

**Annexes and additional material
to Analysys Mason's report for
Ofcom**

**Online data economy
value chain**

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Preamble

This document provides additional content and information regarding Analysys Mason's report for Ofcom on the UK's online customer data value chain in selected sectors. It should be read in conjunction with the main report and is not intended as a standalone document.

The structure of these annexes mirrors to a large extent that of the main report, so for example, Annex A relates to Section 1 in the main report, Annex B to Section 2, and so on.

These annexes use the terminology that is common in the sectors being considered, which may be unfamiliar to some readers. Specialist terms are defined on their first occurrence within this study, and the reader may also refer to the glossary provided at the beginning of the main report.

We have referenced a large range of sources in our report and these annexes. All of these sources are available publicly, typically online.

For any query on this report, please contact David Abecassis, Principal, at david.abecassis@analysismason.com.

Annex A Detailed characterisation of online customer data

A.1 History of the online customer-data market

There is a long history of companies collecting customer data to better understand their customers' requirements, and improve their products and services accordingly. In the (largely bygone) days when shopkeepers knew their customers personally, they could plan to stock goods based on direct interactions with their customers and a well-developed understanding of their buying habits. However, the emergence of supermarkets and other less personal shopping channels largely broke the link between the shopkeeper and the consumer. In parallel, retailers had started to introduce loyalty cards in the early 1980s,¹ in order to provide discounts to regular customers.

Subsequently, the increasing use of barcode-scanning point-of-sale (PoS) systems in supermarkets gave them an opportunity to improve their tracking of individual consumers, substituting customer information collected mechanically for the personal knowledge of the shopkeeper. One of the most successful loyalty card schemes in the UK (and indeed the world), Tesco Clubcard,² is used to help the supermarket understand its customers better, but also enables its suppliers to do so as well. Tesco now sells customer data to marketers so that its suppliers can check the success of ad campaigns using information that can be cross-referenced against online behavioural data. So Tesco's original purpose for collecting data, to engender consumer loyalty, has evolved into something quite different and as a consequence developed a new business model.

It is not just the way in which data has been collected and monetised that has evolved, but also the types of data that are collected. Companies that use data have adapted to changes in the data that is available to them. For example, Acxiom started out as a company whose objectives were to develop a mailing list for the Democratic Party in the USA and to process data on behalf of businesses. More recently, however, Acxiom has adapted its direct marketing and data-processing capabilities to the online world. The company has evolved from collecting names and addresses to collecting behavioural data for online consumers, and from selling databases to enabling clients to more efficiently purchase and use this behavioural data in order to buy targeted ad inventory.

The availability of cheap data storage, faster processing power and broadband connectivity reaching out to almost all consumers and businesses has enabled companies to retain vast amounts of data, which they can interrogate and analyse, with a view to *monetising* it.

One of the key ways in which 'free' content on the Internet is funded is from advertising revenue. A recent report³ estimated that the value of the consumer benefit⁴ of Internet services (excluding e-

¹ <http://www.theguardian.com/money/2012/sep/14/nectar-card-rewarding-green-issues>

² <http://www.dunnhumby.com/us/who-we-are>

³ http://www.youronlinechoices.com/white_paper_consumers_driving_the_digital_uptake.pdf

⁴ Defined as consumer surplus, the difference between people's willingness to pay for a service and the price they have to pay

commerce) is EUR44 per month per household, but that consumers would only be willing to pay less than one sixth of this to use these services with no ads. Online advertising has evolved rapidly from a simple display medium to a sophisticated, automated marketplace enhanced using customer data, and although there would clearly be a significant amount of online advertising even in the absence of customer data, the two are now tightly intertwined.

A.2 Characterising customer data

Additional means of collecting data

In addition to the types of data collection mentioned in the main report, some data is neither strictly declared nor inferred, as it is collected in the background. An example of this is tracking a user's mouse pointer, how they navigate a website and what URLs they click. Customers typically agree to this as part of a website's terms of use.

Furthermore, knowledge about a customer can be increased in unexpected ways. It is possible to combine the declared information held about a person with anonymous or pseudonymous data sets in order to gain further insight about the person.⁵

Characterising personal data

Some personal data is classified as sensitive, that is it could potentially be used as a basis for discrimination, such as information concerning race/ethnicity, political opinions, trade union membership, religion/religious beliefs, mental/physical health, sexual relationships and criminal record. Most data protection legislation in the UK, USA and other developed countries provides very strict guidelines that data collectors and processors must adhere to in relation to sensitive personal data.

In some instances, however, it is unclear whether a piece of data is personal. The Article 29 Working Party which provides recommendations to the EC on data protection⁶ considers that although data contained within cookies may be anonymous it is personal data, since cookies "enable data subjects to be 'singled out', even if their real names are not known".⁷ EU data protection law is being reviewed and there is a lot of discussion within the online data industry about the use of anonymous information.

Similarly, it is not universally agreed whether an IP address constitutes personal data. According to the UK data regulator, the Information Commissioner's Office (ICO),⁸ an IP address is personal data if it is associated with a device that is used by a single user. However, in many cases a device

⁵ For example, a paper by Arvind Narayanan and Vitaly Shmatikov discusses how it is possible to identify individuals and potentially sensitive information by combining public information on IMDB with analysis of anonymous data contained within Netflix's subscriber movie ratings (see www.cs.utexas.edu/~shmat/shmat_oak08netflix.pdf)

⁶ The Article 29 Working Party is made up of Data Protection Authorities of EU Member States.

⁷ <http://ec.europa.eu/justice/data-protection/article-29/>

⁸ <http://www.ico.org.uk/>

can have multiple users. The ICO recommends that to fulfil privacy objectives, an IP address should be anonymised by removing the final eight characters (the final octet). Based on our discussions with industry participants when developing this report, we understand that this is a commonly applied approach. The Article 29 Working Party recommends that IP addresses be treated as personal, since IP addresses can sometimes identify an individual even if the individual's name is not known, particularly when using behavioural data collected by cookies.⁷

It is also under question whether location data constitutes personal data. This is because, depending on the precision of the data and other circumstances (such as how many other people are in the vicinity and what other data is available about the subject), a person's location may make them identifiable. However, there is currently no international consensus on this point.

A.3 Data collection

Data collectors are the starting point of the customer-data value chain. They collect data using a number of methods (introduced in the report and described further in the subsections below), which consumers may opt into or opt out of. They also often have the role of data controllers, determining the purposes for and manner in which customer data is processed. In addition, a data collector may act as a data processor (that is, an organisation that processes data on behalf of a data controller), and may sell raw data to other parties in the value chain.

Data collector can be categorised as first or third party, based on their relationship with the customer:

- A *first party* has a direct relationship with a customer and owns the product, service, content, or website that it delivers to them. A first party may collect personal, behavioural, transaction or technical data using one of the collection methods described below. The information may be exclusively declared, exclusively inferred, or a mix of the two.
- A *third party* is a data collector that collects inferred data about customers, using various means of collection.

A.3.1 Methods of data collection

In this section we introduce the methods commonly used to collect online customer data, as well as selected examples.

Browsers

A web browser can collect technical information attributable to a consumer online. Some data is stored locally (such as passwords to access services, bookmarks and browsing history), and some is shared with the companies that support the browser and the websites that the consumer visits. Password information shared with a website is encrypted and stored on a server, but the website does not have access to it. The browser shares behavioural data with websites that have been collected by cookies, including how the consumer arrived at a website (for example, by clicking on

an advertising link), and products that a consumer wants to compare on a website using a comparison tool. It also keeps track of how long a consumer stays on a particular website. Consumers who do not want to share behavioural information with websites can download software solutions to prevent this, such as Abine and Ghostery.

Competitions

Competitions are used by publishers and marketers to collect personal information from consumers (this may include name, address, age, phone number and email address). The competition may ask the consumer for permission to use their data to send them future emails, postal mail or phone-based marketing from the company, or marketing from third parties. In this case the data controller must provide full terms and conditions for the competition, its privacy policy and the option for users to opt in or opt out of future marketing communications.

Contracts

Consumers who enter a contract to purchase content, goods or a service may have to provide the same information as for competitions, but in some cases they also provide sensitive personal information such as details of their bank account or credit card. This information may also be required by a website or online service in order for a consumer to access content (for example, to set up an account to watch video-on-demand content that is more than 30 days old on 4oD).⁹

Cookies

Market participants use cookies to help them to identify consumers and provide a customised experience of a website, or targeted advertising. There are two main types of cookie, related to whether it is placed by a first party or third party.

A first-party cookie belongs to the domain owner or publisher of the site that a user visits; the user is then recognised as an individual by the publisher. First-party cookies may remember user actions on the website, determine whether a user is logged in, and identify their country or location within it. First-party cookies can be classified as follows:

- *Strictly necessary*: may remember a user's actions on the website, determine whether the user is logged in, or identify the person's location/country.
- *Performance*: collects behavioural information (e.g. how a user moves around a website), identifies the most popular content, and tracks website errors, the performance of the website and ad click-throughs.

⁹ <http://www.channel4.com/programmes/4od>

- *Functionality*: enables a publisher to identify an individual user, and so may store their name, user settings and preferences (for example, to prevent children from accessing adult content, or to share activity with social networking sites).
- *Targeting or advertising*: enables a publisher to deliver targeted advertising based on user behaviour, placed by the publisher or one of its ad network partners. The cookie may also track the effectiveness of adverts, for example by tracking the cost per action (CPA) (which could include click-through, leads, downloads, sales), and limit the number of times that an ad is served to a user.

A third-party cookie also collects performance, behavioural and other information. It is installed on the user's device when they visit a first-party domain. For example, if a user visits www.cheaptobuy.co.uk a third-party cookie is installed called *excellent_ads_served*. That cookie is controlled and managed by the third party and not the publisher, but the third party has permission from the publisher to install the cookie in the user's browser and is subject to the publisher's cookie policy. The user is subject to the third party's privacy policies, which determine what that party may do with the user's data.

Loyalty schemes

Loyalty schemes are used by a wide range of organisations (e.g. retailers, airlines and telecoms operators) to try and build long-term relationships with consumers. Customers are rewarded for spending money by receiving discounts, vouchers and special offers. A company's loyalty scheme also provides it with information about consumer spending habits. When they apply to participate in a scheme, users are typically asked for similar personal information as when entering a competition (see above), and also have the option of opting in or opting out of marketing communications. However, they may also be asked about their behaviour and preferences; for example, a supermarket may ask a customer to indicate the number of people who live in their household, and whether they have any specific dietary requirements.

Network-based collection

Network data is sent back to telecoms operators for billing and operational purposes. This data may include call destination and volume, data usage, SMS/MMS destination and volumes, and location by cell.

Mobile apps

Mobile devices are unable to store cookies, and instead app developers insert JavaScript code into their apps that enables them to track and collect information about the number of active users, the amount of time users spend using the app, the buttons they click, the devices they use, and many other types of behavioural data.

Surveys and panels

Surveys and panels are used to collect a mixture of data about viewers and consumers generally, both personal and behavioural, such as age, demographics, leisure activities, occupation, technology used, TV habits and many more. This form of data collection is usually declared and carried out on an opt-in basis (with the exception of some panels); the consumer is often well informed about what data is being collected and how it may be used.

Other methods

There are additional methods that are used more frequently in specific sectors. For example, the online sector uses pixel tracking and AdID technology, as described in Section B.1.

A.3.2 Opt-in and opt-out mechanisms

Organisations that follow a best-practice approach to data collection using the methods discussed above typically give consumers the opportunity to select how they want their data to be used. In most cases, and in many countries, these practices are defined by legal frameworks that organisations must follow in terms of the collection, storage and use of customer data. Consumers are given choices about how the organisation can use their data, and can decide whether to opt into the organisation's proposition. Below we provide examples of the approaches taken to opt-in and opt-out mechanisms by the sectors studied in this report.

Online sector

In the online sector, personal data is collected through contracts (including registration), competitions and surveys. In all circumstances, users are given the opportunity to opt in or opt out of receiving marketing communications, either by the first party or its partners. Cookies, pixel tracking¹⁰ and JavaScript are used to track behavioural data, although users can opt out of cookies used to track such data, if they do not wish to receive targeted ads.

Audio-visual sector

Customer data in the audio-visual sector is mostly collected by surveys and panels, with participation being opt-in and declared. When data is collected through other means, such as via online VOD platforms and connected devices, the data that is being collected and the purpose for doing so is not always clearly identified. Personal data may be collected in a declared way when users sign up to a service, at which point they are presented with various options for opting in and out of different uses of the data. Meanwhile, other data (such as viewing patterns and other behavioural data) may be collected in an inferred way, for example using cookies or via a set-top box. In practice, data collected in this way – and its use for targeting – is on an opt-out basis.

¹⁰ A technique consisting in a server uploading a 1×1 pixel GIF image to a visitor's browser; this 'tracking pixel' is placed on a web page or within an email so that, when the page or email is viewed it enables the server to track page-viewing behaviour

Fixed and mobile telecoms sectors

Much of the data collected by operators is network-based and necessary for the provision of their services (e.g. billing, network optimisation, etc.). Operators also collect personal information when customers sign contracts, apply for an email account or take part in a survey. This data can be used by the operator to deliver targeted ads, but customers can opt out of such marketing. Mobile operators are also able to collect information about the location of their users, which users do not have the ability to opt out of.

Postal sector

The postal sector only monetises a limited amount of customer data, and for the most part this is offline data. Royal Mail maintains an address database that is updated daily, taking into account new buildings, people who have moved out of or into a home, and people who have died. The address database is licensed to clients of Royal Mail, and is also used in combination with demographic data to develop targeted mailing campaigns on behalf of clients. As far as we can tell from available information, there is no way to opt-out of Royal Mail's address database.

Annex B Customer-data value chain and business models in the online sector

The online sector has been collecting data about Internet users ever since log-in mechanisms appeared as a condition for the use of services, such as bulletin boards.¹¹ Cookies, which are now commonly used to collect behavioural data, were first developed by Netscape Communications Corporation in 1995 and remain one of the primary means of collecting customer data online.¹² Cookies have evolved from providing a repository of prior actions on a single site (e.g. enabling consumers to add an item to their online shopping cart) to fulfilling a wider range of objectives, particularly the collection of behavioural data, thereby enabling marketers to target adverts effectively, and e-commerce websites to recommend products.

Today, advertising is an essential element of the funding model for much of the online ecosystem. Many online publishers and service providers provide services at no charge to users, and are funded by ads in much the same way that free weekly and daily newspapers have been funded by ads – a business model that is well understood by readers. Similarly, online users realise that ads fund many of the free services they use, but the provision and use of targeted display ads online is perhaps less well understood by online users. In many cases it may not be clear where and how a website collects information about users in order to deliver targeted ads (or indeed whether the targeting is by the provider of the advertising, rather than the website itself).

B.1 The customer-data value chain

This section provides additional information on the types of market players involved in the customer-data value chain of the online sector, the types of data collected and the means of collection.

B.1.1 Overview of the value chain

Figure B.1 below presents a simplified value chain for the online customer-data economy, showing the flows of user traffic, how users interact with online market participants, the flows of customer data and the flows of funds. Flows of funds have two components: flows of funds in exchange for customer data, and flows of funds that are not necessarily provided in exchange for customer data but may be influenced by it. Note that this diagram is simplified and does not attempt to identify all sources of funds for all participants, but rather focuses on those flows that are linked to the use of customer data.

¹¹ Users could post information on a bulletin board and interact with one another. Websites such as FidoNet facilitated such services. See http://www.fidonet.org/inet92_Randy_Bush.txt

¹² <http://www.aboutcookies.org/default.aspx?page=5>

Figure B.1: Customer-data value chain for the online sector [Source: Analysys Mason, 2014]

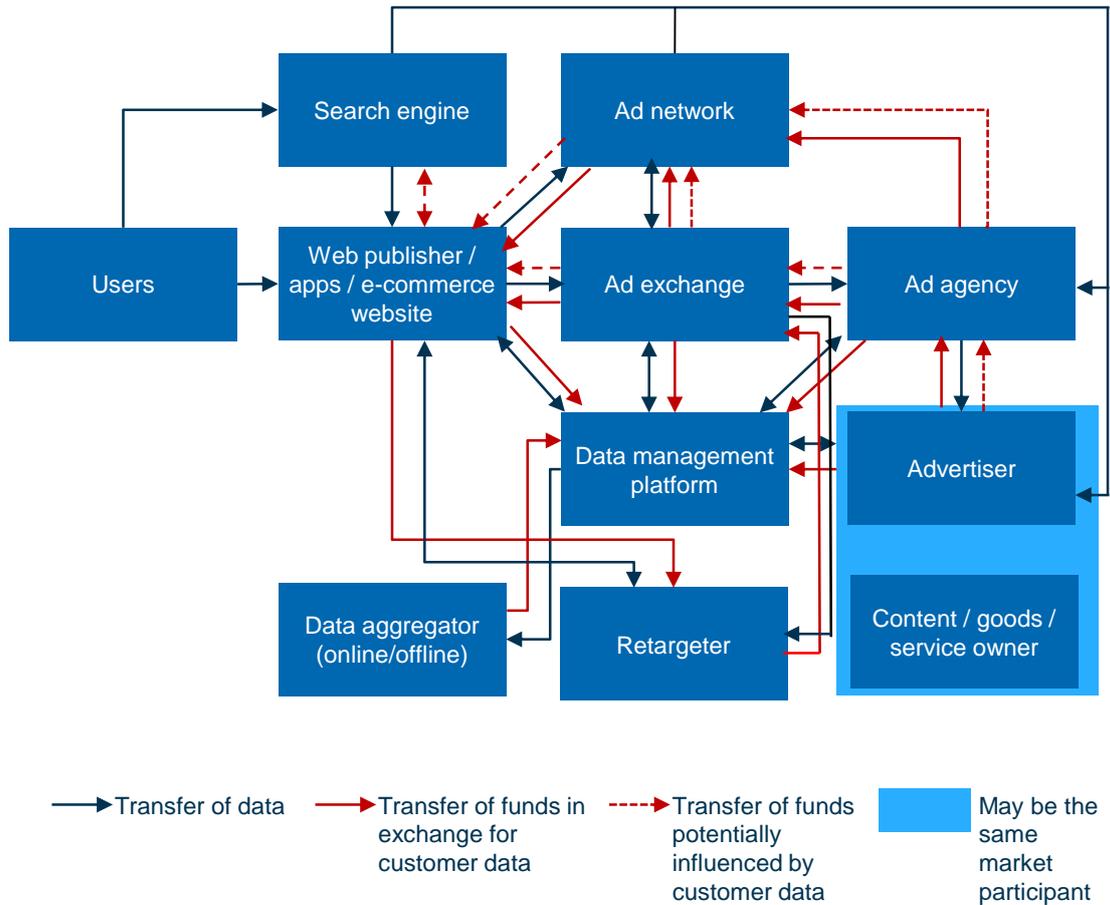


Figure B.2 below provides a short description of each type of market participant in the value chain, including examples of companies that fulfil these roles. One important thing to note is the extent to which certain companies play multiple roles, with large players such as Google and Yahoo! acting as ad exchange, owner of online properties and data management platform.

Figure B.2: Types of market participants in the online data value chain [Source: Analysys Mason, 2014]

Type of player	Role in the value chain	Examples of companies active in the UK market
Advertiser	A company that purchases online and offline advertising space (linear TV, print media, posters/hoardings, mail drops) to promote its brands, content, goods or services. An advertiser may also use its website to advertise its own content / goods / services	British Airways, BP, The Guardian, Heinz, Jaguar Land Rover, M&S, P&G, Sainsbury's, Tesco, Unilever, United Biscuits
Ad agency	A company that develops, plans and manages advertising on behalf of advertisers. An ad agency may also manage branding, marketing and sales promotion. Many ad agencies also provide mobile marketing services, or specialise in mobile marketing	Coast Digital, ClickTapMedia, Havas, WPP, Omnicom Mobile ad agencies (or those with significant mobile capability) include: Fetch, M&C Saatchi, InMobi and Ping Mobile

Type of player	Role in the value chain	Examples of companies active in the UK market
Ad exchange / mobile ad exchange	A marketplace/platform that enables market participants to buy and sell ads. The transactions are normally automated and can be in real time. Ad exchanges can connect to advertisers, agencies, ad networks, digital management platforms and publishers. Some ad exchanges also support mobiles, but there are also specialist mobile ad exchanges	Adjung, DoubleClick (Google), Facebook Exchange (FX), Microsoft Advertising Exchange, PulsePoint, Right Media (Yahoo!), The News Corp Global Exchange (Mobile ad exchanges include AppNexus, Facebook Exchange, Nexage, OpenX, Twitter)
Ad network / mobile ad network	A company that matches advertisers to publishers, in effect aggregating publisher ad space to advertisers. Ad networks can work on behalf of advertisers and publishers. They use cookies to monitor the success of online ad campaigns and to track consumer behaviour. Some ad networks also support mobiles, but there are also specialist mobile ad networks	Genome (Yahoo!), Facebook, Google Display Network, Microsoft Media Network, OpenX, Pubmatic, Tango Media, Technorati Media, ValueClick (Mobile ad networks include Airpush, Amazon, Facebook, Flurry, Google, Tapgage)
App developer	A company that develops software used by smartphones (such as corporate apps, games, maps/navigation tools, messaging, music/entertainment and news)	Financial Times, Waze traffic and navigation, The Trainline, Sky Go, Spotify, Zynga
Content rights / goods / service owner	An entity that owns the rights to protect content that can be watched, listened to or read online	Examples include: BBC, Blast Films, Carnival Films, ITV, Lion Television, Sky, Universal Music
E-commerce site	A website that enables consumers to purchase goods, products or services using an electronic platform. Sometimes referred to as an online retailer or online store	Amazon, eBay, www.johnlewis.com, www.pixmania.com
Data aggregator	A company that aggregates online and/or offline customer data (examples of data sources are provided to the right). Sells data to advertisers, ad agencies, ad networks and ad exchanges	Experian (financial data), Kantar (demographics, click-throughs, social media comments), Nielsen (demographics and psychographic data, OwnerIQ (provides purchase history)
Data management platform (DMP) / mobile DMP	A platform that enables advertisers, ad agencies or publishers to manage (first- and third-party) customer data and facilitate ad targeting based on consumer behaviour and direct knowledge of consumers (first-party data). Advertisers and agencies use DMPs to purchase ad space more effectively. Publishers also use DMPs to improve consumer segmentation in order to sell ad space more effectively. DMPs may also trade data via an online auction platform. Some DMPs specialise in facilitating targeted advertising on mobile devices, and many are able to deliver targeted ads to all device types	Adobe, Aggregate Knowledge (Neustar), BlueKai, Core Audience, nPario, Knotice, X+1 DMPs that can deliver targeted advertising to mobile devices include Aggregate Knowledge (Neustar), BlueKai, distillery, InMobi, Xaxis and X+1

Type of player	Role in the value chain	Examples of companies active in the UK market
Payment provider	A company that facilitates financial transactions, in which a customer enters their bank account, credit card details or uses another payment mechanism (for example, PayPal) to make a payment	Amazon Payments, ClickandBuy, eWAY, PayPal, Sage Group, VeriFone
Retargeter	A company that helps e-commerce websites to bring customers back to their websites and complete a transaction. Its role is to track customers' web journeys, in order to know where to serve a retargeted ad, and buy ad space	AdRoll, Chango, FetchBack (owned by eBay), Google AdWords Remarketing, Perfect Audience, ReTargeter, the TradeDesk
Search engine	A website that enables a consumer to search the web using a set of search terms (keywords). The results can be presented based on preferences set by the consumers (e.g. based on their location)	Bing, Google, Yahoo!
Web publisher	A website that provides content to consumers, such as news, blogs, video, images, social media, classifieds, corporate websites and e-commerce sites. A publisher monetises its website by selling ad space, either directly to advertisers or indirectly using advertising intermediaries	www.amazon.co.uk, www.guardian.co.uk, www.dailymail.co.uk, www.facebook.com, www.newscientist.com, www.vodafone.co.uk, www.youtube.com

B.1.2 Types of data collected and principal means of collection online

Types of data collected

Figure B.3 below provides examples of data used in the online sector. Although it is not possible to provide an exhaustive list of the types of customer data that is collected online, the table provides an overview of commonly used data.

Figure B.3: Classification of customer data used by the online industry [Source: Analysys Mason, 2014, ICO¹³]

Example data	Type	Personal?	Sources / modes of collection
Click-throughs	Behavioural	No	Cookies, pixel tracking, JavaScript
Transactions	Behavioural	No	Payment service provider (for example MasterCard), directly provided by consumers
Browsing information	Behavioural	No	Cookies, pixel tracking, JavaScript
Search history	Behavioural	No	Cookies, pixel tracking, JavaScript
Journey through a website	Behavioural	No	Cookies, pixel tracking, JavaScript
How user reached the website	Behavioural	No	Cookies, pixel tracking, JavaScript
Social networking data	Behavioural	No	Social/third-party cookies (Facebook, Twitter, LinkedIn, Google+)
Location data	Behavioural	No	App/GPS, cookies (location sign-in)
IP address	Technical	No	Cookies, JavaScript

Means of collection

In Section A.3 we discussed the common methods used to collect customer data online. In addition to these, the online sector increasingly uses two other methods: pixel tracking and AdID.

