

Personalised pricing for communications

Making data work for consumers



Overview

Fairness for customers is one of our strategic themes. As part of our work in this area, we want to better understand the emerging practice of personalised pricing.

Online services and connected devices have never been more important to our daily lives – helping us to work, shop and socialise wherever we are. Increasingly this gives firms access to data about our behaviour, interests and preferences. Technological advances mean this data can be combined and analysed in more sophisticated ways. These developments could give communications providers the ability to set different prices for different customers, based on individual characteristics and a prediction of how much someone is prepared to pay. We call this ‘personalised pricing’.

The extent to which customers receive personalised prices varies across the different sectors of the economy. This paper looks at how personalised pricing might evolve in the communications sector and the potential implications for customers.

In this discussion paper

- **We explain how data and algorithms are giving firms the ability to personalise prices in more sophisticated ways.** Greater personalised pricing can have benefits and risks for consumers.
- **We describe ways in which providers in the communications sector could use data to personalise their interactions with customers and how this might develop in the future.**
- **We share the results of our own qualitative research on consumer perceptions of personalised pricing of communications services.** Although some participants recognised the potential benefits, overall the discussions focused overwhelmingly on their concerns. Participants felt personalised pricing was ‘unfair’, with a lack of transparency about how the price would be calculated and uncertainty about whether they had a good deal.
- **We explore a range of issues that personalised pricing could create relating to customer fairness.** We expect that giving people the ability to compare prices effectively and some transparency of the process will be particularly important. Greater personalisation could also have implications for pricing outcomes and ensuring trust in the market overall.

We are publishing this discussion paper now as personalised pricing is an emerging practice and we want to stay at the forefront of how the sector is evolving. We will closely monitor how pricing practices develop as technology evolves and track the distribution of pricing outcomes for communications services over time.

We are inviting views from a wide range of people and organisations to help us better understand the implications of personalised pricing for the sector we regulate. We will also be inviting academics, regulators, information specialists and other stakeholders to a seminar to continue the discussion on personalised pricing in the autumn.

We encourage everyone with views and insights in this area to get in touch: you can reach us at personalised.pricing@ofcom.org.uk.

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Background

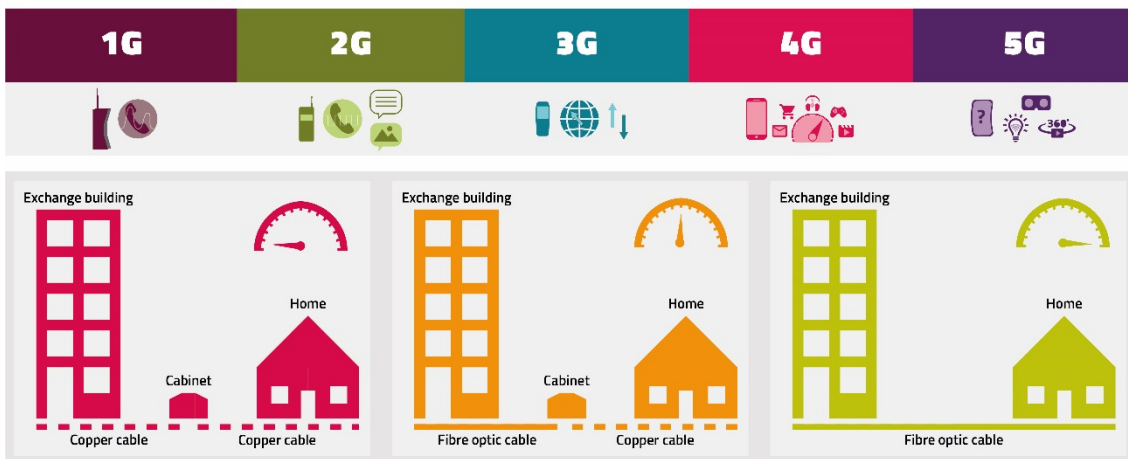
Monitoring technical and commercial developments to prepare for the future is an important part of Ofcom's strategy. As technology progresses, we want to ensure that we fully understand the technical capabilities of the firms we regulate and how they are using those capabilities to shape their interactions with customers.

We are considering personalised pricing as part of our wider programme of work, in the context of our strategic theme of securing fairness for customers.¹ We think the fair treatment of consumers is important in order to maintain customers' trust that markets will work for them. Earlier this year we published a [fairness framework](#), which explains how we are likely to assess fairness issues when they arise and the kinds of concerns that might prompt us to intervene.

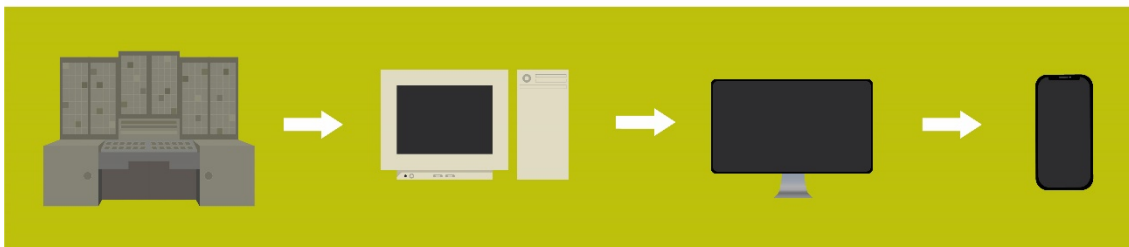
We recently published an update from our [review of pricing practices in fixed broadband](#), which set out latest findings on price differentials and the work we are doing to help consumers, including those who are vulnerable, get a fair broadband deal.

Our thinking on personalised pricing is also part of a broader programme to explore how data and innovation can benefit customers in the communications sector. This includes considering the case for '[Open Communications](#)', an initiative to enable people to share data held by their provider about their use of communications services with trusted third parties. Such third parties could include digital comparison tools, who could use the data to help people navigate the market by providing tailored advice and better product recommendations.

Better connectivity



Increase in computational power



Technology is allowing firms to personalise prices in a more sophisticated way

Better connectivity and greater use of online services in our daily lives has increased the ability of firms to generate and access data about their customers. When combined with more advanced data analysis techniques, firms today can use data to understand the behaviour and preferences of their customers in ways not previously possible.

Online services are exceptionally well placed to collect data about users' behaviours and characteristics.² This data can be used to derive insights on customer preferences, which in turn inform algorithms that personalise and target services, including potentially personalising the price.

The cost of storing, processing and analysing large amounts of data has decreased over

time. At the same time, there has been a rapid increase in the computational power available for undertaking data analysis.³

The increase in storage and computational power available for data analysis has meant that the application of artificial intelligence (AI) to large datasets is becoming increasingly practical. One of the fastest-growing approaches to AI is machine learning.^{4 5}

The regulatory landscape

UK laws already place constraints on how businesses can use personal data held on customers and individuals. These laws provide consumers with protection and legal recourse where their rights have been infringed.

