



The International Communications Market 2008

3 Convergence

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3.1 Convergence market developments

3.1.1 Introduction

For the purposes of this report, we define ‘convergence’ as the growing ability of a range of digital distribution networks to carry different types of content (audio, video, text and other data) and services to a variety of consumer devices. Examples include:

- new mobile handsets that can receive voice calls, video, data, and in some cases broadcast television;
- mobile “dongles” that connect laptop computers and other devices at high speed to the internet using mobile networks; and
- the different ways that audio-visual content can be distributed to consumers— via digital terrestrial television networks, satellite, cable and the internet.

While content reaches consumers by a number of different routes, it usually follows the same general pathway, and this chapter follows the same course:

- section 3.2 examines **content** (including digital music, online films, user-generated content and social networking) and **aggregation** (when content is packaged into a consumer proposition);
- section 3.3 moves on to content **distribution** and the means of carrying it over selected **networks**; and
- section 3.4 concludes with how people choose to **consume** content.

Please bear in mind when reading this section that analysis is not evenly distributed across each stage of the pathway, and that at some points the framework may be either strained or blurred. This reflects the degree to which the industries we regulate cannot yet be considered as fully converged.

But first, section 3.1 begins by highlighting a selection of recent international trends among converging communications markets.

3.1.2 Summary

This section sets out a selection of key developments among converging markets that illustrate how operators and consumers are adapting to new digital distribution opportunities:

- **The expansion of mobile broadband** – the number of mobile broadband subscribers has recently grown rapidly in several of our comparator countries, driven by the availability of high-speed HSPA networks which are now available to more than 70% of households in many European countries and by the introduction of plug-in ‘dongles’ for laptops.
- **The ongoing development of broadcast mobile TV** – operators in several countries across Europe have launched mobile TV services, but its underlying business model has yet to be proved, with the closure of several mobile TV services and a decline in confidence for its prospects in the near future.
- **The growing consumption of free-to-air online TV shows** – consumption of free-to-air online TV shows has grown rapidly in the US and the UK; in the UK

consumption grew by 69% last year, while from a lower base consumption in France grew by 131%.

3.1.3 Mobile broadband takes off

3.1.3.1 High-speed mobile networks available to most people in our comparator countries

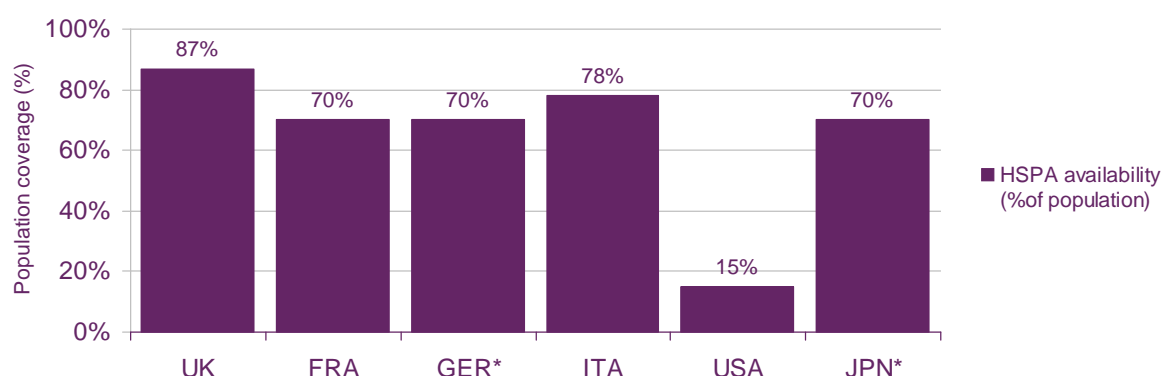
Many mobile operators have now upgraded their 3G networks, offering a step-change in the data transfer speeds available. This often makes use of high speed packet access (HSPA) technology, enabling consumers to access the internet over a mobile network at headline speeds (typically 3.6Mbit/s – 7.2Mbit/s) comparable to basic fixed-line broadband. According to the Global Mobile Suppliers Association, there are currently 221 commercial HSPA networks in 96 countries supported by 805 devices.

By the end of 2007, HSPA networks were available to at least 70% of the population of each of our larger comparator countries, with the exception of the US (Figure 3.1). Consumers in the UK and Italy benefited from the highest levels of availability, with 87% and 78% population coverage respectively.

HSPA is available to only 15% of the US population. Reasons for this include:

- the late deployment of HSPA technology;
- the difficulties involved in providing coverage for such a large land area; and
- the availability of fast mobile data services over other 3G standards (e.g. CDMA2000 EV-DO). This is an incompatible and competing standard to HSPA. EV-DO Revision A allows for headline speeds up to 3.1Mbit/s, and Verizon reported approximately 80% population coverage by the end of 2007.

Figure 3.1 HSPA availability: 2007



Source: IDATE

Note: Availability figures for Germany and Japan are estimates. Data were not available for Canada. While HSPA coverage for the US was only 15%, coverage for CDMA EV-DO Rev A was approximately 80% of the population at the end of 2007.

3.1.3.2 Dongles drive the mobile broadband expansion...

Until the last 18 months, mobile operators generally positioned mobile broadband as a business service, targeting city centres and major transport hubs. But many have recently chosen to shift their focus to the residential market. As a result, the consumer market for

broadband has grown rapidly. According to data from Wireless Intelligence, the number of HSPA subscribers worldwide grew from 5 million in July 2007 to 60 million by October 2008. However, the majority of these are via mobile handsets, and indeed some users are likely to either be unaware of the capability their mobile phone has for high speed data transfer or choose not to use it.

'Mobile broadband' is more usually used to refer to connecting to the internet via an HSPA network using a USB modem or 'dongle' which plugs into a PC or laptop, rather than via a mobile phone. In the past 18 months, mobile operators in parts of Europe have heavily promoted dongles as an alternative or a complement to fixed-line broadband. Rapid growth in take-up can be put down to a variety of factors, including

- extensive marketing of flat-rate data tariffs (typically associated with a cap of at least 1GB per month) at a price comparable to fixed-line broadband;
- rising laptop penetration; and
- the evident consumer demand for broadband on the move.

Figures from GfK show that dongles reached their highest monthly sales in the UK in July 2008 at 163,000 units sold. Swedish operators have also experienced rapid growth in dongle sales. According to the PTS (the Swedish regulator) the number of subscribers using datacards or dongles rose from 92,000 to 376,000 during 2007, a rise of 309%.

In the UK, Italy and Sweden, the role of Hutchison 3G (H3G – branded as '3') in utilising spare network capacity to roll out attractively-priced mobile broadband to consumers was important in triggering wide-scale adoption. With other operators, particularly Vodafone, having already built market share among business users, H3G's efforts focused on more price-sensitive users. As of October 2008, 3 Italia offered a 5GB a month mobile broadband tariff for €19 a month (£13), and 3UK offered a 3GB per month tariff for £15 a month as well as a 1GB tariff for £10 a month.

The development of mobile broadband in Japan has taken a different path. Mobile broadband on handsets is popular, with many subscribers using their mobile phone as their main way of accessing the internet. This is partly due to the early development of other mobile data services such as NTT DoCoMo's *i-mode*.

In the US, mobile broadband is offered over HSPA and, more commonly, EV-DO Revision A. In October 2008 in Baltimore Sprint Nextel launched its roll-out of mobile WiMAX, which also supports mobile broadband, branded as *Xohm*. Localised WiMAX networks have also emerged elsewhere in the world, usually covering municipal areas or private networks.

But in our other comparator countries mobile broadband has not seen widespread consumer adoption. In France, where mobile broadband remains primarily a business proposition, high prices have prevented widespread take-up.

3.1.3.3 Mobile broadband: substitute or complement to DSL?

Mobile broadband typically offers a headline speed of 3.6Mbit/s or 7.2Mbit/s, with actual speeds typically around 1Mbit/s¹¹. This is comparable to basic fixed broadband speeds in

¹¹ Research commissioned by Vodafone and conducted by LCC International in March-May 2008 found that in the UK average speeds for Vodafone were 1.2 Mbit/s with average speeds for other networks varying between 683kbit/s and 993kbit/s, http://www.vodafone.com/start/media_relations/news/local_press_releases/uk_press_releases/2007/independent_trials.html

many countries. Price points are also similar to fixed offerings. For some consumers, mobile broadband may offer an attractive substitute to fixed broadband.