- *Pixel tracking* makes use of a single pixel (a *tracking pixel*) embedded within a GIF image on a website or in an email, which is linked to a URL. This makes it possible to track user behaviour, by enabling a web server to recognise that the page containing the tracking pixel has been viewed, and to record the number of impressions. Tracking pixels can also be used to track whether the purchase of a good or service has taken place, monitor website traffic and generate unique visitor counts.
- *AdID (Anonymous Identifier for Advertising)* is a technology that we understand is being developed by Google as an alternative to third-party cookies.¹⁴ It involves the collection of behavioural data but is supposed to give customers better control over their privacy when browsing the web. Behavioural data will only be available to advertisers that are allowed into Google's AdID programme.

¹³

http://www.ico.org.uk/news/current_topics/~media/documents/library/Data_Protection/Detailed_specialist_guides/PERSONAL_DATA_FLOWCHART_V1_WITH_PREFACE001.ashx,
http://www.ico.org.uk/for_organisations/data_protection/the_guide/key_definitions,
http://www.ico.org.uk/for_organisations/privacy_and_electronic_communications/the_guide/cookies

¹⁴

<http://spectrum.ieee.org/tech-talk/telecom/internet/googles-adid-aims-to-replace-cookies-for-tracking-web-users>

B.2 Business models supported by customer data

In the online sector customer data is used by the various participants in the value chain to support a wide range of business models. Indeed, the variety of these models and the pace of innovation are such that it is beyond the scope of this study to examine all of these individually. We discuss the most important business models under the following four categories, as described in the main report: targeted advertising, retargeting, recommendations and personalisation, data intermediation and sale of customer insights.

Customer data is also used extensively to improve online products and services. For example, Google Now¹⁵ is effectively a predictive information server, or virtual assistant, that is continually enriched by customer data. This results in continual improvement to the service and more engagement with Google services by consumers. Ultimately, however, the way in which this service is monetised is through search and advertising, Google's core business activities.

Such improvements typically aim to increase or protect market shares in services that can be transactional (e.g. e-commerce or delivery of paid-for content) or are related to advertising. As a result, this improvement process is captured in the four business models listed above.

B.2.1 Targeted advertising

Flows of data, flows of funds and sources of value

In order to improve the effectiveness of advertising spend, intermediaries (including ad intermediaries and infomediaries) have developed a range of techniques and business relationships to target specific types of consumer, based on a defined set of criteria. Consider the example of a travel company wanting to target consumers who may be interested in its cruise holidays. To identify potential consumers the company may work with a range of infomediaries and ad intermediaries. When a user visits a website where ads can be served, certain attributes linked to the page and to the user are passed on to an ad exchange (in an anonymous or pseudonymous way) and exposed to potential buyers for the ad space available on the page. These buyers are typically intermediaries themselves, who then collate information about the user from first-party cookies (from the website) and combine it with third-party cookies (from the intermediary or its partners).

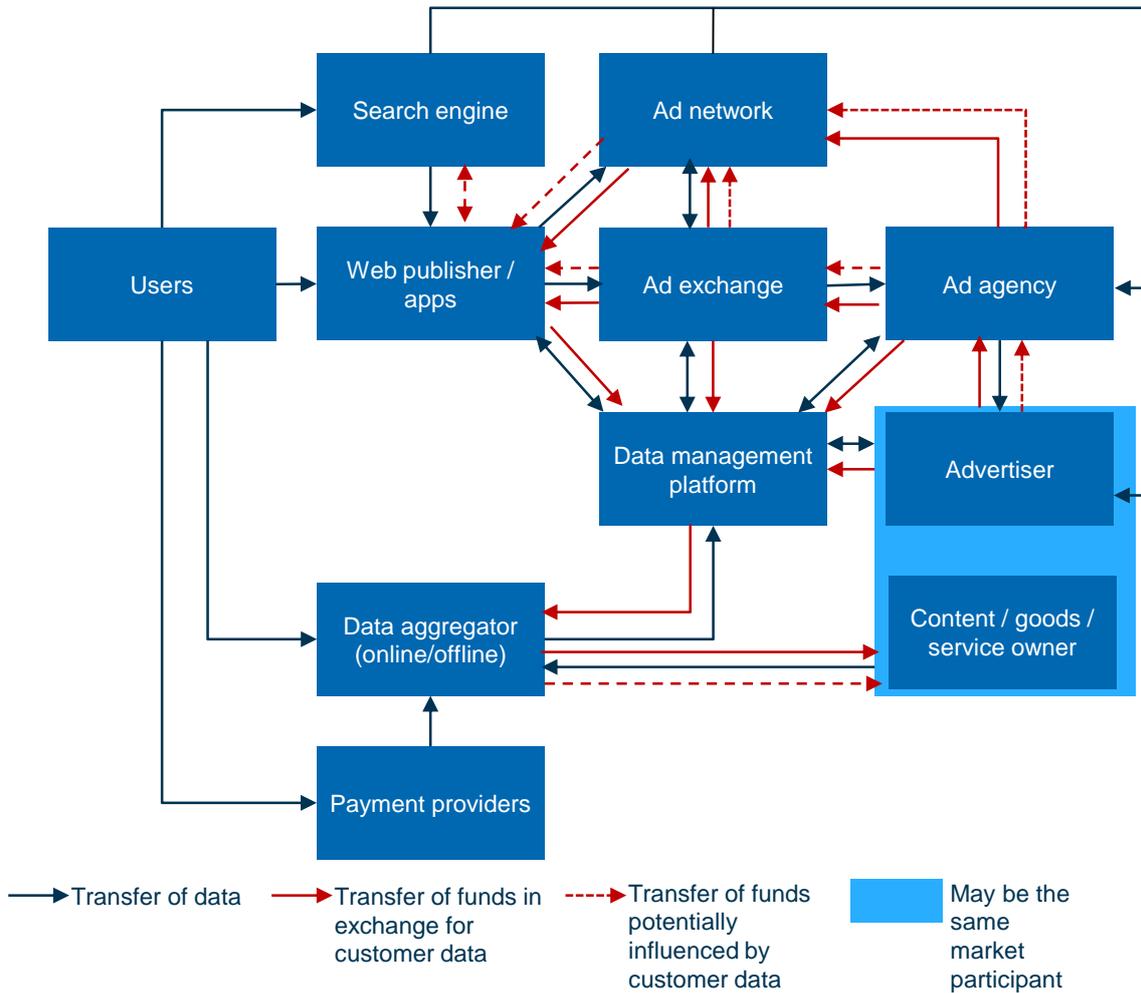
Algorithms are then used to profile the consumer, based on a comparison of all the cookie information that the intermediary has available about the consumer with information it has about other consumers stored in its database. The infomediary knows how many ads the advertiser (the travel company) wants to deliver to targeted users and what it is prepared to pay to serve those ads. The infomediary automatically bids for the ad space from the ad exchange, a price is agreed and an ad is served to the user on the publisher's website, for which the publisher receives a fee. The whole process can take just 0.1 of a second, or 0.15 seconds if it is a retargeted ad.¹⁶

¹⁵ <http://www.google.co.uk/landing/now/>

¹⁶ <http://www.sec.gov/Archives/edgar/data/1576427/000119312513369592/d541385df1.htm>

The value chain for this business model is shown in Figure B.4 below.

Figure B.4: Value chain for targeted advertising [Source: Analysys Mason, 2014]



Ad exchanges play a very important role in this business model. They provide a sales channel between publisher and ad networks, and assist publishers in selling their ad space (or *ad inventory*), and advertisers/agencies in buying it. Ad exchanges can link many publishers, advertisers/agencies and other intermediaries in an automatic (or *programmatic*¹⁷) fashion where bid decisions are taken in real time at high volumes, whereas ad networks tend to use more manual processes to manage ad inventories.

This process essentially enables the advertiser to bid for specific ad space in line with the value it places on this type of audience, while keeping transaction costs at a very low level. This increases the value of ad space on niche online properties, as the advertiser has a greater confidence that the user seeing the ads is in its target audience.

¹⁷ Programmatic advertising is selected and served automatically, typically through real-time bidding systems and the use of customer insights

Although it is possible to deliver targeted ads on mobile devices, the complexity of doing so (due to the large number of app developers and a lack of a common targeting solution) means that mobile ad space typically remains difficult to sell. This in turn leads to a lower unit price for advertisers of mobile display advertising (expressed as cost-per-thousand-impressions, or CPM) than for desktop display CPM rates.¹⁸ The average CPM rates for web display, video display and social display vary considerably¹⁹:

- Web: USD1.22 (GBP0.75)
- mobile: USD1.01 (GBP0.62)
- social: USD0.35 (GBP0.22)
- video: USD11.03 (GBP6.81).

CPM rates depend on the advertiser's ability to reach its intended audience and the amount of ad space available; the more ad inventory available, the lower the cost. Online display and video advertising, particularly for long-form content, are popular with advertisers because consumers are drawn to these formats. Social-networking-based ads are cost-effective as they draw in a wide audience and a large amount of ad space is available, which is by nature specific to each social network customer.

CPM rates also depend on the type of person that an advertiser is seeking to reach. The more defined the target audience, or the greater the importance to the advertiser in spending terms, the higher the average CPM. The so-called 'digital elite'²⁰ (10% of whom live in the EU) are more expensive to target – these are online consumers who earn more than USD76 000 (GBP46 910) per year, are aged 21 to 34, like gadgets, etc. The average CPM for targeting the digital elite is USD1.15 (GBP0.71) compared to USD0.62 (GBP0.38) for the average consumer, an 85% premium.

Major market participants and market structure

The targeted advertising value chain is highly fragmented. There are many data infomediaries and advertising intermediaries that perform different, distinct roles (DMP, ad exchange, ad networks), while some companies operate across the value chain and perform all or most roles.

Google is perhaps the best known player in this market, and acts as a publisher (Google search engine results, which drive the majority of Google's revenue and represent a large proportion of online ad spend),²¹ ad exchange (DoubleClick), ad network (Google Display Network) and

¹⁸ Targeting based on the content of individual pages is of course possible, so monetising popular pages on mobile is not an issue; selling inventory on less visited pages is, however, dependent on advertising

¹⁹ <http://www.marketingcharts.com/wp/interactive/global-ecpm-averages-in-q2-35032/>

²⁰ http://www.iab.nl/wp-content/uploads/downloads/2013/07/GlobalDigitalAudReport_June2013_FINAL.pdf

²¹ Of the estimated GBP6 billion annual advertising spend online in the UK reported by the IAB, 59% is on search, and Google had an 86% market share in search in the UK as of October 2013 according to The Telegraph; this suggests that Google Search may receive about half of the UK's online advertising spend as a publisher

provider of data analytics (Google Analytics). Similarly, Amazon²² and Yahoo!²³ operate ad exchanges and can act as both publisher and infomediary.

Specialist infomediaries are far smaller than the likes of Google and Amazon, generating at most a few hundred million dollars each year, although some are valued at billions of dollars. For example, Criteo was valued at USD1.69 billion (GBP1.04 billion)²⁴ at the time of its initial public offering (IPO) in October 2013, having generated revenue of USD354 million (GBP219 million) in the year ending 31 December 2012.²⁵

Other significant infomediaries include BlueKai, eXelate and Acxiom. Of these, only Acxiom is publicly owned, and generates approximately USD1 billion (GBP0.62 billion) each year.²⁶ There are many smaller infomediaries such as Krux, Core Audience, nPario, Knotice, Rocket Fuel, Turn and X+1. Many infomediaries are privately owned and/or in their start-up phase. Rocket Fuel made an IPO in September 2013 valuing the company at USD2 billion (GBP1.23 billion), even though it had only generated USD107 million (GBP66 million) in revenue during 2012, albeit up from USD16.5 million (GBP10.2 million) in 2010.

International perspective

The UK's online display advertising market is significant, and has benefited from the UK being a large international hub for advertising specialists. Large advertising companies that operate both online and offline include AMV BBDO, M&C Saatchi, McCANN, Saatchi & Saatchi, WPP, and broadcasters and publishers with international significance such as ITV, Channel 4, Sky, the Daily Mail and the Guardian. The presence of many important advertisers (Boots, L'Oreal, P&G, Sky, Tesco, Unilever and large publishers) has also attracted many infomediaries to the UK, many of which have their headquarters in the USA.²⁷

Summary of importance of customer data in this business model

It is clear that targeted advertising does and will continue to support a significant part of the online advertising market, but at the moment no published information is available on the exact split between targeted and non-targeted advertising. However, we understand that the Internet Advertising Bureau (IAB) is expected to publish a report in 2014 that will provide this information. In the meantime, it is possible to estimate how much of the digital advertising market

²² See http://www.amazon.com/b/ref=az_adv_dads_logo_ho?&node=3055328011 and <http://www.adweek.com/news/technology/amazon-advertisings-sleeping-giant-awaken-2013-145964>;

²³ For example, SmartAds

²⁴ <http://www.reuters.com/article/2013/10/29/criteo-ipo-idUSL3N0IJ62D20131029>

²⁵ <http://www.sec.gov/Archives/edgar/data/1576427/000119312513369592/d541385df1.htm>

²⁶ Based on its quarterly results released on 31 July 2013 – see <http://acxiom.co.uk/tag/financials/>

²⁷ A search on “ad data platform” on LinkedIn's data yielded a list of 20 companies in the UK, although we identified only seven of these as infomediaries. The USA listed a total of 139 companies (including Audience Science, Admeld, BrightRoll and many others mentioned above)

(worth roughly GBP6 billion in 2013)²⁸ is targeted, by considering the importance of targeting in search, display and classified and other ads.

- Search-based advertising is different from targeted advertising. Search engines can serve ads based on the search terms that a user types, but also from cookies. Google Analytics can interrogate cookies to serve ads, tracking the URLs a user clicks on after seeing the search results. This is used chiefly as a means to rank adverts by their effectiveness, rather than to link search ads to individual users.

In addition, Google Analytics can interrogate cookies from users who are signed into Google accounts (Google +, YouTube, etc.), and these can be used to serve the most appropriate ads, in addition to the search terms entered by a user. It is our understanding that search terms (not data from cookies) overwhelmingly determine which search ads are served to users. As a result, targeting plays a very limited role in the GBP3.6 billion contribution to the market made by search-based advertising.

- Classified ads are also typically not targeted at users on the basis of their behaviour, and instead use more generic targeting. For example, regional newspapers focus on classified ads related to the local area.
- Targeting on the basis of user behaviour is therefore chiefly a feature of display advertising. Of the GBP1.5 billion annual market for online display, however, only a portion is attributable to targeted advertising. The remainder, non-targeted advertising, is in large part related to campaigns managed by ad agencies.

Within the last category above, it is difficult to assess the portion of digital ad spend attributable to targeted advertising with precision, but a few data points can provide insight:

- IHS Global Insight²⁹, which is IAB Europe's research partner, anticipates that the programmatic video advertising market in the UK will grow from EUR20.5 million (about GBP17 million) in 2012 to EUR224.5 million (about GBP185 million) in 2017. In 2017, the research company expects that one third of online video advertising will be programmatic, compared to 4.6% in 2012, suggesting that online video advertising in total was worth about GBP370 million, or about a quarter of the total value of online display advertising.
- Online programmatic display advertising (not video) is far more advanced. According to the IAB, 85% of advertisers and 72% of publishers in the USA used programmatic advertising online during 2013 and it expects this to increase to 91% and 85% respectively in 2015.³⁰
- As programmatic advertising is primarily targeted³¹ (even though it provides an imperfect gauge of the proportion of ad spend that is targeted) we expect that 30–45% of all online

²⁸ According to the IAB, <http://www.iabuk.net/>

²⁹ <http://www.spotxchange.com/blog/2013/09/10/programmatic-video-advertising-will-grow-tenfold-between-2012-and-2015-in-europe-according-to-ihs/>

³⁰ http://www.iab.net/about_the_iab/recent_press_releases/press_release_archive/press_release/pr-110413

display advertising may be targeted or retargeted,³² representing a total value of GBP450–650 million annually in the UK. It is not clear how much of this pertains to retargeting, although this is a fast-growing area.

B.2.2 Retargeting

Flows of data, flows of funds and sources of value

In the UK, the majority of consumers who visit an e-commerce website do not make a purchase straightaway; in fact as few as 4% may do so.³³ In this context, retargeting is used by such sites to try to bring customers back and persuade them to make a purchase. This applies particularly to consumers who added an item to their basket but did not complete the purchase.

The benefit of retargeting is to drive up the value of ad space visible by a specific user, for an e-commerce site in which this user has shown interest. This value premium depends on the perceived immediacy of the user's purchase and the value of the good or service the user looked at. If the consumer was seeking to purchase a holiday, for example, the e-commerce site may be prepared to pay a premium to bring the user back to its website in the short term, but not in three months' time.

Retargeters generally offer retargeted ads on a CPM basis, which includes their margin, but other pricing models are available, including CPA/CPC. The CPM rates depend on the value of the customer to the e-commerce site, and the number of people with the same profile. For example, there are likely to be fewer consumers who are interested in high-end hi-fi speakers than in entry-level speakers.

Pricing models that reward the retargeter using CPA/CPC can be attractive to e-commerce websites. For example, Criteo purchases ad inventory on a CPM basis and sells it on a CPC basis. The difference between the two (the arbitrage) is the margin it makes, which involves a more risky pricing model when compared to a non-arbitrage, pure CPM approach. In Criteo's case, it is taking a risk that it can successfully deliver sufficient CPCs. Criteo receives payment based on CPC and tracks the number of users that have seen the ad and gone back to the e-commerce website to make a purchase.

Like targeted ads, CPM rates also depend on the amount of ad inventory available and the importance of the customer to the e-commerce website. AdRoll's³⁴ average CPM is USD1.4 (GBP0.86), while Perfect Audience's CPM ranges from USD1.25 (GBP0.77) to USD2.25 (GBP1.39) for web display and from USD0.25 (GBP0.15) to USD0.40 (GBP0.25) for Facebook

³¹ One interviewee who provides an opt-out from targeted advertising on its website confirmed that Google DoubleClick was unable to serve non-targeted adverts

³² Effectively representing 40–60% of non-video online display ads.

³³ Between January 2008 and July 2012 – see <http://www.smartinsights.com/e-commerce/e-commerce-analytics/e-commerce-conversion-rates/>

³⁴ <http://www.adroll.com/about>

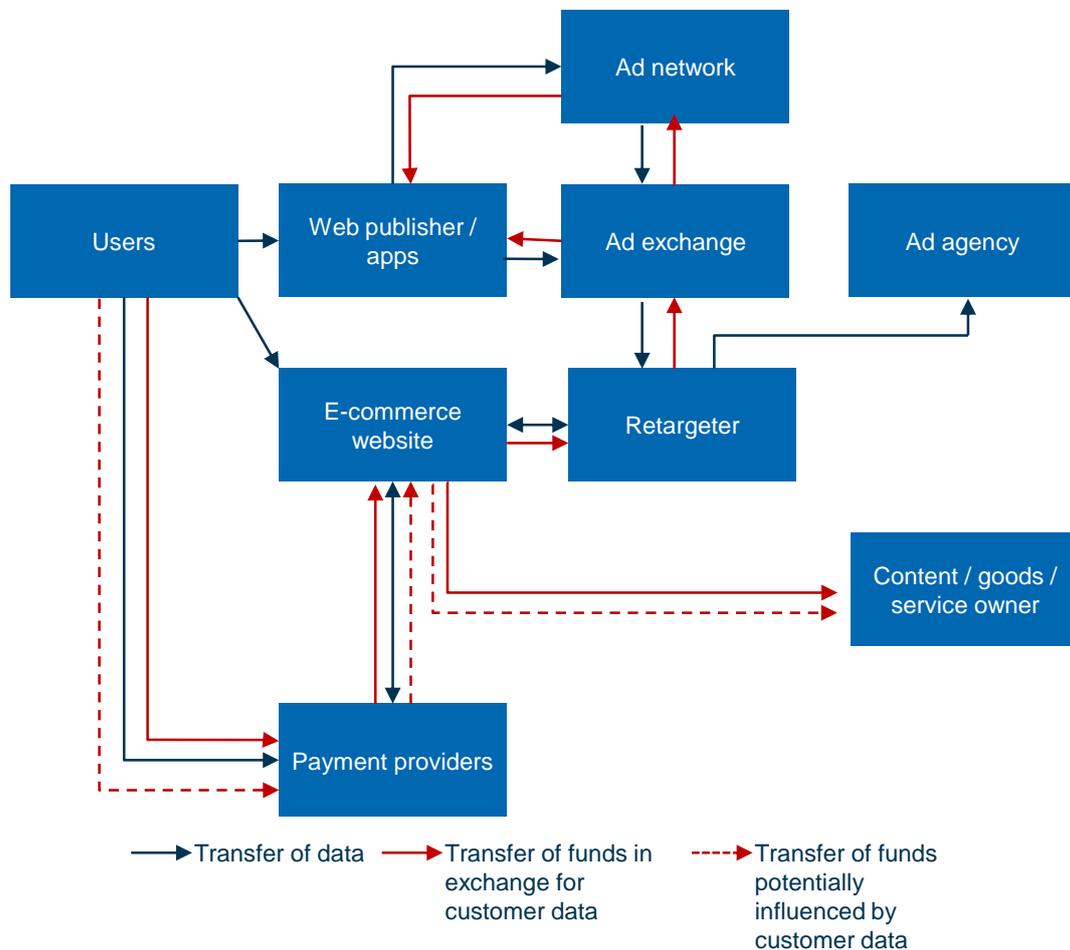
retargeting. Both companies include their margin in the CPM, which we believe could be in excess of 20%.³⁵

Some e-commerce websites prefer not to share any margin with retargeters. For example, Amazon operates its own ad exchange so that it can retarget customers and bid for ad space, and eBay also has retargeting capability following its acquisition in June 2011 of GSI, a company which owned retargeter FetchBack.³⁶

We note that retargeting can also be used by publishers to try and bring back users to their properties, in order to generate new traffic and drive up the value of their ad inventory. This is valuable for publishers with high-CPM inventory, who can acquire traffic from lower-value properties.

The value chain for this business model is shown in Figure B.5.

Figure B.5: The value chain for retargeting [Source: Analysys Mason, 2014]



³⁵ Based on a comparison with standard targeted advertising CPMs averaging USD1.20 for web display

³⁶ <http://www.crunchbase.com/company/gsi-commerce>

Major market participants and market structure

There are many retargeters worldwide, and we have identified over 25 examples. In addition to working in the e-commerce space, some retargeters also help publishers to acquire traffic, by monitoring users who visit the publishers' websites, as well as the search terms they use. The core business of most of these companies is retargeting: important 'pure' retargeters include AdRoll, Chango, FetchBack (owned by eBay), Google AdWords Remarketing, Perfect Audience, ReTargeter, the TradeDesk and Vizury. UK-based companies include adGenie, clickymedia, Digital Dialog, The Digital House and Total Digital.³⁷ Figure B.6 shows the retargeting services offered by the companies listed above.

Figure B.6: Retargeting services offered by selected infomediaries [Source: Analysys Mason, 2014]

Infomediary	E-commerce	Publisher	Search
adGenie	✓		
AdRoll	✓		
Chango			✓
clickymedia	✓		
Digital Dialog	✓	✓	✓
FetchBack	✓		✓
Google	✓		
Perfect Audience	✓		
ReTargeter	✓	✓	✓
The Digital House	✓	✓	✓
Total Digital	✓		
The TradeDesk	✓		
Vizury	✓		

There are no significant barriers to entry, but retargeters need to establish as many partnerships as possible with ad networks and ad exchanges, in order to maximise the number of publishers from which they can purchase ad inventory, and in turn attract e-commerce sites and other publishers.

