over a third (39%) of the stages where ranking was coded also involved platform endorsements appearing at the top of the page.

Below is a mock-up of ranking of products at the ‘search/category results’ journey stage.



Across all the journey stages that included ranking, the user was able to change the ranking a majority of the time (83% of these stages). A majority of ranking was found on the page itself (95%), whereas 5% was found on a *pop-up* and 1% was found on a *banner*.

Personalisation: *The platform uses data to personalise offers to the users' specific traits like their location or previous shopping activity*[16]

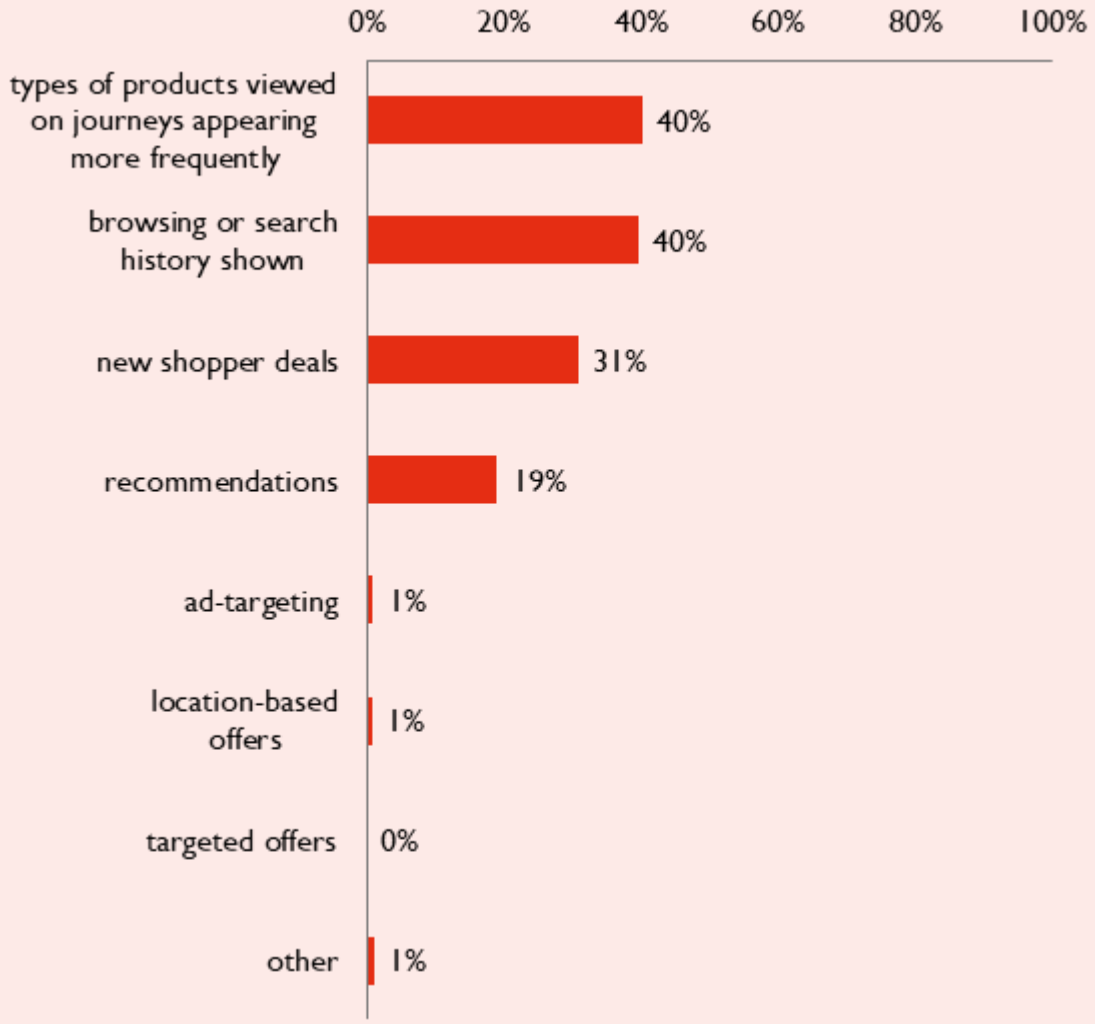
- **Prevalence of personalisation:** Personalisation was present on 88% (552) of the 630 standardised shopping journeys, ranging in prevalence from 52% to 100% on average across platforms.
- **Frequency of personalisation:** On journeys where personalisation was observed, it occurred on an average of 26% of journey stages. Of these journey stages, personalisation was found *multiple times* 44% of the time.

Personalisation mostly involved types of products viewed on journeys appearing more frequently or browsing/search history shown

At the journey stages where personalisation was present, these primarily involved the *types of products viewed on journeys appearing more frequently* (40% of stages), *browsing or search history shown* (40%), or *new shopper deals* (31%). Additional personalisation sub-types included personalised *recommendations* (19% of stages), *ad-targeting* (1%) and *location-based offers* (1%).

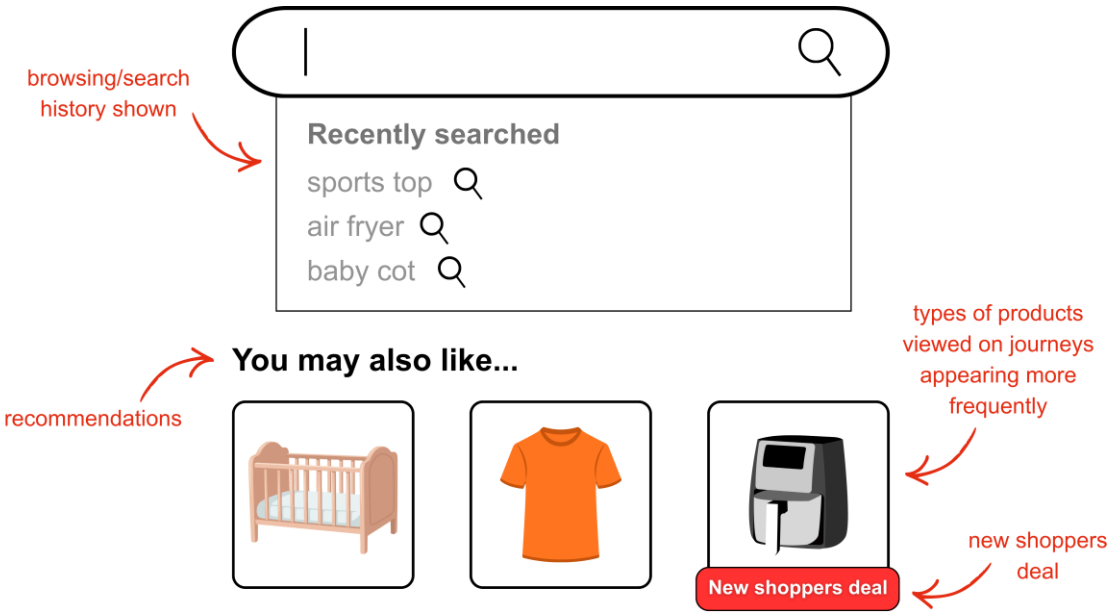
[16] Note that it is not possible to determine whether the items being recommended to the user were in fact personalised. In coding for the presence of personalisation, researchers recorded instances where either the products being recommended appeared to be personalised or the language used indicated that this was the case.

Of the journey stages where personalisation was present, the proportion involving different specific sub-types of personalisation



Base n=2,242 journey stages at which personalisation was encountered, for which data for this follow-up was available.

The two most prevalent sub-types of personalisation are illustrated in the mock-up below.



Of the 2,242 journey stages in which personalisation was encountered, 93% involved personalisation which was embedded on the page, whereas 5% involved this OCA on *banners* and 2% on *pop-ups.*

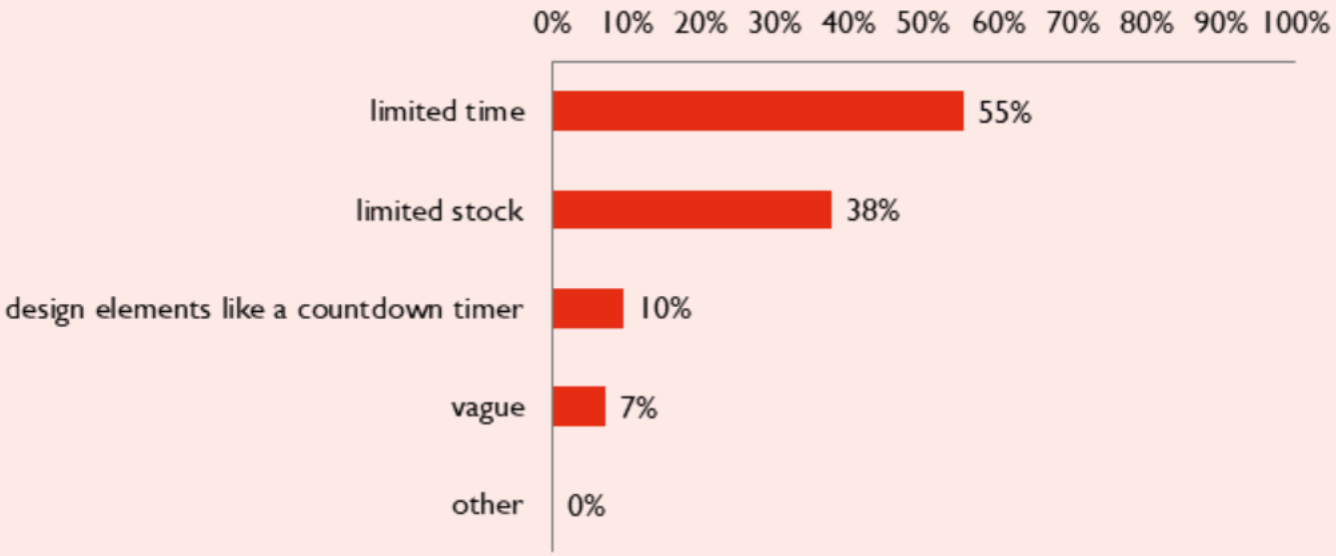
Scarcity claims: *Messages about limited supply or time*

- **Prevalence of scarcity claims:** scarcity claims were present on 86% (543) of the 630 standardised shopping journeys. This proportion ranged from 42% to 100% across platforms.
- **Frequency of scarcity claims:** On journeys where scarcity claims were observed, they occurred on an average of 18% of journey stages. Of these journey stages, scarcity claims were found *multiple times* 32% of the time.

Scarcity claims tended to be encountered as products presented with *limited time* for purchase, and *limited stocks* of a product

When scarcity claims were present at a journey stage, this tended to involve messaging about *limited time* (55% of stages) or *limited stock* (38%). A smaller proportion of journey stages with scarcity claims included *design elements like a countdown timer* (10% of stages), with some scarcity claims categorised as *vague* (7%), which includes claims like 'almost gone' that do not clearly specify whether there is limited time or limited stock.

Of the journey stages where scarcity claims were present, the proportion involving different specific sub-types of scarcity claims



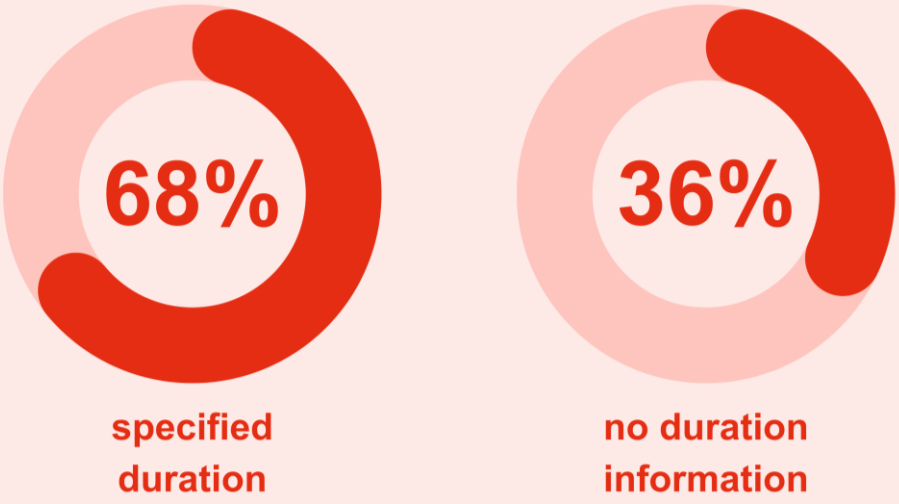
Base n=1,501 journey stages at which scarcity claims were encountered, for which data for this follow-up was available.

An example of these different sub-types of scarcity claims working in tandem with one another is shown in the mock-up below.



Of the journey stages that contain scarcity claims about limited time, 68% of this involved limited time with a specified duration, with 36% containing claims with no duration information.

Of the journey stages where scarcity claims about limited time were present, the proportion involving claims with or without specified duration information



Base n=877 journey stages at which scarcity claims with limited time to purchase were present, for which data for this follow-up was available.

Of the 1,504 journey stages where scarcity claims were encountered, 73% included scarcity claims on the platform page itself, with 18% involving scarcity claims on *banners* and 9% on *pop-ups*.