In the UK, the evidence suggests that mobile broadband is used mainly as a complement to fixed broadband. GfK research suggests that 68% of mobile broadband subscribers use mobile broadband in addition to a fixed connection (although this may include consumers who are currently tied in to fixed broadband contracts).¹²

But in countries where fewer consumers have already taken fixed-line broadband, substitution may be a more likely prospect; there are some indications that mobile broadband is cannibalising the future growth prospects of fixed connections. According to Analysys Mason, mobile broadband accounts for 30% of all broadband connections in Austria. Informa reported that 72.3% of Austrian net broadband additions in the first half of 2007 were mobile subscriptions. This may be explained by competitive pricing plans, lower fixed-line penetration, the high cost of fixed broadband and the fact that significant numbers of Austrian people live beyond the range of the nearest ADSL exchange.

The extent to which mobile broadband proves to be a substitute to fixed broadband is likely to depend on a variety of factors. These may be specific to individual countries and even consumers. They include:

- the quality of mobile broadband coverage indoors and in rural areas;
- the availability of and quality of fixed line infrastructure;
- the established base of fixed-line broadband subscribers;
- the comparative data caps on fixed and mobile broadband offerings;
- the relative price-points of fixed and mobile broadband;
- the comparative speeds of fixed and mobile broadband; and
- the purpose for which a consumer uses his or her connection.

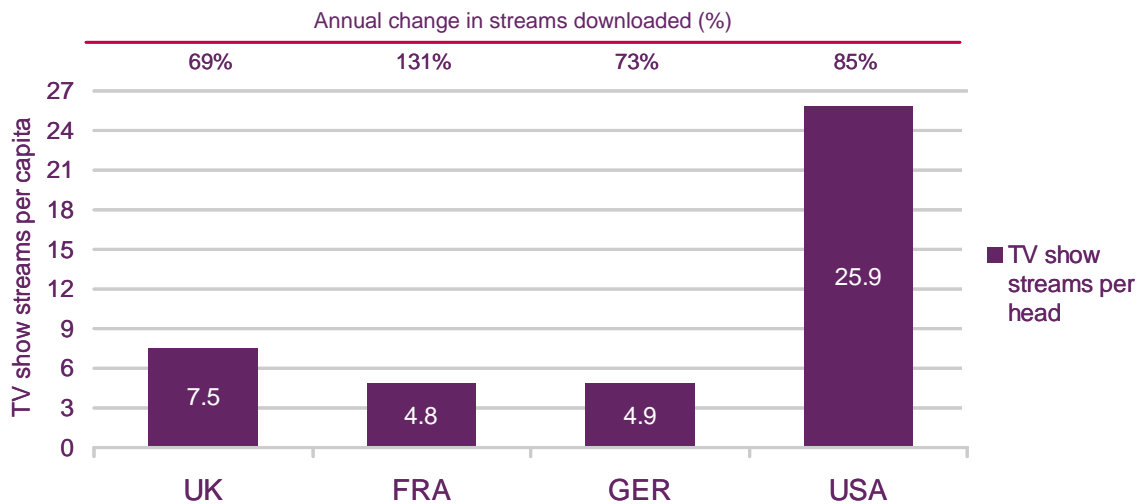
3.1.4 US top for free online TV shows, while the UK leads in Europe

3.1.4.1 Consumer demand for free-to-view TV online growing rapidly...

Content providers increasingly distribute audio-visual (AV) content over the internet, taking advantage of the growing popularity of broadband. This content can include short clips or full programmes, produced either by industry professionals or by members of the public. Distribution is often supported by advertiser revenue. Traditional broadcasters in both the US and the UK have recently responded to consumers' growing appetite for AV online by introducing access to their own shows online.

People in the US were the most prolific consumers of online TV shows in 2007 (including short-form TV content such as clips and highlights), downloading an average of nearly 26 streams per head (Figure 3.2). People in the UK ranked second with 7.5 streams per person, followed by Germany (4.9) and France (4.8). In all four comparator countries consumer demand for online TV shows has been high, with streamed downloads per head growing rapidly since last year. Growth was highest in France at 131%.

¹² See Ofcom's *The UK Communications Market Report 2008*, section 5.1.5.
www.ofcom.or.uk/research/cmr/cmr08

Figure 3.2 Free-to-view streams of TV shows per head, 2006-2007

Source: Ofcom calculations based on Screen Digest/Comscore data

The launch of two online TV aggregation services may have stimulated demand in the UK and the US:

- In July 2007 the BBC's iPlayer soft-launched, using a programme download model, before launching fully at Christmas that year with both streamed and download access to content. The iPlayer is a free broadband internet service that lets viewers catch up on BBC radio and television programmes broadcast over the previous month (for downloads) or week (for streamed content). Since launch the service has proved to be popular with consumers, delivering an average of 700,000 daily streams and downloads in April 2008. It is possible that the 'iPlayer effect' contributed to the growth in streaming of TV shows in the UK in 2007. Other broadcasters in the UK that have launched TV online aggregators include ITV, Channel 4, Five and Sky.
- In the US, NBC Universal and News Corporation launched Hulu as a joint venture in March 2008. It offers free, ad-supported content from NBC, Fox and a variety of studios and networks. The service includes access to some archive content, catch-up and shows that are out to syndication. While this service launched too late to have an impact on the figure highlighted above, Nielsen Online reported that Hulu had attracted 2,632,000 unique viewers during August 2008.

It is possible that both these services will be available to international audiences at some point in the future. Both Hulu and the BBC suggest on their websites that they are working on international versions of their online TV services. Resolving rights issues connected to international distribution is one of the hurdles they need to clear before launch.

Other business models for TV show streams include pay-per-view or subscription. Using one (or more) of these models, most commercial broadcasters in our comparator countries have launched online catch-up services. Examples include TF1, LCI, France24, TV5 and BIS in France, and RTL.de, Spiegel TV and ZDF Mediathek in Germany.

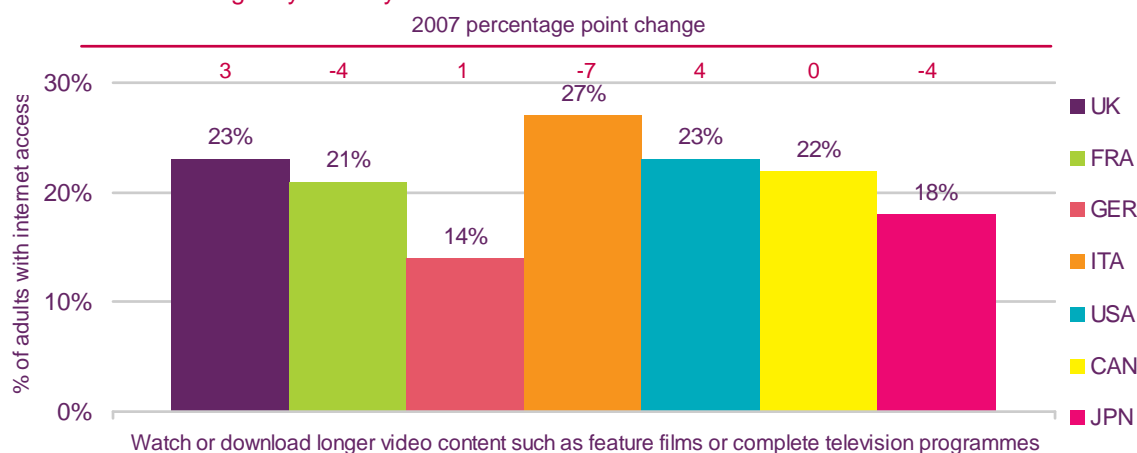
3.1.4.2 ...and AV online grows in popularity as a result

Ofcom's international omnibus research suggests that the recent launch of free-to-view TV online content could be driving up consumption of longer-form video content. The proportion of adults using the internet to access longer video content rose by 3 percentage points in the

UK and 4 percentage points in the US (Figure 3.3); over one in five in both countries claimed to have “watched or viewed longer video content” in October 2008.

Figure 3.3 Use of the internet to consume audio-visual content

Which of the following do you use your internet connection for?