The table on the following page provides a broad overview of the key laws we consider may apply to price personalisation.

Table 1: Key laws we consider may apply to price personalisation

	Provision	Relevance for personalised pricing
Laws affecting access to and the use of consumer data	<i>Data Protection Act 2018 (which updated and repealed the Data Protection Act 1998), and the EU General Data Protection Regulation (GDPR)</i>	These provide protection to consumers, controlling how personal information is used by businesses. They limit access to and the use of consumer data. Businesses must get an explicit, informed and unambiguous consent from the consumer for the proposed use of their data. There is additional protection for the collection and processing of certain sensitive data. Consumers have rights to opt out from being subject to automated processing, decisions and profiling.
Consumer protection laws ensuring a level of transparency	<i>Consumer Protection from Unfair Trading Regulations 2008, Unfair Terms in Consumer Contracts Regulation, and Consumer Rights Act 2015</i>	These laws protect consumers from unfair commercial practices which distort their transactional decisions. The Consumer Protection from Unfair Trading Regulations 2008, for example, prevent a business from collecting and commercially using information about customers without telling them that it is doing so. All these regulations require transparency towards the customer, a business must be clear in its privacy policy and contract about how it intends to use the customer’s data. Important contract terms must be brought to the customer’s attention before he or she signs the contract.
	<i>Advertising Standards Authority (the ASA)</i>	The ASA enforces the Advertising Codes, which include rules around prevention of misleading advertising including misleading use of terms like ‘discounts’ or ‘best price’.
Competition regulations ensuring markets are competitive	<i>Competition Act 1998 (CA1998), and the Enterprise Act 2002 (EA2002)</i>	The CA1998 could apply, ex post, to anti-competitive practices. The EA2002 provides Ofcom with market review tools, which could be used to address structural problems in a market if the use of personalised pricing became an issue.
Prevention of unlawful discrimination	<i>Equality Act 2010 (for Northern Ireland, there are additional grounds of protection)</i>	Protects people from discrimination on grounds of ‘protected characteristics’ (e.g. age, disability, race, religion, sex or sexual orientation). The regulation provides basic protection against discrimination in personalised pricing; communications providers must not directly or indirectly treat customers worse because of protected characteristics.

Wider implications of the use of data and algorithms are being considered across different sectors

A range of organisations are considering the implications of using data and algorithms to personalise aspects of the consumer experience, including pricing.

The **Financial Conduct Authority (FCA)** has been considering price discrimination in financial services and how it will assess the fairness of a given pricing practice. It published a [research note](#) and a [discussion paper](#)⁶ on the topic in 2018 and is applying this fair pricing framework in its [General insurance pricing practices market study](#), the interim report for which was published in October 2019. The FCA is also [working with The Alan Turing Institute on AI transparency](#), proposing an initial framework for thinking about transparency needs in relation to machine learning in financial markets.

The **Information Commissioner's Office (ICO)** is undertaking work on big data, AI, machine learning and data protection. For example, the ICO and The Alan Turing Institute have developed [guidance](#) to help explain the processes, services and decisions delivered or assisted by AI, to the individuals affected by them. The ICO is also developing AI auditing framework [guidance](#) on how to understand data protection law in relation to AI, and recommendations for organisational and technical measures to mitigate the risks AI poses to individuals.⁷

The **Centre for Data Ethics and Innovation (CDEI)** has undertaken two reviews exploring bias in algorithmic decision-making and online targeting. It published [calls for evidence](#) for each topic in May 2019, followed by [landscape summaries](#) and [interim reports](#) in July 2019.⁸ In February the CDEI published its [final report and recommendations](#) on online targeting.

The **Competition and Markets Authority (CMA)** published an [economic working paper](#) in October 2018 on pricing algorithms, including their use to facilitate personalised pricing. It also contributed to an Organisation for Economic Co-operation and Development (OECD) [discussion](#) in November 2018 on personalised pricing in the digital era.⁹

In its 2018 [Consumer Green Paper](#) on modernising consumer markets, the **Department for Business, Energy and Industrial Strategy (BEIS)** also considered this area, highlighting the growing practice of personalising prices and search results across different sectors.¹⁰

In 2018 **Citizens Advice** published work [investigating personalised pricing in essential markets](#), and **Which?** explored the implications of firms' use of personal data in its work on [the future of consumer data](#).



Personalised pricing in theory: concept, potential benefits and risks

Personalised pricing in concept

Personalised pricing is a sophisticated form of price discrimination – the practice of charging different customers different prices for products that cost the same to provide. The prices are based on what different customers are willing to pay.

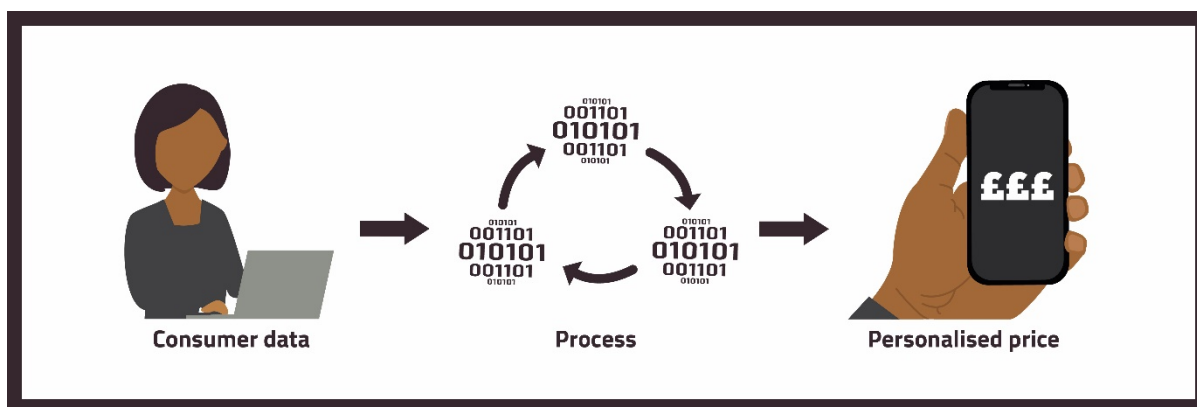
Like in many other sectors, communications providers can today understand their customers in ways that were not previously possible. By collecting information about customers, and processing it using algorithms, particularly machine learning algorithms, firms can draw out insights about how much customers are willing to pay for their services or products. This new ability facilitates personalised pricing, a form of price discrimination which already happens to some extent but may become more prevalent in the future.

Personalised pricing does not imply that every individual must be offered a different price. Rather, based on their individual characteristics, people can also be categorised into different groups, with each group offered a different price.

Although offering different prices to different customers is not a new practice, what is new is the ability of firms to use data and machine learning in doing so. We use the term personalised pricing to envisage this happening to a greater extent than may typically happen today (i.e. in a more detailed way and applied to more products and services), including with automated decision-making, for example using machine learning algorithms.