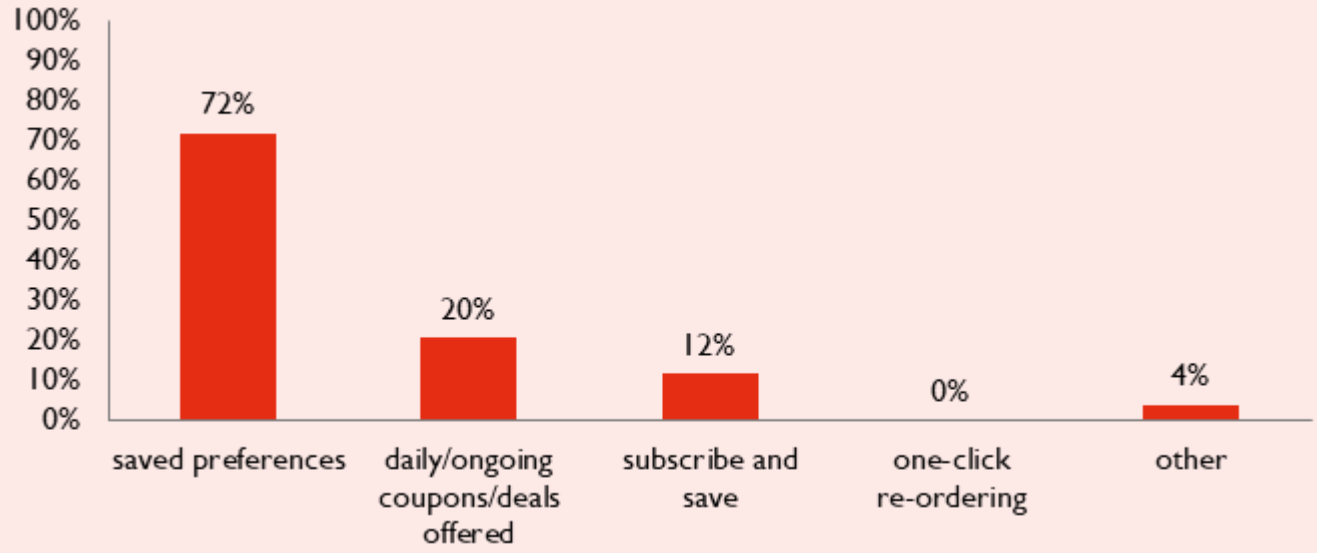
Commitment: *The platform uses data about user behaviour to encourage further shopping behaviours in the future*

- **Prevalence of commitment:** Commitment was present on 84% (528) of the 630 standardised shopping journeys. Its average prevalence across journeys ranged from 43% to 100% on different platforms.
- **Frequency of commitment:** On journeys where commitment was observed, it occurred on an average of 11% of journey stages. Of these journey stages, commitment was found *multiple times* 16% of the time.

Where commitment was seen, this most often involved *saved preferences*

Out of the journey stages that included commitment, most included *saved preferences* (72% of stages) whilst a fifth (20%) involved *daily/ongoing coupons/deals offered*. A further 12% of these journey stages included *subscribe and save* options.

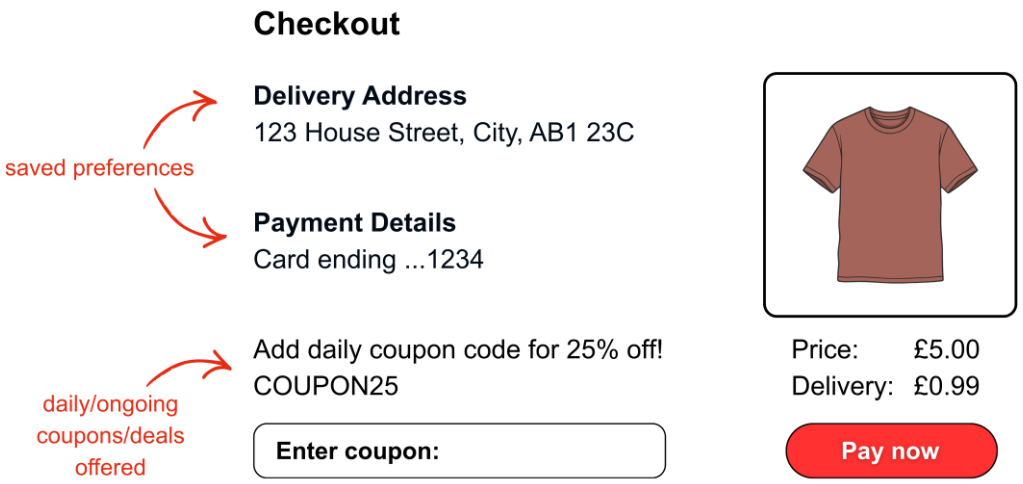
Of the journey stages where commitment was present, the proportion involving different specific sub-types of commitment



Base n=906 journey stages at which commitment was encountered, for which data for this follow-up was available.

Of the 908 journey stages at which commitment was encountered, 96% involved commitment within the platform page, while 4% were on *banners* and 0% were found on *pop-ups*.

Below is a mock-up of the two most prevalent sub-types of commitment working alongside one another at the checkout stage.



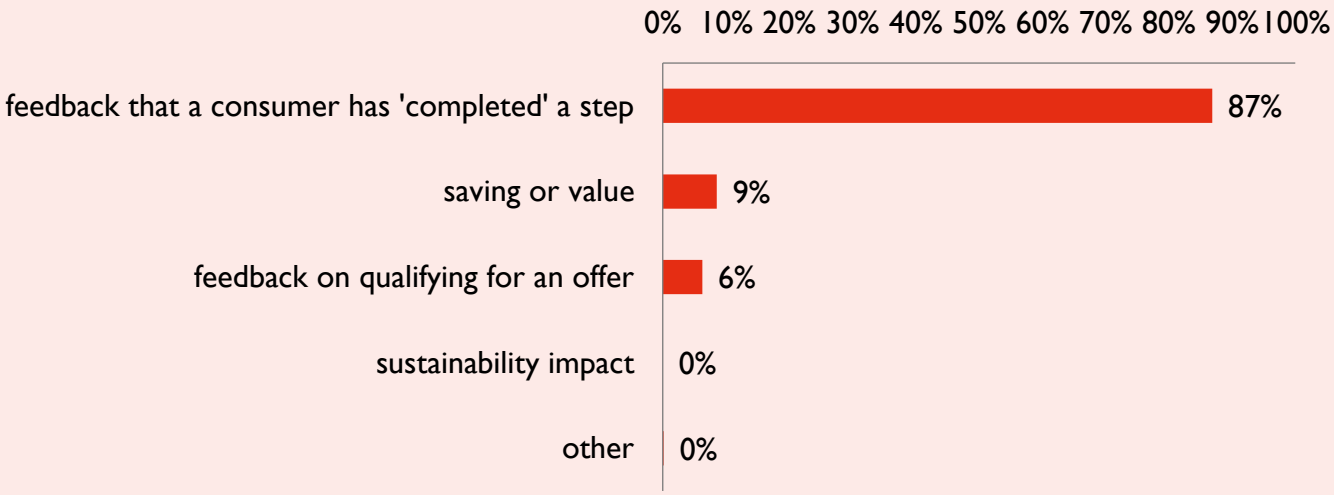
Feedback: *The user is given feedback after making a choice or purchase*

- **Prevalence of feedback:** Feedback was present on 82% (519) of the 630 standardised shopping journeys, ranging in prevalence from 31% to 100% on average on different platforms.
- **Frequency of feedback:** On journeys where feedback was observed, it occurred at an average of just 8% of journey stages. Of these journey stages, feedback was found *multiple times* 3% of the time.

When feedback was observed, this mostly involved *feedback that a user 'completed' a step*

When feedback was present at a journey stage, it mostly involved *feedback that a user has 'completed' a step* (87% of stages), such as successfully adding an item to their cart. Additional stages with feedback included messaging about *saving or value* (9% of stages) and *feedback on qualifying for an offer* (6%).

Of the journey stages where feedback was present, the proportion involving different specific sub-types of feedback



Base n=609 journey stages at which feedback was encountered, for which data for this follow-up was available.

Below is a mock-up of both *feedback that a user 'completed' a step* and feedback about a *saving or value.*



From the 610 stages in which feedback was observed, these largely involved feedback on *pop-ups* (76% of journey stages), with 24% involving feedback embedded on the page and 0% on *banners*.

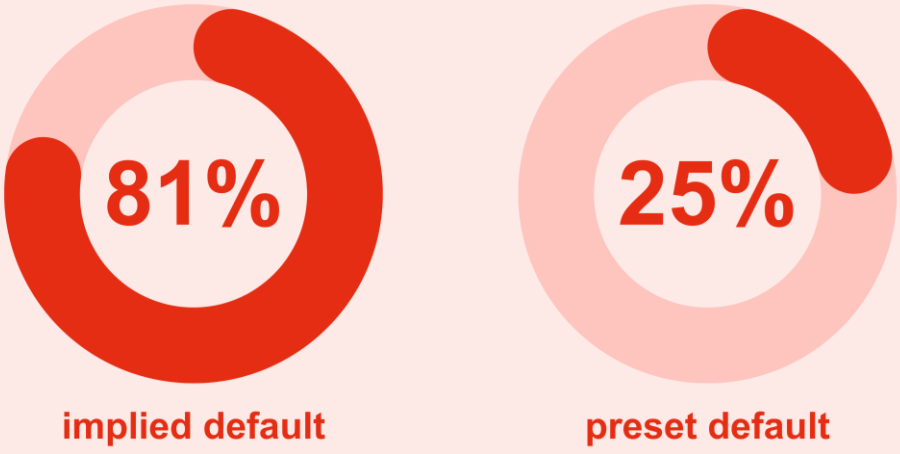
Defaults: *A choice for the user that benefits the retailer is either automatically pre-set or heavily implied in some way*

- **Prevalence of defaults:** Defaults were present on 80% (505) of the 630 standardised shopping journeys, ranging in prevalence from 33% to 100% across platforms on average.
- **Frequency of defaults:** On journeys where defaults were observed, they occurred at an average of 15% of journey stages. Of these journey stages, defaults were only found *once* a large majority (90%) of the time.

Where defaults were seen, this most often involved *implied defaults*

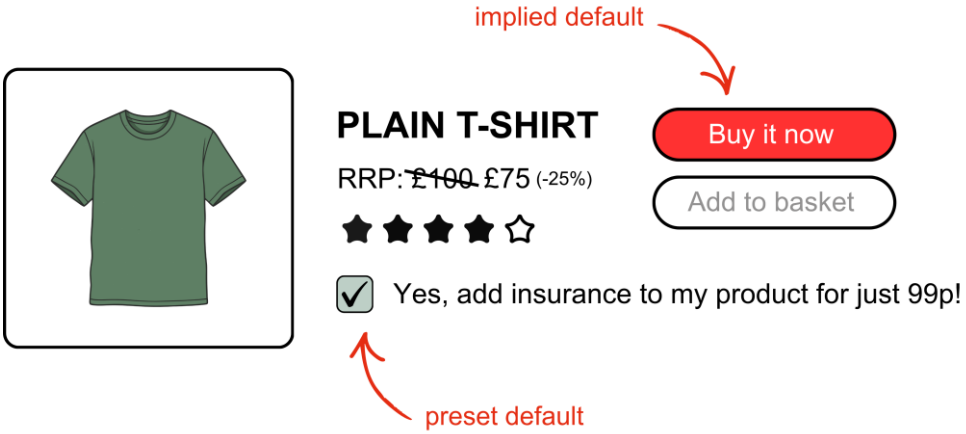
The majority of journey stages containing defaults involved *implied defaults* (81% of stages), where one option is made more salient than others, with *preset defaults* being encountered less often (25%).

Of the journey stages where defaults were present, the proportion of journey stages involving either implied or preset defaults



Base n=1,141 journey stages at which defaults were encountered, for which data for this follow-up was available.

An example mock-up of *implied* and *preset defaults* on e-commerce platforms is shown below.



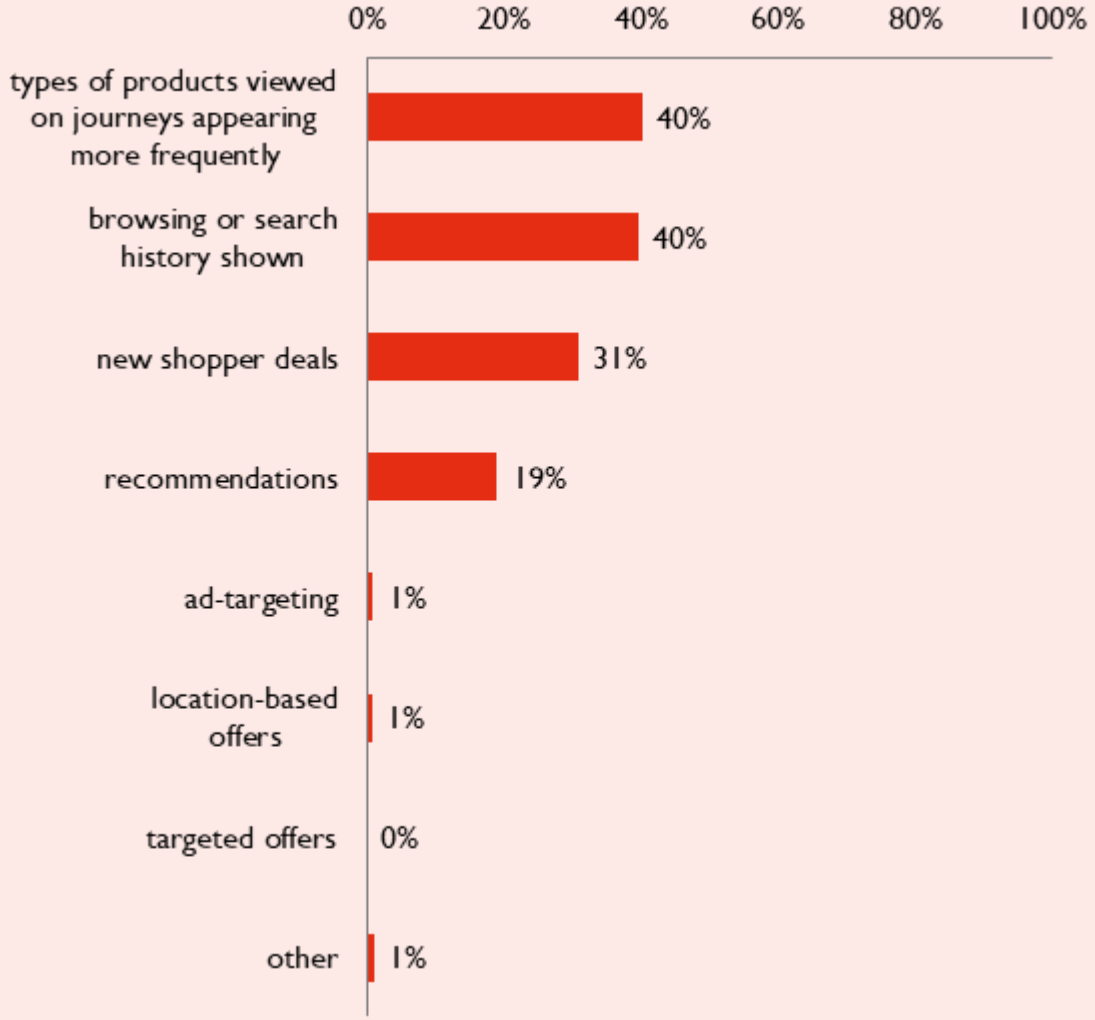
Of the journey stages in which defaults were found, 24% involved *suggested search*, which involves search suggestions being pre-filled into the search bar and disappearing once the user starts typing, as shown in the mock-up below.