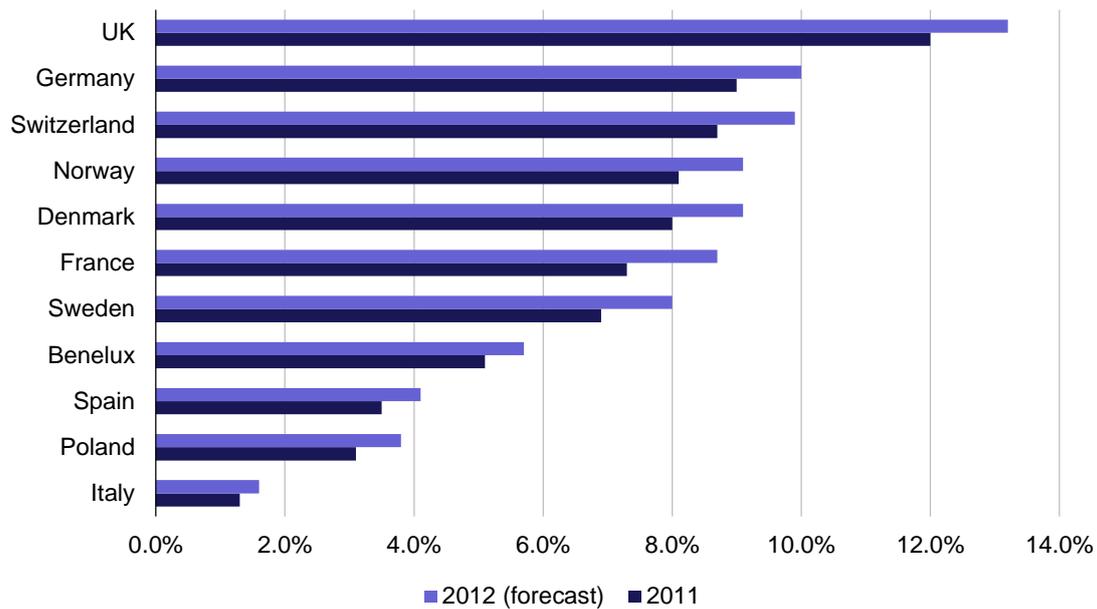
International perspective

The UK has a highly developed e-commerce market when compared to other European countries. As shown in Figure B.7, e-commerce accounted for around 12% of retail sales in 2011.³⁸

³⁷ http://www.adgenie.co.uk/retargeting-advertising/661356/how_does_adgenie_retargeting_work.html,
<http://www.clicky.co.uk/marketing/display/re-targeting/>,
<http://www.thedigitalhouse.co.uk/display-advertising/targeting-&-retargeting>,
<http://www.digitaldialog.co.uk/index.php/services/retargeting>, <http://totaldigital.co.uk/retargeting/>

³⁸ <http://www.census.gov/retail/>

Figure B.7: Online share of retail trade (%), selected European countries [Source: Centre for Retail Research, March 2012]³⁹



Summary of importance of customer data in this business model

It is not straightforward to separate the revenue associated with retargeting from the estimate provided in Section B.2.1 for targeted advertising in general. Companies that specialise in this space generally remain small: the 2012 revenue of Criteo (USD367 million)⁴⁰ makes it a relatively large player, while AdRoll (USD34 million) and ReTargeter (USD6.5 million) are significantly smaller.

In conclusion, although retargeting is undoubtedly growing rapidly,⁴¹ it probably remains a small part of the total, not least because major players such as Amazon are able to act without third-party retargeters, thus limiting the size of the market somewhat.

B.2.3 Personalisation and recommendations

Flows of data, flows of funds and sources of value

There are three main ways in which customer data is used for direct marketing, through personalisation and recommendations: e-commerce websites use recommendations to cross-sell or

³⁹ <http://www.e-commercefacts.com/background/2012/03/e-commerce-forecast-2012/>

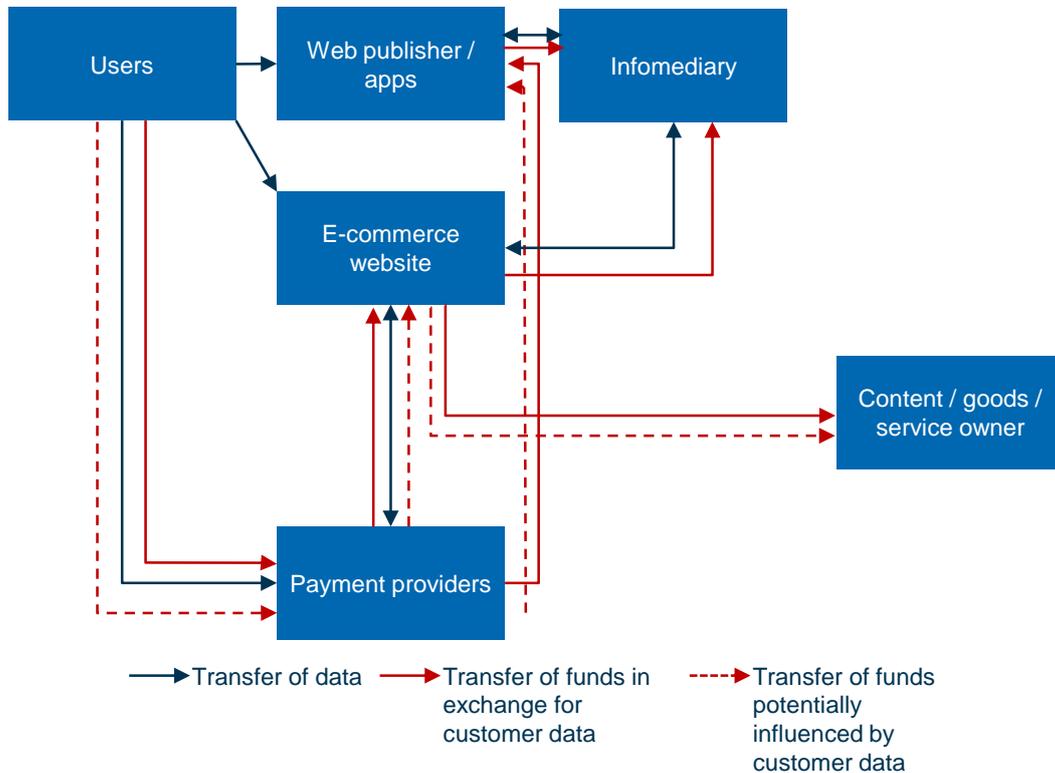
⁴⁰ Source: Criteo's IPO prospectus; we note that this include revenue from managing inventories, which are passed on to publishers (<http://www.sec.gov/Archives/edgar/data/1576427/000119312513369592/d541385df1.htm>)

⁴¹ For example AdRoll reported a run rate of USD100 million in October 2013, twice what it had achieved at the end of 2012; we understand that this is projected revenue based on current performance, rather than actual sales. As AdRoll is thought to be one of the main specialised retargeters in the market, and it operates globally, it is quite clear that this market remains small

up-sell products/services, publishers use recommendations to cross-sell and up-sell content, and many types of service provider use personalisation to build loyalty and retain customers and their traffic. In this section, we focus on e-commerce and publishers.

The value chain for this business model is shown in Figure B.8.

Figure B.8: Value chain for personalisation and recommendations [Source: Analysys Mason, 2014]



Personalisation and recommendations are designed to fulfil three objectives:

- To improve conversion rates, i.e. the percentage of visitors to a website who make a purchase, by providing personalised recommendations based on previous purchases or their current purchase process.
- To increase cross-selling, by suggesting additional, related products or services that a consumer may want to purchase (such as selling a camera case to someone who has just purchased a camera)
- To build loyalty by better understanding each consumer and their buying habits, which an e-commerce website can use to develop a personalised service, e.g. by customising the products or services shown on its landing page or search page.

There are two principal methods that e-commerce websites can use to deliver personalised recommendations:

- recommendations based on matching product descriptions or content (e.g. books–genre, bike–road or mountain) to a particular consumer
- recommendations based on purchases or ratings given to products by other customers.

Some e-commerce websites and infomediaries also send targeted emails containing product recommendations,⁴² or provide guided selling (asking a consumer a set of questions that enable the site to recommend a set of products or a product) in order to increase sales revenue per active consumer.

Infomediaries that provide recommendation services to e-commerce sites may offer CPA-based pricing (based on the percentage or number of recommendations that result in purchases), or a flat fee for a number of recommendations. Smartengine⁴³ and Nosto (see Figure B.9) use a CPA pricing model, while Barilliance (see Figure B.10) bases its monthly fee on the annual revenue generated.

Figure B.9: Nosto: pricing of recommendations [Source: Nosto, November 2013]⁴⁴

Online sales generated by recommendations provided by Nosto (EUR 000)							
	0 to 13	13 to 22.1	22.1 to 32.5	32.5 to 58.5	58.5 to 110.5	110.5 to 260	260 to 650
Fee paid to Nosto	4%	3.5%	3%	2.5%	2%	1.5%	1.25%

Figure B.10: Barilliance: pricing of recommendations [Source: Barilliance, November 2013]⁴⁵

Annual sales of e-commerce website (GBP million)							
	<1	1 to 5	5 to 10	10 to 20	20 to 30	30 to 40	40 to 50
Monthly price (GBP)	350	500	750	1500	2250	3000	3750

The use of recommendations in publishing relates to the need for publishers to maximise their advertising revenue, by increasing engagement and CPMs using a variety of models. For example:

- Publishers use retargeting to drive up CPMs, increasing the number of users and the number of pages viewed, but they also want to sell online content.
- Publishers that have some sort of pay-wall want to sell subscriptions to ‘freemium’ users and deliver some sort of site personalisation, which is very similar to what e-commerce websites seek to achieve through the use of recommendations.

⁴² Emails are also used for retargeting.

⁴³ <http://smartengine.at/?lang=en>

⁴⁴ <http://www.nosto.com/pricing/>

⁴⁵ <http://www.barilliance.com/pricing>

A publisher can segment users using behaviour and demographics, to help determine the attributes of a consumer who would be willing to purchase an online subscription. For example, a survey by the Reuters Institute Digital News Report reported that 25 to 34 year-olds are more likely to consume and pay for digital newspaper content than other age groups.⁴⁶ The survey found that, perhaps unsurprisingly, consumers characterised as ‘news lovers’ are more likely to pay for digital news content than ‘daily briefers’ and ‘casual users’.⁴⁷ The likelihood of a news lover paying for a digital news subscription also depends on the device they use to access the website.

Publishers have various options in terms of whether or not they use intermediaries to provide this personalised content:

- They can use an infomediary to analyse users who visit their website, segmenting users according to their different behaviours and demographics; this may involve the purchase of third-party, offline customer data.
- They can use an infomediary (such as Cxense) to collect, collate, store and analyse online customer data in order to identify users who are prepared to pay for content.⁴⁸
- They can operate without using an infomediary to carry out data analysis, but may buy in third-party data (online and offline) and conduct the analysis in-house using tools such as SAP for Media⁴⁹ purchased from a software vendor.

Major market participants and market structure

There are now a multitude of e-commerce websites. Some, such as Amazon and eBay, are large, diversified and well established. These players can build on a large dataset in order to refine recommendations. However, new players can and do enter the market all the time. An ongoing trend is for established brands to diversify their retail channels by selling through a range of sites, including their own. For example, Brioni, an Italian fashion house founded in 1945, launched its first e-commerce site in November 2013.⁵⁰

As in other business models, the barriers to entry for infomediaries seeking to deliver customised recommendation capabilities to e-commerce websites are mostly related to technology. Of those infomediaries that provide recommendation services, most specialise in this as their core business. However, some infomediaries also provide other services, including personalised landing pages, onsite product search, guided selling tools, and personalised emails that contain details of recommended products (see Figure B.11 below).

⁴⁶ 9% of 2078 respondents in the UK said they had paid for digital news content, or access a paid-for digital news service in the year ended February 2013; see <http://www.digitalnewsreport.org/>

⁴⁷ <http://www.digitalnewsreport.org/>

⁴⁸ http://www.cxense.com/customers/increase_revenues

⁴⁹ <http://www.sap.com/uk/solution/industry/media/solutions/sub-ind/newspaper-magazine-management-software.html>

⁵⁰ <http://www.luxurydaily.com/brioni-opens-shipping-to-100-countries-via-ecommerce-launch/>

Figure B.11: The service portfolio of some example infomediaries [Source: Analysys Mason, online sources]⁵¹

Infomediary	Product recommendations	Personalised emails	Personalised landing page	Onsite search	Guided selling tool
Barilliance	✓	✓	✓		
Baynote		✓	✓	✓	
iGoDigital	✓	✓			✓
Nosto	✓	✓			
Smartengine	✓				

International perspective

Recommendations are used by many e-commerce websites in all countries, and clearly have an influence on purchasing decisions: according to a survey of 1000 consumers in the UK,⁵² 53% of online shoppers in the UK say that recommendations are important to their purchasing decision, and the more a consumer spends online the more likely they are to purchase a recommended product. Consumer acceptance still has some way to go, however: as an illustration, only 17% of online consumers in France indicate that personalisation makes them feel valued by the retailer; the figure for the UK and Germany is only slightly higher (20%).⁵³

Summary of importance of customer data in this business model

As discussed in the main report, recommendations and personalisation are distinctive features of e-commerce websites and publishers which contribute to their continued success, sometimes at the expense of traditional retailers and physical content providers such as newspapers.

Figure B.12 illustrates the decline in revenue generated by national and regional newspapers, including revenue from advertising and circulation (print and online) in the UK. To date, the sale of digital subscriptions and advertising (print and online) has been unable to offset the fall in revenue in the industry as a whole (see Figure B.13), but online margins are of course much higher than for print.⁵⁴

⁵¹ <http://smartengine.at/>, <http://www.igodigital.com/services/recommendations>, <http://www.smartfocus.com/>

⁵² <http://www.richrelevance.com/blog/2013/11/uk-leads-the-way-in-personalisation/>

⁵³ <http://www.richrelevance.com/blog/2013/11/idc-report/>

⁵⁴ www.adassoc.org.uk/write/UK_advertising's_bounce_back_continues.pdf

Figure B.12: National and regional newspaper revenues in the UK, 2007–2011 [Source: Médiatique report for Ofcom on “The provision of news in the UK”, June 2012]⁵⁵

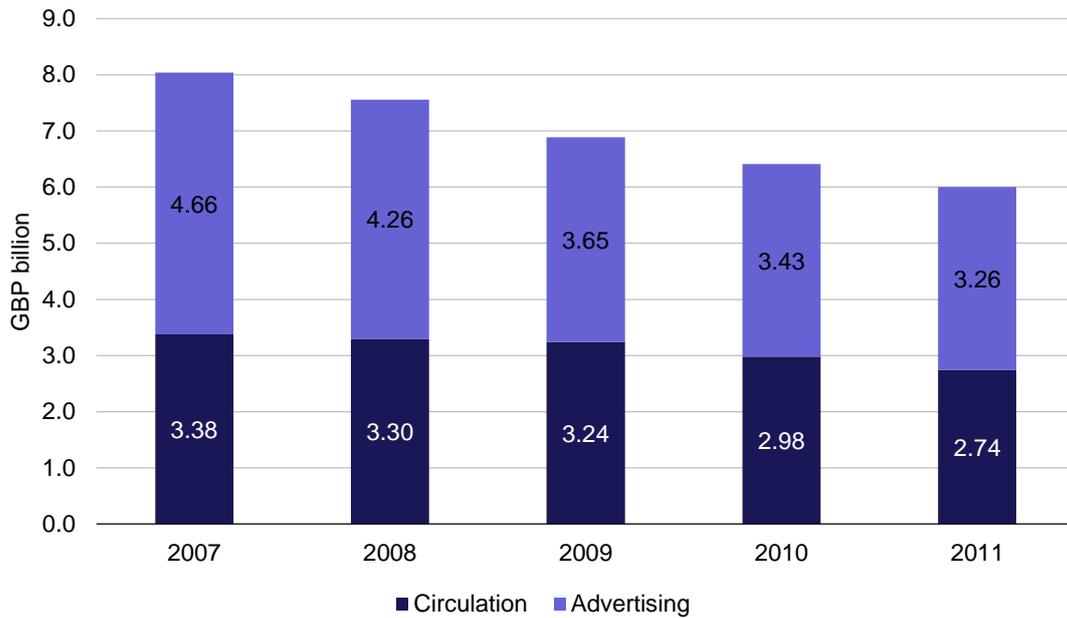
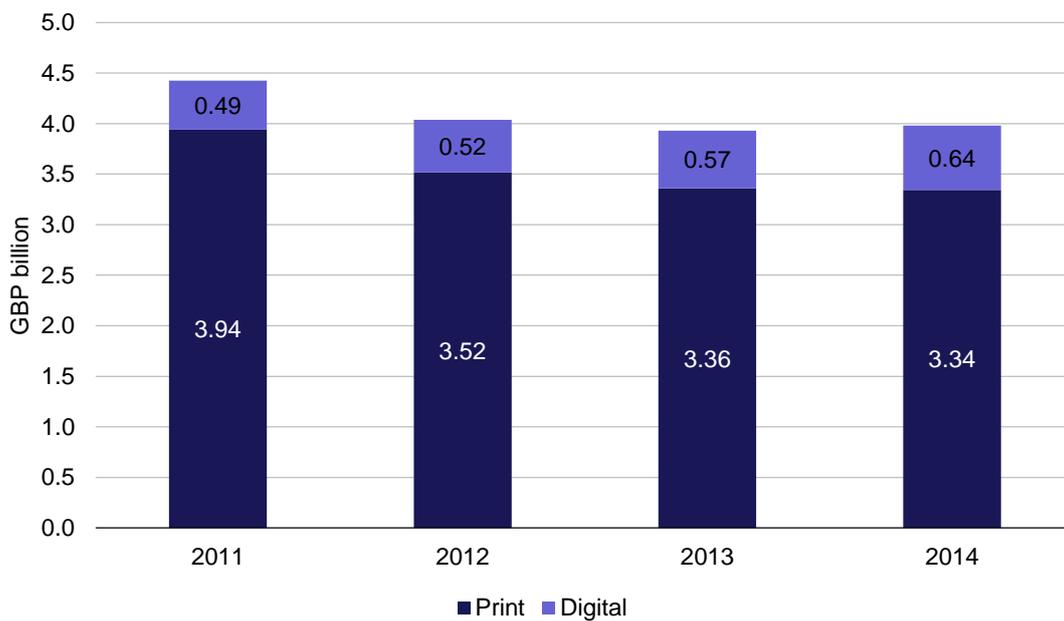


Figure B.13: Advertising expenditure on news brands and magazines, UK [Source: AA/Warc Expenditure Report]⁵⁶



⁵⁵ Page 17, <http://stakeholders.ofcom.org.uk/binaries/consultations/measuring-plurality/statement/annex6.PDF>

⁵⁶ <http://www.iabuk.net/about/press/archive/uk-adspend-hits-17bn-in-2012-the-first-time-since-2007>

B.2.4 Data intermediation and sale of customer insights

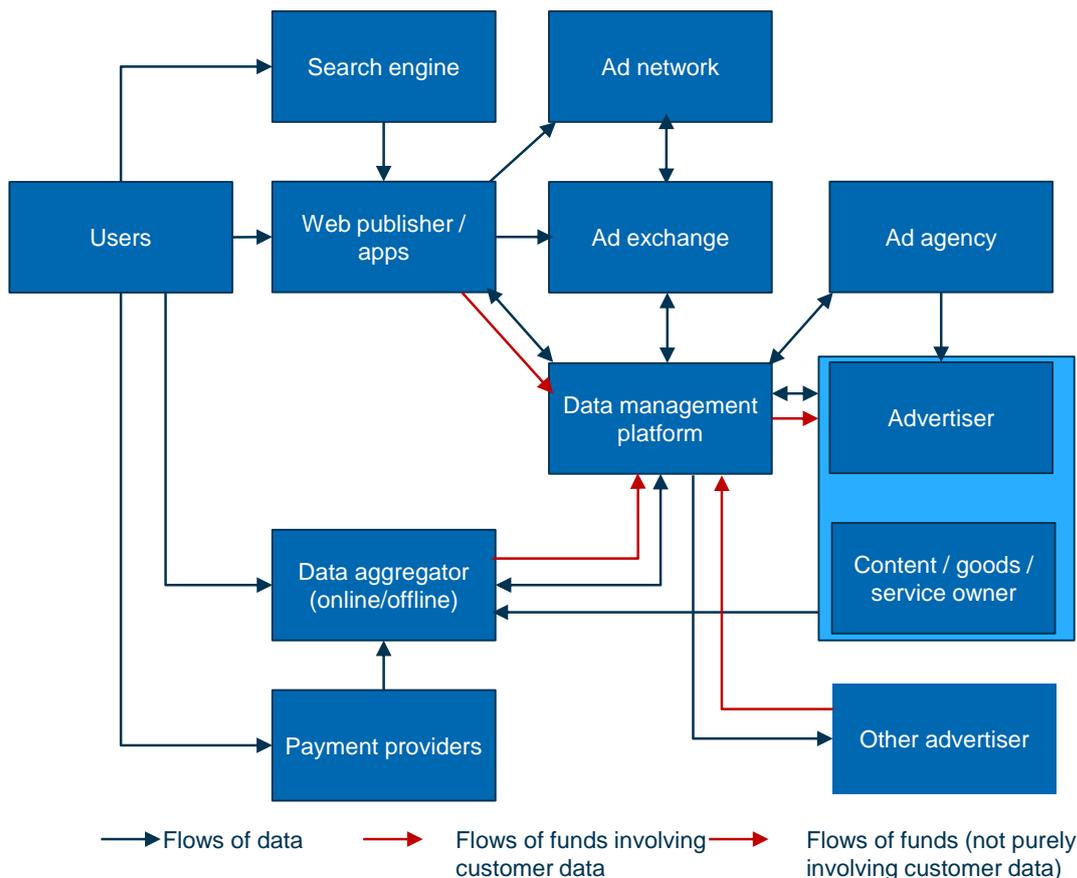
Flows of data, flows of funds and sources of value

The online sector has many players that act as infomediaries, all with a slightly different focus or approach. As such, it is not straightforward to define common characteristics, and the same terminology can be used to define different capabilities and services that a market participant is able to deliver. Broadly speaking, we address the business models covered in this section from the perspective of two types of players:

- Infomediaries, whose business is to monetise data, either through intermediation and processing, or through resale. Some infomediaries simply collate, store and analyse data on behalf of clients, whereas others also sell these customer insights (subject to consent and other restrictions), sometimes having enriched a particular dataset by combining it with third-party data.
- Publishers and participants in the online advertising value chain, who also collect a significant amount of information about consumers (through the business models discussed above), and can in some instances sell these customer insights to other publishers and advertisers.⁵⁷

The value chain for this business model is shown in Figure B.14.

Figure B.14: Value chain for data intermediation and sale of customer insights [Source: Analysys Mason, 2014]



⁵⁷ www.adassoc.org.uk/write/UK_advertising's_bounce_back_continues.pdf

⁵⁷ Typically this relates to data that is not personal data (or PII), although non-sensitive personal data can normally be sold with the explicit consent of the data subject

The flows of data and flows of funds depend on the partnerships and affiliations that an infomediary has with other companies that provide access to first-, second- and third-party data. This means that the more connected an intermediary is, the better it is able to add value to customer data and monetise it. The main models that infomediaries focus on are explored below.

- *Data collection* – Some infomediaries collect data on behalf of clients, using cookies or other methods to collect first- and third-party data (as described in Section A.3). Any personal information that an infomediary collects on behalf of a publisher will be subject to various restrictions linked to the type of consent given by the consumer. Similarly, infomediaries can collect information on a third-party basis, including behavioural and technical information, such as the websites and web pages that are visited, IP address, browser type and operating system. Infomediaries that manage data collection on behalf of clients include Audience Science, BrightTag, eXeltate, Krux and X+1.
- *Data storage and processing* – Some infomediaries act as data processors on behalf of a publisher or advertiser (e.g. Acxiom, BlueKai), providing secure database hosting, storage and analysis services. These services partly outsource the need to store and manage data in compliance with the law.
- *Data analysis* – Finally, some infomediaries engage in customer-data analysis, using their own algorithms and approach, which their clients (publishers or advertisers) may not be able to replicate. In doing so, they typically combine first-party data (from their publisher or advertiser client) with data from third-party sources (online and offline). This adds value to the customer data when compared to pure data processing. Once processed, the customer data delivered to clients segments consumers according to a set of attributes, which can then be used for targeted advertising, for example. Only anonymous data can be shared with clients.

Some companies that use the services of an infomediary may not collect much (or indeed any) first-party data about their consumers, and so may need to purchase anonymised data to assist them with their targeted advertising campaign. For example, if a supermarket wished to launch a home delivery service and did not have its own loyalty card scheme, it might consider that families that have two working parents and one car represent ideal potential customers, and so use this information to develop a targeted ad campaign.

It is our understanding that large online advertisers and publishers, in conjunction with infomediaries, are increasingly thinking about how to sell customer insights to other advertisers. These other advertisers may be far smaller in size, without the marketing budgets or expertise to maintain their own online databases of customer data to use for targeted ads.

According to our secondary research, the sale of customer insights may involve various types of pricing model:

- *subscription* – fees based on the volume of customer insights used by a client
- *licence* – access to customer data through restrictive agreements between infomediaries to get access to their respective customer insights. An agreement may apply to two infomediaries or

multiple infomediaries. The customer insights that an infomediary is able to access from other intermediaries may depend on what insights it is able to offer to those other infomediaries

- *transactional* – bespoke pricing based on the CPA/CPM uplift that resulted from using a particular set of customer data.

Major market participants and market structure

Major players include Acxiom, BlueKai, Core Audience, eXelate, Knotice, Turn and X+1, but it is difficult to compare companies because most of them are privately owned. There are many other smaller players such as Tag Man, Enreach and Dataxpand. Because of the links with targeted advertising, many of the major companies have already been described in Section B.2.1. The same market participants also provide data intermediation and sell customer insights.