Source: Ofcom Understanding International Communications Behaviour research, October 2008
 Base: all adults aged 18+ who use the internet (UK 1001, France 1000, Germany 1002, Italy 1003, USA 1010, Canada 1000, Japan, 1003)

3.1.5 Broadcast mobile TV – a mixed year

Advances in converging technologies have expanded the ways in which AV content can be delivered to a mobile handset. These include:

- streamed or downloaded content using 3G networks;
- broadcast content using a dedicated mobile broadcasting standard such as DVB-H, MediaFLO, ISDB-T and DMB; and
- handsets with an integrated digital terrestrial television (DVB-T) tuner.

From the point of view of the end-user, there can often be little discernable difference between services.

3.1.5.1 Italy leads Europe on broadcast mobile TV

2008 saw the commercial launch of DVB-H services in the Netherlands, Austria and Switzerland in time for the European Football Championships and the Beijing Olympics. But it was Italians who first benefited from DVB-H services in Europe in 2006. According to Informa, the number of subscribers passed one million in May 2008. Three operators provide mobile TV services in Italy, with 3 Italia (3IT) the market leader. 3IT reported in August 2007 that 9.3% of its subscribers take broadcast mobile TV. This may be explained by 3IT's DVB-H handset subsidies and heavy promotion; since June 2008 3IT has been marketing a free-to-view mobile TV offer.

Consumers in Japan and in South Korea also have access to free-to-view broadcast mobile TV services alongside pay-TV services. In both countries the pay service uses a satellite (S-DMB) standard, while the free-to-air service uses terrestrial standards (ISDB-T in Japan and T-DMB in South Korea). At present, free-to-view services generate only modest advertising revenue, but – in an echo of some traditional terrestrial broadcast-based markets like Germany - they have the effect of suppressing the proportion of subscribers willing to take a

subscription package. In Japan, the pay-TV offering MoBaHo! is scheduled to close in March 2009, partly as a result of this tension.

In the US, Verizon Wireless and AT&T both recently launched broadcast mobile TV services. They use Qualcomm's proprietary MediaFLO technology and services begin at \$15 (£7.50) per month.

Figure 3.4 Selected broadcast mobile TV offers

Country	Operator	Technology	Launch	Details
Italy	3 Italia	DVB-H	2006	12 channel offering Mix of free-to-air, subscription and pay-per-view
	Telecom Italia Mobile	DVB-H	2006	8 channel offering Monthly subscription
	Vodafone	DVB-H	2006	9 channel offering Monthly subscription
Netherlands	KPN	DVB-H	2008	11 channel offering Monthly subscription
USA	AT&T Wireless	MediaFLO	2008	10 channel offering Monthly subscription
	Verizon Wireless		2007	8 channel offering Monthly subscription
Japan	Broadcast/operator consortium	ISDB-T	2006	Free-to-air broadcast TV
	MBCO	S-DMB	2004	Monthly subscription to MoBaHo! Service (scheduled to close in 2009)
South Korea	SK Telecom/TU Media	S-DMB	2005	Subscription and pay-per-view
	Broadcast consortium	T-DMB	2005	Free-to-air broadcast TV

Source: Ofcom

3.1.5.2 European policy makers preparing to license DVB-H services...

Legislators and operators in several European countries have taken steps to help kick-start the roll-out of DVB-H networks. While DVB-H is just one of several standards for broadcast mobile TV, European Commissioner Reding formally encouraged the use of the standard when she announced the Commission's strategy for mobile TV in July 2007.

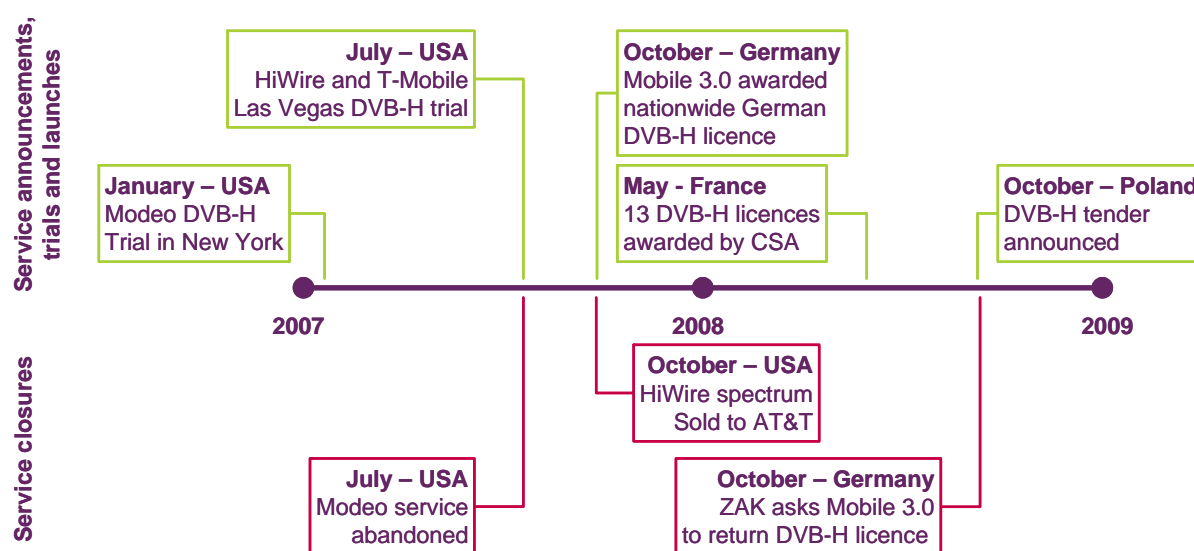
Elsewhere policy makers have made the following announcements on DVB-H:

- After mandating DVB-H as the sole mobile TV technology permitted in late 2007, France's CSA awarded 13 licences to broadcast mobile TV in France in May 2008. Launches are not expected before 2009.
- The Polish government announced a tender for a national DVB-H licence with a deadline of January 2009, which would allow operators to launch a service in the second half of the year.
- In Spain a legislative backlog and general election delayed the regulatory framework for DVB-H, which will now not be in place until the end of 2008. This will allow about 20 DVB-H services to launch in 2010 to coincide with analogue switch-off.

- In the US, T-Mobile took part in a DVB-H trial in Las Vegas with HiWire in 2007. But at the time of writing, the future for DVB-H in the US looked uncertain, since HiWire's parent company Aloha Partners sold its DVB-H spectrum to AT&T, which uses MediaFLO (a competing standard) for its mobile TV service. This is the second setback for DVB-H in the US, following the end of the Modeo service in July 2007.

Figure 3.5 shows recent DVB-H developments in 2007 and 2008:

Figure 3.5 Selected DVB-H service developments, 2007-2008



Source: Ofcom

3.1.5.3 But the German experience provides reason for caution...

Not all deployments of DVH-H services have been an unqualified success. In Germany Mobile 3.0 won the only DVB-H licence at the end of 2007. It planned to launch the service in spring 2008, but by October 2008 the German Commission for Approval and Supervision of Regulatory Authorities (ZAK) had asked Mobile 3.0 to hand its licence back after failing to roll out the service. The company failed to strike distribution agreements with the mobile network operators and faced competition from mobile handsets carrying integrated DTT (DVB-T) receivers.

Given that DVB-T technology is well established, this may offer an alternative route to market for mobile TV without the need for a new legislation and licensing round (and with an established business model). But even the take-up of this technology has been disappointing; in Germany sales of DVB-T handsets have so far been below expectations.

In the UK Virgin Mobile launched broadcast mobile TV using the BT Movio service in October 2006. But BT announced less than a year later that it was shutting down the service. Attention in the UK has now shifted to another mobile TV option that emerged in May 2008 when Qualcomm won the auction for 40MHz of L-Band spectrum in the UK. With their proprietary standard, MediaFLO, showing some signs of success in the US, one option for that spectrum could include a new UK-based mobile TV service.

3.1.5.4 ...and there are still questions about the future of broadcast mobile TV generally

The closure of broadcast mobile TV services in Japan, Germany and the UK, and the halting of trials elsewhere, show that there is still uncertainty about mobile TV, regardless of which standard it uses. It remains to be seen whether operators, vendors, policy makers and consumers can together generate the confidence and demand that mobile TV needs to become a success.

3.2 Content and aggregation

3.2.1 Content creation

3.2.1.1 Introduction

In this section we examine how converging technologies have influenced content creation industries across our comparator countries. They have had the effect of:

- increasing the range of distribution channels for digital audio and audio-visual content; and
- encouraging consumers to play an increasing role in creating and distributing their own content, and using new tools to communicate.