Smaller proportions (6% or less) involved default *delivery options*, *subscription sign-ups*, *filters*, among other sub-types of defaults.

A majority of these journey stages, however, involved defaults coded as *other* (62%). This includes other more generic sub-types of defaults that did not fall into one of the predefined sub-types listed in the chart. Examples of these *other* defaults included implied defaults where the ‘buy it now’ button was highlighted over the ‘add to cart’ button.

Of the journey stages where defaults were present, the proportion involving different specific sub-types of defaults



Base n=1,147 journey stages at which defaults were encountered, for which data for this follow-up was available.

When defaults were observed at a journey stage, they were most often perceived as having the impact on the user of *speeding up the purchase* (40% of stages) or causing *other outcomes that benefit the retailer* (58%).

Of the journey stages where defaults were present, the proportion involving different consequences of the default



Base n=1,026 journey stages at which defaults were encountered, for which data for this follow-up was available.

Of the 1,151 total journey stages containing defaults, around a fifth (21%) of these involved defaults occurring on a *pop-up* and only 1% on a *banner*, whilst 78% were found on the platform page itself.

Automated actions: *The website or app does something automatically without any action from the user*

- **Prevalence of automated actions:** Automated actions were present on 52% (329) of the 630 standardised shopping journeys, ranging in their average prevalence from 13% to 93% across platforms.
- **Frequency of automated actions:** On journeys where automated actions were observed, they occurred at an average of 10% of journey stages. Of these journey stages, automated actions were found *multiple times* around a quarter (27%) of the time.

Where automated actions were seen, this most often involved a video playing automatically

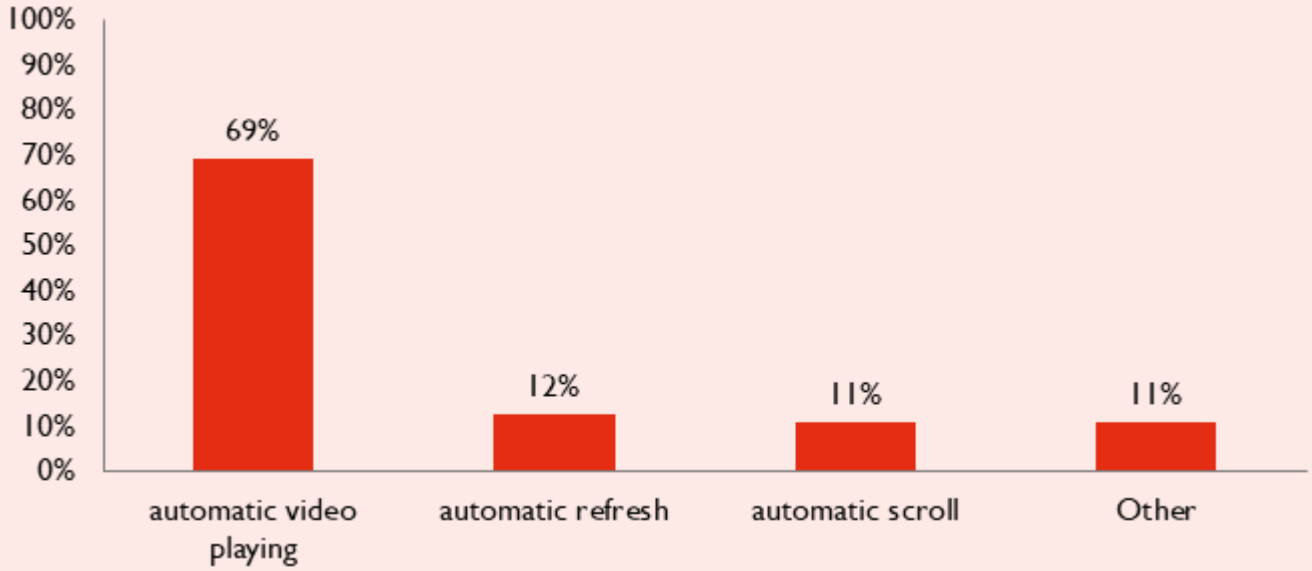
Of all the journey stages containing automated actions, most consisted of an *automatic video playing* (69% of stages), while 12% of these journey stages involved *automatic refresh*[17], where the page automatically refreshes to load new content, and 11% observed *automatic scroll*[18], where the user is automatically scrolled down to a point lower on the page.

On 11% of these journey stages, automated actions classified as *other* were encountered. In these instances, researchers noted examples of automated actions such as being taken automatically to your cart after adding an item to your cart.

[17] This sub-type was included after piloting, based on the observation that on some platforms the home page automatically refreshed after returning from checkout, which sometimes led to new OCAs appearing. For instance, this sometimes led to the user's browsing history being shown, a sub-type of personalisation.

[18] This sub-type was included after piloting, based on the observation that on some platforms the user was automatically taken further down the page, sometimes directly leading them to shoppable products, or other times concealing important information higher up the page.

Of the journey stages where automated actions were present, the proportion involving different specific sub-types of automated actions



Base n=503 journey stages at which automated actions were encountered, for which data for this follow-up was available.

Of the 506 total journey stages that included automated actions, the majority involved these actions occurring on the page (94% of stages) whilst 4% occurred on a *pop-up* and 3% on a *banner*.

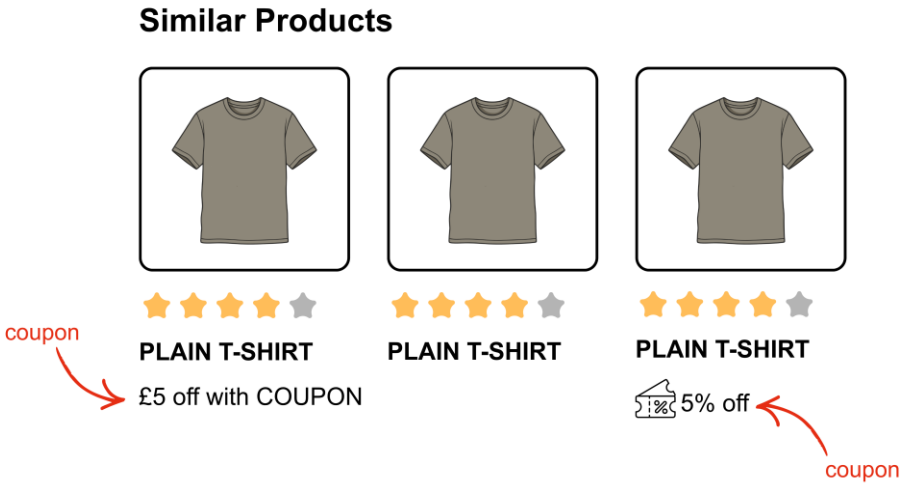
Coupons: *The platform offers discount coupons that users can claim to reduce the price of an item*

- **Prevalence of coupons:** Coupons were present on 48% (301) of the 630 standardised shopping journeys. This proportion ranged from 27% to 80% across platforms.
- **Frequency of coupons:** On journeys where coupons were observed, they occurred on an average of 16% of journey stages. Of these journey stages, coupons were found *multiple times* 37% of the time.

Where coupons were seen, they predominantly appeared on the platform page

Of the 726 total journey stages including coupons, most were observed on the page (80% of stages), rather than on *banners* (18%) and on *pop-ups* (2%).

The mock-up below shows how coupons were presented at the 'product page – similar products' journey stage.



There were no other follow-ups coded in relation to coupons.

At some journey stages, coupons co-occurred with other OCAs

Where coupons were encountered at some journey stages, such as the 'search/category results' stage, they tended to be seen alongside other types of OCAs, including framing, reference pricing, and reviews and ratings. Typically, coupons appeared less consistently than the other OCAs they appeared alongside. A mock-up of these types of OCAs co-occurring at this journey stage is provided on page 37.

Partitioned pricing: *Costs are broken into parts without a clear headline price, meaning the user must add up these separate costs themselves to work out how much they will be charged*

- **Prevalence of partitioned pricing:** Partitioned pricing was present on 47% (295) of the 630 standardised shopping journeys, ranging in prevalence from 1% to 84% on journeys across the different shopping platforms.
- **Frequency of partitioned pricing:** On journeys where partitioned pricing was observed, it occurred at an average of 7% of journey stages. Of these journey stages, partitioned pricing was found *once* 82% of the time.

Where partitioned pricing was seen, it most often consisted of *delivery fees*

Most of the journey stages that involved partitioned pricing included *delivery* fees (95%) being separate from the cost of the product, with only 2% as *booking* fees, 1% as *tax,* and 3% as *other* types of fee. In a majority (96%) of stages containing this OCA, the fees were *mandatory*, meaning the user did not have a choice whether to opt in or out of the additional cost.

Of the 333 total journey stages including partitioned pricing, a majority of this pricing was embedded within the page (95%), rather than appearing on *pop-ups* (4%) or on *banners* (0%).

Mandatory partitioned pricing sometimes appeared on products in the 'search/category results', whereby the delivery fee appeared separately to the product cost. Below is an example mock-up of this sub-type of partitioned pricing.



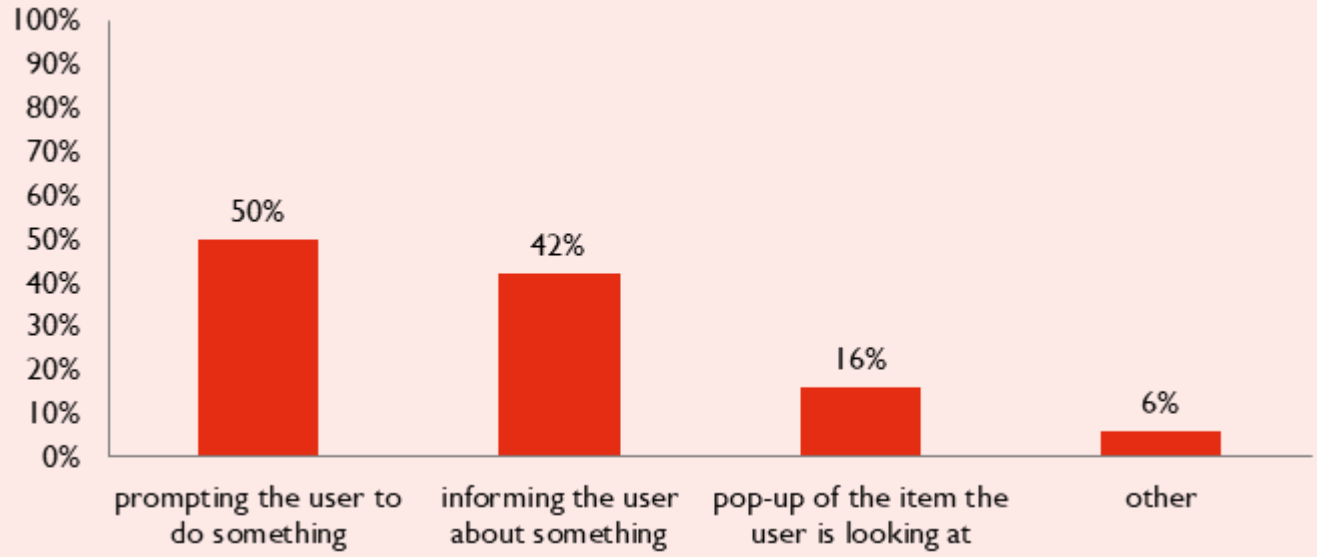
Pop-ups and prompts: *Pop-ups or prompts informing users about something like a sale or promotion, or encouraging them to perform an action which is likely to benefit the retailer*

- **Prevalence of pop-ups and prompts:** Pop-ups and prompts were present on 45% (282) of the 630 standardised shopping journeys. This prevalence ranged from 0% to 87% across platforms.
- **Frequency of pop-ups and prompts:** On journeys where pop-ups and prompts were observed, it occurred at an average of 9% of journey stages. Of these journey stages, pop-ups and prompts were found *once* 94% of the time.

When pop-ups and prompts were seen, this typically involved *prompting the user to an action* and *informing the user about something*

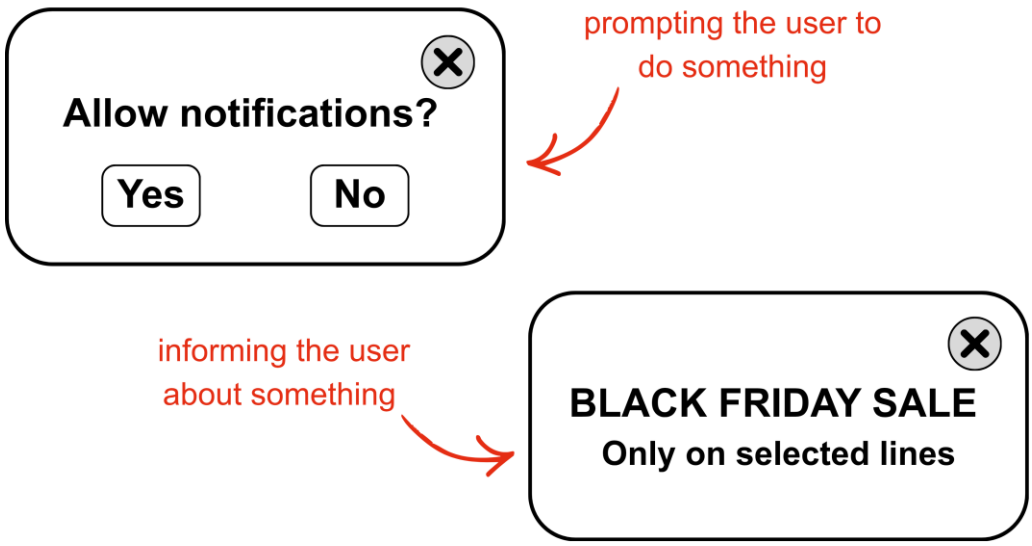
From all the journey stages where pop-ups and prompts were present, this mostly involved those which were *prompting the user to do something* (50%) or *informing the user about something* (42%), with *pop-up of the item the user is looking at* making up a smaller proportion (16%).