There are no specific barriers to entry to this market, but if an infomediary is to attract higher margins and clients it must be connected with as many advertisers, agencies, ad networks and ad exchanges as possible. If an infomediary provides real-time customer-data analysis, it needs a set of algorithms that can process huge volumes of data which can be relied upon to support successful ad campaign outcomes, CPA, e-commerce sales, etc.

International perspective

Data intermediation and the sale of customer insights occur in many countries, but are most advanced in the USA. All the major data infomediaries have global reach, tracking the online behaviour of hundreds of millions of people (for example, Acxiom⁵⁸ has access to data on 700 million consumers worldwide, and BlueKai⁵⁹ has data on 300 million). These companies generally have offices worldwide, including in the UK.

Summary of importance of customer data in this business model

It is not clear whether infomediaries are substituting revenue from the advertising value chain or adding to it. The IAB produces reports about advertising spend, but these do not include spend on other parts of the digital ad value chain (such as advertisers' spend on website development, exchanges, ad agencies or other infomediaries). It is clear, though, that many marketers do not conduct all of these activities in-house, but instead use infomediaries and other companies to fulfil their requirements. Figure B.15 provides a list of digital media activities and the extent to which they are outsourced by corporations seen as marketing leaders in the USA.

⁵⁸ Security and Exchange Commission (SEC), Acxiom Annual Report, 31 March 2013, <http://acxiom.co.uk/about-acxiom/investor-information/reports/>

⁵⁹ <http://www.bluekai.com/audience-data-marketplace.php>

Figure B.15: Percentage of digital media activity outsourced, based on survey of 200 US-based companies with annual revenue in excess of USD500 million [Source: Gartner, March 2013]⁶⁰



It should be noted that the data available to us does not split out the value that is retained by intermediaries, which we can only infer from the size of some of the major players. Figure B.16 below shows the revenue generated by four relatively large infomediaries. It should be noted that Acxiom operates offline as well as online, while the others are wholly online. Most of the high-profile DMPs reviewed for this study do not publish revenue figures, suggesting that they remain below the USD10 million level. The relatively modest size of these companies suggests that the market for data intermediation, outside of advertising intermediation, remains very small.

Infomediary	Global annual revenue (2012)
Acxiom	USD1.1 billion (GBP670 million) ⁶²
OpenX	USD154 million (GBP100 million)
DataXu	USD87 million (GBP53 million)
BlueKai	USD41 million (GBP25 million)

Figure B.16: Revenues of selected infomediaries, 2012 [Source: company reports, AdExchanger, 2013]⁶¹

⁶⁰ See <http://www.gartner.com/technology/research/digital-marketing/digital-marketing-spend-report.jsp>

⁶¹ Sources: <http://www.adexchanger.com/online-advertising/bluekai-and-dataxu-surge-according-to-inc-revenue-survey/>
<http://www.forbes.com/companies/bluekai/>
<http://acxiom.co.uk/about-acxiom/investor-information/reports/>
<http://www.sec.gov/Archives/edgar/data/1576427/000119312513369592/d541385df1.htm>

⁶² Year end 31 March 2013, includes many lines of business “Customer Data Integration (CDI), Consumer Insight Solutions, Marketing Management Services, and Consulting and Agency Services. The IT Infrastructure management segment includes the Company’s IT outsourcing and transformational solutions.”

B.3 Prospects for future growth

Industry-developed regulatory codes

Many infomediaries follow industry-developed regulations from the European Interactive Digital Advertising Alliance (EDAA) and the European Advertising Standards Alliance (EASA)⁶³ which ensure that members provide opt-outs for consumers who do not want their behavioural data to be collected. From interviews, we are also aware of one infomediary that worked with the ICO to make sure that its online consumer monetisation strategy was compliant with privacy regulations.

Customer-data tracking

Some companies – for example, BlueKai and eXelate – enable consumers to make use of do-not-track (DNT) technology so that their behaviour is not tracked. These companies offer a standard approach to turning tracking on and off. For example, a consumer may not want an infomediary to track them while they are conducting financial research or examining medical issues. Many advertisers, publishers and infomediaries follow self-regulatory codes⁶⁴ which allow consumers to choose not to be tracked, although it may not always be easy to turn tracking on or off. On the rare occasions that DNT has been set as the default by browser providers,⁶⁵ advertisers have reacted in a strongly negative way, demonstrating the perceived value of tracking and targeting among these stakeholders.⁶⁶

Infomediaries (again including BlueKai⁶⁷ and eXelate⁶⁸) and search engines such as Google⁶⁹ give consumers the ability to view and edit their online behavioural profile, which may help to educate consumers about the types of data that are being collected and analysed.

DNT may not go far enough for some consumers, who do not want any of their data to be collected. These consumers value the ability to block cookies and other tracking methods, and typically believe ad targeting is an invasion of their privacy. Technical solutions such as Abine and Ghostery can fulfil this desire for privacy to some extent.

⁶³ <http://www.edaa.eu/http://www.edaa.eu/>
<http://www.easa-alliance.org/About-EASA/Who-What-Why-/page.aspx/110>

⁶⁴ Online Behavioural Advertising (OBA), http://www.iab.net/public_policy/self-reg

⁶⁵ For example, Microsoft Internet Explorer 10; see http://blogs.technet.com/b/microsoft_on_the_issues/archive/2012/08/07/do-not-track-in-the-windows-8-set-up-experience.aspx

⁶⁶ See, for example, <http://www.aboutads.info/blog/digital-advertising-alliance-gives-guidance-marketers-microsoft-ie10-%E2%80%98do-not-track%E2%80%99-default-set>
<https://www.aboutads.info/leading-advertising-and-marketing-industry-groups-react-w3c-do-not-track-announcement>

⁶⁷ <http://www.bluekai.com/registry/>

⁶⁸ <http://exelate.com/privacy/opt-in-opt-out/>

⁶⁹ https://www.google.com/settings/ads?hl=en&sig=ACi0TCgup7el8ULzmcjqMEX8EQr9WNIO6DdlCzWorWTMooPWJm7p5ldhI_3nvYeghC7ULjnGLmC44PbptvmvxBxTzVHI05PL9IEODq_puNXnfWLI9UeYQuE

Other consumers are of the view that targeted ads can be beneficial to them,⁷⁰ but may still want the flexibility to block cookies from third parties that do not provide DNT options; according to a survey of web users in the USA in March 2013, 18% had used DNT in a browser.⁷¹

⁷⁰ http://www.des2013.co.uk/pdf/Digital_Entertainment_Survey_2013.pdf

⁷¹ http://www.nytimes.com/2013/07/16/technology/do-not-track-rules-for-advertising-to-web-users-come-a-step-closer-to-an-agreement.html?_r=0

Annex C Customer-data value chain and business models in the audio-visual sector

The audio-visual sector has traditionally involved the delivery of content to households in a linear manner via terrestrial, satellite, cable or IPTV platforms. In this model, communication from broadcasters to consumers, through TV platform, is in one direction only.

However, the sector is now evolving such that broadcasters and platforms are able to obtain direct feedback from consumers. The consumption of content via many different devices (such as smart TVs, tablets and smartphones) has resulted in a rise in the collection of customer data. This data is ultimately used by some players to further develop or strengthen existing revenue streams and create new ones. The nature of the audio-visual industry means that much content production is funded by advertising revenue. As a result, the majority of the value delivered by customer data in this sector is in enhancing advertising and promotion.

C.1 The customer-data value chain

In this section we discuss the types of market participant involved in the customer-data value chain of the audio-visual sector, and then describe the types of data collected, aggregated, analysed and monetised by these participants.

C.1.1 Overview of the value chain

Figure C.1 provides an overview of the customer-data value chain for the audio-visual sector. It shows:

- flows of user traffic and how users interact with market participants
- flows of customer data, and
- flows of funds, in two parts: flows of funds in exchange for customer data, and flows of funds that are not necessarily exchanged for customer data but may be influenced by it.

Value is added along the chain from the left-hand side (showing where data is collected) to the right-hand side (where data is monetised). The various roles in the value chain fall broadly within three categories:

- Data collectors and aggregators, including organisations that measure TV audiences and third parties that combine audience data with other customer-data datasets (note that such datasets can be generated by interactive pay-TV platforms).
- Content producers and distributors such as TV broadcasters, pay-TV platforms, VOD services and over-the-top (OTT) platforms which may operate via linear TV and/or online.
- Advertisers and advertising intermediaries, such as agencies, media planners and buyers.

Figure C.1: Customer-data value chain in the audio-visual sector [Source: Analysys Mason, 2014]⁷²

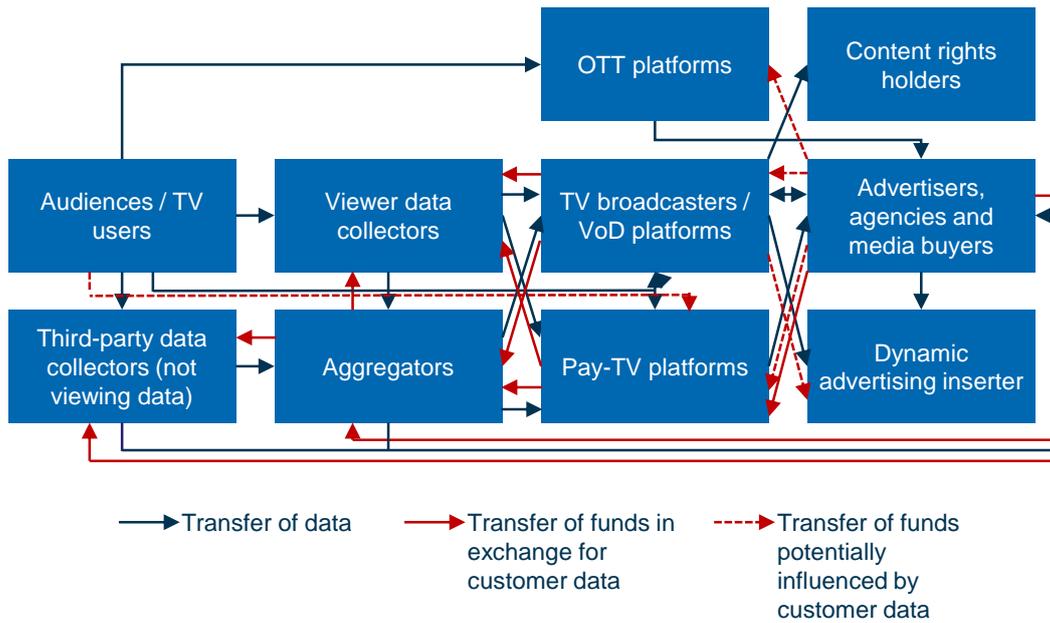


Figure C.2 provides a short description of each type of market participant, with a few examples of companies that fulfil these roles. It is important to note the extent to which certain companies play multiple roles. For example, broadcasters invest in audience measurement services such as BARB, content distribution platforms such as YouView, and second-screen apps⁷³ such as Zeebox. As a result, there is a high level of integration across the value chain for some of the main players.

Figure C.2: Types of market participants in the audio-visual data value chain [Source: Analysys Mason, company websites, interviews, 2013]

Type of player	Role in the value chain	Examples of companies active in the UK market
Audience data collector	Gathers data directly from audiences, mainly to provide an indication of prices for advertising space	BARB, SkyView panel, Sky IQ panel, Kantar Media, comScore. Almost all broadcasters and pay-TV operators engage in some form of audience data collection
Other data collector	Collects other demographic and behavioural data, which may be purchased by data aggregators, broadcasters and pay-TV operators	Kantar Media, Ipsos MORI, RSMB
Data aggregator	Combines datasets, including viewing data and other demographic and behavioural data, to inform pay-TV operators and advertisers	Experian, Sky IQ

⁷² For simplicity, media buyers, advertising agencies and advertisers have been combined into one role. Pay-TV hardware such as TiVo (offered by Virgin Media) is included in 'Pay-TV platforms'

⁷³ An app intended to be used on a mobile device at the same time as using another, larger screen, for example for watching TV or playing games

Type of player	Role in the value chain	Examples of companies active in the UK market
TV broadcaster	Provides the publishing space for advertising, the value of which can be increased through targeting. Provides content and the consumer viewing experience, which can be improved using customer data	BBC, ITV, Channel 4, Channel 5, Sky channels
Pay-TV operator	Provides the consumer viewing experience and delivers channels. Has a subscription relationship with customers. Uses data to develop the product and for targeted advertising	Sky, Virgin Media, BT
Advertiser and advertising intermediary	Buys advertising space from broadcasters, the value of which can be increased through targeting	Largest advertisers include P&G, Unilever and DFS ⁷⁴ Large intermediaries include Publicis Omnicom, Havas, WPP Group and Interpublic, which carry out a range of services (including ad creation, planning and buying). Independents also exist

C.1.2 Types of data collected

Figure C.3 summarises the types of data used by the audio-visual sector, and provides examples of information that is routinely collected and the mechanisms through data is obtained. This list is not exhaustive; other data is collected through surveys (such as income, hobbies and interests, and other lifestyle information). This classification of data for the audio-visual sector should be considered as complementary to the online sector, as shown earlier in Figure B.3 (page 15).

Figure C.3: Classification of user data for the audio-visual sector [Source: Analysys Mason, 2014]

Example data	Type	Personal?	Sources/modes of collection
Household composition	Identity	No	Surveys
TV channels viewed	Behavioural	No	Surveys, panels, cookies
Times of TV viewing	Behavioural	No	Surveys, panels, cookies

C.2 Business models supported by customer data

Individual companies in the audio-visual sector adopt slightly different approaches, depending on the value they place on customer data and their level of integration. However, most of their activities that involve customer data can be expressed as a combination of the following six business models:

⁷⁴ <http://www.thinkbox.tv/server/show/nav.990>

- targeted advertising (online and VOD)
- targeted advertising (linear TV)
- personalised recommendations
- traditional advertising (linear TV and online)
- content improvement
- sale of customer insights⁷⁵ and analytics.

We note that pay-TV operators also use customer data from set-top boxes (STBs) for operational and security reasons,⁷⁶ though this is used to monitor and improve the quality of service rather than as a source of revenue. Accordingly, it is not discussed further here.

Below we discuss each of the six models: the first three are considered individually in Sections C.2.1 to C.2.3, and then the remaining three are considered together in Section C.2.4.

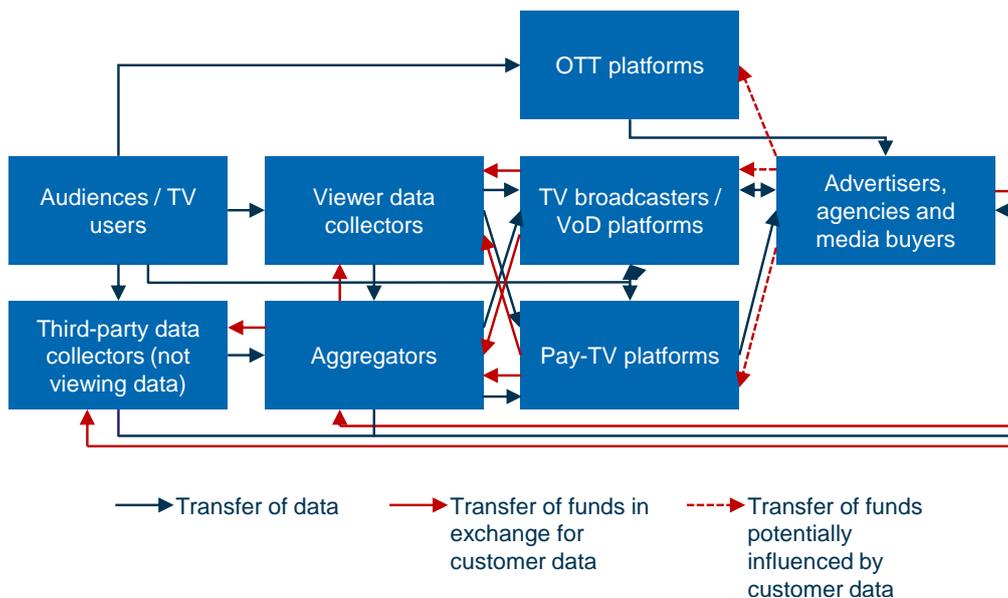
C.2.1 Targeted advertising (online and VOD)

Flows of data, flows of funds and sources of value

VOD is most often provided via connected devices, as content is streamed or downloaded over an Internet connection. Targeted advertising also occurs through the website of the VOD host, through the monetisation of standard online ad space such as banners. This was explained in detail in Section B.2.1, and is not described further below.

The value chain for this model, illustrated in Figure C.4 below, includes OTT platforms, second-screen apps, and data transmission is via an Internet connection (as the service can be used on connected devices such as computers, tablets and smartphones as well as TVs).

Figure C.4: Value chain for targeted advertising (online and VOD) [Source: Analysys Mason, 2014]



⁷⁵ Within the audio-visual industry, these are more commonly called *audience* insights. For consistency, this study uses the term customer insights for all the sectors considered

⁷⁶ For example, we understand that certain managed TV service providers monitor indicators collected from the STBs to protect the content against illegal copying

Major market participants and market structure

VOD services are operated by pay-TV operators (Sky On Demand and Sky Go, Virgin TV Anywhere and TiVo, BT Player, also NOW TV by Sky) and free-to-air broadcasters (BBC iPlayer, ITV Player, 4oD, Demand 5). The VOD services operated by broadcasters can be viewed using their websites or mobile apps, as well as via a set-top box or connected TV.

There is considerable variation in the extent to which broadcasters use customer data to deliver targeted advertising online and on VOD. Interviews suggest that customer data is being collected, but not yet used for targeted advertising. Some broadcasters do not consider the value of targeted advertising to be proven, due to advertisers wanting their adverts to reach as many users as possible regardless of their attributes, as well as scepticism from some large broadcasters about the effectiveness of using customer data to create segments.

Sky uses consumer behaviour and demographic information to deliver targeted ads on its VOD service.⁷⁷ Ad targeting by the type of connected device is also possible.

Zeebox is a second-screen app that allows users to interact with programmes being broadcast on linear TV through an app available on mobiles, tablets and computers that links with social media. Zeebox's SpotSynch product uses sound recognition or manual entry by the user to establish what channel, and therefore advert, a user is watching on TV, and can synchronise this with ad placement on the second screen. This creates increased engagement with the advert, and can lead to click-throughs and purchasing.

TVcheck is another second-screen app, launched by Orange to increase audience engagement while watching TV.⁷⁸ Twitter has also launched TV ad targeting, identifying users who are watching a programme from their conversations. This allows advertisers (including Betfair, Dominos and Sky) to promote messages to these specific users.⁷⁹

The online and VOD targeted advertising business model is more fragmented than those for traditional and targeted ads on linear TV. There are many more players who exploit targeted advertising online, whether via VOD, OTT or a second screen.

International perspective

This business model is used worldwide. The USA is more developed than the UK in terms of VOD targeted advertising, with Time Warner Cable having completed a trial that linked advertising across its apps onto multiple devices,⁸⁰ to increase consumer engagement and awareness. TF1, a national channel in France (equivalent to one of the UK's commercial PSBs),

⁷⁷ Please see Annex C.2.2 for further details

⁷⁸ http://web.orange.co.uk/article/news/New_social_TV_app_from_Orange

⁷⁹ <https://blog.twitter.com/2013/tv-conversation-targeting-launches-in-the-uk-and-us-coming-soon-to-brazil-canada-france-and>

⁸⁰ <http://www.bigdata-startups.com/BigData-startup/time-warner-cable-big-data-optimize-viewers-experience/>

has launched targeted advertising on its VOD offering through PCs, which it hopes to extend to other devices.⁸¹

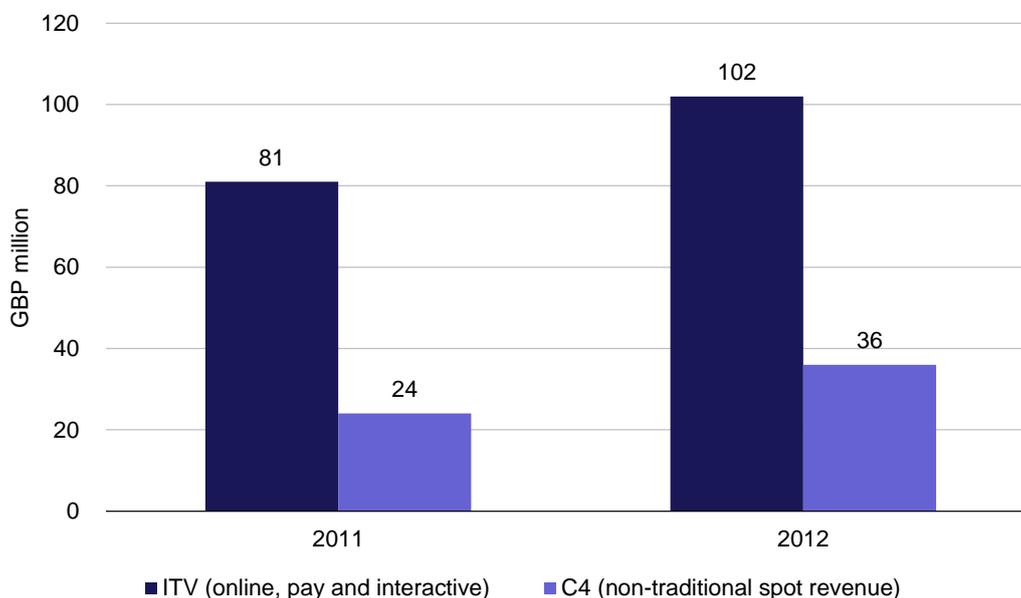
Zeebox's second-screen app is also available in the USA and Germany, while Twitter's TV ad targeting is available in the USA as well. Twitter is looking to expand this service to Brazil, Canada, France and Spain.

Summary of the importance of customer data in this business model

Revenue from this business model is certainly increasing, though it is unclear what net effect this will have across the customer-data value chain in future. CPMs for long-form VOD content are much higher than for short-form content (we understand that YouTube's short-form content attracts CPMs one fifth of those of long-form content). It remains to be seen whether this revenue will displace revenue from linear TV or other online advertising.

Whilst online and VOD revenue represents a small proportion of broadcasters' incomes (particularly in terms of targeted advertising revenue), it has been growing rapidly, and we expect this to continue (see Figure C.5 below, which shows the revenue that ITV and Channel 4 generate online). Full-length video requests on ITV's websites increased by 22% in 2012, to 458 million⁸². This compares to an 18% increase in visits to Channel 4's websites, mobile sites and apps and a 5% increase in full-length video requests (to 450 million)⁸³. BBC iPlayer is the most popular VOD platform in the UK, with 1.5 billion requests in 2012, up around a quarter on the previous year.⁸⁴

Figure C.5: ITV and Channel 4 online revenue [Source: Analysys Mason, 2014]



⁸¹ <http://www.telecompaper.com/news/tf1-weborama-sell-behaviour-based-profiling-for-VOD-ads--925150>

⁸² <http://www.itvplc.com/sites/itvplc/files/ITV%20Annual%20Report%202012.pdf>

⁸³ http://annualreport.channel4.com/Downloads/Channel4_AR12_full_72.pdf

⁸⁴ <http://downloads.bbc.co.uk/mediacentre/iplayer/iplayer-performance-dec12.pdf>

In addition to licence fees, the BBC receives funding from commercial activities internationally. In the year ending March 2013, it generated GBP1.1 billion in revenue from BBC Worldwide (BBCWW); this includes revenue from BBC.com, licensing formats, sale of content rights, sale of merchandise and rental of production facilities. 47% of revenue comes from international BBC broadcasting and the sale of BBC content and formats. A pilot of the iPlayer app is currently being trialled in 16 countries.⁸⁵ These initiatives by the BCC could have the potential to bring targeted advertising revenue to BBCWW.

Broadcasters are aware of the threats implied by the move to online consumption of their content. Firstly, online CPMs are typically lower than linear TV CPMs, and pure audience substitution may result in substantial revenue loss. Secondly, broadcasters are wary of the intermediation of online and VOD advertising, a development which would benefit specialised online video ad inventories (as seen in the online sector with standard ad space on website). This could lead to a commoditisation of what is currently considered premium ad inventory, resulting in intermediaries taking a larger share of advertising revenue. Broadcasters have been able to avoid this so far, due to the high level of vertical integration.