3.2.1.2 Summary

- **Online distribution of recorded music took an increasing proportion of total sales by value in 2007** – accounting for 24% of total revenue in the US (up by 7 percentage points), 16% in Japan (5 pp) and 8% (2 pp) in the UK. But overall, physical and digital music sales combined continue to slide year-on-year – by 20% in Spain, 17% in France and Italy and by 13% in the UK.
- **At least half of UK and Canadian adults use the internet to access social networking sites**, although user participation in generating content may be falling in popularity.
- **The number of people using their mobile to capture content is highest in the UK (59%) and Italy (58%)** – while recording video clips and uploading video content to the internet remain minority pursuits.
- **Using a mobile to access video and TV content is still a niche activity** – it is most popular in Japan where 8% claim to watch live TV on their mobiles.
- **Mobile social networking takes off in the UK and US** – 0.8 million UK and over 4 million US mobile subscribers now access social networking sites on their phones.

3.2.1.3 Audio content

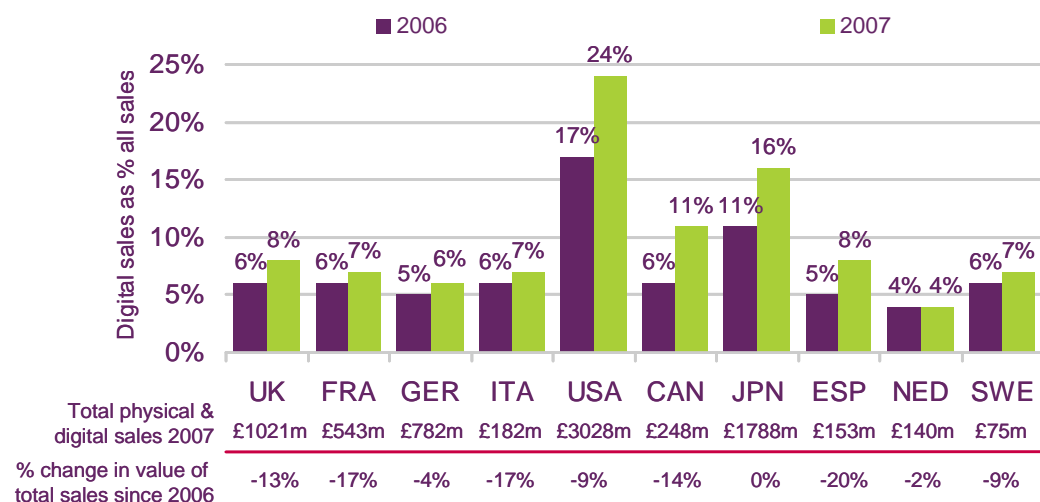
Digital music accounts for a quarter of total recorded music sales by value in the US

Recorded music industries in all the comparator countries where data were available experienced at least a small increase in digital sales as a proportion of all sales in 2007. The biggest increase came in the US, where digital grew to 24% of the total (Figure 3.6) in 2007. This was more than twice as high as the proportion in any other comparator country except Japan, where the comparable figure was 16%.

One of the drivers of the growth in the popularity of digital recorded music has been widespread adoption of portable digital music devices such as MP3 players, and the iPod. Our consumer research suggests that MP3 player take-up among internet users was at least 50% (see Figure 1.12 in section 1.3) across all the countries surveyed. The next generation of mobile phones can also store and play large numbers of music tracks; examples include the Apple iPhone which comes in 8GB and 16GB versions and the Nokia N96 with 16GB storage.

But despite digital taking a growing proportion of all recorded music sales, overall sales of recorded music (physical and digital) have continued to fall year-on-year. All the comparator countries except Japan experienced significant reductions of up to 20%; in Japan, sales remained flat (Figure 3.6).

Figure 3.6 Digital music share of total recorded music sales: 2006 and 2007



Source: International Federation of the Phonographic Industry

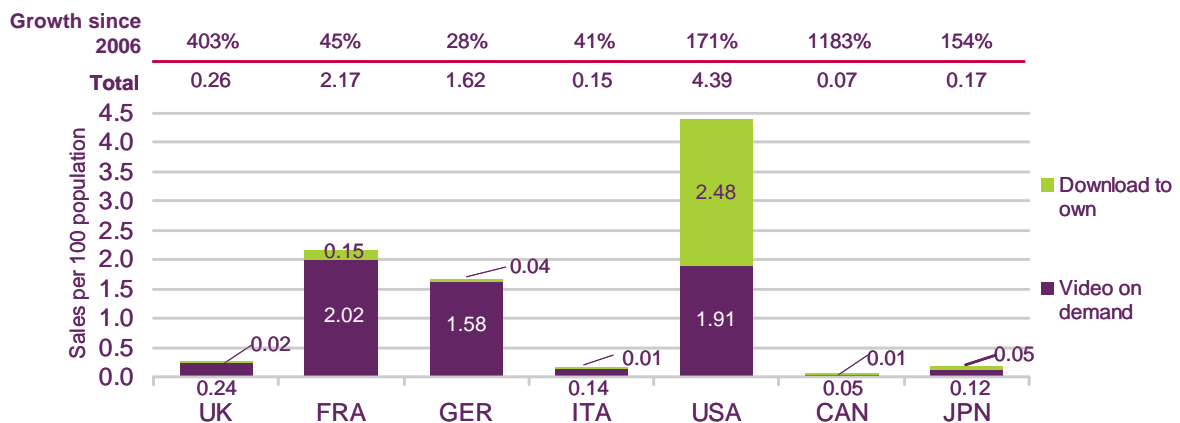
Audio-visual content commissioned by broadcasters

Digital distribution of online audio-visual content has developed more slowly than music. This may be partly because the delivery of good quality video content requires more bandwidth than audio, particularly for professionally-produced online film and longer pieces of content produced for TV.

The experience of the Apple iTunes store in the US illustrates this. NBC Universal content – which at the time was estimated to account for 30% of TV sales - was withdrawn from iTunes in December 2007 in a dispute over pricing structures. Only after Apple and NBCU resolved their dispute in September 2008 did NBCU’s content reappear on iTunes.

Download-to-own drives online film growth in the US – the most developed market among our comparator countries

Film distribution over the internet typically uses one of two models. Video-on-demand (VoD) allows consumers to rent a temporary download or buy temporary access to a stream; download-to-own (DTO) gives the consumer a permanent copy. Of these, VoD is the more popular among consumers in most of the comparator countries for which data were available, with the exception of the US. There, DTO sales per head accounted for more than half of all downloaded/streamed films sales; and DTO sales in the US alone were larger than the combined DTO and VoD sales of any other comparator nation (Figure 3.7).

Figure 3.7 Sales of online films per 100 population, 2007 (VoD/DTO)

Source: Ofcom calculations based on Screen Digest data

3.2.1.4 User-generated content

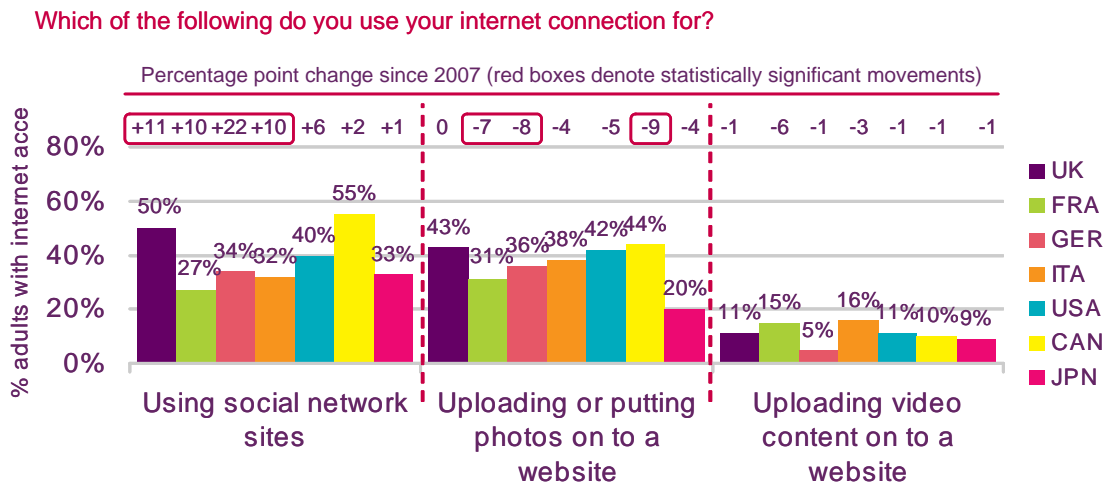
UK consumers' use of social networking sites rose over the year and closed in on Canada...