Of the journey stages where pop-ups and prompts were present, the proportion involving different specific sub-types of pop-ups and prompts



Base n=397 journey stages at which pop-up and prompts were encountered, for which data for this follow-up was available.

Below is a mock-up of these two most prevalent sub-types of pop-ups and prompts.



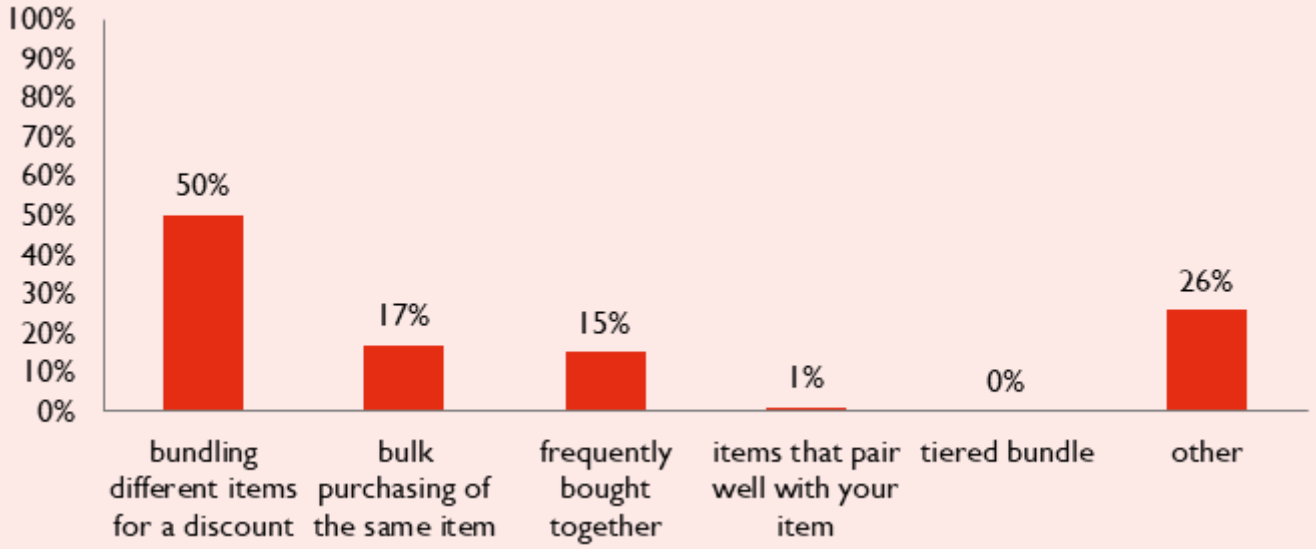
Bundling: *Multiple products are grouped together for sale in a single 'package', typically at a special price*

- **Prevalence of bundling:** Bundling was present on 40% (252) of the 630 standardised shopping journeys, with prevalence ranging from 1% to 100% across the different platforms.
- **Frequency of bundling:** On journeys where bundling was observed, it occurred at an average of 14% of journey stages. Of these journey stages, bundling was found *multiple times* 33% of the time.

When bundling was observed, it primarily consisted of *bundling different items for a discount*

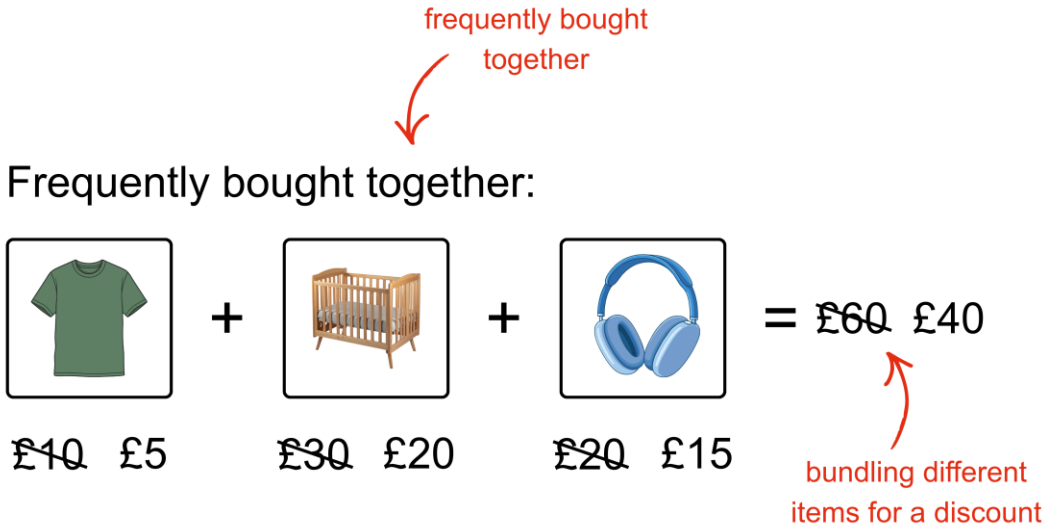
On the journey stages where bundling was seen, most of these involved *bundling different items for a discount* (50%), with other sub-types of bundling appearing less frequently.

Of the journey stages where bundling was present, the proportion involving different specific sub-types of bundling



Base n=540 journey stages at which bundling was encountered, for which data for this follow-up was available.

The mock-up below shows an example of two of these sub-types working in tandem.



Of the 542 total journey stages that included bundling, 89% found bundling on the platform page, with 10% involving bundling on *pop-ups* and 1% on *banners*.

Climate pledges / sustainability: *Claims related to the climate or sustainability*

- **Prevalence of climate pledges and sustainability:** Climate pledges and sustainability were present on 38% (241) of the 630 standardised shopping journeys, ranging in prevalence from 0% to 97% across platforms.
- **Frequency of climate pledges and sustainability:** On journeys where climate pledges and sustainability were observed, it occurred on an average of 10% of journey stages. Of these journey stages, climate pledges and sustainability were found *once* 83% of the time.

Where climate pledges and sustainability were seen, they predominantly appeared on the platform page

Of the 369 total journey stages in which climate pledges and sustainability were encountered, 93% had climate pledges and sustainability on the page, with 6% on *banners* and 0% on *pop-ups*.

An example of these claims about the climate or sustainability are shown in the mock-up below.



There were no other follow-ups coded in relation to climate pledges / sustainability.

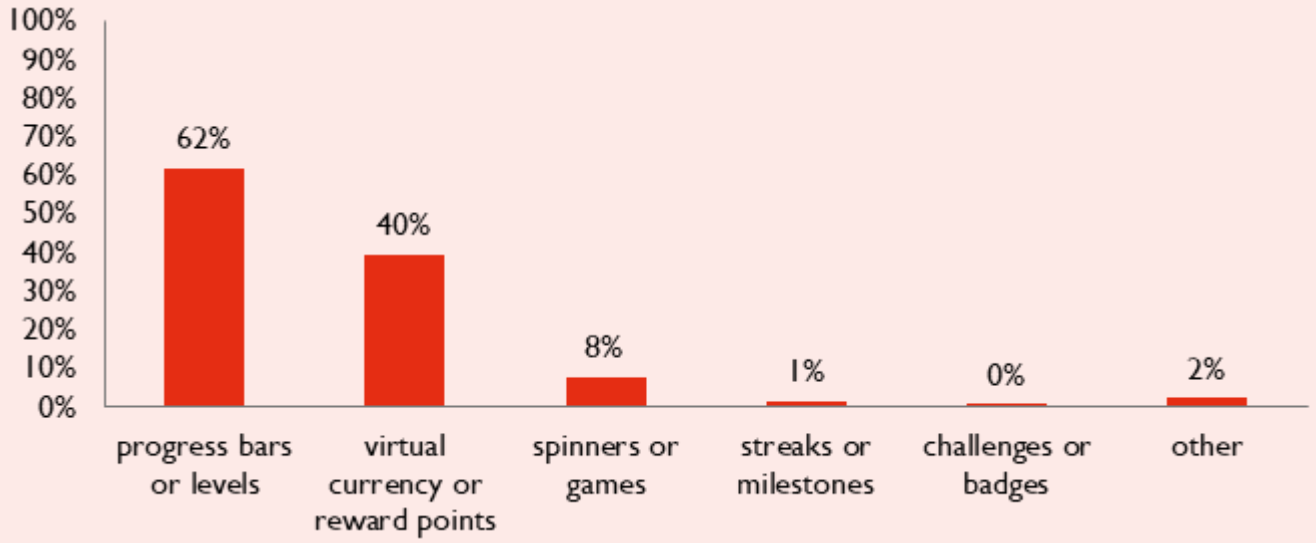
Gamification: *A 'gamified' shopping experience is created through the use of virtual currencies, progress bars, spinners, and so on.*

- **Prevalence of gamification:** Gamification was present on 36% (224) of the 630 standardised shopping journeys, ranging in prevalence from 0% to 99% across platforms.
- **Frequency of gamification:** On journeys where gamification was observed, it occurred on an average of 8% of journey stages. Of these journey stages, gamification was found just *once* most (89%) of the time.

Where gamification was seen, it most often involved *progress bars or levels* or the use of a *virtual currency or reward points*

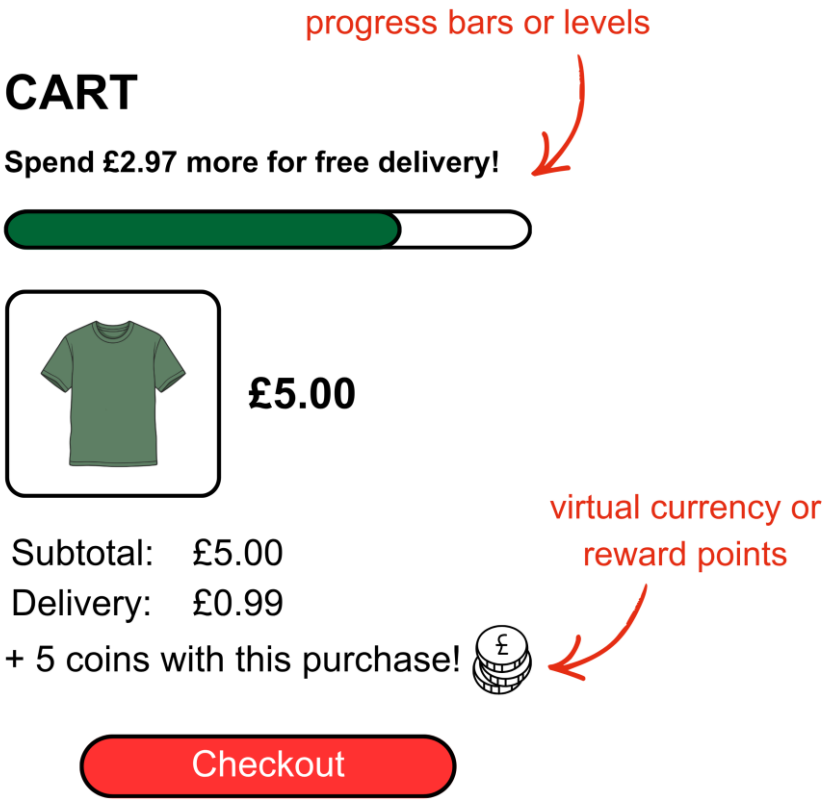
Out of all the journey stages where gamification was seen, these tended to involve *progress bars or levels* (62%), whilst 40% involved *virtual currency or reward points* and 8% contained *spinners or games*.

Of the journey stages where gamification was present, the proportion involving different specific sub-types of gamification



Base n=286 journey stages at which gamification was encountered, for which data for this follow-up was available.

Below is a mock-up showing the ways these sub-types of gamification appeared on different e-commerce platforms.



Of the 286 total journey stages where gamification was observed, 82% included gamification embedded on the page, with 11% on *banners* and 7% on *pop-ups*.

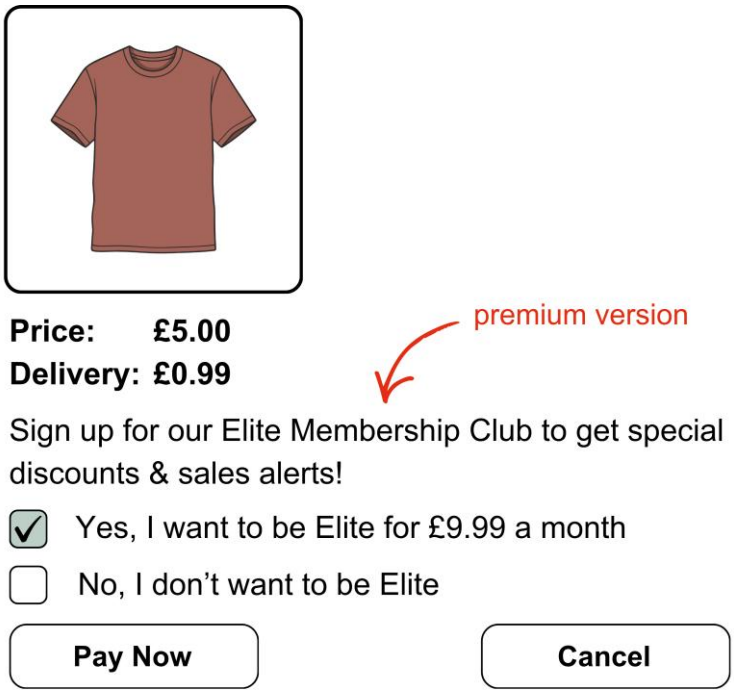
Premium version: *The user is offered a premium version of the platform*

- **Prevalence of premium version:** Premium versions of the platform were offered on 28% (175) of the 630 standardised shopping journeys. This prevalence ranged from 0% to 100% across platforms.
- **Frequency of premium version:** On journeys where a premium version was offered, this happened on an average of 24% of journey stages. Of these journey stages, a premium version was offered *multiple times* 42% of the time.