We therefore see personalised pricing as more than the long-established ways of price discriminating by group, such as student discounts. It is also distinct from dynamic pricing, such as when airlines increase prices for a flight as the number of available seats decreases.

Personalised pricing can be implemented in different ways. For example, by offering all customers the same price, but personalising the discounts each one can access based on the individuals' product use, interactions with the firm, and/or personal characteristics. Another example might be adjusting the quality or quantity of the product offered to each customer.



Personalised pricing could have benefits and risks for consumers

Our focus is on the impact of personalised pricing on consumers in the communications sector, where although the practice could generate benefits, there is also a risk of poor

outcomes. The table below summarises the main potential benefits and risks that we see. We then expand on each of these in the rest of this section.

Table 2: Main potential benefits and risks of personalised pricing for consumers

	Benefits	Risks
Greater variation in prices	Lower prices for some customers, particularly beneficial if in vulnerable circumstances or with a lower ability to pay.	Higher prices for some customers, particularly concerning if in vulnerable circumstances.
Expanding the market and trust in the market	More customers served (or more served with higher quality services), as prices lowered for those whose ability/willingness to pay would otherwise leave them unserved (or underserved).	Greater variation in prices viewed as unfair and undermines trust and satisfaction with communications sector, potentially even reducing participation.
Cost of searching for a deal	Providers reduce churn by pre-emptively offering better deals to customers identified as likely to switch/re-negotiate, reducing hassle for customers and reducing customer service costs for providers. Also, creation of offers which better suit individual needs.	Higher search costs if providers hide details of more competitive pricing from their own existing customers. More difficult for competitors or new entrants to gain market share as churn lowered by personalised pricing, potentially weakening competition.
Impact on average price	Lower average price if price personalisation leads to intensified competition.	Higher average price if the main effect is better identification of customers unlikely to switch and prepared to pay more. Similarly, higher average price if personalisation leads to weaker competition due to reduced transparency.

Greater variation in prices

Personalised pricing allows increased price discrimination, and this can be beneficial to some customers. This is because some customers who are very price sensitive are likely to pay lower prices where an operator personalises an offer based on their willingness to pay. We consider this may be particularly beneficial to some financially vulnerable customers. By being able to charge lower prices to some customers without having to lower prices to all, firms have more incentive to lower prices to customers who because of their circumstances are very price sensitive.

However, customers who are less price sensitive may be charged higher prices and be worse off as a result of more personalised pricing. The reasons why some customers are prepared to pay higher prices could include: high level of satisfaction with the current communications provider, high income, or a lack of engagement with the market. Some of these factors may be hard for providers to obtain reliable information on. But if providers could, for example, reliably identify customers unlikely to be engaged with the market, then those customers may face higher prices. We would be particularly concerned if those who were charged higher prices were in vulnerable circumstances.

Expanding the market

Personalised pricing has the potential to expand the market, or serve more customers with higher quality services. It does this by incentivising firms to reduce prices to customers who are very price sensitive, who would otherwise be underserved, while preserving the higher prices and profitability of customers who are less price sensitive.

Trust in the market

Large price differentials between customers may be perceived as unfair and undermine trust in the communications sector. This could lead to some customers being less inclined to take additional or higher quality services, and to customers being less engaged with the market, including being less prepared to switch provider. Loss of trust could also lead to calls for increased regulatory intervention to directly control the distribution of retail prices.

Increasingly communications providers have data on usage and other customer characteristics that may influence their personalised offers. If such data is not easily accessible to customers when it comes to deciding about their package, that could be another reason for undermining trust and participation in the communications sector.

There may be some limit to the extent to which personalised pricing could undermine participation. If customers were sufficiently unhappy with such personalised prices, firms might no longer find it profitable to set prices in that way. Rather, a firm may attract more customers by making it clear that it does not set personalised prices.

Cost of searching for a deal

On the one hand, personalised pricing may make it easier for some customers to find a new deal. For example, communications providers may offer lower recontract prices to existing customers they consider likely to switch. This means those customers do not have to search further, saving them time and effort. This may also reduce costs for the provider, if it avoids a call to the customer service centre. Customers might also benefit from personalised offers, which better suit their individual needs.

On the other hand, search costs could increase if customers found it difficult to identify a benchmark against which to compare their price. This could happen, for example, if providers hide details of more competitive pricing from their own existing customers. Digital comparison tools and regulatory interventions such as the end-of-contract notification¹¹ with details on a provider's best tariffs reduce this risk.

Separately, existing providers could leverage the advantage they have from information held about their customers to make entry more difficult for potential new providers. However, this advantage may be mitigated by giving customers the ability to share the data operators hold about them. Open Communications could enable customers to easily and securely share data held by their existing provider with digital comparison tools or other potential providers, to help them navigate the market and get a better deal.

Impact on average price

Personalised pricing could lead to lower average prices in a competitive market. Each firm may compete aggressively with a low price for a new customer, because it can lower prices for a new customer without lowering prices for its existing customers. As each firm does this for each customer, this can lead to a general downward pressure on all prices.

This effect of personalised pricing increasing competition and lowering average prices is most relevant when, firstly, every customer is fully engaged with the market and, secondly, all providers have similar information about each customer.

When some customers are not fully engaged with the market, then personalised pricing may allow providers to better identify and target these customers with higher prices. While rival providers may offer such customers attractive deals and lower prices, if those customers are not engaged with the market, this possibility of switching would not benefit or protect them from higher prices from their current provider. This may result in price personalisation raising average prices.

Average prices may also rise if there was less transparency due to some customers finding it harder to identify a benchmark against which to compare their price, as discussed above.

The use of algorithms to set prices automatically could increase the risk of collusion, thereby raising average prices. This could happen if technology allows firms to monitor and react to their rivals' behaviour more easily.¹² However, the greater the extent of personalised pricing, the lower the risk of collusion as at the extreme of a different price for each customer, collusion becomes untenable.¹³



Personalised pricing in the communications sector

The extent to which customers receive personalised prices varies across the different sectors of the economy. The potential for personalised pricing to develop within the communications sector is clear. As we develop our thinking in this area, we have considered:

- the types of data communications providers may hold on their customers
- how communications providers might use data to understand their customers better and personalise prices
- how personalisation might be implemented

Types of data communications providers may hold on their customers

Communications providers may already hold a wide range of data on existing customers that could be relevant to personalisation including:

- service usage
- monthly spend and payment history
- length of period with the provider
- device preferences
- interest in 'over the top' media services¹⁴
- level of engagement with customer services

Communications providers have access to relatively more data about their existing customers, enhancing their ability to offer a personalised price or service. Targeting new customers with a personalised price could be more difficult, as providers typically may not hold all the necessary information.¹⁵

A communications provider might be able to observe some limited information about prospective customers from their online search activity, such as search terms or filters used by that person on a provider's website. For example, if someone searches for specific mobile handsets or broadband equipment, then compatible services can be identified to match that search. However, it's likely that the quantity of data needed for analysis for the purpose of personalisation would be significant, so this type of data could have limited value on its own.