Our online consumer research shows that consumers' claimed use of social networking sites has risen in every country we surveyed. The number of adults using social networking websites rose by 11 percentage points year-on-year in the UK, France and Italy, and by 22 percentage points in Germany (Figure 3.8). UK internet users remain the top social networkers in Europe, with one in every two people who have access to the internet saying they use social networking sites. Only in Canada were people more likely to say they were social networkers (55%), and the gap between Canada and the UK has narrowed by 9 percentage points since last year. Social networking was most popular in the English-speaking countries, and this may reflect the fact that many of the most popular sites such as MySpace, Facebook and Bebo started off as English-language sites.

...but uploading photos and video less popular?

While use of social networking sites has grown in popularity in many of our comparator countries, internet users in our survey countries appeared less engaged with uploading pictures and video to the web during 2007, with the notable exception of the UK. It is possible that this is because social networking sites are becoming the focus of UGC-related activity (e.g. creating profiles, updating news etc); it might also be because the novelty of uploading content to the internet has begun to wear off for some consumers.

Figure 3.8 Use of the internet for user-generated content



Source: Ofcom Understanding International Communications Behaviour research, October 2008
 Base: all adults aged 18+ use the internet (UK 1001, France 1000, Germany 1002, Italy 1003, USA 1010, Canada 1000, Japan, 1003)

People in the UK and Italy are most likely to capture content using a mobile; those in Japan are most likely to use their mobile to upload content

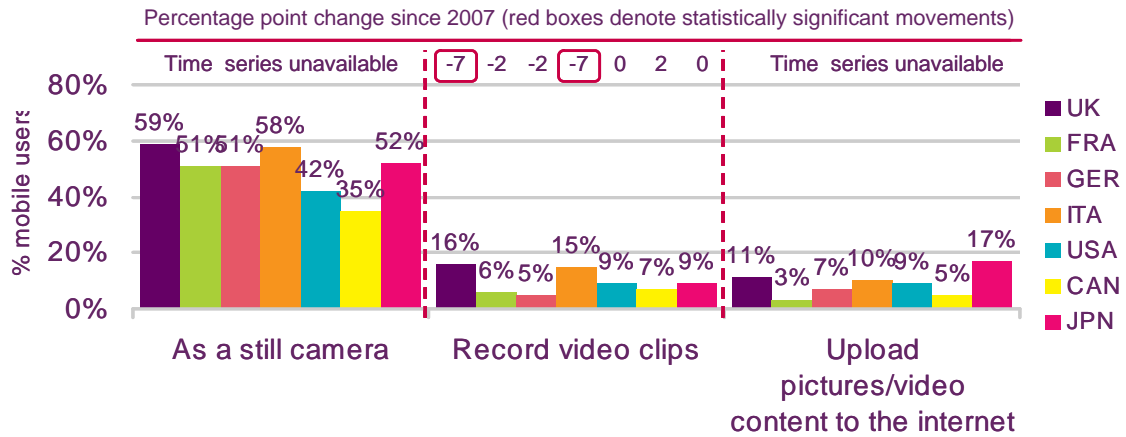
Mobile users in the UK and Italy are most likely to use their mobile phones to capture content by taking photos and recording video clips (Figure 3.9). Using mobiles as a still camera is the most common form of content capture, and its popularity is highest in the UK at 59%, and lowest in Canada at 35%. Outside North America, over 50% of people claimed to use their mobiles to take still photos.

The popularity of recording video clips on a mobile phone was highest among mobile users in the UK and Italy (16% and 15% respectively), though claimed use fell (by 7 percentage points) in both countries during 2007.

Japanese users were most likely to upload that content to the internet using a mobile phone, with 17% saying they had done so. This may reflect higher use of the internet on mobiles in Japan.

Figure 3.9 Use of the mobile phone for user-generated content

Which of the following do you use your mobile phone for?



Source: Ofcom Understanding International Communications Behaviour research, October 2008
 Base: All adults who use the internet aged 18+ who own a mobile phone (UK 929, France 914, Germany 946, Italy 952, USA 834, Canada 765, Japan, 914)

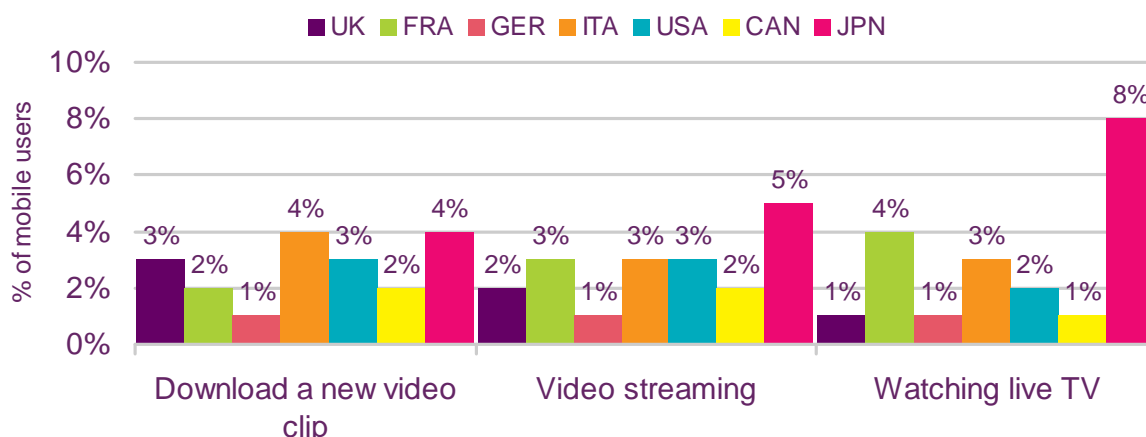
Accessing video content using a mobile a minority activity – most popular in Japan

Japan, Italy and France are all markets with significant mobile television offerings. Japan has a free-to-air broadcast TV service, while Italy has a mixture of free-to-air and subscription content delivered over a DVB-H network. France does not yet have a broadcast mobile television service, although TV services delivered over 3G networks are available from providers including Orange and Canal Plus.

Despite the growing supply of video-for-mobile services, our consumer research shows that, among the countries we surveyed, its consumption remains a minority activity that is at its most popular in Japan (8% claim to use their mobile to watch live television) (Figure 3.10). In Europe it remains very much a minority pursuit – 3% of French and Italian mobile users claim to watch streamed video over their phones, while 4% of French users claimed to watch live television.

Figure 3.10 Use of the mobile phone to watch video content

Which of the following do you use your mobile phone for?

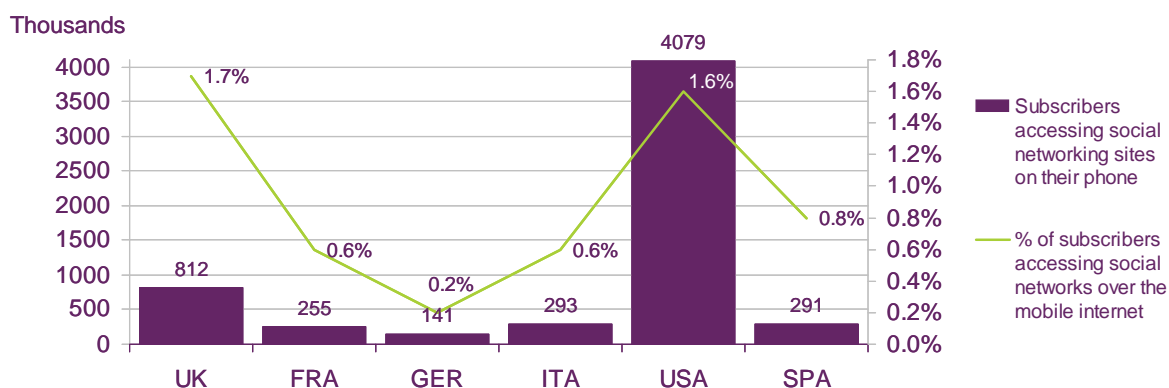


Source: Ofcom Understanding International Communications Behaviour research, October 2008
 Base: All adult internet users aged 18+ who own a mobile phone (UK 929, France 914, Germany 946, Italy 952, USA 834, Canada 765, Japan, 914)

Mobile social networking starts to take off in the US and the UK

Mobile social networking is now a feasible consumer proposition, thanks to the growing sophistication of mobile phones – bigger screens, faster processors, 3G technology – and application development and faster mobile networks. According to Nielsen Mobile data, mobile users in the UK were most likely to access social networking sites on their mobile (1.7%) closely followed by those in the US (1.6%). (Figure 3.11). On the face of it, these figures do not suggest widespread use – but bearing in mind the general popularity of social networking sites among a younger audience, these levels of claimed use could possibly represent a higher proportion of that group.