Where a premium version was offered, this predominantly happened on the platform page

Of the 669 journey stages on which a premium version was offered, 88% involved these taking place on the page, with 10% on *banners* and 2% on *pop-ups*.

Below is an example mock-up of a premium version being offered on an e-commerce platform.



There were no other follow-ups coded in relation to a premium version being offered.

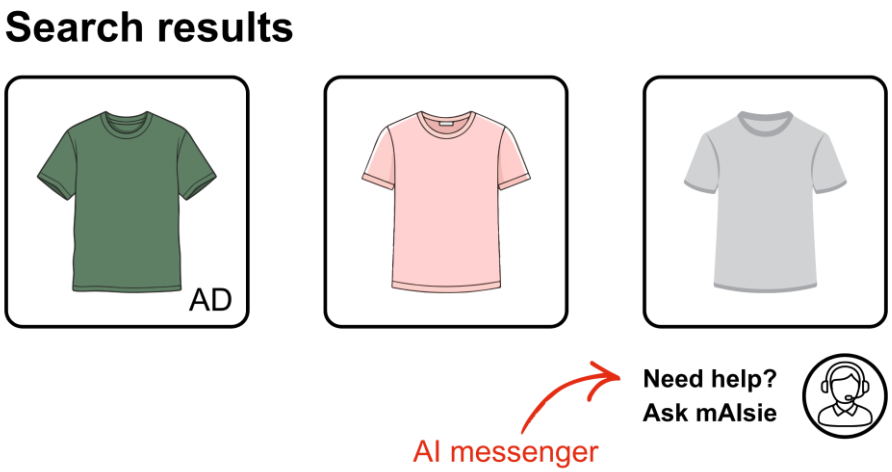
Messengers: *The user is offered a platform on which they can communicate with a specific person, group, or AI chatbot*

- **Prevalence of messengers:** Messengers were present on 18% (113) of the 630 standardised shopping journeys, ranging in prevalence from 0% to 66% across platforms.
- **Frequency of messengers:** On journeys where messengers were observed, they occurred on an average of 7% of journey stages. Of these journey stages, messengers were found *once* 96% of the time.

Where messengers were seen, they most often consisted of *AI messengers*

Where messengers were encountered at a journey stage, these largely consisted of *AI messengers* (94%), with other sub-types appearing less frequently. Specifically, *live chat & forums* were encountered on around 2% of these journey stages, with *other* types of messengers appearing on 4%. Other sub-types of messengers were not encountered on any of the standardised journeys, including *expert profiles*, *scheduled webinars*, and *blogs and articles*.

An example mock-up of an AI messenger is presented below.



In total, 129 journey stages including messenger OCAs were observed, and 88% involved messengers on the page rather than on *pop-ups* (7%) or *banners* (5%).

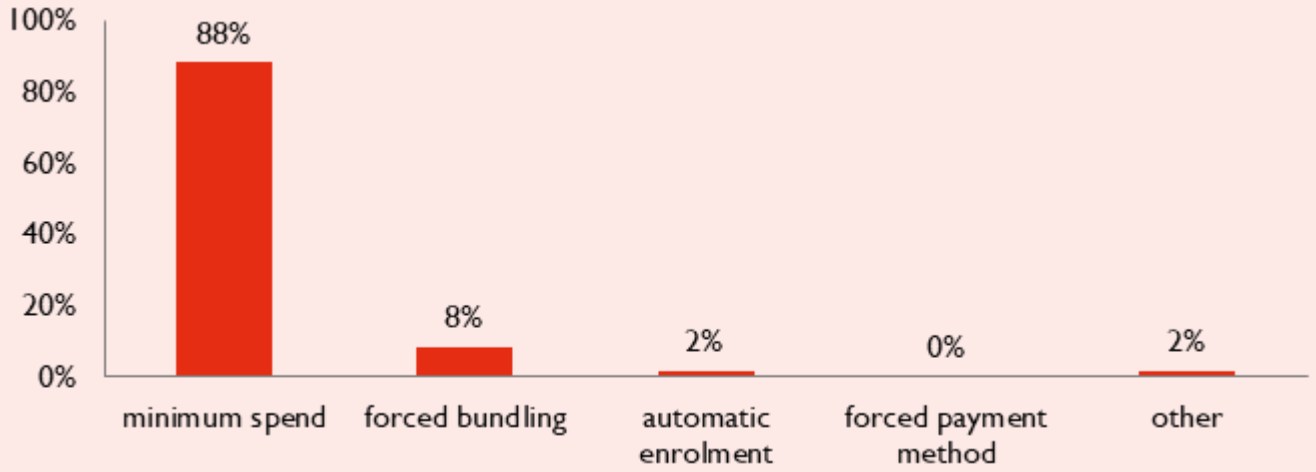
Forced outcomes: *The platform changes or restricts a user's options without explicit permission or without giving them a choice to change it*

- **Prevalence of forced outcomes:** Forced outcomes were present on 9% (58) of the 630 standardised shopping journeys. Their prevalence ranged from 0% to 57% across platforms.
- **Frequency of forced outcomes:** On journeys where forced outcomes were observed, they occurred on an average of 7% of journey stages. Of these journey stages, forced outcomes were found *once* 97% of the time.

Where forced outcomes were seen, this most often involved a *minimum spend*

Of all the journey stages where forced outcomes were observed, 88% consisted of *minimum spend*, while 8% included *forced bundling*, where a user is forced to bundle multiple items together in order to checkout, and 2% had *automatic enrolment*.

Of the journey stages where forced outcomes were present, the proportion involving different specific sub-types of forced outcomes



Base n=60 journey stages at which forced outcomes were encountered, for which data for this follow-up was available.

Of the 61 total journey stages where forced outcomes were found, the majority (69% of stages) presented them on the page, whilst 20% presented them on *banners* and 11% on *pop-ups*.

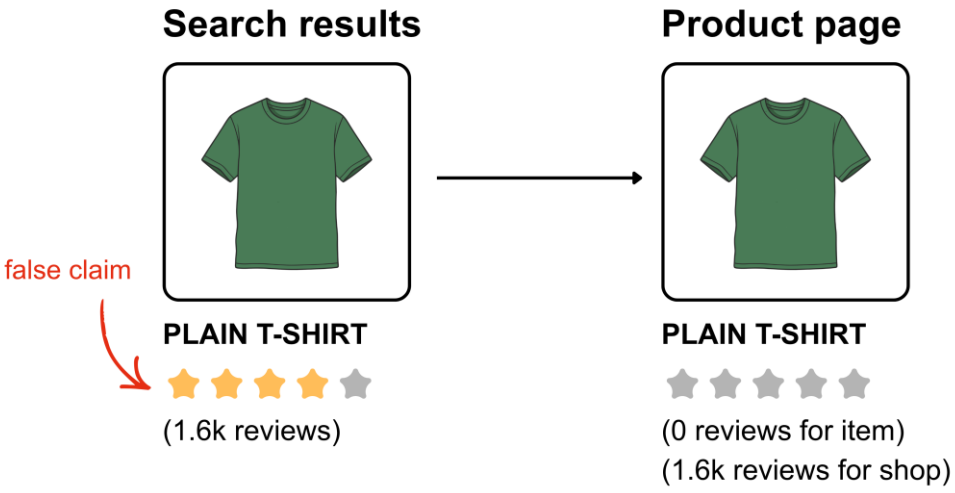
False claims: *A claim made by the platform is factually incorrect or impossible to carry out*[19]

- **Prevalence of false claims:** False claims were present on 8% (51) of the 630 standardised shopping journeys, ranging in prevalence from 0% to 31% across platforms.
- **Frequency of false claims:** On journeys where false claims were observed, they occurred at an average of 7% of journey stages. Of these journey stages, false claims were found *once* 98% of the time.

False claims were typically observed in relation to reviews, delivery fees and product pricing

Though no coded data was collected on the sub-types of false claims, researchers noted that false claims were largely in relation to reviews, delivery fees, and product pricing.

In relation to delivery fees or the product price, these were sometimes seen to increase from the' search/category results' to 'checkout'. In terms of reviews, on some platforms, the reviews at the 'search/category results' stage appeared at first to be in relation to the product but later turned out to be in relation to the seller, as shown in the mock-up below.



[19] Note that within the current research design it was not possible to check the validity of all claims made on platforms. The prevalence of false claims in the current sample is therefore likely to be an underestimate, with the false claims coded being those which were more explicit contradictions of what had previously been shown to the user.

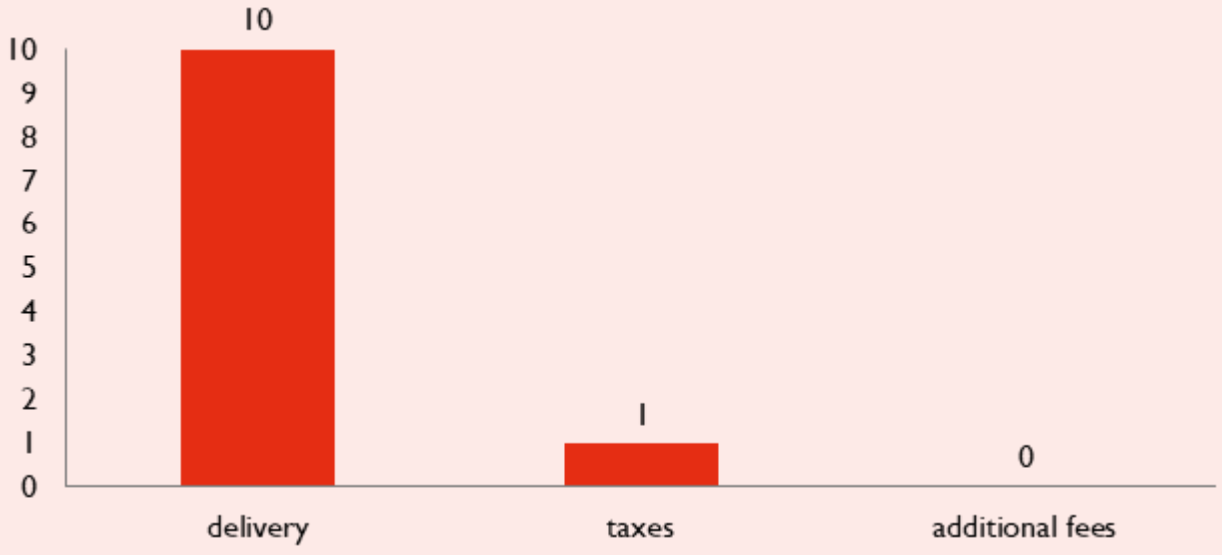
Drip pricing: *Only part of the price is shown upfront, with additional costs appearing without warning later on in the purchasing journey*

- **Prevalence of drip pricing:** Drip pricing was present on 2% (11) of the 630 standardised shopping journeys. This proportion ranged from 0% to 4% across platforms.
- **Frequency of drip pricing:** On journeys where drip pricing was observed, it occurred at an average of 6% of journey stages. Of these journey stages, drip pricing was found *once* 100% of the time.

Most instances of drip pricing involved additional *delivery* fees being added

Of the 11 journey stages where drip pricing was seen, most (10) involved drip pricing related to delivery fees, with only 1 encounter of drip pricing involving taxes.

Of the journey stages where drip pricing was present, the number of journey stages containing different specific sub-types of drip pricing



Base n=11 journey stages at which drip pricing was encountered, for which data for this follow-up was available.

OCA prevalence by journey stage and device

The prevalence of some OCAs varied according to the specific stage of the shopping journey or depending on the device that was being used. This section summarises the three OCAs which were the most prevalent at each journey stage, as well as the OCAs which varied significantly by device. To see the full flow of journey stages, refer to page 10.

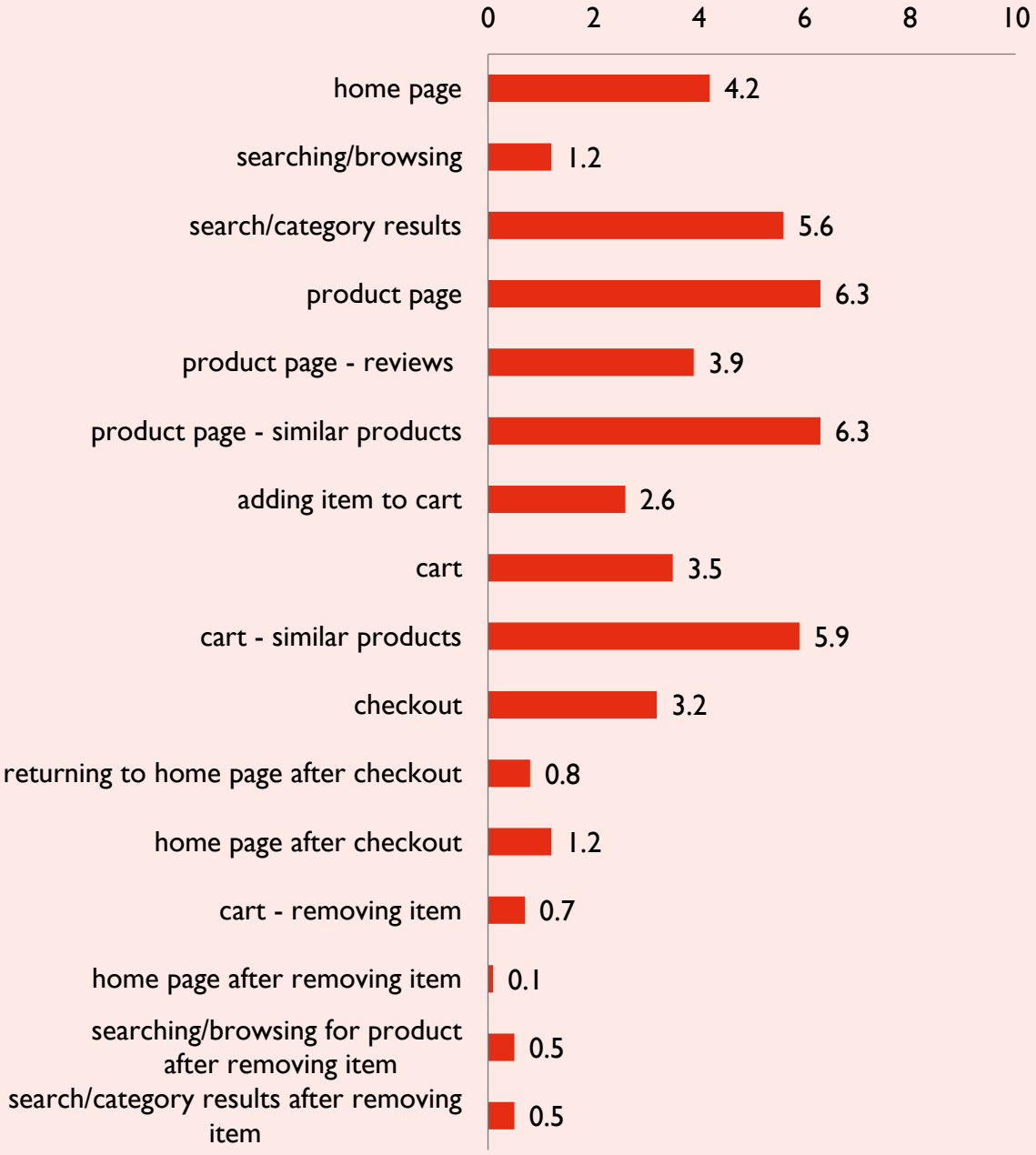
The ‘product page’ and ‘product page – similar products’ journey stages had the highest number of different types of OCA encountered on average