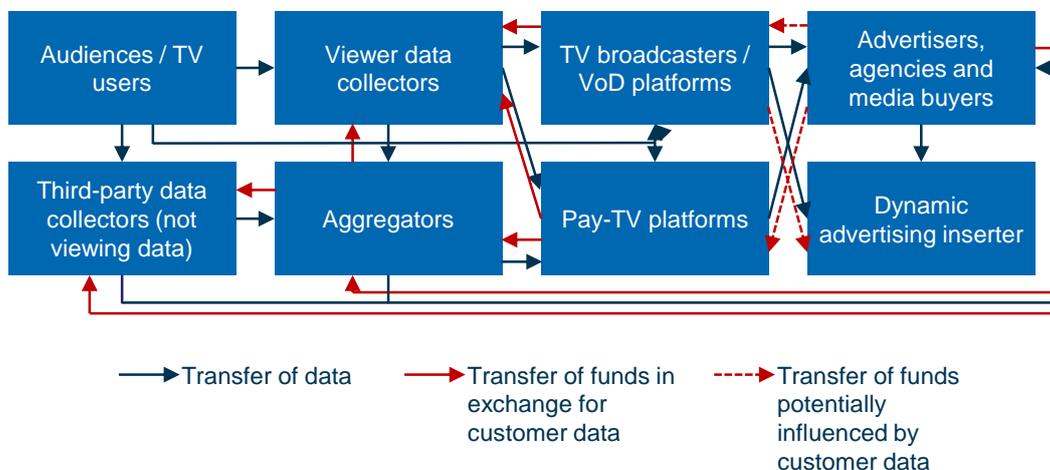
Some broadcasters are also concerned that targeting may deplete the revenue-generating potential of some programmes if their segment of viewers is not considered to be valuable to advertisers. While broadcasters could charge a premium for segments that respond well to advertising, other segments may be considered low value.

C.2.2 Targeted advertising (linear TV)

Flows of data, flows of funds and sources of value

The value chain for this business model is shown below. The key difference from the traditional advertising model is the need for software that allows dynamic advertisement insertion and more detailed customer data (for targeting). The value chain is shown in Figure C.6.

Figure C.6: Value chain for targeted advertising (linear TV) [Source: Analysys Mason, 2014]



⁸⁵ <http://www.bbc.co.uk/mediacentre/worldwide/worldwide-future-vision.html>

Major market participants and market structure

This business model is very new in the UK, where it is primarily used by Sky. Sky AdSmart initially allowed a small number of partners to deliver targeted ads, although we understand it will be extended to all advertisers in 2014. Adverts are broadcast by satellite and downloaded to Sky's set-top box, and the relevant adverts are inserted into broadcast TV as and when required.⁸⁶ The adverts are charged on a CPM basis.

Broadcasters may also use a third party such as YoSpace⁸⁷ to facilitate insertion of personalised adverts. YoSpace is able to insert targeted adverts via devices such as connected TVs, tablets, smartphones and web browsers. Adverts can be pulled from a third-party advertising server, such as Videoplaza. For example, the Scottish broadcaster STV has tested this technology with YoSpace and Videoplaza and intends to develop it further⁸⁸. STV has an online panel of homes in Scotland which carry out surveys for ScotPulse,⁸⁹ STV's in-house research division. Data collected by ScotPulse is used to measure the effectiveness of adverts, and may also be used for personalisation of adverts.

Successful implementation of this business model requires broadcasters to have detailed and accurate data about consumers. The broadcaster must also be able to incorporate the required technology for dynamically inserting adverts. Therefore, barriers to entry are relatively high.

Targeted advertising on linear TV does give advertisers with smaller marketing budgets the opportunity to reach specific audiences. Whilst Sky and STV appear to be the only channels that are currently using this business model, sources suggest that Virgin Media is preparing to launch its own targeted advertising product, to be incorporated into its set-top box,⁹⁰ though no official announcements have been made.

International perspective

Targeted advertising on linear TV is far more developed in the USA, where pay-TV operators also offer targeted advertising for a much wider range of channels, not just those that they control directly. For example, satellite provider DIRECTV implemented targeted advertising on linear TV in 2012.⁹¹ Time Warner Cable is also active, combining publicly available data such as real-estate and voter registration records with viewing data, to refine its ad targeting.⁹² Other pay-TV

⁸⁶ <http://www.marketingweek.co.uk/news/a-marketers-guide-to-skys-adsmart/4005568.article>

⁸⁷ <http://www.yospace.com/index.php/cdslive-overview.html>

⁸⁸ <http://www.stvplc.tv/blog/2013/09/stv-works-with-yospace-and-videoplaza-to-deliver-targeted-ad-content-on-live-streams>

⁸⁹ <http://stvcommercial.tv/scotpulse>

⁹⁰ <http://www.marketingmagazine.co.uk/article/1106609/virgin-media-launch-targeted-tv-ad-service-2012>

⁹¹ <http://directvadsales.com/addressable-overview/>

⁹² <http://www.fastcompany.com/3004619/how-big-data-keeps-cable-tv-watchers-hooked>
<http://www.bigdata-startups.com/BigData-startup/time-warner-cable-big-data-optimize-viewers-experience/>

operators in the USA that use targeted advertising include satellite operator Dish⁹³ and cable provider Charter.⁹⁴

This business model does not appear to have been deployed in other countries we have surveyed, such as France, Germany or South Korea.

Summary of the importance of customer data in this business model

We do not expect targeted advertising to become more important in revenue terms than traditional linear TV advertising, but it is likely to provide an additional revenue stream for broadcasters. The ability to buy advertising slots to deliver small, highly targeted campaigns may encourage some companies to advertise on TV for the first time, when they would previously have been priced out of the TV format.⁹⁵ The business model may also enable broadcasters to increase the CPM of lower-profile programmes with more lucrative viewership.

Stakeholders have different opinions on the value of targeted advertising on linear TV: some believe that targeted advertising will become an important revenue source in future, and Sky for example expects this revenue to complement traditional advertising revenue.⁹⁶ In contrast, other broadcasters place a high value on traditional advertising, do not want to diminish this, and are unsure of the benefits of targeting. Some broadcasters are concerned that even though premium consumer segments may attract high CPMs, lower-value consumers will attract lower CPMs and the net effect may actually be a fall in ad revenue. These broadcasters are also concerned about the ability of platforms or device vendors to cannibalise some of their revenue, by inserting themselves in a value chain in which broadcasters currently retain a high degree of control.

As this business model has only just begun to be implemented, revenue and pricing data is not readily available. However, we understand that targeted advertising will command a premium⁹⁷ in CPM terms when compared to traditional advertising, though the overall number of views an ad will receive may be lower if the target segment is smaller.

C.2.3 Personalised recommendations

Flows of data, flows of funds and sources of value

Companies can use customer data internally to make personalised recommendations of programmes that users may enjoy, via the user interface or an email campaign, as well as to promote affiliate sales of products advertised on TV, or programme-related merchandise.

⁹³ <http://www.dishmediasales.com/>

⁹⁴ <http://www.chartermedia.com/advertising-services>

⁹⁵ <http://www.theguardian.com/media-network/2013/feb/15/bskyb-adsmart-personalised-tv-advertising>

⁹⁶ <http://econsultancy.com/uk/nma-archive/61706-sky-adsmart-will-not-cannibalise-existing-tv-advertising-vows-director-jamie-west>

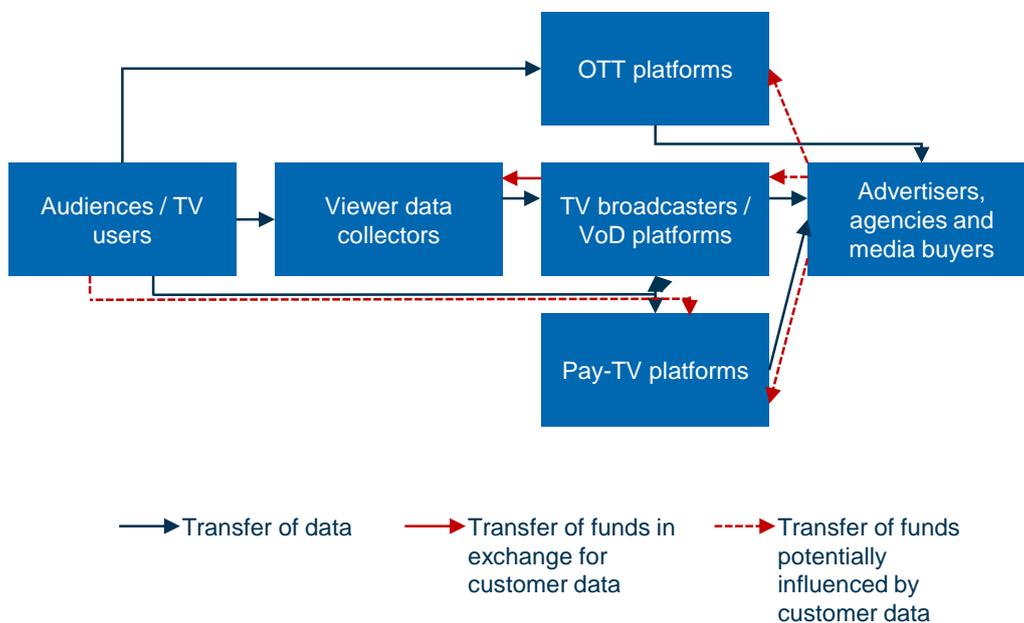
⁹⁷ Source: industry interviews

Personalised recommendations are derived by analysing consumers’ previous viewing behaviour to understand their preferences. Promoting content that users are likely to enjoy encourages customer retention and higher audience viewership. This is most commonly used on OTT and VOD platforms, as users have to sign in to use the service and so it is possible to track what programmes they have watched, and to display recommendations based on this data. Suggestions for premium content may also generate additional revenue (if a new subscription is needed, for example).

Affiliate sales can be promoted via second-screen apps, which recommend products that are simultaneously being advertised on linear TV.

Figure C.7 shows the value chain for the personalised recommendation business model. Second-screen apps can be regarded as fulfilling a similar role to OTT platforms in the value chain, as they are used alongside linear TV as a complementary service.

Figure C.7: Value chain for personalised recommendations [Source: Analysys Mason, 2014]



Major market participants and market structure

A number of players are exploring possible business models based on personal recommendations:

- In October 2013, the BBC announced its intention to implement “a more bespoke experience for every user” in the next generation of BBC iPlayer,⁹⁸ which would include the capability for a user to create their own ‘online channel’ based on their preferences,⁹⁹ as well as innovation in personalised recommendations.

⁹⁸ <http://www.bbc.co.uk/mediacentre/latestnews/2013/dg-speech-main.html>

⁹⁹ <http://www.bbc.co.uk/mediacentre/latestnews/2013/dg-iplayer.html>

- Channel 4 and ITV use data provided by users registering to use their VOD platforms (such as age group, location and gender) to suggest relevant programmes.¹⁰⁰ Users can also create a playlist of favourite programmes.¹⁰¹
- Email campaigns have been used by one UK PSB to suggest programmes to registered users, based on analysis of their viewing history.
- Virgin Media's TiVo PVR service suggests programming based on previous preferences which a user can input using the 'thumbs up' and 'thumbs down' buttons on their remote.¹⁰²
- The Netflix OTT service creates a list of recommendations based on users' viewing history.

The data required to implement personalised recommendations is easy to acquire and analyse, resulting in a relatively high use of this method in order to improve the quality of a user's experience. Personalised recommendations may also increase revenue by increasing the amount of adverts that are viewed as a result of users watching more content.

International perspective

On the whole, there do not appear to be notable differences between how this internal improvement to consumer experience has been adopted in the UK compared to other markets. For example, TiVo in the USA was making personalised recommendations based on user viewing data long before this feature was launched in the UK. Content can be automatically recorded onto the PVR in households that are likely to be part of the target market.¹⁰³

Summary of the importance of customer data in this business model

Personalised recommendations are valuable in that they enhance the quality of experience and encourage customer retention. This improves the competitiveness of the provider and may well deter churn (though it is unclear whether it attracts new customers). Broadcasters can also use recommendations to increase the amount of their content that viewers watch, which can increase advertising revenue.

Customer data is important for this business model, but does not explicitly and significantly add to a broadcaster's revenue stream. This is, therefore, not a key business model in the audio-visual sector, but rather complements the services already being offered.

¹⁰⁰ <http://annualreport.channel4.com/investing-in-data>

¹⁰¹ <http://www.wired.co.uk/news/archive/2011-08/25/40d-rebuild-features>

¹⁰² <http://store.virginmedia.com/digital-tv/set-top-boxes/tivo.html>

¹⁰³ http://support.tivo.com/app/answers/detail/a_id/205

C.2.4 Business models based on statistical aggregation of a sample

A number of business models in this sector rely on customer insights and analytics based on statistical aggregation of customer data (a process that means customer data is completely anonymised). The following business models are discussed below:

- traditional advertising (linear TV and online)
- content improvement
- sale of customer insights and analytics.

Traditional advertising (linear TV and online)

► *Flows of data, flows of funds and sources of value*

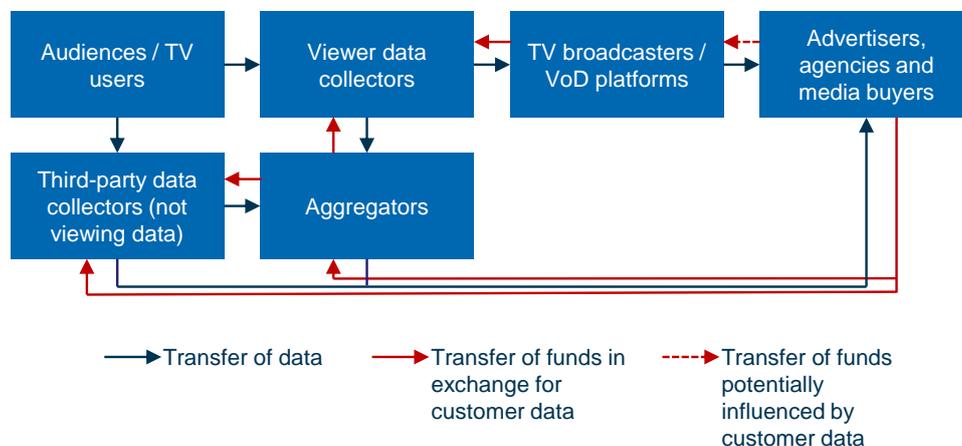
In traditional TV advertising the CPM rate is set by the broadcaster that hosts the ad based on a number of factors, including:

- the time of day that the ad is broadcast (prime time being the most expensive)
- the programme on air during which the ad is shown (demographics that tend to watch certain programmes are more valuable)
- the length of the slot (a longer slot is more expensive)
- the regional coverage of the broadcast (some regions are more valuable than others, depending on their size and population characteristics)
- the time of year (the pre-Christmas season tends to be the most expensive, while summer months command lower rates).¹⁰⁴

Major advertisers may have direct relationships with TV channels, and others may purchase ad inventory via agencies acting as media buyers, matching advertisers to appropriate slots. Agencies consider their client’s target market, budget and timing constraints. Advertising slots on linear TV are often sold alongside online advertising slots on the broadcaster’s VOD service, as part of a package.

The value chain for this business model is shown in Figure C.8 below.

Figure C.8: Value chain for traditional advertising [Source: Analysys Mason, 2014]



¹⁰⁴ <http://www.thinkbox.tv/server/show/nav.909>

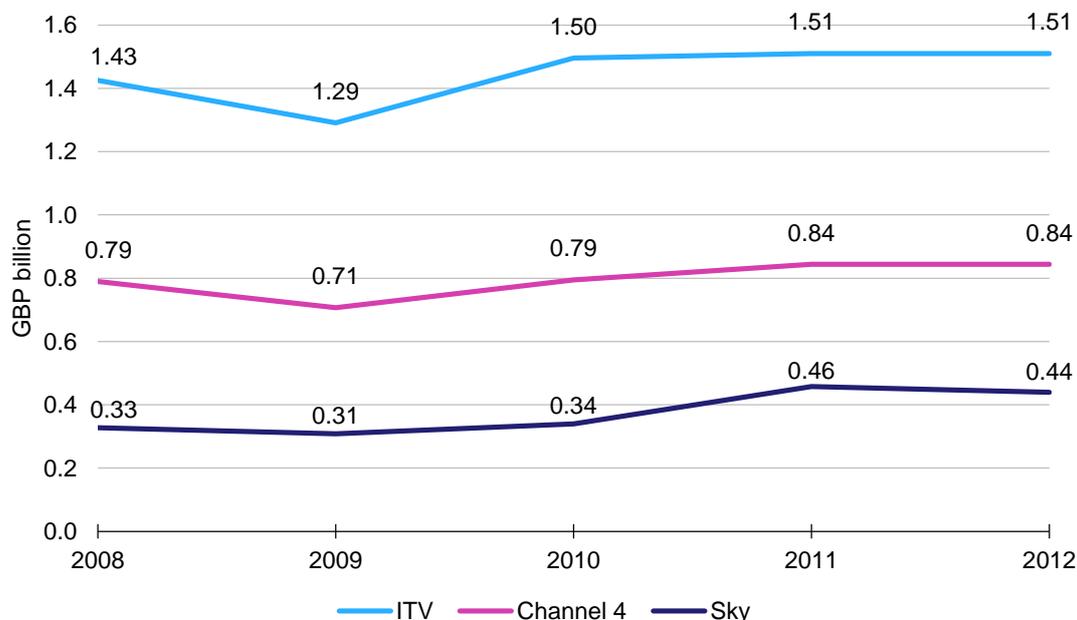
► *Major market participants and market structure*

The main data collectors are BARB, Sky and the TV broadcasters themselves. BARB is funded by the major broadcasters and other stakeholders such as the Institute of Practitioners in Advertising (IPA). BARB measures audience numbers via a panel containing a sample of around 5000 households. It commissions Ipsos MORI to continually carry out surveys to understand the characteristics of households in the UK, to ensure that BARB’s viewer panel is representative of the whole country. RSMB, a research company, uses Ipsos MORI’s data to select the viewer panel.

Sky has maintained its own panel of viewers, the Sky Viewer panel, since 2006. This contains 30 000 Sky subscribers, from whom viewing patterns are collected on a regular basis, as well as information about spending on items such as cars, holidays and technology. 7000 homes within the panel are surveyed to collect further information such as purchasing habits (using a hand-held barcode scanner).¹⁰⁵ Sky also gathers data from its Sky IQ panel, which consists of 500 000 households; this information is collected through the participants’ set-top boxes.

TV advertising is a relatively expensive marketing method, particularly for high-profile advertising slots, and the necessary funds are only available to the largest companies. A few broadcasters, chiefly Channel 4 and ITV, capture the vast majority of TV ad revenue in the UK (around 60% to 70% of the market), due to their popular content and the large audiences that they attract. Sky is also an important player, integrated across the value chain, which collects data and sells advertising space on its channels. Traditional TV advertising revenue for the three main commercial broadcasters is shown in Figure C.9 below.

Figure C.9: Traditional TV advertising revenue by broadcaster¹⁰⁶ [Source: ITV, Channel 4, Sky, 2013]



¹⁰⁵ <http://www.skymedia.co.uk/Insight/Panels/skyview.aspx>

¹⁰⁶ Revenue shown for ITV and Channel 4 is traditional advertising revenue (known as net advertising revenue), while Sky’s advertising revenue is for advertising across all formats

It should also be noted that the importance of traditional advertising to broadcasters' overall businesses varies. Channel 4 is heavily dependent on advertising revenue from traditional linear TV as this represents 91% of its revenue, while ITV's business is more diversified, with advertising revenue representing 59% of the total (see Figure C.10 below). Sky is much less dependent on advertising sales from its own channels and the channels that it carries, because its primary revenue source is pay-TV subscriptions.

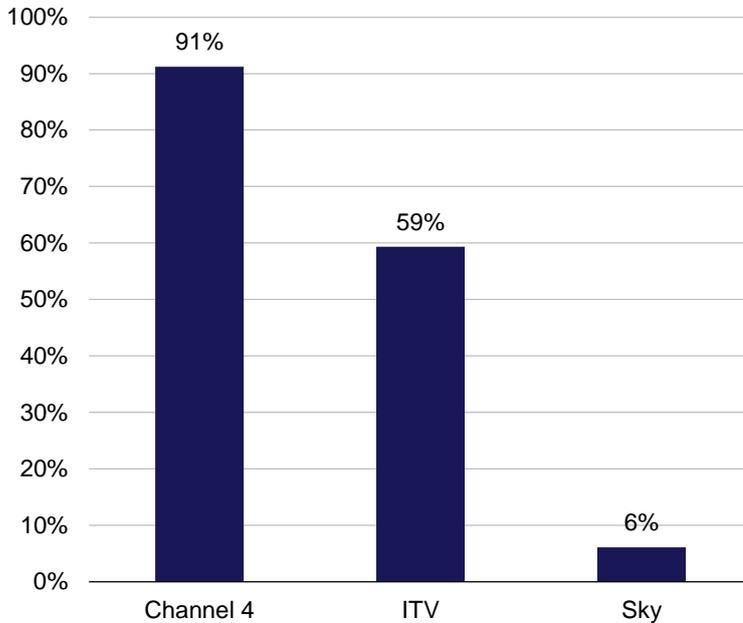


Figure C.10:
Advertising share of
revenue for
broadcasters¹⁰⁷
[Source: ITV, Channel
4, Sky, Analysys
Mason, 2013]

The advertising roles involved in this business model are for the most part carried out by subsidiaries of the largest global advertising companies, which may perform some or all of the tasks required by advertisers, such as creation of ads, media planning and media buying. The major companies are Publicis Omnicom, Havas, WPP Group and Interpublic. There are also independent firms which carry out these activities, such as Total Media, Thinkmedia, Alchemy Media and TMS12. Advertising support services are led by a few major firms, with relatively low margins of 5%–20%, depending on the campaign, advertiser and broadcaster – the margins are at the low end of this range when working with large PSBs.¹⁰⁸

The requirement for a strong content offering means that there are high barriers to entry for prospective commercial broadcasters in this business model. The well-established position of BARB, and the concentrated nature of the advertising agency and media planning market, means that barriers to entry for supporting roles in this business model are also high. Finally, although TV campaigns are expensive, it should be noted that lower-profile advertising slots can be efficient for

¹⁰⁷ Revenue shown for ITV and Channel 4 is traditional advertising revenue (known as net advertising revenue), while Sky's advertising revenue is for all types of advertising across formats

¹⁰⁸ Typical margins for media buyers are 5%–20%, depending on the market structure, or less if the advertiser / agency deals directly with the channels; sales house integration enables a large broadcaster to keep an additional 10–20% of the advertiser's spend

some advertisers, where there is no need for large-scale input from an advertising agency or media planner.

► *International perspective*

Traditional advertising is the primary business model that is used to fund TV broadcasters worldwide. In other countries the TV industry uses viewing figures published by organisations similar to BARB in the UK.

- In the USA, the most trusted source of TV viewing statistics is Nielsen, a research company that is not owned by industry stakeholders.¹⁰⁹ Nielsen measures audiences of programmes watched on TV, and also monitors viewing across multiple devices (e.g. TVs, consoles, PCs, tablets) in over half of the panel.
- France's audience measurement organisation is called Médiamétrie. Its panel provides data on national and free DTT channels, pay-TV platforms and viewing on other devices. Stakeholders such as broadcasters and advertisers use data from Médiamétrie as an input to their decision-making.¹¹⁰
- In South Korea, there are two main TV measurement panels, TNmS and AGB Nielsen.¹¹¹ There is strong rivalry and competition between them, and AGB Nielsen has accused TNmS of publishing incorrect data.¹¹²
- In Germany, GfK carries out this task on behalf of the audience research co-operative ABG, which is a partnership of the main broadcasters. The agreement is worth EUR130 million for the period from 2012 to 2018, suggesting the value of this research per household per annum is around EUR0.50.¹¹³

► *Summary of the importance of customer data in this business model*

TV advertising spend in the UK is not growing, and its share of total advertising spend is broadly stable at around 26%.¹¹⁴ Despite being targeted in a somewhat basic way using the segments defined by BARB, TV advertising is still a valuable marketing medium for companies that consider it an effective way to communicate a message quickly to potential customers (e.g. that a sale is taking place next weekend), to reach people on a large scale, and to increase brand awareness.

¹⁰⁹ <http://www.nielsen.com/us/en/nielsen-solutions/nielsen-measurement/nielsen-tv-measurement.html>

¹¹⁰ <http://www.mediametrie.com/>

¹¹¹ <http://www.casbaa.com/advertising/features/1410-audience-measurement-overview>

¹¹² <http://www.soompi.com/2011/06/21/south-korea-tv-ratings-tns-vs-ac-nielsen/#.UoyfF7nuNqY>

¹¹³ Germany has about 40 million households, and the contract runs for six years; see <http://www.gfk.com/news-and-events/press-room/press-releases/Pages/GfK-again-commissioned-by-AGF-the-German-TV-audience-research-cooperative.aspx>

¹¹⁴ Based on <http://www.iabuk.net/about/press/archive/uk-adspend-hits-17bn-in-2012-the-first-time-since-2007>

Whilst revenue from TV advertising is stagnant, there has been some growth in TV viewing, which increased from an average of 3 hours 42 minutes per day in 2004 to 4 hours in 2012.¹¹⁵ Online consumption of TV is also growing: for example, online requests for Channel 4 and ITV full-length videos increased by 22% and 5% respectively in 2012, as mentioned in Section C.2.1.

Prices paid for TV advertising are the product of the CPMs and the number of views, so customer data is essential in supporting this business model. The lack of involvement of intermediaries means that most advertising spend is retained by the broadcaster. Therefore, whilst there is limited new value being created by the use of customer data in traditional advertising, it can be concluded that good-quality audience data is key to the broadcasters retaining the ability to monetise their advertising inventory over linear TV.