Figure 3.11 Social networking access via a mobile phone: 2007/8



Source: Nielsen Mobile; EU data Q1 2008, US data December 2007

3.2.2 Aggregation

3.2.2.1 Introduction

Television channels, radio stations and online portals all aggregate content; they reduce the effort that consumers would otherwise expend in finding content that they want to watch,

listen to or read. In this section we look at how converging communications technologies have affected aggregators by:

- setting out the revenues raised by other audio and AV aggregators that rely on pay-per-download business models; and
- highlighting trends in advertising revenue – which plays an important part in funding online aggregators,

3.2.2.2 Summary

- **Mobile music is now a significant driver of digital music revenue** – over half of digital downloads in Italy, France and Japan are to mobile phones.
- **Online audio-visual content revenue per head is highest in the English-speaking countries** – revenue per head stands at £1.70 in the US, £0.98 in the UK and £0.55 in Canada.
- **Internet advertising is most important to advertisers in the UK and Sweden** – the internet accounts for 19% of ad spend in the UK and 17% in Sweden, significantly more than the next highest European country, the Netherlands (9%).
- **Games and video dominate Google search terms** – while fast-rising search terms are exclusively concerned with user-generated content sites like Facebook and Dailymotion.

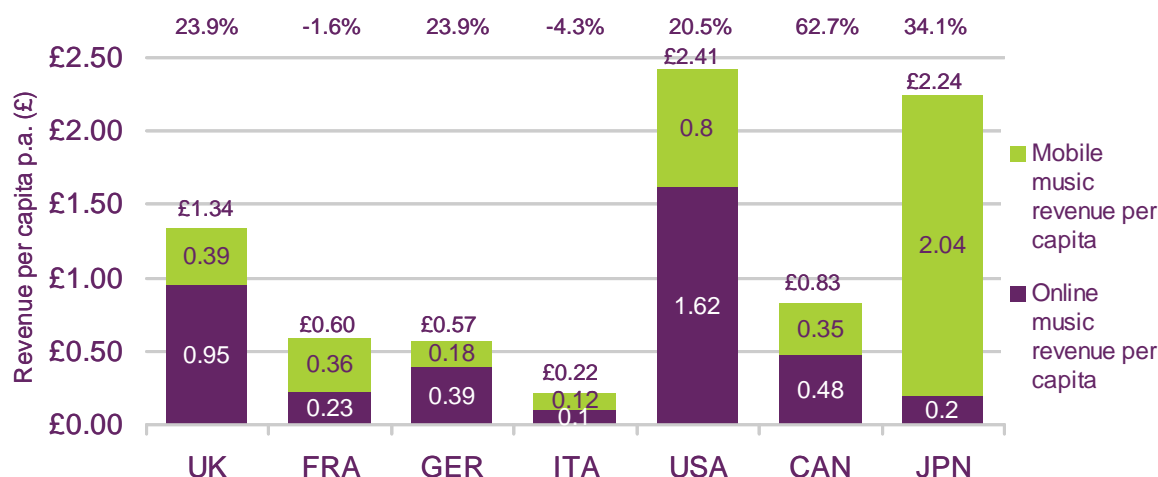
3.2.2.3 Audio aggregation

Digital music downloads mostly to mobile in Japan, and popular in France and Italy

Digital music has traditionally been distributed in one of two ways:

- **Download-to-own (DTO)** – consumers purchase a permanent download online (with or without digital rights management, depending on the store). iTunes is the market leader across the world, with around 70% of the online DTO digital music market.
- **Subscription services** – consumers pay a monthly fee to download music. Access to the music usually ceases if the user stops paying the monthly fee. Napster is an example of this model.

Music purchased and downloaded using a digital platform is growing in popularity, although its growth has failed to stem the recent overall reduction in recorded music sales. Music downloads to mobile phones are an important driver of digital music revenue in all the key comparator markets. In Japan they account for most digital music revenues and make up over half of digital music revenue per head in France and Italy; in the UK they accounted for 29% of total digital sales in 2007. (Figure 3.12)

Figure 3.12 Digital music revenue per head, 2007

Source: Ofcom calculations based on International Federation of the Phonographic Industry data
 Note: Mobile and online shares based on data for H1 2007. As a result it is possible that this chart understates the share of mobile music and overstates the share of online music.

But as consumer adoption of portable music devices has grown and as familiarity with acquiring music online has developed, so have the ways of delivering digital audio content to consumers. There are at least three recent trends:

- **Music downloads with no digital rights management (DRM)** – DRM allows rights holders to control consumers' use of digital media, and can apply time restrictions to music, or constrain the number of devices that can play the content. Responding to consumer criticisms about the restrictive nature of DRM, a number of DRM-free services have launched, sometimes provided at a slight premium. These include *amazonmp3* in the US (launched in September 2007), Apple's *iTunes Plus* and Europe's *7digital*.
- **Ad-supported online streaming (streaming on demand)** – these services enable consumers to stream audio content 'free' using an ad-funded model. A variety of sites such as *We7* (UK), *SpiralFrog* (US) and *Deezer* (France) provide music in this way.
- **Mobile pricing models** – Nokia recently launched its mobile offering *Comes with Music* that bundles a year's worth of unlimited music downloads in with the purchase price of certain new Nokia phones; Sony Ericsson recently announced a similar service called *Play Now Plus*.

3.2.2.4 Audio-visual content aggregation

Audio-visual (AV) content distributed online has recently grown in popularity. There is now a wide selection of licensed (and unlicensed) websites that aggregate and package AV content online. Some cater particularly to user-generated content, such as YouTube or Dailymotion. Others, like the BBC iPlayer or Hulu offer access to professionally produced and broadcast content (see section 3.1.4 above). They use several different business models to fund this type of content:

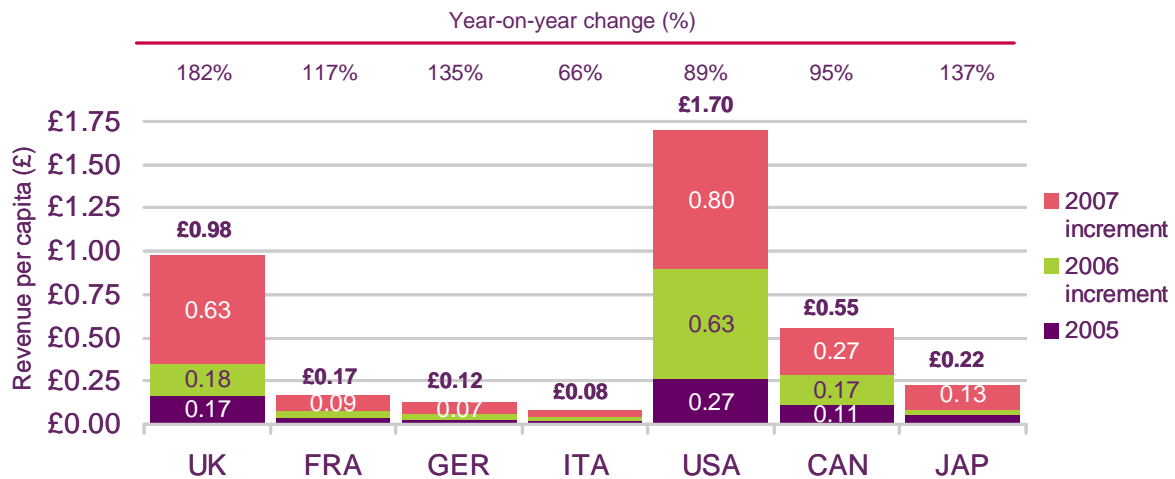
- **Pay-per-view** – users pay each time they download or stream content. This model is used by Apple iTunes and Canal Play;

- **licence fee-funded** – the BBC iPlayer is free-to-view in the UK, supported by the BBC licence fee;
- **advertising-funded** – in the US Hulu offers free online ad-supported video streaming of TV content and films from US television networks, and is already well established. Advertising also supports online services from Rai in Italy and local services in Spain; and
- **subscription services** – services such as L’Equipe TV Live (France) and dk4 livestream (Denmark) charge consumers a monthly fee in return for access.