The average number of different types of OCAs encountered varied by journey stage, with the ‘product page’ and ‘product page – similar products’ having the highest average number of types encountered (6.3).[20]

Later stages in the journey, from ‘returning to home page after checkout’ onwards, tended to involve a lower number of OCA types, ranging from 0.1 to 0.8 on average. As these journey stages involved revisiting a stage from earlier in the journey, only the presence of new OCAs were coded here, which explains why overall prevalence of OCAs at these stages was lower.

[20] Note that not all journeys contained all journey stages. For a full explanation of this, please refer to page 19. The numbers of journeys containing each journey stage is provided in the footnote for the chart on the following page.

Average number of different types of OCAs encountered at each journey stage



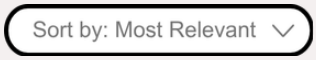
Base n=532-630 journeys, chart shows the average number of different types of OCAs seen at each journey stage across all journeys where that journey stage occurred. Note that checkout – similar products has been excluded due to base n<30.

The prevalence of different OCAs varied according to the specific stage of the shopping journey

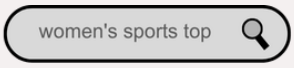
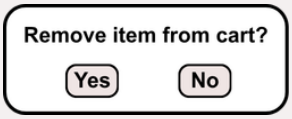
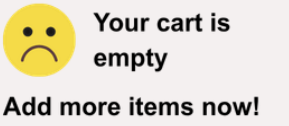
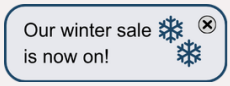
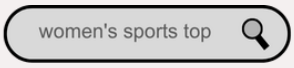
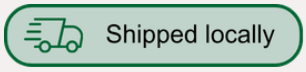
The table below summarises the top three most prevalent OCAs at each journey stage, with mock-up examples of what these look like.

The prevalence of OCAs varied across journey stages. OCAs like reviews and ratings, and popularity claims were more consistently higher in their prevalence at earlier journey stages like the 'search/category results'. Other OCAs, like personalisation, were more prevalent at later journey stages, being encountered more often at stages like the home page after removing item from cart.

Top 3 most prevalent OCAs encountered at each journey stage

Journey stage (number of journeys encountered on)	**#1 most prevalent**	**#2 most prevalent**	**#3 most prevalent**
Home page (n=630)	framing (82%) **"OUR BEST DEALS EVER!"**	scarcity claims (47%) 	reference pricing (43%) ~~£100~~ -25% **£75**
Searching/ browsing (n=628)	no OCAs seen (40%)	personalisation (35%) 	popularity claims (22%) 
Search/category results (n=625)	reviews and ratings (88%) 	popularity claims (80%) 	framing (77%) 
Product page (n=630)	reviews and ratings (96%) 	framing (85%) **"Lowest price in 30 days!"**	popularity claims (80%) 
Product page – reviews (n=544)	reviews and ratings (99%) 	ranking (95%) 	framing (78%) 

Journey stage (number of journeys encountered on)	**#1 most prevalent**	**#2 most prevalent**	**#3 most prevalent**
Product page – similar products (n=623)	similar products (98%) **Others also bought:** 	reference pricing (81%) ~~£100~~ -25% **£75**	popularity claims (79%) best-selling item
Adding to cart (n=629)	feedback (81%) item successfully added to cart!	similar products (25%) **You may also like:** 	nudge / dark nudge (24%) **Checkout!**
Cart (n=627)	framing (56%) **"Lowest price in 30 days!"**	reference pricing (50%) ~~£100~~ -25% **£75**	popularity claims (49%) 10,000+ items sold
Cart – similar products (n=532)	similar products (97%) **Customers also liked:** 	popularity claims (80%) best-selling item	framing (76%) Black Friday deal
Checkout (n=630)	commitment (70%) **Saved address:** 123 Commitment Lane DB7 0CA	framing (52%) **"Order now for free shipping"**	sludge (46%) To proceed to checkout, please sign in: email or username continue
Checkout – similar products (n=11)	*N/A – base n<30*	*N/A – base n<30*	*N/A – base n<30*
Returning to home page after checkout (n=626)	no OCAs seen (60%)	sludge (34%) **Leave checkout?** Yes No	framing (19%) **"Are you sure you want to give up these amazing deals?"**

Journey stage (number of journeys encountered on)	**#1 most prevalent**	**#2 most prevalent**	**#3 most prevalent**
Home page after checkout (n=598)	personalisation (49%) **Your browsing history:** 	no new OCAs seen (37%)	defaults (11%) 
Removing item from cart (n=623)	no OCAs seen (39%)	sludge (27%) 	framing (25%) 
Home page after removing item from cart (n=606)	no new OCAs seen (89%)	personalisation (9%) **Suggested for you:** 	pop-ups and prompts (1%) 
Searching/browsing for product after removing item from cart (n=620)	no new OCAs seen (89%)	personalisation (38%) **Recently searched:**	defaults (2%) 
Search/category results after removing item from cart (n=610)	no new OCAs seen (89%)	personalisation (24%) 	framing (9%) 

Base n=11-630 journeys at which each journey stage was seen. Note that not all journey stages appeared in every journey.

There were some OCAs that were more prevalent on different devices

The table below shows the seven OCAs for which significant differences in prevalence between devices were seen, with the statistic representing significantly higher prevalence highlighted.

Commitment and gamification were both more prevalent on app journeys than web journeys, appearing in 91% vs. 71% and 40% vs. 24% of journeys respectively. Popularity claims, ranking,

defaults, automated actions, and messengers showed the opposite pattern, appearing more often on web journeys than on app journeys.

Average overall prevalence of specific OCAs whose prevalence differed significantly on journeys carried out on different devices

OCA type	Prevalence on app journeys	Prevalence on web journeys	NET
popularity claims	98%	100%*	**99%**
ranking	91%	100%*	**95%**
commitment	91%*	71%	**81%**
defaults	73%	81%*	**77%**
automated actions	40%	51%*	**45%**
gamification	40%*	24%	**32%**
messengers	5%	37%*	**21%**

Base of App n=270, Web n=270, NET n=540. Note that this analysis only includes OCAs with a base n>30 for both app and web journeys. Note that journeys on one platform have been excluded since only app journeys were carried out on this platform.
**Significantly higher than the corresponding figure for the other device.*

Subjective OCAs

As discussed in the background and methodology section (see page 12), some OCAs were treated as 'subjective' for this research. This was done as it was difficult to find a definition that was clear enough to enable consistency between coders, with researchers noting that perceiving their presence inherently relied on a subjective sense of the impact of the OCA. These subjective OCAs have been excluded from the main analysis and are analysed in this section. The statistics should be interpreted with these considerations in mind.[21]

Sensory manipulation: *Visual features, haptic feedback, sounds, or design features are used to draw attention to specific options, steer users to specific choices, or reinforce actions*

Sensory manipulation was the most prevalent subjective OCA, encountered on nearly every journey

Sensory manipulation was present on 100% (629) of the 630 standardised shopping journeys, with this proportion ranging from 99% to 100% across platforms.

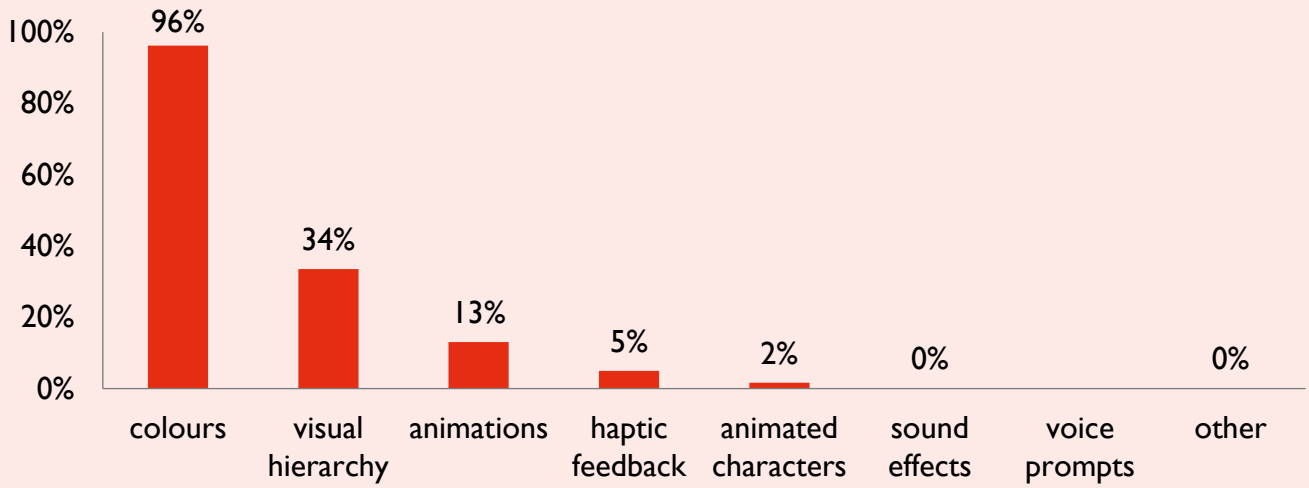
On journeys where sensory manipulation was observed, it occurred on an average of 44% of journey stages. Of these journey stages, sensory manipulation was seen *multiple times* two-thirds (67%) of the time.

When sensory manipulation was seen, it often involved the use of *colours*

Of the journey stages that included sensory manipulation, these largely involved the use of *colours* (96%), whilst 34% involved a *visual hierarchy*, 13% included *animations*, 5% included *haptic feedback*, and 2% included *animated characters*.

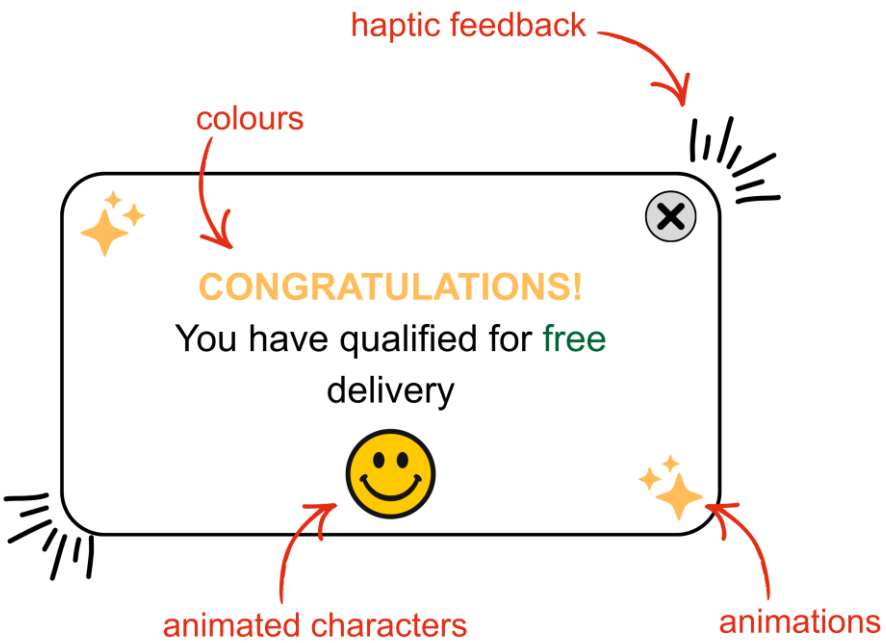
[21] Note that two subjective OCAs (complex language and decoys) are not included in the findings as their base sizes were less than 30.