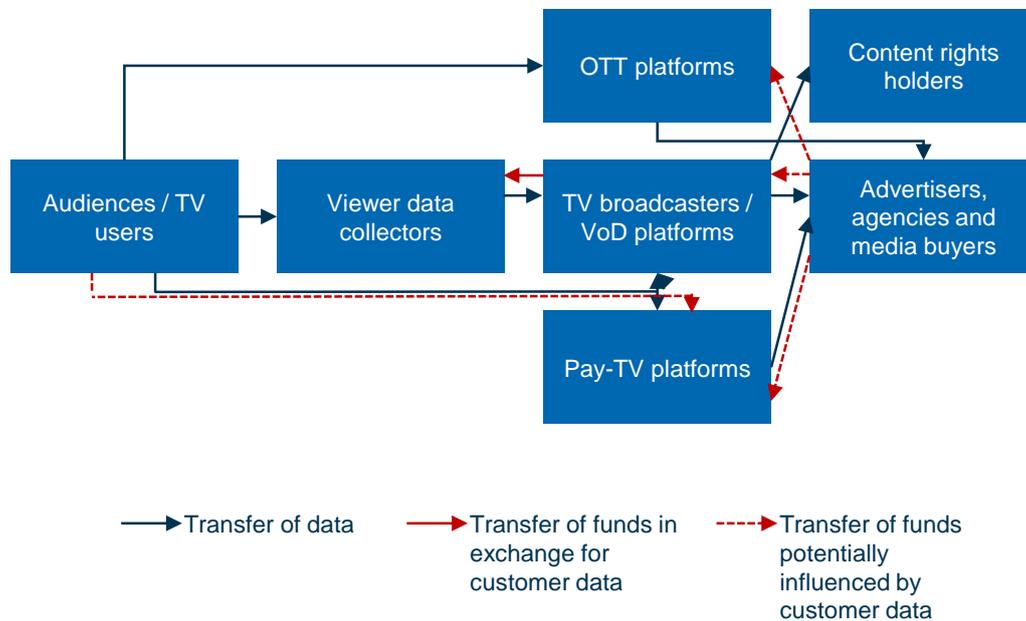
In the medium term, data collected directly from consumers by broadcasters and content producers, for example through online viewing or VOD platforms, may contribute to refining the audience data provided by BARB in the context of linear TV advertising. However, based on our discussions with industry participants, this is not yet being done in any systematic way.

Content improvement

► *Flows of data, flows of funds and sources of value*

The value chain for content improvement using customer data is shown below in Figure C.11.

Figure C.11: Value chain for content improvement [Source: Analysys Mason, 2014]



¹¹⁵ <http://www.barb.co.uk/file/download/resources/trends-in-tv/BARB+Trends+in+Television+Viewing+2012.pdf>; note that the BARB panel changed in 2010

► *Major market participants and market structure*

TV broadcasters already have the data available to help them to adapt or commission programmes, so this business model is widely adopted. OTT players such as Netflix and LOVEFiLM have begun to use online customer data to improve their own original content: for example, in 2013 LOVEFiLM announced plans to make the pilots of 11 original TV series available to members to watch on its streaming service in the UK and Germany.¹¹⁶ The viewer response will be used to determine which pilots would be commissioned for full-series production.

Despite falling prices for equipment and distribution channels (e.g. YouTube), barriers to successful entry for professional long-form content production remain high: the main risk relates to the failure to attract audiences, although the use of data to understand what content should be produced can mitigate this.

► *International perspective*

There is evidence that new platforms are using this technique as a means of determining the types of content to provide. LOVEFiLM's use of consumer feedback to provide attractive content has been used in both the UK and Germany. Meanwhile, Netflix in the USA has produced its own original content, and uses historical viewing behaviour to understand how popular a programme might be.¹¹⁷

► *Summary of the importance of customer data in this business model*

Programme commissioning and content acquisition make up a large proportion of broadcasters' operating expenses. Channel 4's investment in original content was at a record high of GBP387 million in 2012, representing 71% of its content budget.¹¹⁸ Sky spent GBP2.6 billion on programming in the year ending June 2013, 42% of its opex.¹¹⁹ The BBC's direct content spend is GBP2.4 billion per year.¹²⁰

Broadcasters use audience ratings to assist them in making commissioning and programme-development decisions, and the UK's content production sector is also expected to make increasing use of ratings in order to help it to continue growing.¹²¹ This customer data is likely to lead to more efficient use of programme commissioning budgets and better performance of the audio-visual sector.

¹¹⁶ <http://corporate.blog.lovefilm.com/a-press-releases/amazon%E2%80%99s-lovefilm-to-host-original-pilot-television-programmes-from-amazon-studios.html>

¹¹⁷ <http://blog.kissmetrics.com/how-netflix-uses-analytics/>

¹¹⁸ http://annualreport.channel4.com/Downloads/Channel4_AR12_full_72.pdf

¹¹⁹ https://corporate.sky.com/documents/pdf/publications/2013/annual_report_2013.pdf

¹²⁰ <http://downloads.bbc.co.uk/annualreport/pdf/2012-13/bbc-full-financial-statements-2012-13.pdf>

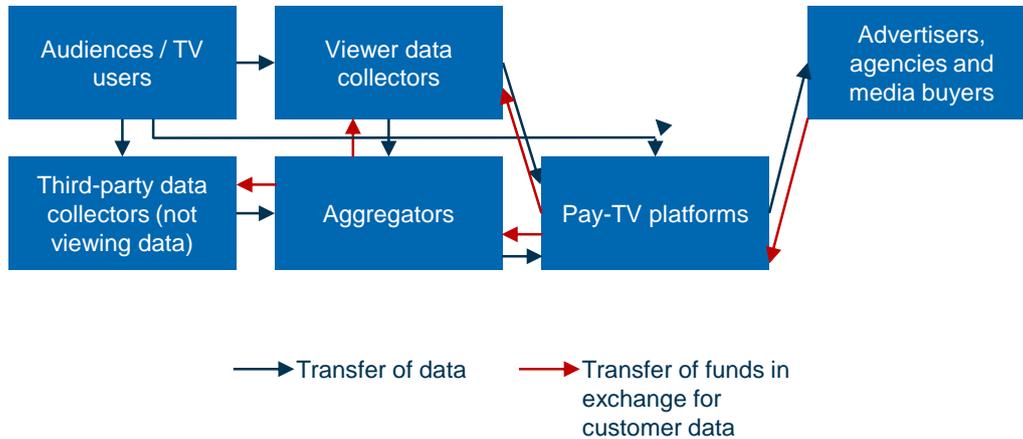
¹²¹ Independent content producers' revenue in the UK rose by 16.5% in 2012, to GBP2.8 billion, of which 93% was attributable to TV and 30% was international; see <http://www.pact.co.uk/support/document-library/financial-census-and-survey-2013/>

Sale of customer insights and analytics

► *Flows of data, flows of fund and sources of value*

The value chain for this business model is shown in Figure C.12 below.¹²²

Figure C.12: Value chain for sale of customer insights and analytics [Source: Analysys Mason, 2014]



► *Major market participants and market structure*

Sky IQ (as mentioned in Section C.2.4) is a data collector, aggregator and analyser owned by BSkyB. It was originally established in partnership with Experian,¹²³ but has been fully owned by BSkyB since 2011. Along with viewing data and other information that can be obtained from customer subscriptions, Sky IQ carries out analysis that can help Sky's clients better understand markets, so that they can improve their products, marketing or advertising.

► *International perspective*

The sale of customer insights and analytics is more prevalent in the USA than in the UK. TiVo has been selling viewing data to broadcasters since 2003.¹²⁴ Dish, a satellite operator, captures detailed viewing data, but this is sold to advertisers as part of a managed service to help them monitor their campaigns, rather than as a standalone dataset.¹²⁵ Charter Media also sells its analysis of customer data.¹²⁶ In other countries, customer data does not appear to be collected with the same variety and granularity as in the USA, and so this business model does not seem to be employed to the same degree.

¹²² Advertisers obtain data from a wide range of sources, but the focus of this model is data sold by other participants in the audio-visual sector

¹²³ <http://econsultancy.com/uk/nma-archive/47253-sky-viewing-panel-grows-to-over-500-000-sky-homes>

¹²⁴ <http://www.wired.com/science/discoveries/news/2003/06/59072>

¹²⁵ <http://www.dishmediasales.com/downloads/MediaKit.pdf>

¹²⁶ <http://www.chartermedia.com/advertising-services>

► *Summary of the importance of customer data in this business model*

This is a new product that is generated from customer data, and therefore creates value in the audio-visual sector. Sky IQ has suggested that its products are complementary to those offered by BARB, not substitutive.¹²⁷ Furthermore, advertisers can monitor the effectiveness of their TV advertising campaigns using this data, by linking viewing data to sales and therefore determining the conversion rate.

Nevertheless, selling customer insights and analytics represents a very small proportion of revenue. It was reported that Sky IQ and The Cloud (Sky's public Wi-Fi network which is free of charge for Sky subscribers) together generated GBP21 million in the financial year ending June 2012. This is a 13% decline on the previous year, but the fall is attributable to contraction in The Cloud's line of business. It is expected that revenue in this space will grow, but will not be significant in the short term.

C.3 Prospects for future growth

Future developments will depend on a combination of legal aspects, technical advances and limitations, as well as the economic situation and social issues. In terms of legal issues, stakeholders in the audio-visual sector appear to be aware of and comfortable keeping within the current legal and regulatory boundaries. Entities that use customer data make this clear in their terms and conditions and privacy policies, and seek to inform or request permission from consumers if the way they use data changes.

One area in which regulation and policy are not entirely clear for stakeholders is the definition of personally identifiable information. Broadcasters and platforms are aware of conflicting views, both internally and in the public space internationally¹²⁸ and would welcome clarity on this subject.

This being said, users of customer data in this sector are comfortable that the level of anonymisation and aggregation of data is more than sufficient to meet regulations (and just as importantly, the expectations of consumers). Technical safeguards are in place to ensure that individuals cannot be personally identified. Some stakeholders are hesitant to combine their datasets with others, due to the increased risk of de-anonymisation this may present.

Technically, some business models are easier to implement than others. Targeted advertising requires the technology to insert ads, which is relatively simple in the online space (and therefore for VOD), but more challenging on linear TV. However, this is becoming easier as consumers use more connected devices to watch TV, such as set-top boxes and connected TVs. For this reason, BARB is expanding the devices from which it collects the panel's viewing data to include mobile devices.

However, as many users in a household may share a device, it may be difficult to implement targeted advertising effectively. This is mostly a concern for linear TV, as users of other devices

¹²⁷ <http://www.mediaweek.co.uk/article/1185573/media360-skyiq-data-increase-sales-5-says-homebase-marketer>

¹²⁸ Source: industry interviews

have their own tablets and smartphones that often require them to register and log in, thus allowing broadcasters and platforms to have access to user-specific data.

For technical reasons, broadcasters which provide on-demand content via the set-top-box interface of pay-TV platforms do not have access to viewing data:¹²⁹ the pay-TV operators therefore have access to an additional set of data that is not readily available to broadcasters.

While stakeholders may have the capability to collect user data, they do not always actively do this, as they have yet to establish the economic benefit of doing so. This links to the doubts of broadcasters regarding the potential of targeted advertising, as mentioned earlier in Section C.2.1, including the division of audiences into premium and low-value segments. In addition, the perceived commoditisation of online advertising space is a concern, which could result in CPMs closer to those seen on other websites rather than the premiums currently achieved by broadcasters on their own VOD platforms.

Other interesting business models have been suggested, such as using customer data to better understand the value that customers associate with their OTT subscription. A provider could then vary the price of its service so that it better matches the value the consumer attributes to it (which is effectively price discrimination). Whilst this is a potentially controversial business model, it would allow providers to charge higher prices where consumers are willing to pay.¹³⁰

Another way to monetise customer data using personalised recommendations is to promote sponsored suggestions for programmes that may appeal to a user, in a similar way to the sponsored links displayed on the Google search results page.

Broadcasters are particularly keen to keep within the boundaries of what consumers expect in terms of use of their data, as they have strong brands that are key to their commercial success. Sky IQ commissioned survey-based research on consumer attitudes towards use of their data, which it published on its website; according to this research, “63% [of respondents] worry about how much personal data they’ve revealed online”.¹³¹

Another example of adverse reaction to the collection of customer data relates to the discovery that some LG Smart TVs continued to collect viewing data about users even when this function had been supposedly disabled in the device’s settings.¹³² LG responded promptly to press reports by promising to remedy this as soon as possible, and clarifying that viewing data is used for recommendations based on other LG Smart TV viewers, not for targeted advertising.¹³³ As more devices become connected, users may be unaware of when their data is being collected, especially if it is on a device not traditionally associated with data collection.

¹²⁹ <http://econsultancy.com/uk/nma-archive/61652-q-a-mark-brandon-commercial-director-virgin-media>

¹³⁰ <http://www.washingtonpost.com/blogs/the-switch/wp/2013/09/04/how-netflix-could-use-big-data-to-make-twice-as-much-money-off-you/>

¹³¹ <https://www.skyiq.com/sites/default/files/Sky%20IQ%20-%20White%20Paper%20-%20Data%20Attitudes%20Report.pdf>

¹³² <http://www.bbc.co.uk/news/technology-25018225>

¹³³ <http://www.bbc.co.uk/news/technology-25042563>

Annex D Customer-data value chain and business models in the fixed and mobile telecoms sectors

Fixed and mobile operators in the UK, and other countries, are under pressure to develop new revenue streams, in order to offset declining revenues in their core business. According to Ofcom’s *Communications Market Report 2013*, the total revenues of fixed and mobile operators in the UK fell by around 8.5% between 2007 and 2012 (from GBP42.1 billion to GBP38.8 billion). Most operators use customer data to enhance their existing core business in order to offset these declines, not to support the development of new business models.

D.1 The customer-data value chain

D.1.1 Overview of the value chain

This section introduces a simplified model of the value chain for the use of customer data in the fixed and mobile sectors, and introduces the market participants.

Figure D.1 summarises the combined fixed and mobile customer-data value chain, showing the relationships between market participants, the flows of customer data and the associated flows of funds.

Figure D.1: The fixed and mobile value chain [Source: Analysys Mason, 2014]

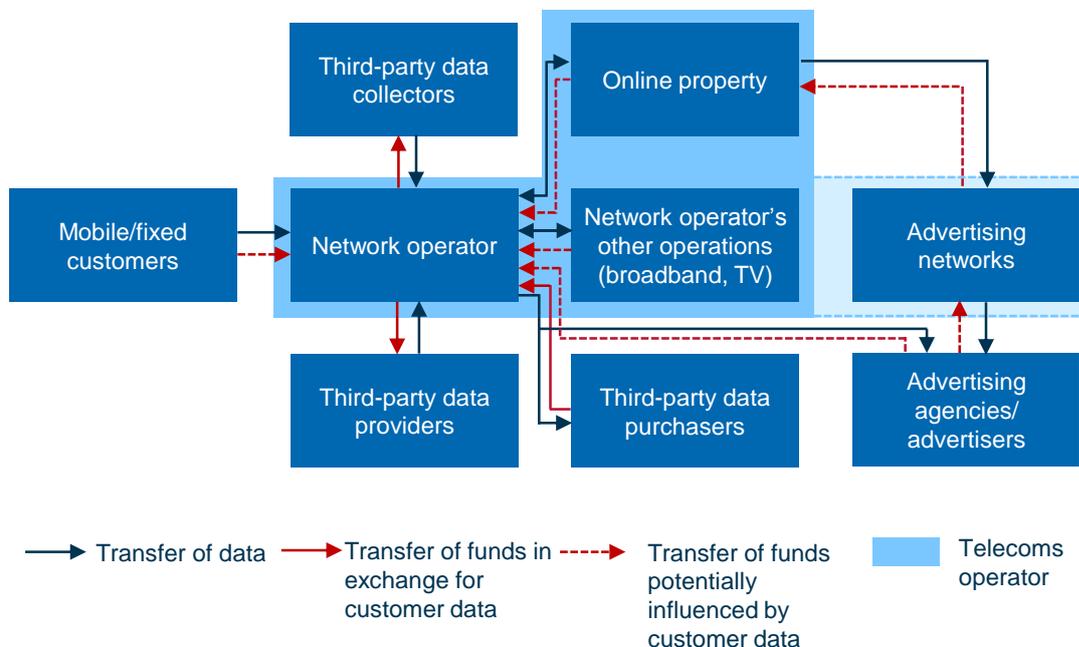


Figure D.2 below provides a short description of the role of each of these participants in the value chain, together with example companies.

Figure D.2: Description of market participants in fixed and mobile data value chain [Source: Analysys Mason, 2014]

Market participant	Role in the value chain	Examples of companies
Network operator	Pushes through SMS/MMS advertising to consumers, operates valuable online and mobile portals, pays third parties for packaged customer data	BT, TalkTalk, Virgin, 3, O2 (Telefónica), EE, Vodafone
Data collector	Collects usage and location data from consumers, data used by operators	Zettics, O2 (Telefónica), EE, Vodafone, Sprint, Verizon
Advertising network	Aggregates and sells ad space to advertisers, provides adverts to operators' mobile and online platforms and portals	Sprint (Pinsight Media+), SingTel (Amobee), Orange France
Third-party data provider	Sells audience data to operators, to be merged with operator's customer data	Visa, MasterCard ¹³⁴ , GfK, Experian
Third-party data purchaser	Buys packaged customer data from operators	Morrisons, PayPal

D.1.2 Types of data collected

Figure D.3 summarises the types of data collected by fixed and mobile operators and the mechanisms through which they are obtained.

Figure D.3: Classification of customer data, for the fixed and mobile sectors [Source: Analysys Mason, 2014]

Example data	Type	Personal?	Sources / modes of collection
Minutes of use	Behavioural	No	Network data
Call history	Behavioural	No	Network data
Data usage	Behavioural	No	Network data
Location data	Behavioural	No	App/GPS, mobile operator's network
Online behavioural data	Behavioural	No	Network browsing data (e.g. HTTP requests)

D.2 Business models supported by customer data

In our view, the most valuable use of customer data in this sector today is to support marketing activities within an operator's subscriber base, to increase retention and revenues. That being said,

¹³⁴ <http://www.ft.com/cms/s/2/089f7cd0-16f2-11e2-b1df-00144feabdc0.html#axzz2m2qQ0uu4>

advertising remains one of the main ways in which operators hope to monetise customer data externally, despite the challenges involved.

The ability to effectively deliver ads via a *fixed* telephone network is limited, as there is no standardised solution for delivering display-based ads. Indeed in most cases this is simply not possible and so far the networks have not been used to deliver other forms of ads (voice-based or SMS-to-voice). Consumers are also particularly sensitive to receiving advertising (selling) via their fixed telephone, as they feel this often constitutes an invasion of privacy and a nuisance which is less easily ignored than, say, text or email advertising.

In contrast *mobile* phones (and specifically smartphones) provide hardware capable of both advertising to users and collecting location-based data. Operators face two fundamental barriers in the mobile space, however. First, small screen sizes and technological limitations (such as the difficulties of using cookies) limit the scope for advertising on mobile devices.¹³⁵ Second, the vast majority of ad delivery on mobile devices takes place in apps, and so bypasses the operator. We have considered apps as part of the online sector, although in Section D.2.2 below we explore the extent to which operators make use of apps.

We have identified the following five business models used by fixed and mobile operators:

- operational improvements
- targeted advertising on operators' online properties
- targeted advertising via messaging
- advertising network integration
- packaging and sales of customer insights.

Fixed and mobile operators may also use customer data to fulfil security obligations (providing call records, numbers, names, etc. to the police), though this is not discussed further here as it is a requirement for providing the service, rather than a means of monetising customer data.

The nature of telecoms operators' relationship with their subscribers means that they must be cautious about developing business models using customer data, in order to preserve the trust of their customers. This affects even relatively common uses of customer data, such as targeted advertising.

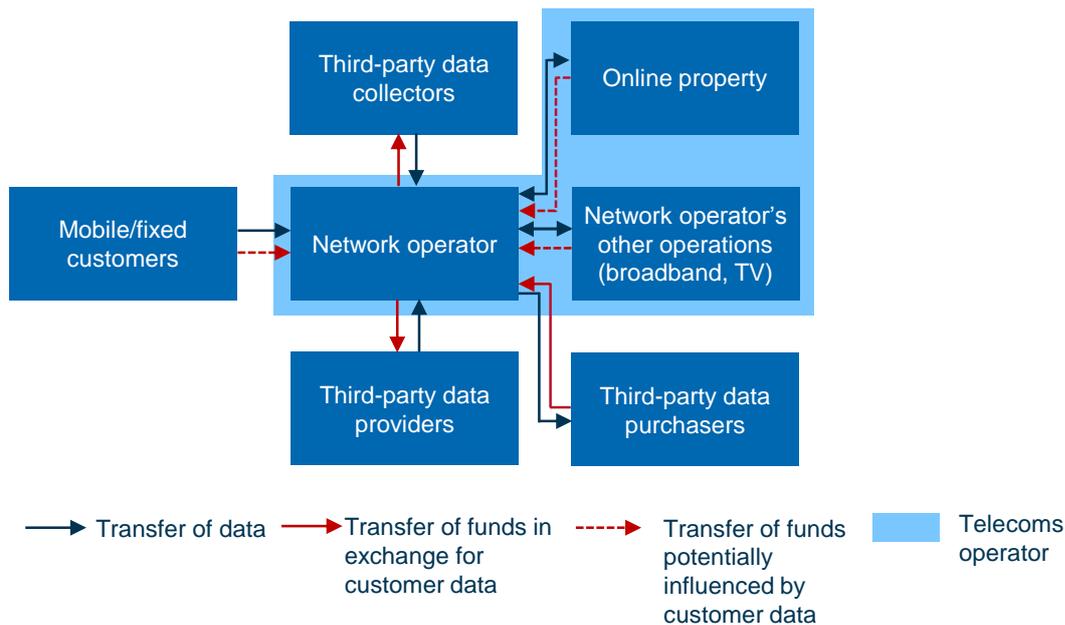
D.2.1 Operational improvements: network management and micro-segmentation

This business model is discussed in detail in the main report.

The value chain for the operational improvements business model is shown in Figure D.4 below.

¹³⁵ Following Facebook's IPO, the share price more than halved due to concerns about its ability to deliver advertising to its increasingly mobile-orientated audience. The company subsequently managed to significantly increase the share of its revenue from mobile (to 49% in Q3 2013, according to its published results)

Figure D.4: Operational improvements value chain [Source: Analysys Mason, 2014]



Operators rely on major operational support system (OSS) and billing support system (BSS) vendors to supply the tools that enable them to deploy traffic management tools and micro-segmentation. Traffic management is supported by vendors such as Bivio Networks, Cloudshield Technologies, Guavus, Juniper Networks and Sandvine, while micro-segmentation can be delivered by Oracle, SAP, SAS and Teradata.

D.2.2 Targeted advertising on operators' online properties

Operators can and do use their significant consumer reach to run popular online properties (websites or mobile software), effectively acting as online publishers.

Some mobile operators pre-install software on handsets that they distribute, typically bundled with a subscription, so that they can deliver targeted ads. This gives these operators a pre-installed tool to display ads on these devices. For example, Sprint partnered with Samsung to install a toolbar on Android devices which enables the operator to insert ads at the bottom of device screens.¹³⁶ Meanwhile, Verizon's subscribers can opt in to a programme where they share their location, web browsing and usage data and receive targeted marketing and content via post, email, text, internet and mobile advertising.¹³⁷ In the UK, the only visible initiative is Weve, which we understand is launching an online targeted ad service to mobile users in the UK, extending its targeted-messaging capability.¹³⁸

¹³⁶ <http://www.adexchanger.com/mobile/sprints-pinsight-media-explores-native-ad-units/>

¹³⁷ <http://support.verizonwireless.com/support/faqs/AccountManagement/verizon-selects.html>

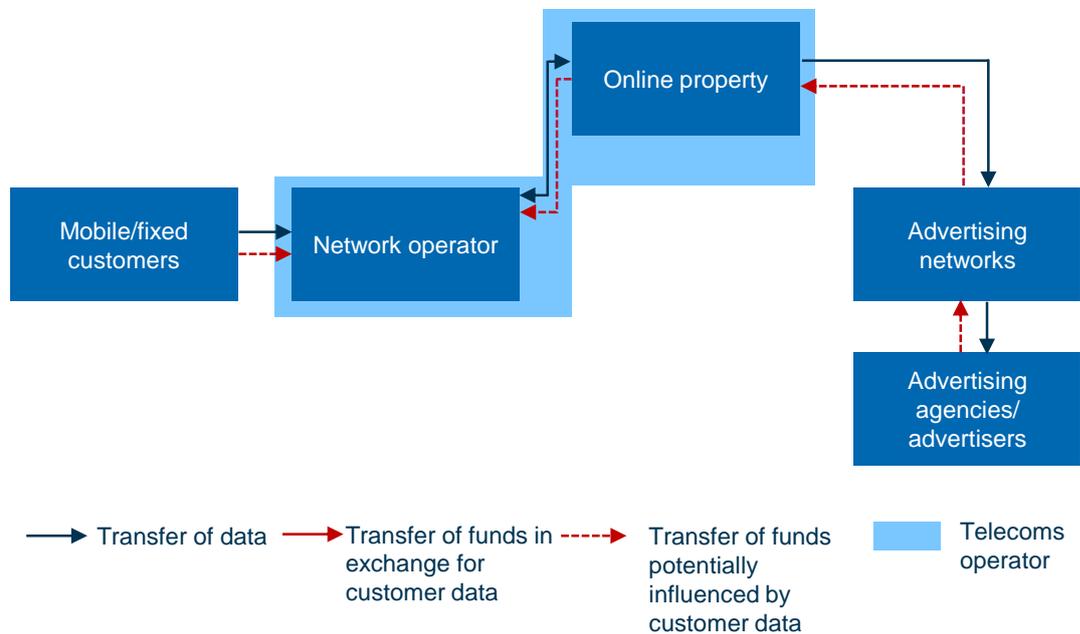
¹³⁸ <http://www.marketingweek.co.uk/news/weve-primers-display-ad-services/4007599.article>

AT&T in the USA has also tried to deliver targeted advertising to mobile subscribers, but it decided to discontinue this part of its business,¹³⁹ possibly due to backlash from subscribers who were upset at the prospect of their behavioural data being used to serve targeted ads, or because AT&T decided to only focus on delivering targeted ads to customers using its pay-TV service, U-verse TV, the targeted advertising (online and VOD) business model discussed in Section C.2.1.