Communications providers can also enhance the data they already hold about their customers with data purchased from third party sources. Third party data, such as email addresses or phone numbers, is commonly used for marketing purposes to target potential new customers. Third party data can also be more detailed, and may be useful both for retaining existing customers and for acquiring new customers. Such data may relate to an individual's demographics and address, credit history, purchase preferences, or if they have recently moved home.

How providers might use data to understand their customers better and personalise prices

Using data to understand customers better

Data can help communications providers create profiles of individual customers or groups of customers. These profiles could allow providers to tailor their engagement with customers, for example through direct marketing or on a call with a customer service agent.

Using data to segment customers in this way may be important for maintaining and improving customer satisfaction, and for supporting any contract renewal processes. For example, providers could use the results of their analysis to predict:

- their willingness to pay for current or new services over time
- their risk of churn – meaning the likelihood they will switch services or provider over time
- their expectations, needs and interests in relation to their communications service

Data gathered when a customer cancels their contract or switches provider can also allow providers to understand the reasons for switching away.

By analysing data from customers who leave, a provider can create profiles of customers whose characteristics indicate they might be at risk of leaving. If done successfully, the use of personalised offers to these customers may lead to improved customer retention and make it harder for rivals to win such customers.

The level of sophistication of personalised pricing may be determined by several factors. For example, the number of input variables used to differentiate customers, the adaptability of systems to new information gathered, or the complexity of the system used. A greater level of sophistication could allow providers to improve the accuracy of their predictions about customer behaviours and make targeting of personalised offers more effective.

However, the insights generated from using data to better understand customers are often only predictions, and not certain. Any investment in more data or advanced systems would need to be balanced against the potential revenues which the provider may generate in return from its investment.

Using data to set personalised prices

Communications providers could use data about customers to identify their willingness to pay and set a personalised price in a variety of different ways. For example:

- offering a specific personalised price for a product or service when a customer is searching for a new deal
- offering a personalised discount or 'discounted tariff price' as part of a promotion or to retain existing customers
- using data to present a range of personalised tariffs to a sales agent discussing a potential offer with the customer

More widespread adoption of personalised pricing could lead to the creation of a much larger range of tariffs than are currently available in the market today. However, managing a very wide range of tariffs for services could be complex and costly for providers.

How personalisation might be implemented

As technology develops and firms have access to more data, there is the potential for very sophisticated versions of personalised pricing to emerge. This would allow communications providers to generate predictions about an individual customer with greater detail and accuracy, such as their willingness to pay for a specific product or propensity to switch provider. We might expect more interest in advanced forms of personalisation where providers can use it to improve their overall profitability.

These developments also have the potential to reduce costs. For example, automation of the contract renewals process using data might reduce the need for sales agents to respond to calls to discuss offers and simplify the process for customers. On the other hand, sales agents may continue to be needed, to improve the customer experience and mitigate the risk of automatically generated prices being targeted at the wrong customers.

Where personalised pricing is used to target new customers, it is likely that investment in additional data (and analysis tools) would be required, which could act as a constraint on its development. It is also not clear that good quality and robust data will exist, or whether predictive customer profiling would add significant value to subscriber revenues.

Rather than a focus on personalised pricing, an alternative way in which the sector might develop is the use of data to tailor products and services more closely to the needs of an individual customer. This might see a wider variety of products being offered, with greater scope for customers to personalise different elements of their communications service.



Consumer perceptions of personalised pricing

As personalised pricing develops, understanding consumer attitudes will be important to maintaining overall trust in the market. In this section we consider consumer perceptions of personalised pricing, including awareness of the concept and attitudes towards benefits and concerns. We draw on our own research into consumer attitudes in the communications sector and existing studies on personalisation, online targeting and the use of data.

Understanding consumer attitudes towards personalised pricing

As personalised pricing is still an emerging practice, there is a limited amount of literature on consumer perceptions,¹⁶ particularly in relation to the communications sector. We undertook a small piece of consumer research to gain some insight into awareness of and attitudes towards personalised pricing in the communications sector.¹⁷ The research was a small qualitative study, involving focus groups and in-depth interviews undertaken across the UK, speaking to consumers and a small number of small and medium enterprises (SMEs). We have set out our findings below, alongside insights from existing literature which relate to personalisation, online targeting¹⁸ and the use of data, across various sectors.

Our research did not test the extent of personalised pricing in the communications sector today. The findings should be viewed in this context, with levels of awareness or perception not necessarily reflecting the actual use of personalised pricing by communications providers. As personalised pricing continues to evolve, further research is required to develop a more detailed understanding of the prevalence of personalised pricing and consumer responses.

Awareness of personalised pricing

Participants in our research had very limited awareness and knowledge of personalised pricing. We found no prior awareness of the concept, with participants only able to compare it to negotiating for a 'personal' price, although in this scenario it was assumed that any customer could negotiate to get the 'best' price. As an unfamiliar concept, personalised pricing raised a lot of questions for participants, especially around transparency and data, which we detail below.¹⁹

The lack of awareness found in our research is consistent with findings in the wider literature. For example, consumer research undertaken as part of a European Commission market study published in 2018²⁰ found that self-reported awareness of online personalised pricing²¹ was fairly limited amongst UK respondents, and lower than

awareness of online targeted adverts and personalised ranking of offers.²² 10% of UK respondents said they understood how online personalised pricing works, while 39% said they had not heard about it until then.

Research carried out by Which? similarly found awareness of personalised pricing to be limited compared to targeted advertising and personalised recommendations, with many participants in the study surprised to learn that prices might vary according to consumers' behaviour online.²³ The research also found that participants were particularly concerned with examples where they were not aware of personalised pricing, as they were unable to take action against it.²⁴

Consumers may not be aware that they are being offered a personalised price. In a behavioural experiment undertaken as part of the 2018 European Commission market study,²⁵ relatively few participants correctly identified whether and how price personalisation had occurred. For example, less than 20% of participants correctly identified price personalisation in the scenario where prices were lower based on their previous search history.²⁶

Attitudes towards benefits and concerns about personalised pricing

Our research found that the concept of personalised pricing was broadly considered by participants to be 'unfair'. While a small minority of participants were less critical, many were concerned about a lack of transparency around how their price would be calculated, the lack of control over the outcome and lack of certainty as to whether they had a good deal. There were also concerns about data possibly being purchased from other firms and how this impacted prices, as well as data security.²⁷

Benefits of personalised pricing

In our research, when asked about the potential benefits of personalised pricing, while many participants had concerns, a small minority were less critical of the concept. They considered that it might benefit more vulnerable groups, for example with lower or unstable income, which in principle was a good thing. A few engaged participants considered that personalised pricing may be happening already and result in a similar outcome to 'haggling', observing "it's how free markets work". A few participants wondered if algorithms would recognise their haggling and adjust the price accordingly.²⁸

"I think it's great, but purely because I think it would give me a better deal. All these deals are already out there, you just don't have to go searching for them this way"

Female, <40, Engaged, Dual Play, Edinburgh²⁹

Our research included a hypothetical case study of personalised pricing to help bring the concept to life.³⁰ When participants considered the case study, some acknowledged the potential benefit of personalised pricing to lower income households, enabling them to maintain their service. A small number of more financially unstable or vulnerable participants could also see the potential to personally benefit from personalised pricing, though they could also see possible issues.³¹

“I like the idea of people with little money getting a more preferable deal, but I also worry that if I found out a mate had it cheaper all hell would break loose. It’s tricky for the companies.”