Of the journey stages where sensory manipulation was present, the proportion involving different specific sub-types of sensory manipulation



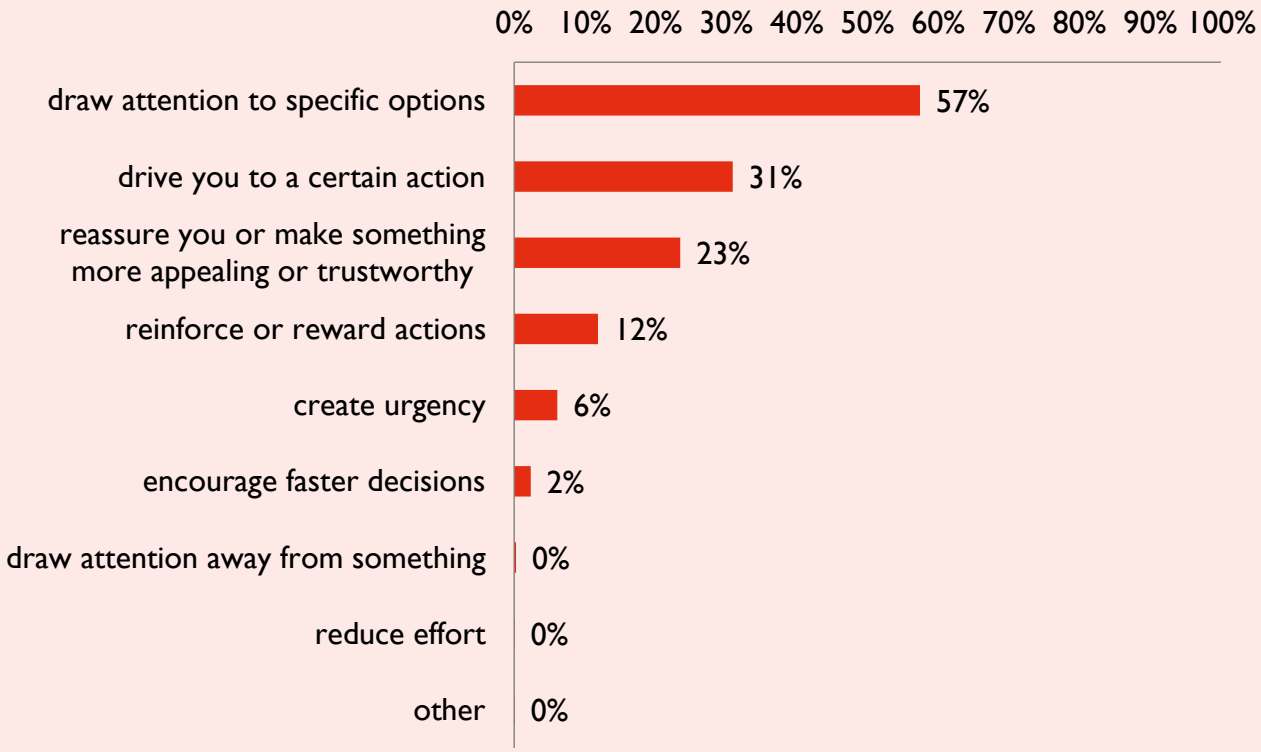
Base n=4,295 journey stages at which sensory manipulation was encountered, for which data for this follow-up was available.

Below is a mock-up showing multiple different sub-types of sensory manipulation occurring at once.



Researchers also coded what they perceived to be the effect of the sensory features. This most often involved *drawing attention to specific options* (57%). Less often, this perceived intent was *driving you to a certain action* (31%), to *reassure you or make something more trustworthy* (23%), *reinforce or reward actions* (12%), *create urgency* (6%), or to *encourage faster decisions* (2%).

Of the journey stages where sensory manipulation was present, the proportion at which different perceived effects of sensory manipulation were observed



Base n=4,277 journey stages at which sensory manipulation feature effects were perceived, for which data for this follow-up was available.

Of the 4,298 total journey stages that included sensory manipulation, most were observed embedded on the page (80%), rather than appearing on *pop-ups* (14%) and *banners* (6%).

More often than not, sensory manipulation co-occurred with other OCAs

Where sensory manipulation was seen, it often appeared together with a variety of other OCAs, such as scarcity claims, feedback, or defaults. Researchers noted that the use of sensory manipulation in combination with other OCAs often felt as though it enhanced the impact of those OCAs. For instance, where scarcity claims were presented in red, this led to an increased sense of urgency, while implied defaults were often created using colour and a visual hierarchy, drawing the user's attention to one button over another.

Below is an example mock-up of the co-occurrence of different types of OCAs with sensory manipulation.


haptic feedback,
colours and feedback
ADDED TO CART
LAST CHANCE!
Only 2 left...
Buy it now
Add to basket
scarcity claims
and colour
colours, visual hierarchy
and implied default

Choice overload: *Too many options are shown, making decision-making more difficult*[22]

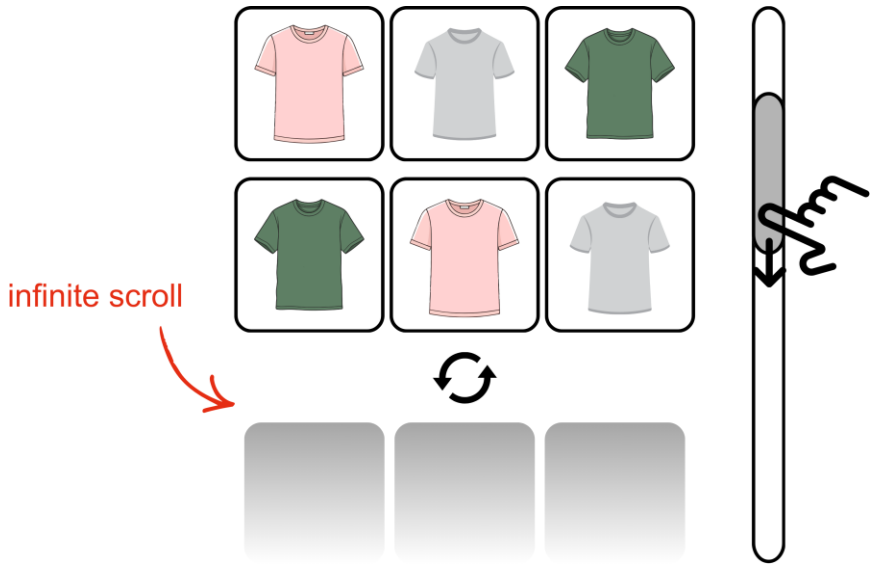
Choice overload was encountered on around half (48%) of journeys

Choice overload was present on 48% (303) of the 630 standardised shopping journeys, with prevalence ranging from 1% to 99% across different platforms.

On journeys where choice overload was encountered, it occurred on an average of 11% of journey stages. Of these journey stages, choice overload was seen only *once* a large majority (97%) of the time.

When choice overload was encountered, a large majority of the journey stages involved *infinite scroll*

Of the 303 journey stages in which choice overload was observed, almost all of these stages involved *infinite scroll* (97%), where the user is continually presented with new products as they continue to scroll down the page, typically when scrolling through the 'search/category results' or at 'similar products' journey stages, as shown in the mock-up below.



Overwhelming number of indistinguishable products (7%) and *overwhelming product variants* (1%) appeared less often. Other sub-types of choice overload were not encountered on any of the standardised journeys, including *excessive bundling options*, *filter overload in search results*, and *flash sale with many items*.

[22] Choice overload was defined as subjective since this definition inherently relies on a subjective assessment of what should be classified as 'too many', as well as whether the impact on the user would be to make decision-making more difficult.

Out of the 538 journey stages that contained choice overload, none of these involved an occurrence on a *banner* or *pop-up*.

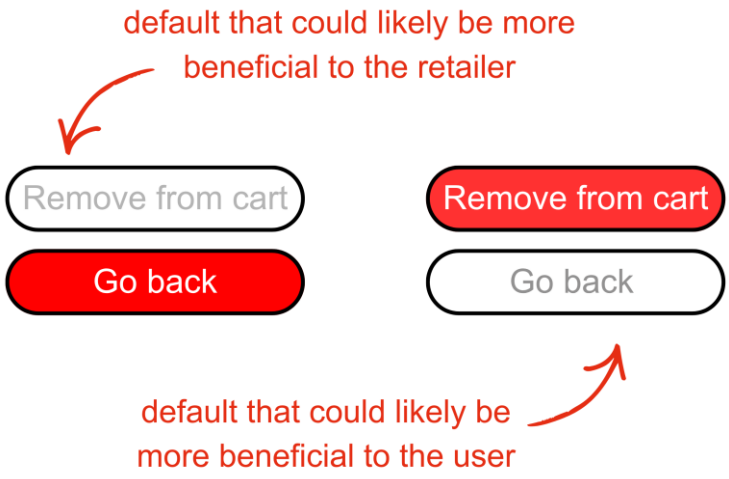
Reflections on potential for harm

This research was designed to map the prevalence of OCAs across various e-commerce platforms. While coding the different OCAs on each platform, researchers took note of some OCAs that appeared to hold higher or lower risk for harm than others. The following section gives a broad overview of these reflections and includes some examples. It is important to note that this observational data capture was not integrated into the research design and was not captured systematically. Further detailed study on users' interactions with e-commerce platforms would be required to make any claims on the potential harmful effects of OCAs on users.

Sometimes, OCAs appeared to be used in ways that are beneficial to the user

On some journeys, OCAs were found that appeared to act more in the best interests of the user than the retailer.[23] While these OCAs shared the same design features as OCAs that appear to benefit the retailer, they seemed to be used in ways that did not encourage more spending or speed up the purchasing process. Instead, they made it easier to cancel a purchase or added additional steps to the purchasing process, potentially allowing users to take more time to consider their purchases.

For example, on some platforms, positive feedback and sensory manipulation occurred when removing an item from cart possibly reinforcing the user's action of stopping the purchase process, rather than discouraging it. Other platforms had a built-in feature to quickly remove items from cart by swiping and actively reminded users of this feature at the cart stage. Similarly, on journey stages where a choice had to be made between multiple options, the preset or implied default did not always guide the user to the option likely to be preferred by the retailer. The button to preview your cart, for example, was sometimes highlighted over the quick checkout option, or free delivery was pre-selected over a faster, more expensive offer.



[23] Note that these OCAs were not coded and so are not included in the data presented elsewhere in this report.

Some other instances of these OCAs were potentially more ambiguous in terms of their potential benefit to the user, though they nevertheless did not appear to encourage behaviours which would be beneficial to the retailer. An example of this includes apparent scarcity claims which do not actually make claims about limited stock, and instead inform the user about ample stock, as seen in the following mock-up.



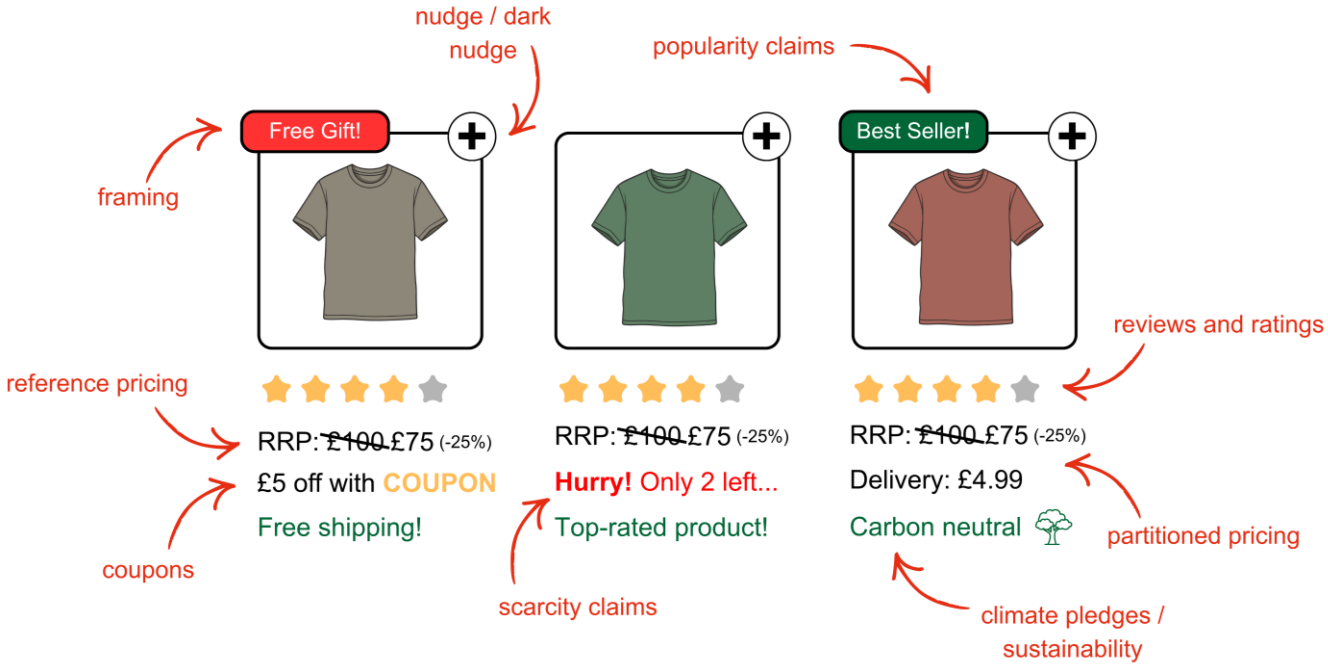
Other OCAs appeared to hold a greater potential for user harm

Some OCAs stood out to the research team as having a higher potential for harm. Although the research design does not permit claims about whether these OCAs harm users, highlighting them may help to identify potentially fruitful avenues for future study. These were:

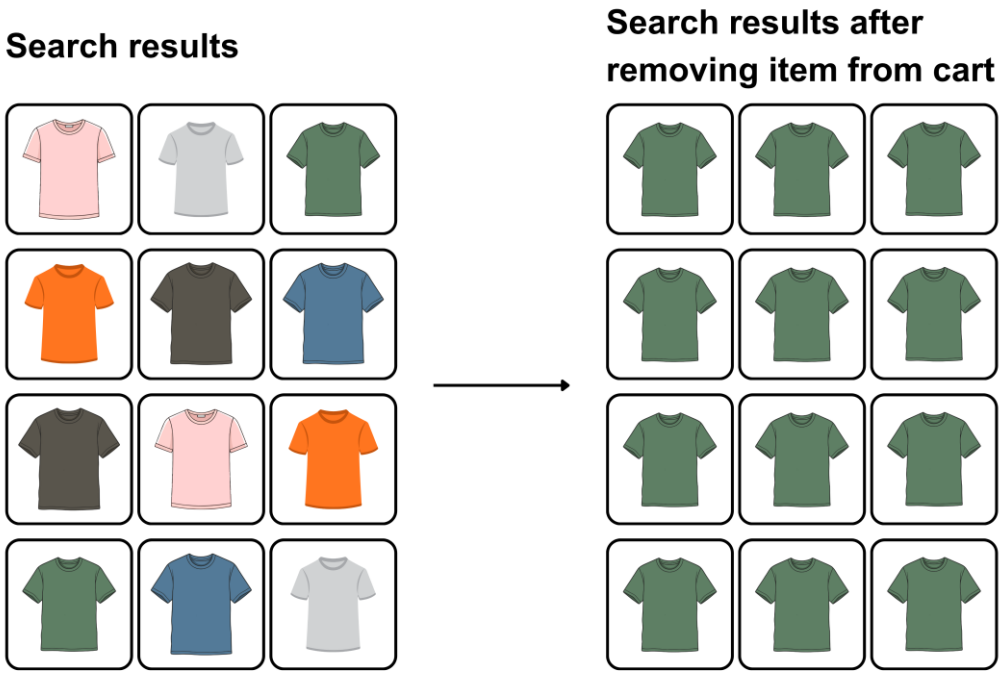
- OCAs that felt overwhelming
- OCAs that felt misleading
- OCAs that made the shopping process feel out of your control
- OCAs that felt confusing

Some OCAs felt particularly overwhelming

Sometimes, OCAs could feel particularly overwhelming. One example of this was on the ‘search/category results’ stage where researchers were shown multiple product options with a large number of OCAs, including sensory manipulation, framing, reference pricing, and popularity claims.