In the past, BT and others partnered with Phorm, a UK-based company whose purpose was to enable ISPs to serve targeted advertising over-the-top by analysing browsing data from the network. This led to a very strong consumer backlash and the UK operators now appear extremely cautious in how they use this type of data.¹⁴⁰

Figure D.5 shows a representation of the value chain for this business model.

Figure D.5: Targeted advertising through online properties value chain [Source: Analysys Mason, 2014]



Major market participants and market structure

Although it can be difficult to obtain accurate page-view statistics on these websites, some estimates¹⁴¹ indicate that bt.com receives around 5.5 million unique visitors a month, sky.com 8.2 million, virginmedia.com 4.7 million and talktalk.co.uk 2.3 million. In revenue terms, the same source estimates annual revenue from website traffic at about USD1.2 million for Sky.com, down

¹³⁹ <http://www.fiercewireless.com/story/att-shuts-down-mobile-part-adworks-advertising-network/2013-10-11>

¹⁴⁰ In February 2008, Phorm announced that it had signed deals with the UK's then three largest ISPs (BT, TalkTalk and Virgin Media). BT conducted a trial later that year, using Phorm to characterise users' Internet traffic passing through ISPs in order to serve targeted ads, by scanning web pages for keywords. There was intense consumer backlash and legal proceedings ensued but were later dropped, which culminated in BT discontinuing its ad service. The ICO clarified that such systems should be 'opt in' only

¹⁴¹ Source: websitetrafficspy.com

to USD300 000 for TalkTalk.co.uk. It is notable that *mobile* operators' properties receive significantly fewer visitors, with between one and two million unique visitors a month.

The market players that facilitate the sale of targeted ads on operators' online properties are the same as described in detail in the online sector (see Section B.1.1 above) – the intermediary companies that operate between publisher and advertiser.

With online publishers other than operators, the traffic is driven by visitors' desire to view the content on that page; it is of significant interest or use to the visitor. Operators need to offer content too, but crucially they can use their fixed and mobile customer base to drive traffic onto their sites through related services such as online sales, messaging and self-care. In this respect, the value of operators' online properties is well established and solid, because they have a large number of users and a trusted brand in another market (telecoms) which has much higher barriers to entry than in web publishing.

International perspective

The vast majority of fixed and mobile operators in the world have a relatively well-developed online presence. Currently, however, there are a limited number of examples where operators offer unique content, in addition to customer service or sales activities. It appears that the UK and the USA have the most developed examples, with Sky, BT and Orange in the UK, and Sprint in the USA, all operating mobile platforms.

Summary of the importance of customer data in this business model

By using behavioural data obtained either through cookies or an environment that requires user login, an operator can facilitate targeted advertising on its online platforms. This is particularly important because it allows for better monetisation of all areas of the operator's website or app. An understanding of its customers' behaviour is also crucial to the placement of an operator's own adverts on other publishers' websites, in order to drive sales or increase customer retention. However, the ability to drive traffic to an operator's online offerings is not particularly dependent on customer data as this is usually achieved through a more blanket approach. The importance of customer data becomes much clearer once the consumer is on that online platform.

D.2.3 Targeted advertising via messaging

Flows of data, flows of funds and sources of value

In the UK, the use of mobile messages¹⁴² as marketing tools is subject to the same regulations as email: mobile phone users should only receive messages from a company if they have opted in to receiving such messages (e.g. by signing a contract, filling out a survey or opting in to another data collection method). If a mobile user later decides to opt out of a marketing service, they

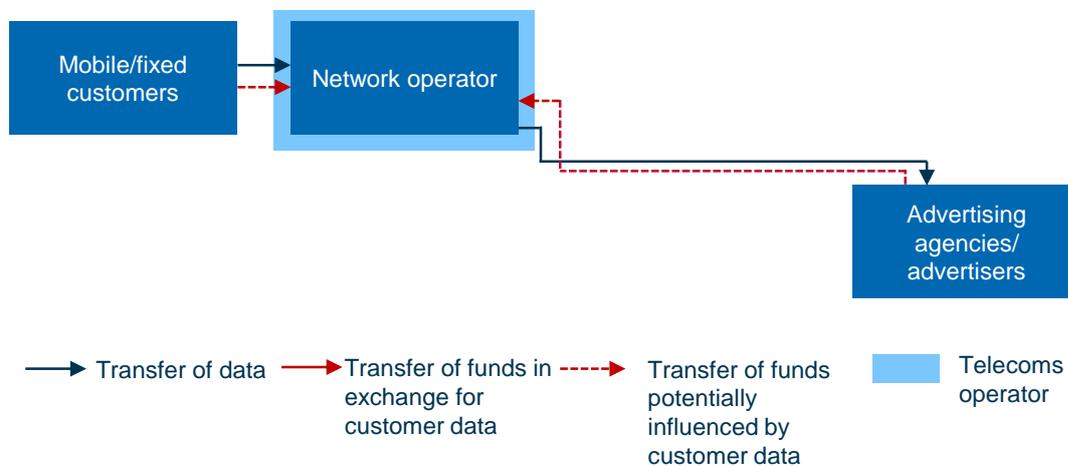
¹⁴² SMS primarily, MMS as an option

should be able to do so by texting STOP to a five-digit code.¹⁴³ An SMS (or MMS) sent by a company that has collected data from a consumer is considered to be targeted advertising since the company has had some sort of interaction with that customer.

There are of course some marketers that send unsolicited (spam) SMSs, in contravention of the Privacy and Electronic Communications Regulations; the aim of many of these companies is to verify that a mobile phone number is active so that they can sell this data on.¹⁴³

Some operators have developed a business model that adds value to the low-margin sale of bulk SMS by enabling marketers to deliver targeted SMS, without the marketer having to collect data and opt-ins from mobile users. Figure D.6 illustrates this business model.

Figure D.6: Targeted advertising via messaging value chain [Source: Analysys Mason, 2014]



Marketers use a mobile operator to deliver targeted SMSs based on one of two approaches:

- *Targeting a particular user group.* For example, a hotel company may have a lot of unsold rooms in Wales and wish to send SMSs to people who have indicated that they spend holiday time in the UK and live in the Midlands. Of course such targeting can be more granular, and advancements in data analysis technology are making it easier to target more specific groups.
- *Based on a user’s location.* For example, an operator could send SMSs on behalf of a retail chain when a user is within 200m of one of its stores. This could be useful for a clothes retailer that wants to promote a sale or deliver a money-off voucher in order to increase footfall at its stores. The retailer can agree with the operator the profile of the type of person it wants to target and the number of SMSs to be sent, but SMSs will only be sent when one of these people is close to one of their stores. This use of proximity-based services is sometimes called *geo-fencing*.

¹⁴³ http://www.ico.org.uk/for_the_public/topic_specific_guides/marketing/texts

Major market participants and market structure

There are many intermediary companies selling SMSs on a wholesale basis in the UK, including 360 GlobalSMS, Bulk SMS, Redsms and Trumpia.¹⁴⁴ All the mobile operators also sell SMSs on a wholesale basis.

There are no barriers to entry for delivery of simple bulk SMSs to marketers, and marketers can manage and deliver targeted SMSs. However, they will be unable to deliver SMSs based on a user's location, as this is a unique part of a mobile operator's targeted SMS proposition.

Summary of the importance of customer data in this business model

The value of SMS targeting to operators is likely to be limited, unless they can implement pricing models that enable them to take a share of the incremental sales that the targeted SMSs deliver for their clients. Operators add value by being able to identify target customers – certainly more than the value they receive from selling SMSs to marketers, or indirectly through bulk SMS providers. In effect, an operator that delivers targeted messaging on behalf of marketers is undertaking roles that would otherwise be fulfilled by other participants in the value chain. This means the operator potentially replaces the role performed by a bulk SMS provider and the marketing team at the marketer or ad agency.

D.2.4 Advertising network integration

Amobee provides targeted ad services to advertisers and publishers in the same way as other infomediaries, but specifically to mobile users. Through its acquisition by SingTel, Amobee now has privileged access to a large user base in the countries where SingTel operates, which gives it two main competitive benefits:

- Amobee is able to deliver targeted ads to these users, using a range of techniques such as geo-fencing: it can provide advertisers with the ability to serve location-based display ads online, similar to the targeted messaging delivered by operators (discussed in Section D.2.3).
- In addition, Amobee is able to use a broader set of first-party data about SingTel's mobile subscribers. For example, it can use behavioural data collected via the JavaScript written into apps and combine it with other customer data.

Since its acquisition, Amobee continues to provide services to operators, including Telefónica and Sprint (in fact Sprint uses Amobee's platform).¹⁴⁵ Sprint's offer is somewhat different from Amobee's, since its infomediary and advertiser intermediary services are only available to publishers (specifically app developers) and advertisers, and not to other mobile operators. As a

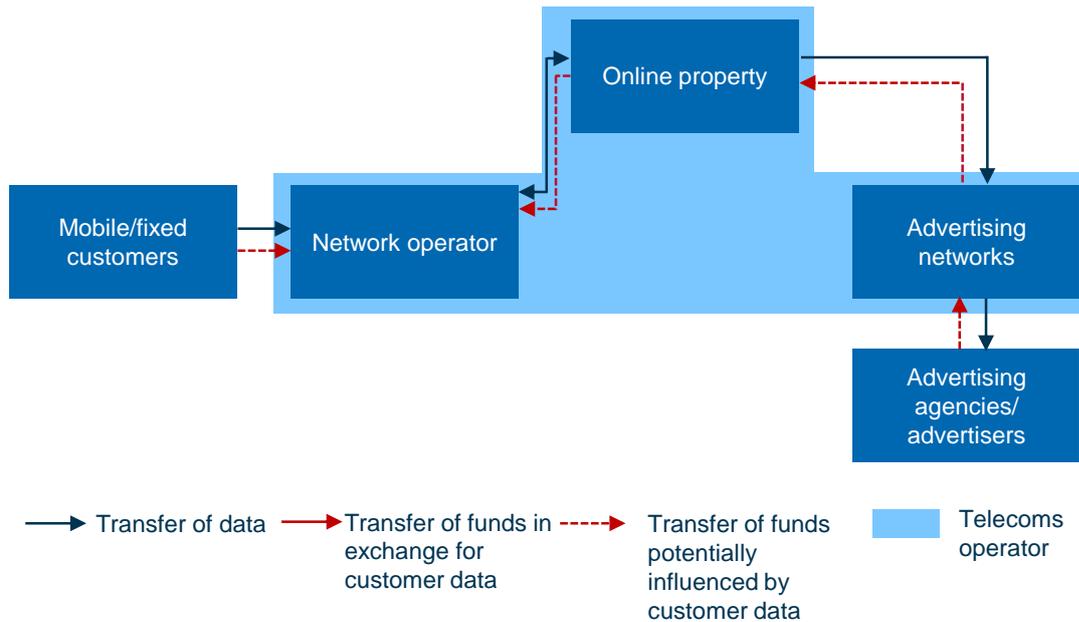
¹⁴⁴ <http://www.360globalmobile.com/>, <http://www.bulksms.co.uk/>, <http://www.redsms.co.uk/site/>, http://trumpia.co.uk/main/mobile_marketing_reseller_white_label_API_business.php?promocode=GRESELL-UK0030&gclid=CL3HltqAirsCFeTLtAodfAEAEw

¹⁴⁵ <http://newsroom.sprint.com/news-releases/sprint-launches-pinsight-media-advertising-service.htm>

result, Sprint can only deliver targeted ads to online users that use its mobile service. In the same way that an infomediary enables an app developer to include a piece of JavaScript so that it can track users' behaviour, Sprint provides the tools for its partners to do the same. Finally, Sprint connects to third parties such as ad networks and DMPs in order to maximise the CPMs it can deliver on behalf of its app developer clients.

Figure D.7 illustrates the advertising network integration business model.

Figure D.7: Advertising network value chain [Source: Analysys Mason, 2014]



Major market participants and market structure

The main barrier to entry for mobile operators wishing to offer targeted ad services to app developers and advertisers is the investment required to build a platform, and the need to ensure that it is used by a large enough number of companies or intermediaries.

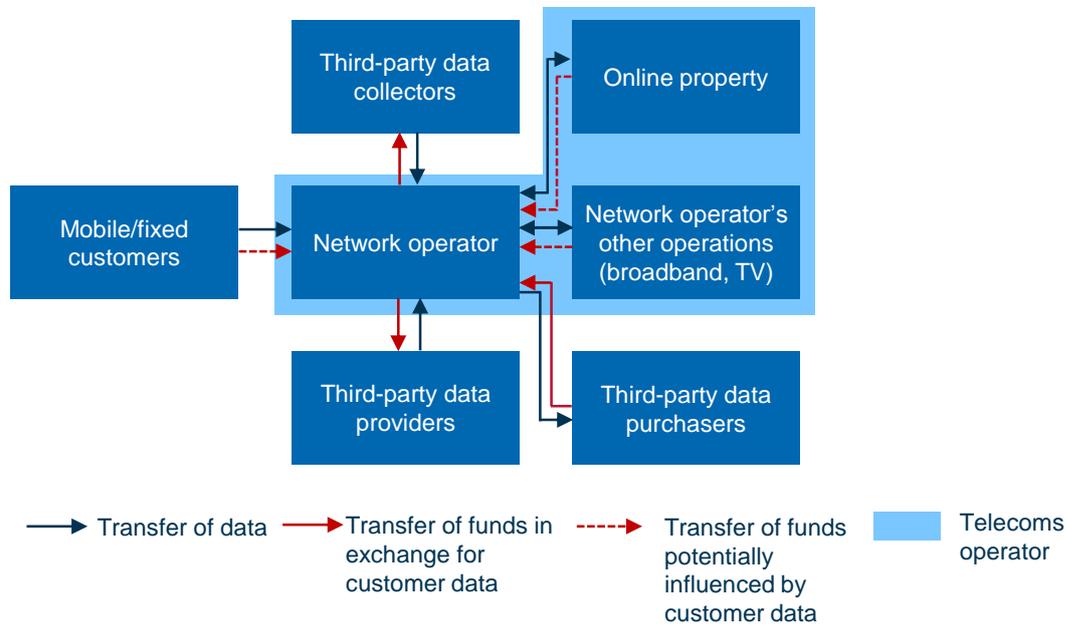
Summary of the importance of customer data in this business model

Some operators that have decided to adopt the advertising network integration business model have done so as part of a broader strategy. For example, SingTel is actively expanding its digital services arm, with a stated ambition of leveraging its own scale and operations in fast-growing markets, but also to position itself as a supplier for other major operators in the world (for example, Vodafone is a customer of Amobee). This export-driven approach is clearly not replicable by all operators, and may be of limited value for the larger groups that operate in the UK (such as Vodafone and Telefónica).

D.2.5 Packaging and sale of customer insights

Figure D.8 illustrates this business model in more detail.

Figure D.8: Value chain for the packaging and sale of customer insights [Source: Analysys Mason, 2014]



Section 4.2.5 of the report describes how some mobile operators have attempted to leverage the location data they obtain from day-to-day network operations to provide customer insights to specific types of organisation, notably retailers. Below, we provide some additional information on this business model.

An operator can either sell aggregated location data to third-party data purchasers, or combine it with customer data provided by a third-party data provider in order to deliver a service to an infomediary, advertising intermediary or advertiser. In the first case, the operator is adding very little value to its data, and as far as we are aware this is not a model used by any operator in the UK. In the second case, the operator adds more value to its location data.

Consider the example of a football, rugby or tennis match. A data aggregator can provide a profile of the type of people who attend this kind of event (by gender, age, income, etc.), which can be cross-referenced against aggregated data on the operator’s subscribers who have attended these events. The operator can then generate customer insights about all its subscribers and also develop a profile of its competitors’ subscribers.

The fact that operators are unable to pinpoint subscribers precisely (they can only locate them to within a minimum of 100m)¹⁴⁶ means that the use cases which can be developed by operators are somewhat limited. For example, it is possible to understand the movement of subscribers from one town to another along a major road or motorway, but the limited resolution means it is not possible to understand the movement of people as they travel from street to street.

¹⁴⁶ <http://www.information-age.com/technology/mobile-and-networking/123457043/ee-and-ipsos-mori-face-privacy-backlash-over-mobile-data-analysis>

Annex E Further considerations on the policy and regulatory challenges related to customer-data business models

Based on the findings detailed in the previous annexes, we now discuss the main trends, drivers and barriers associated with data-centric business models in the UK (Section E.1), examine the impact of the trends identified in this study (Section E.2), and consider the issues they raise in terms of innovation, competition and consumer protection with reference to three market scenarios (Section E.3).

E.1 Summary of the trends and direction of data-centric business models

Customer data now supports a wide variety of business models in most of the sectors of interest to Ofcom. From the research documented in the previous annexes, we have identified trends in each of the sectors under consideration: online, audio-visual sector, fixed and mobile telecoms, and post (considered at a high level).

E.1.1 Trends specific to the online sector

In the online space, customer data underpins targeted advertising, service personalisation and recommendations.

Customer data has driven the growth in online display advertising, and we estimate that targeted advertising, which is directly supported by customer data, may be worth around GBP500 million in annual revenue for UK publishers and intermediaries.¹⁴⁷

Likewise, personalisation and recommendations have been an important means for e-commerce companies to differentiate themselves from their bricks-and-mortar counterparts, helping the sector to grow to an estimated GBP80 billion in transactions in 2013.¹⁴⁸

Retargeting brings e-commerce and advertising together, and leverages the ability to target users who have expressed an interest in a purchase, in order to convert intent into sale. This trend will help both online advertising and e-commerce to continue growing. It also provides a powerful marketing mechanism for publishers who want to develop loyalty and regular interactions with their viewers, to drive both advertising revenue and subscriptions for paid content.

Finally, the wide availability of customer data has stimulated the emergence of a rich ecosystem of innovation and intermediation. These infomediaries rely on the wide availability of data (collected with user consent, or derived through anonymisation of data) to develop highly specific business

¹⁴⁷ As mentioned in Section B.2.1, we estimate this to be between GBP450–650 million in 2013

¹⁴⁸ There are important exceptions; for example, one of the largest loyalty schemes in the UK, which relies on detailed segmentation of user profiles, is Tesco's Clubcard scheme

models focused on data aggregation, storage and compliance, analytical solutions and intermediation, particularly in the advertising value chain.

E.1.2 Trends specific to the audio-visual sector

In the audio-visual sector customer data is also growing in importance, albeit as a result of specific threats to traditional broadcasting models.

Linear advertising remains by far the most important source of revenue for the commercial PSBs, being worth around GBP2.5 billion per year. Offline customer data has been used as ‘currency’ for decades in this space, and is now being complemented by more-sophisticated, online data collection (e.g. Sky’s viewer panel and Sky IQ). A significant driver of value for the commercial PSBs is their ability to retain ad sales in-house, vertically integrated with their broadcasting operations.

Although broadcasters are attempting to preserve this integrated ad sales model and apply it to their online and VOD content, they are facing significant pressure. On the one hand, content producers are actively marketing their rights through multiple channels, monetising them through advertising (the sale of which is outsourced to intermediaries) as well as through content licensing. At the same time, advertisers are used to buying online ad inventory through established intermediaries (ad networks and ad exchanges) who would like to play a role in the sale of the broadcasters’ online ad inventory. Further development of this trend will be heavily dependent on the extent to which TV consumption moves online: although online consumption is currently incremental to TV viewing at the household level, on an individual basis it may already be substitutional and will become increasingly so in the medium to long term.

In parallel, the traditional linear advertising model may become more competitive as innovative solutions develop that allow the dynamic insertion of advertising, much of it targeted, on linear channels. These insertions are possible using the functionalities of set-top-boxes such as those provided by TiVo on Virgin Media’s platform and Sky AdSmart on Sky’s platform. Similar capabilities are built into smart TVs to allow advertising to be served directly to the TV, through apps and other non-linear content, but also in the form of ad insertions in linear channels. Although there is nothing to suggest that *net* advertising revenue will be diverted from broadcasters to platform owners as a result of this trend, it does provide an additional threat to the integrated sales model currently used by the commercial PSBs.

These twin threats are relevant to the funding model of the PSBs: currently, we estimate that Channel 4 and ITV capture up to 95% of the investment made by advertisers on their channels, which means intermediation costs are around 5% of ad spend for these particular flows of funds. Conversely, intermediated advertising models, and in particular online models, typically see more than 20% of ad spend going to intermediaries. Although the short-term risk is minimal, the possibility of intermediation translates into a maximum value at risk of the order of 15% of ad spend on the commercial PSB channels (around GBP375 million per annum in the extreme case when all current revenues are at stake). Given the relatively low cost of the ad sales functions for a large broadcaster, this translates almost directly into a risk to content funding.

To the extent that the intermediation role could be fulfilled by a pay-TV platform such as Sky (AdSmart) or Virgin Media (TiVo), these trends provide an opportunity for these other players. For broadcasters, however, these are threats that they are trying to mitigate, in the following ways:

- The commercial PSBs are developing their own ability to offer programmatic video advertising as well as refined audience targeting. The objective is for the broadcasters to retain a high degree of control over ad sales related to their content, to avoid intermediation and commoditisation of their role.
- Separately, commissioning is evolving to improve the quality and relevance of content to audiences, as well as more tailoring of this content. This primarily has a commercial rationale, in that high-quality content and better content targeting will help the PSBs to retain large audience shares.¹⁴⁹
- Finally, all PSBs are investing in platform-like capabilities, partially through YouView, but primarily through their own VOD clients. These enable them to collect behavioural data from their online users and, to a significant extent, control the advertising that is shown to them. In addition, broadcasters are developing ways to provide personalisation and content recommendations to their viewers, with the aim of increasing audience engagement and supporting loyalty- and brand-building. Finally, second-screen apps are being developed to complement linear viewing, making it possible to collect customer data as well as leverage it to foster stronger audience engagement.

A notable difference between the use of customer data in the audio-visual and online sectors is that broadcasters rarely sell on customer insights to other companies. Sky does engage in this, but only through a specific subsidiary (Sky IQ) which is at arm's length from the core pay-TV business.

E.1.3 Trends specific to the fixed and mobile telecoms sectors

This reticence to sell customer data is shared by telecoms players, and relates to the very small size of the opportunity for these players compared to the size of their core business, as well as the damage to their reputations that could occur if consumers became uncomfortable with their approach to customer data. For example, it is probably fair to say that this is why BT's partnership with Phorm was unsuccessful. However, we are aware of a limited number of examples elsewhere, such as Verizon Selects in the USA.

Operators routinely collect very large amounts of data from their networks, for day-to-day operation. Thanks to improved analytical functionalities in the operation and billing support systems (OSS/BSS) that help operators to manage their networks, new opportunities are arising that can help put operators on a stronger competitive footing. These include the ability to improve the management of the quality of experience for customers, and to offer more personalised services through micro-segmentation, driven by customer-data analysis.

¹⁴⁹ We note that this may also be useful in assessing the extent to which PSB remits are fulfilled, by ensuring content that reaches across the breadth of UK audiences

These improvements can have a real impact on an operator's ability to acquire new subscribers and retain the ones it already serves. To illustrate the scale of this impact, we estimate that a reduction of 10% in the number of churners, coupled with a 10% reduction in the costs of subscriber acquisition and retention could result in additional margins of the order of GBP150 million per year for a typical mobile operator in the UK.