Male, <40, Unengaged, Triple Play, Larne, Financially Vulnerable³²

In follow-up telephone interviews, some research participants also considered that there could be benefits of personalised pricing if circumstances changed suddenly, for example, in response to Covid-19, or if the ‘deal’ was able to flex mid-contract.³³

Looking at personalised pricing in e-commerce more broadly, the European Commission consumer research found that UK respondents saw getting the best available price for products and access to reductions or promotions as some of the main benefits of online personalised pricing.³⁴ However, the research also found that 42% of UK respondents did not see any benefits of online personalised pricing.

Concerns about personalised pricing

Concerns around fairness and getting a good deal

In our research, when asked about the potential concerns they might have about personalised pricing in the communications sector, instinctively many participants felt that

the concept was ‘unfair’. There was concern that personalised pricing lacked transparency, meaning they would not know if they had a good deal. This was a key barrier, with participants questioning how you could judge if you’re being offered a ‘good’ price or not, as there was no anchor in terms of what the ‘real’ price is or clear point of comparison.³⁵

“It boils down to that I don’t know if that deal’s any good. If there’s no way of knowing what others have, or a typical price in my area, or whatever metric I could use, I’m left thinking “well, is that any good?”

Male, Unengaged, Triple Play, 30-64, London³⁶

For more engaged research participants, the concept of personalised pricing felt disempowering. They considered that as prices depend on the data providers hold on you, this felt out of their control compared to the current process of haggling with providers.

The more unengaged participants felt there was potentially no ‘reward’ for loyal custom, and similarly perceived the need to haggle to get a better deal currently to be unfair.³⁷

The case study prompted a sense of injustice for consumers who pay more than others for a service, as well as concern that those who ‘opt out’ of sharing data will be penalised. Personalised pricing was perceived to judge people based on financial data and their willingness to share data, and participants felt that the lack of clarity around the process could lead to trust issues with providers.³⁸

There was also concern about how personalised pricing would work and how it would be controlled, with the perceived lack of transparency raising many questions about how prices are generated. Participants questioned how the algorithms worked, in particular, what influenced their price and how their price compared with others.³⁹

“I’m unsure about all the information they are using. How do they get to these different prices? Different prices per customer - are they just making assumptions about you?”

Female, Unengaged, Triple Play, >40, Edinburgh⁴⁰

Concerns around the use of data

Research participants also wanted to know what financial or demographic data might be accessed, and how this impacted on price, for example, whether you are judged for your age, ethnicity or earnings. Participants were not comfortable with financial or demographic details being used to shape their price as it felt ‘irrelevant’ to the product, but usage information was seen as relevant and therefore felt to be ‘acceptable’.⁴¹

There were also concerns about the possibility of using data bought in from other firms, with participants unclear what they’re ‘opting in’ to or if they would be penalised for opting out. They questioned how bought-in data is stored, whether it could be passed on and what guarantees, or reassurances are in place.⁴²

SMEs

Our research found SME participants to be slightly more critical of personalised pricing than residential consumers.⁴³ Most accepted the idea of ‘haggling’ for a better deal, and we note that bespoke pricing is a more established model in the market for business customers where SMEs have a greater diversity of communications needs than residential consumers. However, they still wanted reassurance that this is from a ‘fair and equal’ base, i.e. a clear market price for the deal. Loyalty was also a factor that might justifiably reduce the base price.

Most SME participants preferred a deal determined by the market ‘average’, rather than by their own usage, especially if their

set-up was spread across business and residential deals. Again, a lack of comparison was key.

Other research findings

The wider literature highlights similar concerns held by consumers. For example, the European Commission consumer research found that in relation to online personalised pricing, UK respondents were particularly concerned about use of their personal data and the possibility of paying more for products.⁴⁴ The research also found that only 6% of UK respondents did not have any concerns about online personalised pricing.

Similarly, research carried out in 2018 by Citizens Advice found that 84% of people said they felt uncomfortable with personalised pricing in essential service markets, with 3 in 4 people saying that if they encountered personalised pricing they would not trust their provider.⁴⁵ Studies by the CDEI and Which? also found that consumers have concerns about the use of data and online targeting.⁴⁶

What might mitigate concerns for consumers?

Our research found that the potential benefits of personalised pricing did not outweigh participants' concerns. With the exception of lower prices for low income households, there was a lack of faith in possible benefits, including expanding access to new or varied services.⁴⁷

When asked what would overcome participants' concerns, only banning the use of financial data or the practice of buying in other data appeared to help, though participants still questioned how this could work and felt that further clarity was needed.

Greater transparency around what data is used and how it fed into results was seen to be useful. However, it was still unclear to participants how their result would compare to the 'market norm' or 'average'. The ability to compare prices using price comparison websites was seen as helpful, although participants were unsure about how they could be used to get a personalised recommendation. Outcomes had the potential to raise questions and cause frustration where participants knew that they were paying more than others for the same product.

Better explanation of the collection or use of personal data upfront was thought to provide useful reassurance but did not overcome concerns about specific types of data being used, for example, financial or demographic data.

The case study in the research presented a customer who opted out of sharing their data and therefore was not offered a lower personalised price. In response the ability to 'opt out' of data sharing was not seen by participants to be a positive outcome, as they considered that people could be penalised for not sharing their data.



Potential implications of personalised pricing

Increased use of data and technology is enabling new services across the digital economy. We want to support innovation and make sure that it works in the interest of consumers in the communications sector.

Personalised pricing could benefit some customers by lowering prices or intensifying competition. At the same time, there is also a risk that personalised pricing might develop in a way that leads to poor outcomes.

As part of our programme of work on fairness, the major communications providers have signed up to a set of [commitments](#) that put fairness at the heart of their business. They include having a fair approach to pricing with prices that are clear and easy to understand and supporting customers when their circumstances make them vulnerable.

We have also published a fairness framework, which explains how we are likely to assess fairness issues and the kinds of concerns that might prompt us to intervene.