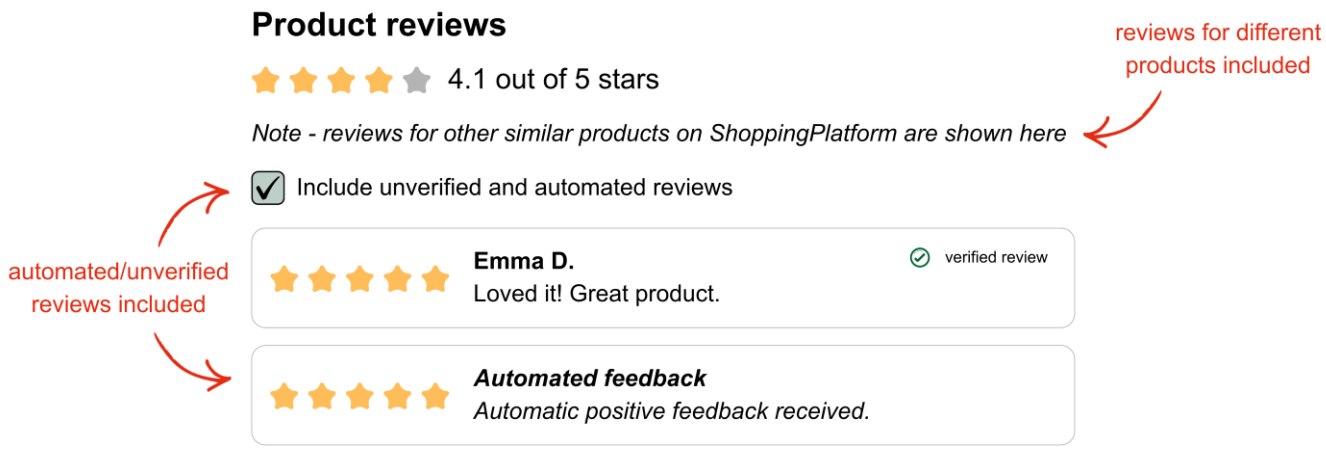
Another example of this was on the 'search/category results' after adding, and then removing, an item from cart. Here, the results shifted from a variety of different products to multiple variants of the apparent same item that had been removed from cart, as shown in the mock-up below, making it harder to differentiate between products.



Other OCAs felt misleading, especially where information was hidden or withheld

On some journeys, researchers observed that items labelled as ‘free’ gifts had been automatically added to the user’s cart, but upon reaching checkout these ultimately turned out to incur additional costs in terms of an increase in mandatory fees. No information about these additional costs was provided prior to the checkout stage, meaning the increase in price felt misleading.

Information also sometimes felt misleading at the ‘product page – reviews stage’, potentially giving users the false impression some products or sellers are more highly rated than they are. As mentioned in the reviews and ratings sub-types section, the total amount of reviews shown was sometimes inflated by including automatically generated reviews. In other instances, reviews of different, similar products were combined and presented as reviews for a singular product. In both cases, information about which reviews were included was misleading, which could lead some users to falsely believe a product is more popular than it is. These two examples are presented in the mock-up below.



Some OCAs created a sense of not having control over the shopping process

Some platforms performed automated actions that made researchers feel like they were not always in control of the shopping process. On some journeys, for example, the platform automatically scrolled down to a different part of the page without any action from the researcher. Sometimes, this meant it concealed or made it harder to see key information, while other times it would take the user to an area lower down on the page containing shoppable products to continue browsing from.

Similarly, on some journeys, researchers were immediately taken to their shopping cart after adding an item to cart without selecting the option to do so. This sped up the shopping process outside of the researcher’s control by automatically taking them away from the ‘product page’ and onto the ‘cart’ stage where they could complete the purchase.

Some price changes throughout journeys felt confusing, seemingly with no identifiable reasoning behind them

On some journeys, researchers encountered seemingly random shifts in the same product's price both between journey stages and within journey stages after an action was carried out (for example, after being forced to log in). These price changes were not consistent and were observed as both price increases and decreases across different platforms and journeys. For example, on some journeys, researchers noticed the price of a product increasing after removing it from the cart while on other journeys the same action reduced the total product price. On other journeys, researchers observed the price of an item increasing or decreasing immediately after signing into their account at the cart stage – that is, within the exact same journey stage.

Aside from the product's price, on some journeys delivery fees and taxes were also observed shifting between the 'product page', 'cart', and 'checkout' stages, without any consistency or explanation as to when and how these price and cost fluctuations were occurring. For this research, these price fluctuations in fees were coded as false claims where they were encountered.

These changes were sometimes quite small increases or decreases to price and could therefore easily be missed by a user during the purchasing process. From this research alone, it is unclear what was driving these changes in price, but recent research by the Department for Business, Energy and Industrial Strategy suggests that it could have been due to price personalisation based on the user's prior behaviour on the platform, which holds the potential for harm to certain groups of users.[24]

Implications for future research

This project provides a helpful starting point for future research into the potentially harmful effects of OCAs by providing evidence of their prevalence on seven e-commerce platforms. It provides data on when and how OCAs appeared, the different forms they can take, and an outline of the methodology for carrying out such research.

Additionally, this research sheds light on some of the challenges that come with carrying out research in this area. The nature of Online Choice Architecture is often to influence or control user attention and behaviour, requiring researchers to actively mitigate these effects throughout the research in order to objectively map the OCAs present but also to navigate the platforms in a structured, standardised manner. For example, some OCAs were harder to identify because other design elements concealed or drew attention away from them.

Future research should build on this comprehensive mapping research by combining insights on prevalence with an understanding of user experiences. To fully understand the potential harmful effects of OCAs, harms need to be better understood in the context of these platforms. These harms include the potential for users to spend more than they want, make uninformed purchase

[24] BEIS – Personalised Pricing and Disclosure

decisions, as well as other potential harms such as reinforcing gambling behaviours. This should draw on existing work, such as work done by the CMA, to explore harm from OCA practices.[25]

In addition, the relationship between OCA practices, risk factors and harm should be explored, considering the wider risk factors that influence a user's shopping behaviour, such as age, predisposition to gambling behaviours, or any other vulnerabilities. Other risk factors may be related to the platforms themselves, such as the density or specific combinations of OCAs used. By incorporating the prevalence of OCAs into the wider context of users' lives in this way, future research could not only help uncover the potential harms OCAs can cause, but also who is most at risk from these harms.

[25] GOV.UK - Online Choice Architecture: How digital design can harm competition and users

BIST afterword

Purpose and scope of BIST reflections

This section sets out the Department for Business, Innovation, Science and Trade's (BIST) reflections on the findings, and its link to previous BIST commissioned research. It considers how the evidence could inform future research and policy development in relation to online choice architecture (OCA). These reflections do not assess consumer harm, make judgements about the legality of specific practice, or set out enforcement or policy intentions.

Online choice architecture as a policy issue: wider evidence and context

This research contextualises online choice architecture as a systemic feature of online marketplaces, rather than as a set of isolated design practices. By mapping the prevalence, positioning and combination of different OCAs across consumer journeys, the research provides insight into how consumers are routinely exposed to numerous forms of digital design that have the potential to shape their choices at various stages when shopping online. The sheer quantity of OCA elements that could shape consumer choices on a given shopping journey may itself be a feature that drives potential for harm.

A key policy relevant insight is that several OCAs are not only widespread but tend to appear at decision critical points in the consumer journey and often in combination. From a policy and research perspective, this reinforces the importance of considering the combined and cumulative effects of digital design elements in context, rather than assessing individual features in isolation, when considering potential harm to consumers from OCA and how they might be impacted.

While the research does not directly assess consumer harm or compliance with the law, it is helpful to distinguish between practices that are already addressed within the existing legal consumer protection framework and other forms of OCA that may be more contextual. In doing so, the findings provide useful background for considering how current rules operate in practice in complex and ever evolving digital environments characterised by layered and interactive design features.

Some of the practices identified in this research are prohibited under UK consumer law. For example, the Digital Markets, Competition and Consumers Act (DMCCA) 2024 strengthened protections in relation to the drip pricing of unavoidable fees[26]. In the present research, reassuringly we found limited evidence of drip pricing (on 2% of the journeys).

The DMCCA also strengthens consumer protections in relation to fake reviews[27]. Whilst we were unable to assess prevalence of fake reviews in this research, we did identify design choices in the presentation of reviews and ratings that have the potential to be misleading and thus may impact

26 GOV.UK - Price transparency

27 GOV.UK - Fake reviews

consumer purchasing decisions. For example, we found examples of reviews and ratings for similar products presented in combination with reviews for the specific product on a product page, in a way that might not be immediately clear to the consumer. Additionally, we saw default inclusion of automated reviews[28], which in combination with other design features, may be misleading and inflate perceived ratings for a product.

We also found evidence of claims that appeared to be entirely false (8%). This is likely to be an underestimate as it was not possible for us to assess the truthfulness of claims in most cases. Where found, this often related to how ratings were presented. For example, there were cases where ratings were presented under a product on the search page, but after moving to the product page, it became clear that the reviews were actually related to the seller not the product itself. The CMA has published guidance to support businesses on how to comply with new rules relating to fake reviews, including how they are presented to consumers to ensure they do not mislead.
In this research we found that scarcity claims were common (86% of journeys). Under UK consumer law scarcity claims must be true, and whilst it was beyond the scope of this research to establish truthfulness, there were some examples that seemed likely to be untrue. Additionally, even when truthful, scarcity claims should not put undue pressure on consumers to take certain transactional decisions, which may occur especially when used in combination with other forms of OCA[29]. We found that 36% of journey stages with scarcity claims about limited time did not provide specific duration information and so have greater potential to be misleading. We also found potentially positive examples of scarcity claims, where users might be advised ‘more than 10 left’. It would be valuable for research to consider whether these reduce a sense of urgency for consumers and if this interacts with the influence of scarcity claims such as ‘less than 10 left’ on another product.

It is also important to reflect on how OCA interacts with the use of algorithms. Algorithms refer to the sequence of instructions to perform a computation or solve a problem and are central to the operations of many businesses. In the context of online marketplaces, this may guide elements such as individual recommendations, the ranking and positioning of search results, and personalised offers.

We found evidence of personalisation on 88% of journeys. This was only where we noted clearly observable personalisation (for example, ‘recommended for you’ or ‘products similar to’ those we had previously searched for being shown to us) and it is likely that all journeys had additional elements of algorithmic personalisation that were not observable in this research. Whilst personalisation can be positive to consumers, there is potential for algorithms to enable personalisation to enhance the use of targeted OCA elements, in ways that may not be transparent and have high potential to cause harm. This research continues to highlight the critical importance of understanding the interaction between OCA and algorithmic systems.

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[28] Automated reviews are where the platform automatically generates positive feedback unless a consumer opts out or gives their own rating and feedback or has raised an issue, within a given timeframe.

[29] GOV.UK - Using urgency and price reduction claims online

Reference pricing was found on 94% of the journeys. Notably, 23% of these journeys involved unclear rankings, where a struck-through price was shown with no explanation or context, making it difficult for the consumer to be able to clearly understand what the discount related to. Reference pricing frequently occurred alongside other OCAs, such as popularity claims, coupons and framing, which may also increase the impact of the reference price on the consumer. Research by Citizens Advice suggests that reference pricing can harm consumer decision making even when they are accurate, and so it would be valuable to engage in further work to understand the wider implications.[30]

Gamification was only found on 36% of the journeys, but there was a high level of variation across the platforms. Additionally, this is likely to be an underestimate of gamification on online marketplaces, as many elements of gamification would not have been captured in the present research, as they appear at other stages in the consumer journeys, such as through email offers. Gamification techniques may have become more common in recent years and so it would be valuable for future research to examine gamification in the context of online marketplaces, to understand the potential for harm.

Messengers were seen infrequently (18% of journeys), however where they were seen, these were predominantly AI messengers. With advances in AI technology, it seems likely that these may become more common. Additionally, the relatively low prevalence we saw might relate to the journeys, as it may be these are on other areas of the site. AI messengers have the potential to personalise and enhance many OCA elements, and it would be beneficial for future work to understand the impact that AI messengers such as chatbots have on consumers at different stages of the journey.

Finally, although prevalence evidence alone does not demonstrate consumer harm, the research found numerous examples of OCAs that seemed likely to have potential for harm. Overall, the findings support a policy view of online choice architecture as an issue that cuts across individual practices and highlights the need for further research to understand how specific OCA elements may individually and in combination influence consumers to make choices that may be suboptimal for them, including consideration of how different design practices may influence different groups of consumers, including those who may be more vulnerable.[31]

[30] Citizens Advice - Online Choice Architecture and Vulnerability: Understanding the Impact of Reference Pricing on Consumer Behaviour

[31] Citizens Advice - Review of Online Choice Architecture and Vulnerability

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