Online TV/video revenue per head growing rapidly

Across all the key comparator countries AV revenue per head has grown at an annual rate of between 66% and 182% over the past three years. Revenue per head is highest in the US at £1.70, with the UK next, at just under a pound. As in previous years, there is a noticeable difference between the English-speaking countries and the other key comparator nations.

Figure 3.13 Online TV and video revenue per head, 2007



Source: © Informa UK Ltd 2008. All rights reserved. Taken from "Online TV & Video: The over-the-top challenge to traditional TV"

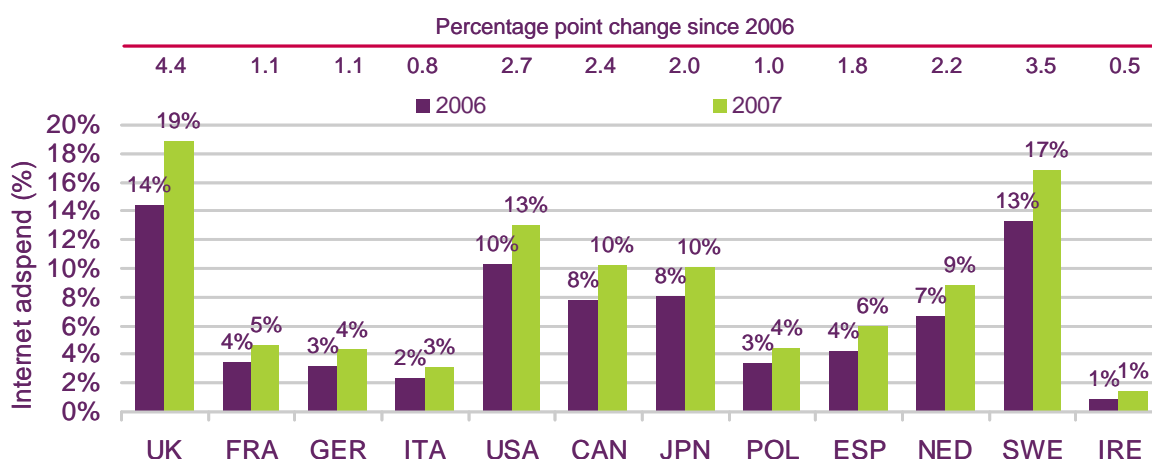
3.2.2.5 Advertising

Many online content aggregators rely on a free-to-view (or hybrid free and pay) business model to make content available. Advertising is therefore a crucial (and sometimes the only) source of revenue for them. This section starts by looking at the internet’s share of total advertising expenditure across the comparator countries. It then goes on to look at Google and internet trends of relevance to advertisers.

Internet adspend share highest in the UK and Sweden

The internet’s share of total advertising expenditure varies across our comparator countries (Figure 3.14). As a proportion of total advertising it was highest in the UK (19%) and Sweden (17%), and lowest in Italy (3%) and Ireland (1%). It accounted for 13% of spend in the US, 10% in Canada and 10% in Japan.

Figure 3.14 Internet advertising spend as a share of total advertising, 2006-2007



Source: World Advertising Trends 2008, published by World Advertising Research Center

Paid-for search is a significant component of internet advertising. It allows advertisers to buy listings within advertised results on search engines such as Google, MSN and Yahoo. Google is the largest search engine in most of our comparator countries (see Figure 3.33 in section 3.4.8) and attracts a significant proportion of all paid-for search revenue.

3.2.2.6 Video and games dominate Google search terms, with searches for UGC sites growing in popularity

Although one of Google’s primary roles is in content navigation rather than traditional aggregation, it is increasingly seeking to play a part in content aggregation. Additionally, its significance in online advertising is difficult to ignore in any discussion of advertising and aggregation.

Google’s substantial market share in much of the world means that its most popular search terms provide some insight into consumers’ search habits in each country (Figure 3.15). In many countries the most popular search terms are location-specific. Examples include ‘BBC’ for the UK, ‘gry’ for Poland and ‘wetter’ in Germany. But there are also common search interests among - those for video content, and in particular for ‘YouTube’, were especially popular in many countries. Other popular search terms included ‘games’ (including ‘jeux’ and ‘juegos’) and online auction sites.

The growing popularity of user-generated content was reflected in the search terms that rose up Google’s rankings the fastest in 2007. Without exception they were either social networking sites (‘Facebook’, ‘Badoo’ or ‘naska klasa’), video content sites (‘YouTube’ or ‘Dailymotion’) or in the case of ‘webkinz’, a virtual world.

Figure 3.15 Most popular Google searches, by country: 2007

Rank	1 st	2 nd	3 rd	<i>Biggest riser</i>
UK	bbc	games	ebay	<i>facebook</i>
FRA	jeux	video	pages jaunes	<i>dailymotion</i>
GER	ebay	wetter	youtube	<i>studivz</i>
ITA	video	libero	youtube	<i>badoo</i>
USA	lyrics	myspace	youtube	<i>webkinz</i>
CAN	lyrics	facebook	youtube	<i>facebook</i>
JPN	video	yahoo	youtube	
POL	gry	allegro	mapa	<i>nasza klasa</i>
ESP	youtube	hotmail	juegos	<i>youtube</i>
NED	amsterdam	marktplaats	google	<i>youtube</i>
SWE	lyrics	download	youtube	<i>facebook</i>
IRE	ireland	bebo	youtube	<i>youtube</i>

Source: Google Insights for Search (<http://www.google.com/insights/search/>)

Note: 'Biggest riser' unavailable for Japan

3.3 Distribution and networks

3.3.1 Introduction

Converged technologies let consumers access a range of media types through several distribution networks. In this section we examine the impact of convergence on content distribution, including:

- growth in the number of consumers receiving television over IPTV networks;
- the availability of VoIP services;
- the roll-out of mobile services; and
- convergence between fixed and mobile networks in the home.

3.3.1.1 Key points

- **IPTV availability highest in France** – 22% of French households can now receive IPTV, while France and Sweden lead in IPTV take-up.
- **VoIP revenues were highest in North America** during 2007 – but they accounted for the highest share of fixed telephony revenue in Canada, at 5.6%.
- **High-speed HSDPA networks are now widely available in Europe and Japan** – the UK has the highest coverage, at 87% of the population.
- **‘Homezone’ fixed-mobile convergence products attract more subscribers than dual-mode handsets** – T-Mobile has secured 1.4 million subscribers to its Homezone tariff in Germany alone, while Orange’s dual-mode *Unik/Unique* service has only 470,000 subscribers across four markets.

3.3.1.2 Internet protocol television (IPTV)

Internet protocol networks are an obvious example of a network that can carry varying content types (voice, text, audio-visual). This section looks first at television content carried over IP networks, and the following section looks at voice over IP networks.