While we recognise the potential benefits of personalised pricing, in this section we focus on the risks and some available mitigations. We do this through the lens of our strategic objective to secure fairness for customers.

This section covers:

- how the nature of personalised pricing means that it may increase the risk of exploitation
- the importance of being able to compare prices for customers receiving a personalised offer
- how transparency about personalised pricing and the data being used can help customers
- our expectation that personalised pricing should not disadvantage customers in vulnerable circumstances
- implications of greater personalised pricing for the distribution and level of prices overall
- compliance with legislation preventing discrimination against protected characteristics

Given the nature of personalised pricing, especially the use of personal data and algorithms, collaboration with other regulators and expert organisations will be important to understand all the potential implications.

Regulators also face a broader challenge to keep up with the rapid pace of change in these areas. We expect a focus on outcomes will be important and different approaches to protecting consumers could be appropriate as the market evolves.

The nature of personalised pricing means that it may increase the risk of exploitation

Behavioural biases can affect the way people engage with the market and their ability to choose the best deal for their needs. These biases can be exploited by firms in ways that do not benefit customers so that, for example, they pay more or choose an inferior or over-specified product.

This potential to exploit the customer increases where a communications provider can personalise prices based on detailed insight into a customer's circumstances and their likely willingness to pay. For example, if a customer is identified as someone who is reluctant to change what they have, their provider may predict they are unlikely to be price sensitive or switch and offer them a high price for their service.

There is a challenge in determining the boundary between exploitation and the results of a well-functioning market in which providers all compete to attract customers. In our fairness framework we set out the types of questions we are likely to consider when we apply the framework and the factors which, if present, might make us more likely to intervene. For instance, the exploitation of behavioural biases would concern us where customers are adversely affected, for example where this impairs a customer's ability to make well-informed decisions or means they make decisions which are not in their best interests.⁴⁸

For a customer to make well-informed decisions, having access to the relevant information is clearly important. We therefore focus first on the information customers will need to be able to make good decisions.

Being able to compare prices is important for customers receiving a personalised offer

The availability of information on offers and services is important for customers to be able to take advantage of competition between communications providers. For example, if a customer only receives personalised offers for their broadband service, it could be difficult for them to identify a baseline price for comparison. This could make it harder for them to make informed choices and engage with confidence in the market.

This is consistent with our research which found that participants were concerned that personalised pricing could leave them uncertain about whether they had a good deal. In particular, participants felt they would not know the 'real' price as opposed to the personalised offer and would have no baseline for comparison. This lack of transparency over whether they had a good deal or not could lead to a lack of trust.⁴⁹

We require communications providers to tell broadband, phone and TV customers when their contract is coming to an end, and to show customers the best deals available from their provider. Customers that remain out-of-contract must also be sent similar reminders.⁵⁰ These notifications set out the details of a customer's service and the price they are paying, as well as any changes to that price when they go out-of-contract. In addition, as part of presenting their best tariff information, providers are required to include the cheapest tariff available to the customer (based on the customer's current services and, where relevant, individual usage) and the cheapest tariff available to any customer (if this is different, for example where a tariff is only available to new customers).⁵¹

These notifications should help customers in making an informed decision about whether they are on the right deal, or whether they should consider other options. Where customers are on or offered a personalised price, the inclusion of the cheapest best tariff available to any customer may be particularly useful as it could help customers compare tariffs and assess whether it represents a good deal.

However, we only require this information to be sent when a customer is reaching the end of their contract with their existing provider, and on an annual basis thereafter. Customers may also benefit from having similar information on other occasions where they are offered a personalised price. For example, when making the initial purchasing decision or when being offered an upgrade to their current service.

Engaged customers can also compare the prices to those offered by rival communications providers, including by using digital comparison tools. It is possible that these offers from rival providers could also become personalised in the future, though such rivals will have a commercial incentive to make potential customers aware of prices that are likely to be attractive to them.

Transparency about personalised pricing and the data being used helps customers

Customers may not know that the price being offered is a personalised price. This is because the process experienced by the customer is likely to be similar regardless of whether the price offered is personalised or not. This means the customer is dependent on any information the communications provider gives about whether the price is personalised.

Providers could choose to link personalised offers with customer loyalty or a wider marketing campaign, rather than stating explicitly that it is a personalised price or giving further information about how that price was generated, to keep their marketing message clear and simple to understand. However, customers may not recognise personalised pricing when it occurs, or awareness may increase at a slower rate than if it was explicitly stated. Furthermore, customer awareness may be limited to the fact a price is personalised and may not include awareness of the types of data used or how that price was arrived at.

Some customers may want to know that the price they are offered is personalised and what personal information has been used in generating it. In our research, participants expressed a desire to understand what influenced their price. In particular, they were interested in which of their financial and demographic data could be used and were concerned about this type of information informing their price, as opposed to service usage information (for example call volume) which was generally felt to be more relevant and its use understood.⁵²

Existing laws may help address some concerns about the use of personal data. For instance, customers may be able to opt-out from personalised pricing if it falls within the scope of relevant provisions about personalisation within the GDPR. Further, if a provider holds data about a customer that is incorrect, and this restricts the prices they are offered, it is fair that this error can be spotted and rectified promptly and, in some circumstances, this right is conferred in law.⁵³

In our research, some participants also expressed a desire for more in-depth information about the algorithms and calculations used, but also recognised that this may be too complex.⁵⁴ It may be challenging for providers to provide transparency about how the price is arrived at. Indeed, if using certain types of complex machine learning techniques, it may be hard or even impossible for the developers themselves to understand in detail why certain prices are generated.⁵⁵

If customers have transparency about whether their price is personalised and what personal data is used, this may help to maintain trust in personalised pricing. It may even empower some customers. For instance, a degree of understanding about the relevant data might enable customers to modify their behaviour in order to affect the personalised offers they receive, for instance by paying their bills promptly, or sharing more or less of their personal data.⁵⁶

Personalised pricing should not disadvantage customers in vulnerable circumstances

We would be particularly concerned if personalised pricing led to higher prices for vulnerable consumers. Section 3(4) of the [Communications Act](#) sets out a number of things we must take into account in performing our duties, where they are relevant. These include the vulnerability of those whose circumstances appear to us to put them in need of special protection and the needs of people with disabilities, of the elderly and of those on low incomes.

We expect communications providers to take actions to ensure that vulnerable customers are not paying higher prices than other customers for the same service. Where providers set personalised prices using complex algorithms, we would be particularly concerned if they did not have the ability to check the pricing outcomes for customers in vulnerable circumstances for potential bias.

Greater personalised pricing would have implications for the distribution and level of prices overall

Even if customers in vulnerable circumstances do not face higher prices, we still see some risks from personalised pricing for the distribution of prices and the level of average prices that customers pay.