These margin improvements may, however, prove to be transitory: as operators catch up with each other, the competitive advantage conferred by better use of customer data is likely to disappear. Accordingly, the extent to which customer data can help to alleviate the pressure on telecoms operators' revenue in the market as a whole will, in our view, be relatively limited in the long run.

External data-based business models that are incremental to the operators' core business are currently limited:

- All operators benefit from highly successful online properties, in the form of their home page and apps used by subscribers to manage their fixed and mobile services. These pages perform very well in terms of unique visitors per month, with sky.com and bt.com estimated to have well in excess of 5 million unique visitors per month, for example. This enables operators to drive some advertising revenue, although the estimates available suggest this is a very small amount compared to their overall revenue, and is clearly not the core rationale for operating these websites.
- Most mobile operators can and do operate as a direct marketing channel, through the delivery of promotional SMSs to their subscribers. The target segments that can be addressed are increasingly refined by processing customer data. This will make it possible to deliver more relevant messages to subscribers and to mitigate consumer opposition to inbound marketing on their mobile devices.
- Operators have sought ways in which to play a role in the online value chain, driven by concerns associated with disintermediation, i.e. their role being reduced to a 'bit pipe' in an environment where OTT service delivery is increasingly prevalent. SingTel has been one of the most ambitious operators internationally, acquiring and leveraging a mobile ad exchange provider called Amobee in 2012 to expand its ability to target and deliver ads to mobile users. This is typically done through apps: the principle is that mobile operators partner with Amobee to improve the targeting of their users, which enables Amobee to increase the value of the ads delivered to the apps that these customers use. So far, this model is not prevalent in other markets, although we understand that Sprint is effectively using Amobee's platform under its own brand name to provide a similar service. In the UK, Weve, the joint venture between Everything Everywhere, Telefónica and Vodafone, is expected to engage in a similar model in the future, but nothing firm is yet in place.¹⁵⁰
- Finally, one other use of customer data that is notable is the attempt by operators to leverage the location data they obtain from day-to-day network operations to provide customer insights

¹⁵⁰ <http://www.marketingweek.co.uk/news/weve-primers-display-ad-services/4007599.article>

to specific types of organisation, such as retailers. An example is Telefónica's Smart Steps programme, offered as a managed service, which provides a real-time footfall analysis service to retailers. We understand, however, that this model remains a limited opportunity in revenue terms, and one that other players such as Google may provide using data obtained from handsets.

E.1.4 Trends in the postal sector

We have found that the business models which use customer data in the postal sector are of limited relevance to this review. The bulk of the data that is used and monetised is offline data, closely related to day-to-day operations. For example, the Royal Mail Postcode Address File (PAF) contains extremely up-to-date address details of 29 million properties and is valuable to many sectors of the economy. We understand that there are over 37 000 licensed users of this data, across all sectors.

However, Royal Mail is progressively enhancing its address data by combining it with third-party data, some of which would fall under the definition of online customer data. For example, Royal Mail merged its offline address data with eBay's purchase data, creating a detailed dataset for spending habits used to develop its Insight Tool.

Business models like this one remain relatively simple, and the data derived directly from the postal sector is offline rather than online data.

E.2 Common trends and policy considerations

Across all these sectors, a number of common considerations have emerged from our research and interviews, related to innovation, consumer protection, and competition and contestability.¹⁵¹

Innovation

The first consideration is the extent to which customer data in various forms supports innovation. This is particularly visible in the online sector, but is also key to the efficiency improvements that telecoms operators are making thanks to better analysis of their customers' behaviour and preferences. In both these sectors the ability to collect, store, exchange, analyse and use data has spurred a wide range of innovations.

Some of these innovations are essentially efficiency improvements which benefit market participants first, before filtering through to consumers: examples include targeted advertising, retargeting and network optimisation. Others are entirely new features or services: for example, personalised recommendations, 'digital assistant' services and micro-segmented offers.

¹⁵¹ A highly contestable market is one that has low barriers to the entry of new players, and vice versa

One concern that is widely shared among our interviewees is the effect that a more restrictive regulatory regime would have, both on service innovation and on the large number of specialised businesses (ad intermediaries and infomediaries, for example) which have developed to take advantage of the opportunity to innovate with customer data.

Consumer protection

The second consideration relates to consumer protection in a wide sense. This is the chief preoccupation of data protection policy and regulation in the UK and other developed countries, but it is extraordinarily complex.

There is, above all, recognition in all sectors that consumers can ‘vote with their feet’ if they feel their data is not being appropriately protected or used. The telecoms industry has taken note of examples such as the negative press coverage of the BT–Phorm initiative, the discontinuation of Telefónica’s Smart Steps programme in Germany,¹⁵² and the reluctance of consumers to be contacted for promotional purposes. As a result, operators are very wary of using customer data for external uses. In the online industry, likewise, infomediaries have developed businesses designed to help companies ensure compliance and best practice in the use of customer data.

Consumer choice, however, is predicated on there being sufficient information available for this choice to be informed, and sufficient flexibility so that consumers are still able to enjoy the benefits of online services that do not require the submission of personal data.

Several interviewees mentioned the ‘cookies directive’ (e-Privacy Directive 2012)¹⁵³ as an example of irrelevant regulation, arguing that it is both ineffective (consumers have not stopped using any site that uses cookies) and unenforceable (as illustrated by the website <http://nocookielaw.com/>, whose purpose is to demonstrate the lack of enforcement of the directive). We would argue, however, that the obligation for sites to disclose the use of cookies contributes to a progressively greater understanding of how data is collected online from consumers.

Likewise, some sources report that Do-Not-Track browser features and ad-blocking technology are being adopted increasingly widely,¹⁵⁴ suggesting that a significant minority of consumers are taking measures to protect their privacy, quite apart from any regulated obligation being imposed on the collection, transfer or use of their data.

In this context, interesting initiatives are emerging online to provide users with more control over their data and the advertising they are served. For example, the AdChoice¹⁵⁵ industry initiative purports to provide clear information and control to users, with Criteo (the retargeting specialist

¹⁵² <http://www.fiercewireless.com/europe/story/telef-nicas-big-data-plans-blocked-german-regulator/2012-11-02>

¹⁵³ See for instance http://www.ico.org.uk/for_organisations/privacy_and_electronic_communications/the_guide/cookies

¹⁵⁴ See for example <http://blog.pagefair.com/2013/the-rise-of-adblocking/>

¹⁵⁵ <http://www.youradchoices.com/>

mentioned in Section B.2.2) offering particularly granular choices.¹⁵⁶ The bt.com website is also an interesting case study, as it allows users to move very easily from an open regime where their data is collected and used broadly, to a closed regime where no targeting is possible.

In relation to ad blocking, the threat of a significant move among consumers towards blocking by default has been a key driver for the industry to provide the information and control that policy-makers would like to see. This highlights the widely varying views and approaches that surround the ongoing robust discussions on the proposed EU General Data Protection Regulation (GDPR or DPR), which would have to be enforced in all EU Member States. The gap between the current DPR proposals and the UK government's policy illustrates this point: there is no consensus – either on what policies should achieve, how they could work in practice, what their enforcement would imply, or what their broader impact might be.

Interestingly, at the same time as the online sector appears to be developing industry-led measures that support increased consumer control in a maturing sector, conversely in the 'connected TV' world there are significant privacy concerns that may not be adequately addressed by focusing solely on traditional Internet players. A recent controversy involving LG's smart TVs (mentioned in Section C.3) highlighted the potential for TVs to collect and send a large amount of data over the Internet. Likewise the new Xbox One comes bundled with a Kinect device that can monitor and record movements and sound and potentially transfer them.¹⁵⁷ Similar concerns have been raised in the past by built-in webcams, but new devices such as smart TVs and games consoles are often not seen by users as being computers, even they may have similar capabilities and be vulnerable to the same sorts of problem. These capabilities highlight a new challenge in consumer protection, linked to the increased connectedness of everyday devices that consumers do not associate with Internet browsing.

Competition and contestability

A last consideration that we see as very important is the ability of the market to support competition and contestability, ultimately to the benefit of consumers. The currently wide availability of customer data, both on a first-party and on a third-party basis, is enabling new entrants to experiment and develop new propositions with limited barriers associated with customer data. If the availability of data decreases as a result of regulation or consumer opposition, established players may be able to entrench their position, reducing the level of competition in the market.

Likewise, the large degree of contestability for most online services provides a stimulus for companies with a large market share (such as Google in search or Amazon in e-commerce) to keep innovating and to strive to retain their customers, given the constant threat of cannibalisation by competitors. Increased barriers to entry for new players (or barriers to expansion by existing players) might lead to further entrenched market power.

¹⁵⁶ <http://www.criteo.com/en/privacy-policy>

¹⁵⁷ <http://bgr.com/2013/11/04/microsoft-xbox-one-kinect-privacy-statement/>

International perspectives

The dimensions described above (innovation, consumer protection and competition and contestability) are central to the questions that policy-makers face in the following areas: balancing short-term consumer concerns with their long-term interests; developing policies which ensure that efficient entry into markets is possible and attractive; and supporting innovation.

We note that these preoccupations appear to be shared across all developed markets, and they have all adopted reasonably similar approaches to data protection and privacy in practice. In France, for example, there are clear principles on how the cookies directive should be implemented, but these imply considerable flexibility for publishers, similar to what the ICO is recommending in the UK.¹⁵⁸

Also in France, a court has ruled that IP addresses do not constitute personal data. However, the lack of clarity on this issue in the UK – mentioned by several interviewees – has not led to functionally different outcomes: in practice, IP addresses are used when necessary as non-personal data, without a strong threat of action from the ICO.

Sometimes similar regimes can nevertheless foster different outcomes. For example, in Germany the Telefónica Smart Steps programme was blocked by the data protection authority, despite being allowed in the UK and the two regimes being substantially similar.

Within large EU Member States such as the UK, France and Germany, despite each country having its own regime and sometimes taking different approaches to specific issues, the general practices of data protection, enforcement and outcomes do not seem particularly divergent. Likewise, the US regime, which we understand focuses on enforcement by the Federal Trade Commission (based on general consumer protection in trade) in case of complaint, rather than compliance with specific data protection rules, does not appear to be an easier or harder market in which to operate when using customer data.

E.3 Further details of the scenarios for future developments

We have developed three scenarios as a basis for discussing the impact of the trends identified in this study, and the issues they raise in terms of innovation, consumer protection and competition and contestability:

- The Status Quo scenario represents the current state of play, with the trends and dynamics that we have identified and discussed throughout this report continuing as they are today. In this scenario there would be no fundamental change to the policy framework or its enforcement, and the current market dynamics would play out in an evolutionary way.
- The Restricted Growth scenario would see an outcome where customer-data usage is scaled down from the current situation. This scenario would be the result of evolutions linked to

¹⁵⁸ <http://www.cnil.fr/documentation/fiches-pratiques/fiche/article/ce-que-le-paquet-telecom-change-pour-les-cookies/>

market forces (e.g. as the result of some particular campaign) and/or policies limiting the use of customer data.

- The Explosive Growth scenario considers a situation where customer data is used on a much wider scale than at present. This would possibly require a more liberal policy regime than is currently in place, as well as a broad degree of acceptance from consumers and an accelerated need for data in the market.

Each of these scenarios could come about due to a wide variety of factors, linked to consumer behaviour, regulatory actions or technological development. Although it seems inevitable that the quantity of data being generated, collected and used will continue to increase rapidly (as a result of more machine-to-machine and embedded communications, for example), we see the Status Quo scenario as being the most likely. This view is in large part based on the fact that all stakeholders appear to be seeking a balance between innovation on the one hand (which benefits from the use of customer data) and consumer protection on the other (which imposes some limits on the collection and use of data).

In the sections below, we discuss the policy changes and market dynamics that might lead to their realisation. We then address the implications of these scenarios in terms of industry development and innovation, consumer protection and competition and contestability.

E.3.1 Status Quo scenario

In this scenario, we consider a regulatory and market environment similar to the one prevalent today.

Collection of data remains straightforward on a first-party basis, and the current approach used for cookies remains unchanged: using a service implies consent within a privacy policy of the choosing of the data controller, within the limits set by current legislation and regulations. Conversely, third-party collection becomes increasingly visible to customers, who can choose to block it.

Transfer of non-personal data, either anonymised or pseudonymised, remains possible with limited transaction or compliance costs, whilst transfer of personal data can also be done provided appropriate consent is given.

Repurposing and recombination of data is not limited for anonymised data, and effectively possible for pseudonymous data under a limited requirement to ensure that individuals cannot be identified as a result. For first parties, i.e. data controllers, repurposing and recombination of personal data is also possible, with limited requirements for specific consent, as long as the new purpose is consistent with the disclosure and consent provided by customers when the data was first collected.

This scenario assumes that there will be no fundamental rejection by consumers of the way in which their data is currently collected and used. It is likely, however, that they will be more

selective in how they allow *third-party* data collection to take place, through the use of Do-Not-Track (DNT), third-party cookie blocking. It is likely that ad-blocking technology will remain available and increasingly prevalent, but not to the extent that it undermines continued, albeit slowing, growth in the use of online advertising. The increased demand for mobile apps will enable publishers and advertisers to mitigate the use of ad blocking, as consumer control of advertising will remain more difficult to implement in apps (or will be expressly monetised through premium apps with no ads).

Innovation and sector development

Under this scenario, we can expect the following developments:

- In the online sector, there will be continued growth in targeted advertising in general, and retargeting in particular. Personalisation and recommendations will continue to drive this shift to e-commerce, fuelled by customer data. Finally, more service innovation can be expected, in the mould of Google Now but also making fuller use of wearable technology for a variety of purposes (such as remote health monitoring).
- In the audio-visual sector, the use of customer data will intensify, driven by broader sectoral trends (online and on-demand consumption, as well as time-shifting, which potentially increase the importance of dynamic advertising). TVs and STBs are already at the stage where they can play a core role in delivering personalised content to viewers, including advertising, but the PSBs will be able to derive complementary revenue from this trend, through specific agreements with TV manufacturers and pay-TV operators. As a result, intermediation of ad sales will grow in this scenario, and tensions will remain between the PSBs and the intermediaries (online as well as broadcast TV platforms) that stand to gain from this trend.
- In the telecoms sector, this scenario does not imply any radical shift in approach or strategy. It will remain possible for operators to develop and distribute their own online services by leveraging their customers' data, but many other online services will compete with these, making major investments unlikely.

Consumer protection

Under this scenario, consumers will remain moderately engaged with their online privacy, progressively developing a better understanding and awareness of the use of their data online, but broadly accepting the status quo in terms of data collection, transfer and use (e.g. for targeted advertising). There will be a better understanding of how third parties access customers' data in a browser environment, leading to more-informed use of cookie blocking and DNT features among a large minority of users.

Competition and contestability

The progressive tightening of the availability of third-party data, driven by consumers rather than policy and regulation, will impose costs and barriers to entry for entirely new players focusing on the use of personal or behavioural data.

However, without significant limitations on the transfer of adequately anonymised data, avenues for innovation will remain, and non-personal data should not become significantly more scarce than it is today.

To an extent, barriers to entry may be a positive aspect of the evolution of the market under this scenario: they will push parties that want to collect personal and behavioural data to develop a direct relationship with consumers, in order to obtain some form of consent for collection of their data, while discouraging parties that collect data without a visible counterpart being offered to consumers.

Conclusions

This scenario strikes a balance between, on the one hand, the information and protection of consumers, and on the other the ability of customer data to continue fuelling innovation and supporting development of the online industry.

This scenario is contingent on the policy and regulatory environment remaining substantially as it is today. Given the current position of the UK Government, as developed in its answer to the proposed DPR, we consider this to be a likely outcome.

Significant tightening of the policy regime, or a material change in consumers' approach to the use of their data (e.g. because of privacy concerns) would make this scenario less likely, and would lead to the Restricted Growth scenario described below.

E.3.2 Restricted Growth scenario

In this scenario, we consider a regulatory and market environment that is materially more hostile to the use of customer data.

Collection of data becomes harder for both first and third parties. This may be because of regulation requiring explicit consent to be provided for a wider range of data, but also because of a more generalised rejection by consumers of cookies and other forms of tracking technology. Faced with a choice between collecting less data or losing traffic, web publishers are likely to choose the former.

Transfer of anonymised data remains possible with limited transaction or compliance costs, whilst transfer of both personal and pseudonymised data can only be done under onerous disclosure and consent requirements, resulting in substantial reductions in the availability of this type of data.

Repurposing and recombination are likewise negatively impacted, both through a reduction in the scale and scope of the data available to be repurposed and recombined, and because of more explicit consent requirements that must be obtained from customers. First parties can still use the data provided by their customers, but they are effectively given incentives to hoard this data, creating scarcity in the market as a whole.

This scenario could materialise because of a fundamental rejection by consumers of the way in which their data is currently collected and used. This may translate into much more widespread blocking of cookies, both first- and third-party, as well as the rejection of sites and mobile apps that require too much data without a clear rationale. Stricter privacy policies by major app stores might play a role.

Innovation and sector development

Under this scenario, we could expect the following developments:

- In the online sector, the increased scarcity of data has a negative impact on the infomediary ecosystem, because of the difficulties of managing data without obtaining user consent to every change. There is an impact on targeted advertising in general, and retargeting in particular, although a likely consequence is higher barriers to entry and market concentration, with large, established companies (e.g. Amazon, Google) able to obtain first-party data in exchange for services that consumers have come to rely on. Service innovation is likely to reduce, because of the risk (regulatory and/or reputational) of using customer data.
- In the audio-visual sector, this scenario enables the PSBs to retain a central role and avoid significant intermediation of their ad sales in the medium term. As their online presence increases, they will be in a position to collect first-party data; customers are likely to consent to this, because of the high value associated with long-form TV content (in other words, provision of data continues to be seen as a small price to pay to access PSB content on demand). The ability of TVs and STBs to collect and use customer data is reduced by regulation and consumers' reluctance to consent to it.
- In the telecoms sector, this scenario may in practice result in better opportunities for market participants. The ability to personalise services for operators' internal use remains, as customers view their relationship with their operator as a trusted one. In addition, the barriers to entry and innovation for online players place operators in a position of strength, effectively as a major first-party data controller. This may make investment in their own online services more attractive, as a result of the lower level of contestability and competition (i.e. it will become more difficult for app developers to leverage customer data without partnering with a large first-party data controller such as an operator).

Consumer protection

This scenario appears to result from consumers having more control over their data, and choosing to exercise this control in an informed and effective way. The level of perceived privacy will increase, as will the incentives for data controllers to protect customer data very closely.

However, as noted by many of the stakeholders we interviewed, restrictions on the availability and ease of sharing of customer data will have negative impacts on consumers on several grounds: service innovation will decrease, and contestability in existing markets that rely on customer data will reduce, which might lead to less competition and potentially harmful market power in the hands of established players. Various aspects of the Internet that are currently funded by advertising could lose revenue; some have argued that this will increase the value of online properties that are more valuable to advertisers, at the expense of sites where the typical user is less attractive.

Competition and contestability

This last point is potentially the most important. What this scenario effectively assumes are two key changes in the way customer data is used: (a) greater scarcity of data, because of the limitations on third-party collection and the transfer of data; and (b) significant frictions introduced in what collection and transactions do take place, because of the requirement (imposed by consumers or regulators) for more information and explicit consent.

The scarcity of data that prevails in this scenario will have significant repercussions for the structure of the markets and business models reviewed in this study. In effect, only companies that are able to demonstrate that customer-data collection is either necessary to deliver a service, or the counterpart of a service that consumers value sufficiently highly (in other words, where data is a form of payment for the service) will be able to continue collecting significant amounts of data. This has a number of implications:

- Justifying the collection of data on the grounds of its intended use may not always be possible. Innovation related to data happens through experimentation, and can sometimes appear the result of serendipity rather than explicit intent on the part of the innovator. In particular, with advances in computational power and algorithms, it is now possible to experiment on extremely large datasets, often in real time. This makes personal or pseudonymous data valuable, as long as it can be used without excessive frictions – but these are likely to arise in this scenario.
- Scale becomes essential if data is scarce and difficult to collect. The ability to analyse large datasets is critical to a number of innovations, such as those associated with machine learning or crowd-based analyses (e.g. traffic data on Google Maps). If pseudonymous data cannot be easily exchanged, combined and repurposed, only companies with large pre-existing datasets and customer bases will be able to innovate, which is likely to lead to further vertical integration and the large becoming larger still.

Conclusions

This scenario leads to a significant scaling back of some of the developments related to the use of customer data that can be observed today. In practice, these developments are often not directly visible to users, as they relate to the ability of intermediaries to increase the efficiency of service delivery, such as online advertising for example. Where they are visible is in the innovation and entry into the market of a large number of new players, which would be hampered in this scenario.

From the perspective of broadcasters and telecoms operators, such a scenario may actually reduce the threats they face (intermediation in the ad value chain for broadcasters, commoditisation for telecoms operators). However, this would come at the expense of consumers' freedom to consume services over the top and from a range of providers, with potentially detrimental longer-term effects outweighing the benefits in these two particular sectors.

If this scenario materialises as a result of consumers' choice, perhaps due to excessive and irresponsible use of data in any of the sectors considered in this report, then it will be difficult to argue against it. It may not be desirable from an economic perspective, but consumers will have been able to trade economic gains off against their privacy.

Should this scenario result from a deliberate policy intent, however, it is essential that these trade-offs be considered carefully, with a view on the impact they may have, particularly in terms of the UK's position in the global technology and advertising markets.

E.3.3 Explosive Growth scenario

In this scenario, we consider a regulatory and market environment that is materially more liberal regarding the use of customer data. In practice, the current regime facilitates a broad range of activities, and liberalising it further is likely to involve a removal of restrictions on the use and transfer of certain types of personal data. One possibility is for non-sensitive personal data to be handled in a less restrictive way.

Under this scenario, collection of data becomes easier. That implies lower consent requirements for the collection of data (including background data, and personal and behavioural information). In order for this to be feasible, consumers will have to be comfortable with such an increase in data collection; it is an interesting question whether this is more or less likely with a decrease in the amount and clarity of information provided to consumers about such practices.

Transfer of most types of data can be done without friction, under a light, implied-consent regime. Transaction or compliance costs reduce, and large amounts of personal or pseudonymous data are available much more broadly. Personal data that enables the identification of individuals directly, possibly as opposed to indirectly through recombination with other types of data, may remain subject to restrictions substantially similar to those in force today. As a result, data-related barriers to entry are low.

Repurposing and recombination remain possible with limited restrictions, possibly including data that may enable the identification of individuals in combination with other data points. As a result, the level of privacy is likely to be significantly diminished in this scenario, while the range of activities that can be undertaken by companies without established customer bases may expand significantly.

Loosening restrictions on the use of personal data significantly weakens privacy controls, and data protection and security. In practice, this evolution may be unacceptable from the perspective of consumers and policy-makers. We discuss below what this may imply, to assess whether the potential gains may possibly outweigh the downsides.

Innovation and sector development

In this scenario there are no barriers to extensive innovation, thanks to the broad availability, at low cost, of substantial datasets, including detailed pseudonymous data. The broader availability of more data that is currently considered personal may enable more innovation in personalised services, beyond established players. However, there is no strong evidence that actual innovation in most other areas will significantly increase in this scenario compared to the Status Quo scenario.

There are limited sector-specific considerations in this scenario, especially for the online sector. The other sectors examined in this report make a conscious decision not to share their customers' data more broadly, irrespective of the regulatory environment, because of consumer perception and the risk of opposition from their customers.

This being said, in a more liberal environment where consumers are more willing to share personal data, telecoms operators will clearly be able to monetise the valuable customer data they hold more broadly if they choose to do so. However, they may still not be able to derive significant revenue from this data in such a scenario, because there will be no scarcity.

Consumer protection

For this scenario to come about, consumers will need to relinquish some of the protections that are currently in place regarding their privacy and personal data.

If customer data is used much more broadly, and with a more personal slant, consumers will be exposed to the consequences of a relaxation of data protection rules, and have less control over their data. The level of perceived privacy will decrease, as might the incentives for data controllers to protect customer data very closely (because the reputational impact of data leaks may not be as great as they are currently) with potential negative impacts on data security, for example. This could lead to a rise in criminal activity such as identity theft.

Service innovation may increase, and so could contestability in existing markets that rely on customer data.

Competition and contestability

Without significant limitations on the availability of third-party data in this scenario, the cost of entry will remain low or even reduce. Avenues for innovation will remain and data could become less scarce than it is at present.

As a flipside to the Status Quo scenario, the low barriers to entry may give rise to certain uses of data by new players without a real business case or proposition. In a context where identities could possibly be inferred from the data being freely exchanged, this raises the same concerns discussed above with regard to consumer protection.

Conclusions

In this scenario, it is likely that there will be an appreciable reduction in the level of privacy and control enjoyed by consumers. In this context, consumers themselves may reduce their reliance on online services, because of privacy concerns, introducing a kind of ‘deadweight loss’ as the benefits of online services cannot be fully realised.