Below we discuss three separate scenarios:

- very wide price ranges could undermine trust in the market
- price rises for some customers could drive up average prices
- competition could weaken if entry becomes more difficult

Very wide price ranges could undermine trust in the market

In our research, participants were concerned that personalised pricing could mean a lack of clarity about the fairness of their deal and what is used to calculate it.⁵⁷ We would be concerned if personalised pricing led to a breakdown in customer trust. This is most likely to happen if personalised pricing leads to a large variation in the prices paid by different consumers for the same service.

If consumers lost trust in the communications sector, engagement could fall. Some customers may be less inclined to take additional or higher quality services, and some customers may be less active in the market including being less prepared to switch provider.

Loss of trust could also lead to calls for greater regulatory intervention to limit the distribution of retail prices. For example, [Citizens Advice's super-complaint to the CMA](#) considered the degree of price discrimination in various markets to be unfair. It mentioned various possible interventions, including the possibility of intervening directly by putting a limit on the difference charged by a supplier between its best and worst deals.

Price rises for some customers could drive up average prices

If personalised pricing becomes widespread in future, some communications providers might use data to identify those customers who are unengaged and unlikely to switch, targeting them with price increases. This could result in personalised pricing raising average prices across the market, resulting in many customers being worse off.

Rising average pricing would be more likely if there were relatively little scope for prices to fall for very price sensitive customers. This could be the case if such prices were already close to the provider's incremental cost.

Competition could weaken if entry becomes more difficult

Personalised pricing may give communications providers an advantage in serving their existing customer base compared to rivals. This is because a customer's existing provider knows more about that customer than other providers. For example, providers may build customer profiles from data collected during past interactions with their call agents or website, as well as service use history. They may be better able to identify which of their existing customers are prepared to pay higher prices with little risk of switching, and which customers are very price sensitive.

In contrast, rival providers may not be able to do this accurately. They may therefore be unable to make a comparable personalised offer to a customer shopping around. If this effect was large, it could become harder for a new entrant to become established in the retail market. With time, competition may weaken.

Any such effect may be mitigated if customers could easily share data held by their existing provider. Future initiatives to facilitate data portability, such as Open Communications, could therefore help by allowing customers to easily share some of their personal data with digital comparison tools or other potential providers. However, this is unlikely to cover all data held by the existing provider, so there could still be relevant data that other potential providers would not be able to access.

Firms must comply with legislation preventing discrimination against protected characteristics

When personal data is used to set the price of a product or service, there is always a risk that customers can be discriminated against based on their personal characteristics.

Where prices are generated by algorithms and automated processes, in particular machine learning algorithms, there is an added risk of inadvertent discrimination. This is where the process leads to biased outcomes despite this not being the intention. As the systems for personalisation become more complex, firms and regulators could face a challenge in effectively identifying the source of potential bias or discrimination. This challenge is being considered across the digital economy, with work underway on the potential implications of greater use of AI systems.⁵⁸

While it may be challenging, communications providers will have to comply with their duties under the [Equality Act 2010](#) not to discriminate against protected characteristics, including sex, age, race or disability. The Equality and Human Rights Commission is responsible for enforcing this legislation.



Next steps

In this discussion paper we have set out our initial thoughts on the implications of personalised pricing in the communications sector. While we recognise there are potential benefits, we have focused on the risks to consumers that might emerge.

We will continue to monitor how personalised pricing develops in the future as technology evolves. Our initial thinking suggests a focus on outcomes will be particularly important and we will use our regular [*Pricing trends for communications services*](#) report to track the level and distribution of prices across the communications sector.

Our aim is for this paper to engage with communications providers, consumer groups, academics and other interested parties to help us understand further the implications of personalised pricing for the sector we regulate, including issues of fairness for customers. We encourage readers to get in touch with their views on any aspect of the paper. You can reach us at personalised.pricing@ofcom.org.uk.

We will also be inviting academics, regulators, information specialists and other stakeholders to a seminar to continue the discussion on personalised pricing in the autumn.

Endnotes

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- ¹ Ofcom, April 2020. [*Ofcom's Plan of Work 2020/21: Making communications work for everyone*](#), pages 8-9.
- ² Ofcom, October 2019. [*Online market failures and harms: An economic perspective on the challenges and opportunities in regulating online services*](#), page 4.
- ³ OECD (2015), [*Data-Driven Innovation: Big Data for Growth and Well-Being*](#), OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264229358-en>. Pages 145-146.
- ⁴ The Government Digital Service and Office for Artificial Intelligence [defines machine learning as](#) “a subset of AI, and refers to the development of digital systems that improve their performance on a given task over time through experience.” (Accessed 28 July 2020). For example, discovering combinations of characteristics that tend to be associated with a higher willingness to pay based on data from many customers.
- ⁵ ICO, March 2017. [*Big data, artificial intelligence, machine learning and data protection*](#), page 7.
- ⁶ See FCA work on [*Fair Pricing in Financial Services*](#). (Accessed 28 July 2020). A [feedback statement](#) was published in July 2019.
- ⁷ [Draft guidance](#) was published in 2020 for consultation.
- ⁸ The CDEI published a [summary of responses](#) to its review into bias in algorithmic decision-making in October 2019.
- ⁹ See also OECD, November 2018. [*Personalised Pricing in the Digital Era – Note by the United Kingdom*](#).
- ¹⁰ BEIS, April 2018. [*Modernising Consumer Markets: Consumer Green Paper*](#), pages 38-40.
- ¹¹ See Ofcom, May 2019. [*Helping consumers get better deals: Statement on end-of-contract notifications and annual best tariff information*](#), page 1.
- ¹² OECD (2017), [*Algorithms and Collusion: Competition Policy in the Digital Age*](#). www.oecd.org/competition/algorithms-collusion-competition-policy-in-the-digital-age.htm.
- ¹³ OECD, November 2018. [*Personalised Pricing in the Digital Era: Background Note by the Secretariat*](#), paragraph 46.
- ¹⁴ These include streaming or messaging services offered directly to users over the internet or via online applications.
- ¹⁵ OECD, November 2018. [*Personalised Pricing in the Digital Era: Background Note by the Secretariat*](#), section 2.2.
- ¹⁶ The CDEI have noted the need for further research in this area. See CDEI, July 2019. [*Landscape Summary: Online Targeting*](#), pages 21 and 28.
- ¹⁷ This research formed a small part of a much broader study exploring attitudes towards Open Communications. For further details on the background and research methodology see Ofcom, August 2020. [*Personalised Pricing: Presentation of Personalised Pricing Findings*](#), pages 4-6.
- ¹⁸ Online or digital targeting is defined by the CDEI as “the customisation of products and services online (including content, service standards and prices) based on data about individuals and groups, and the predicted likelihood of optimising a determined outcome through this customisation.” See CDEI, July 2019. [*Landscape Summary: Online Targeting*](#), page 6.
- ¹⁹ For details of how we presented the concept of personalised pricing see Ofcom, August 2020. [*Personalised Pricing: Presentation of Personalised Pricing Findings*](#), page 11.

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- ²⁰ European Commission (EC), June 2018. [Consumer market study on online market segmentation through personalised pricing/offers in the European Union: Final report](#). Consumer survey fieldwork took place between June-July 2017.
- ²¹ Personalised pricing was defined in the research questionnaire as “...e-commerce websites can potentially access data on your online behaviour, as well as personal information. E-commerce websites can also use this data to adapt the prices charged to you for specific goods and services you are looking for online. This is known as online “personalised pricing” (different consumers seeing a different price for the same product online)”. See EC, June 2018. [Consumer market study on online market segmentation through personalised pricing/offers in the European Union: Annexes](#), Annex A1.5, page 102.
- ²² EC, June 2018. [Consumer market study on online market segmentation through personalised pricing/offers in the European Union: Final report](#), pages 102-104.
- ²³ Which? and BritainThinks, June 2018. [Control, Alt or Delete? Consumer research on attitudes to data collection and use](#), page 77. Research carried out November 2017 – February 2018.
- ²⁴ Which?, June 2018. [Control, Alt or Delete? The future of consumer data](#), page 21.
- ²⁵ The experiment involved participants from the UK and 7 EU Member States. For further details on the background and research methodology see EC, June 2018. [Consumer market study on online market segmentation through personalised pricing/offers in the European Union: Annexes](#), Annex A1.8.
- ²⁶ EC, June 2018. [Consumer market study on online market segmentation through personalised pricing/offers in the European Union: Final report](#), page 118.
- ²⁷ Ofcom, August 2020. [Personalised Pricing: Presentation of Personalised Pricing Findings](#), pages 8-9 and 11.
- ²⁸ Ofcom, August 2020. [Personalised Pricing: Presentation of Personalised Pricing Findings](#), page 11.
- ²⁹ Ofcom, August 2020. [Personalised Pricing: Presentation of Personalised Pricing Findings](#), page 11.
- ³⁰ For the hypothetical case study used in the consumer sessions, see Ofcom, August 2020. [Personalised Pricing: Presentation of Personalised Pricing Findings](#), page 13.
- ³¹ Ofcom, August 2020. [Personalised Pricing: Presentation of Personalised Pricing Findings](#), pages 13 and 15.
- ³² Ofcom, August 2020. [Personalised Pricing: Presentation of Personalised Pricing Findings](#), page 15.
- ³³ Ofcom, August 2020. [Personalised Pricing: Presentation of Personalised Pricing Findings](#), page 13.
- ³⁴ EC, June 2018. [Consumer market study on online market segmentation through personalised pricing/offers in the European Union: Annexes](#), page 302.
- ³⁵ Ofcom, August 2020. [Personalised Pricing: Presentation of Personalised Pricing Findings](#), pages 11-12.
- ³⁶ Ofcom, August 2020. [Personalised Pricing: Presentation of Personalised Pricing Findings](#), page 12.
- ³⁷ Ofcom, August 2020. [Personalised Pricing: Presentation of Personalised Pricing Findings](#), page 11.
- ³⁸ Ofcom, August 2020. [Personalised Pricing: Presentation of Personalised Pricing Findings](#), page 13.
- ³⁹ Ofcom, August 2020. [Personalised Pricing: Presentation of Personalised Pricing Findings](#), page 12.
- ⁴⁰ Ofcom, August 2020. [Personalised Pricing: Presentation of Personalised Pricing Findings](#), page 12.
- ⁴¹ Ofcom, August 2020. [Personalised Pricing: Presentation of Personalised Pricing Findings](#), page 12.
- ⁴² Ofcom, August 2020. [Personalised Pricing: Presentation of Personalised Pricing Findings](#), pages 11-12.
- ⁴³ Note this was a small sample. SMEs were presented with a modified version of the hypothetical case study, tailored for businesses, see Ofcom, August 2020. [Personalised Pricing: Presentation of Personalised Pricing Findings](#), page 16.
- ⁴⁴ EC, June 2018. [Consumer market study on online market segmentation through personalised pricing/offers in the European Union: Annexes](#), page 303.

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- ⁴⁵ Citizens Advice, August 2018. [*A price of one's own: An investigation into personalised pricing in essential markets*](#), page 1. Citizens Advice and ComRes nationally representative polling, July 2018, 2,848 responses.
- ⁴⁶ See CDEI, July 2019. [*Landscape Summary: Online Targeting*](#); CDEI, February 2020. [*Review of online targeting: Final report and recommendations*](#); Which?, June 2018. [*Control, Alt or Delete? The future of consumer data*](#).
- ⁴⁷ Ofcom, August 2020. [*Personalised Pricing: Presentation of Personalised Pricing Findings*](#), page 14.
- ⁴⁸ Figure 1 of our fairness framework provides a summary of where we are likely to be more concerned about fairness. See Ofcom, January 2020. [*Making communications markets work well for customers: A framework for assessing fairness in broadband, mobile, home phone and pay TV*](#), page 2 and paragraph 4.6.
- ⁴⁹ Ofcom, August 2020. [*Personalised Pricing: Presentation of Personalised Pricing Findings*](#), pages 8, 11, 12 and 18.
- ⁵⁰ Ofcom, May 2019. [*Helping consumers get better deals: Statement on end-of-contract notifications and annual best tariff information*](#), page 1.
- ⁵¹ For full provisions and the detailed circumstances in which these are applicable, see Ofcom, May 2019. [*Helping consumers get better deals: Statement on end-of-contract notifications and annual best tariff information*](#).
- ⁵² Ofcom, August 2020. [*Personalised Pricing: Presentation of Personalised Pricing Findings*](#), page 12.
- ⁵³ In certain circumstances, GDPR gives individuals the right to access the personal data input into their profiles, so they can review and edit for any accuracy issues. See ICO, [*Rights related to automated decision making including profiling*](#). (Accessed 28 July 2020).
- ⁵⁴ Ofcom, August 2020. [*Personalised Pricing: Presentation of Personalised Pricing Findings*](#), page 12.
- ⁵⁵ So-called 'black box' algorithms are an example of such typically opaque systems, although it remains to be seen how far it is possible to integrate certain types of transparency into the design of such systems, and there is growing interest from developers in doing so.
- ⁵⁶ The ICO and The Alan Turing Institute have developed guidance to provide a broad steer on what to think about when explaining AI-assisted decisions to individuals. These principles (which relate, for example, to transparency and accountability) are complement to the data protection principles outlined in the EU GDPR. See ICO and The Alan Turing Institute, [*Explaining decisions made with AI*](#), pages 38-44.
- ⁵⁷ Ofcom, August 2020. [*Personalised Pricing: Presentation of Personalised Pricing Findings*](#), page 13.
- ⁵⁸ See for example the CDEI's [*Review into bias in algorithmic decision-making*](#). (Accessed 28 July 2020).