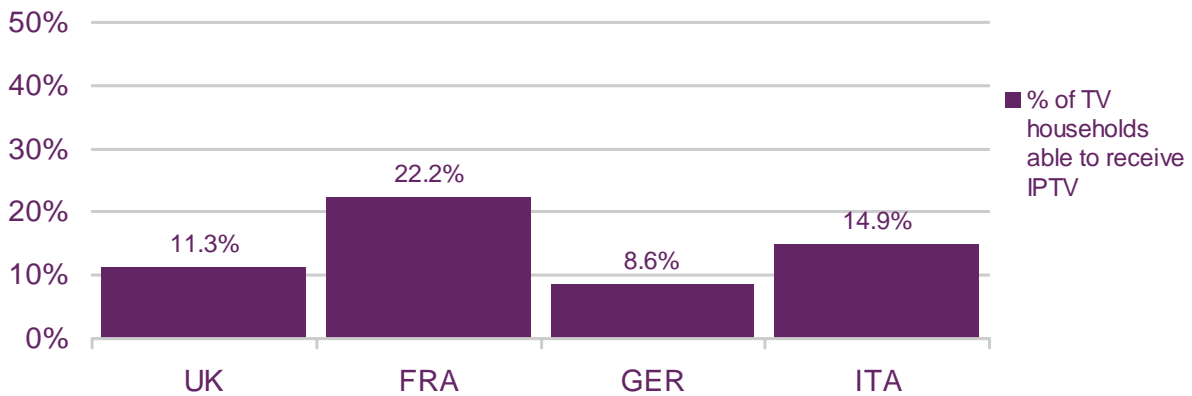
Over one in five French households can receive IPTV

IPTV services deliver audio-visual content over closed and managed networks using internet protocol technology. This allows operators to control content and guarantee quality of service to subscribers. It differs from television content delivered over the ‘open’ internet (sometimes called ‘over the top’ content) which offers no such quality of service guarantees.

France leads the major European countries in the availability of IPTV, with 22% able to receive the service (Figure 3.16). Italy has the next highest availability (15%), followed by the UK (11%) and Germany (9%).

IPTV typically requires a minimum amount of bandwidth to support both a standard television service and concurrent internet surfing. As a result, IPTV availability is limited by internet connection speeds in some places.

Figure 3.16 IPTV availability, 2007



Source: IDATE

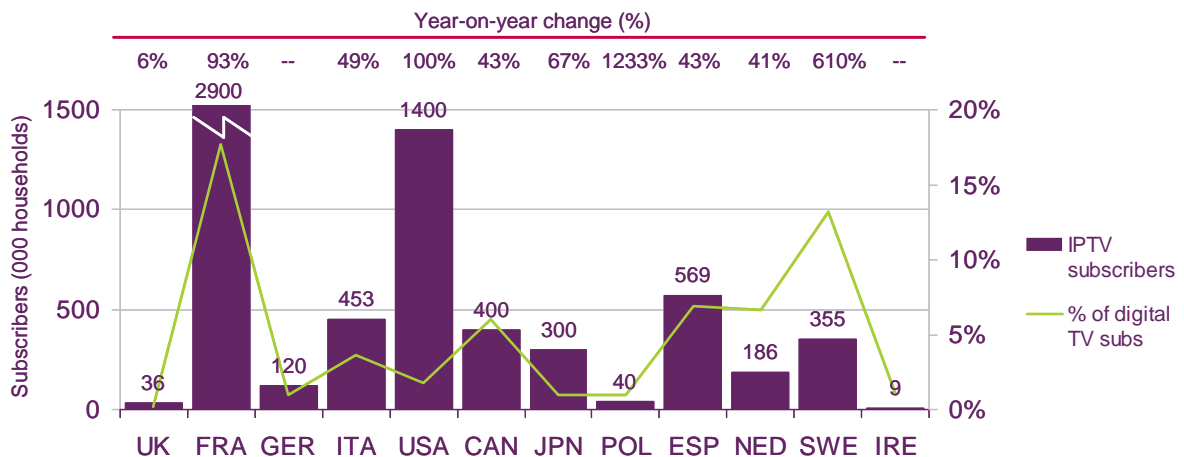
Some IPTV operators have hybridised their service with DTT so that some live television channels are broadcast while others (and on-demand services) are delivered over the IPTV infrastructure. Examples of this include BT Vision in the UK (its live channels are all taken from DTT) and *Free's Freebox* in France.

French consumers still most likely to take IPTV

With nearly 3 million subscribers, people in France are still more likely to take an IPTV service than in any other country. In 2007 they made up nearly 20% (2.9 million) of all French digital TV subscriptions, 13% (0.4 million) in Sweden and over 5% (0.6 million) in Spain. There were 1.4 million US connections, but that number only represents 1.8% of digital households.

Nearly all of the nations covered by this report experienced robust growth in IPTV subscribers between 2006 and 2007, although this was from a very low base. Apart from Poland, where growth of 1223% was from a base of only 3000 households in 2006, growth was highest in Sweden (610%), the US (100%) and France (93%). Key drivers of IPTV in Europe have included bundled options that include cheap or even free IPTV services and the presence of many IPTV operators in existing fixed-line and broadband markets.

Figure 3.17 IPTV subscribers: 2007



Source: World Television Markets 2008, IDATE

3.3.1.3 Voice over internet protocol (VoIP)

IPTV is not the only consumer service that relies on internet protocol technology. VoIP services carry voice calls over the internet (instead of the public switched telephony network, PSTN) and typically cost less than those carried over the PSTN. Consumers can make VoIP calls in several ways:

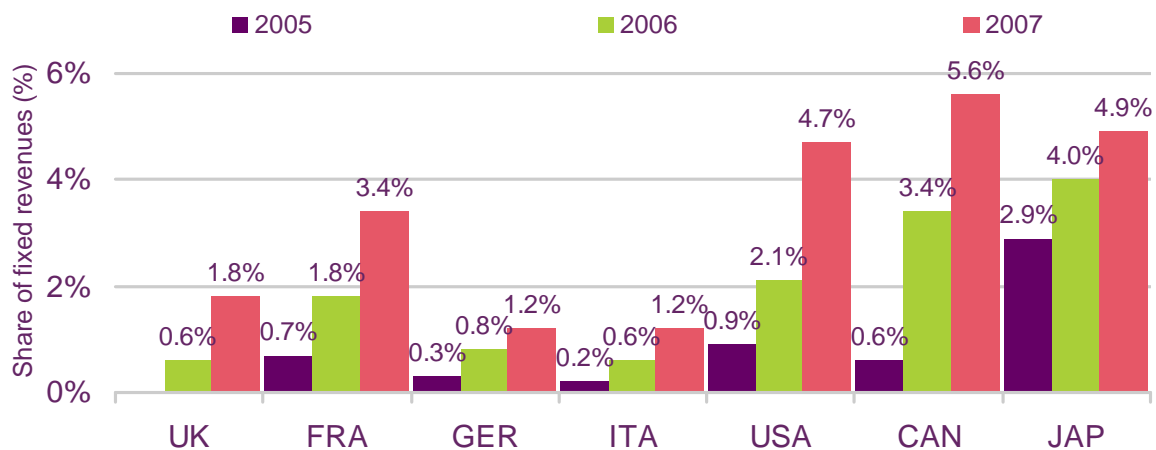
- from a PC;
- using a traditional phone and VoIP phone adaptor or special VoIP phone (i.e. without using a PC);
- using a WiFi-enabled VoIP phone; or
- over a mobile phone (either via a WiFi-supported handset or over a cellular network).

Owing to the difficulty of measuring PC-to-PC VoIP traffic, the remaining analysis excludes these calls.

VoIP share of fixed telephony revenues highest in North America and Japan

Revenue as a proportion of fixed telephony share was highest in Canada (5.6%), followed by Japan (4.9%) and the US (4.7%). Share, in both Canada and the US, has jumped since 2005, largely as a result of increased take-up by business. This contrasts with France and Japan where VoIP use is more widespread among domestic subscribers.

Figure 3.18 VoIP share of fixed telephony revenues: 2005-2007



Source: IDATE

Note: excludes those who make PC to PC calls

For analysis of VoIP take-up across the comparator countries, please see Figure 5.53 in section 5.3.3.4.

Net neutrality

IPTV, VoIP and other video and peer-to-peer applications can contribute to heavy traffic and congestion on the internet. Many of these applications are time-sensitive and are far less tolerant of delay than, for example, email or web browsing.

To respond to these new applications and their associated demands, service providers are developing a range of business models. Some of these prioritise different types of traffic. Improvements in network technology allow greater identification of internet packets associated with different applications, and this lets service providers prioritise traffic accordingly.

This has led to debate about regulatory intervention to ensure 'net neutrality'. The debate echoes previous arguments about the public interest requirements of the telecommunications industry, and whether companies involved in broadcasting are best viewed as 'community trustees' (with obligations to society and consumers) or 'marketplace participants' (with obligations only to their shareholders). Proponents of net neutrality such as internet applications providers and consumer groups argue that it is fundamental to the protection of consumer choice and innovation on the internet. Opponents of net neutrality base their case on the need to differentiate their offers on two grounds:

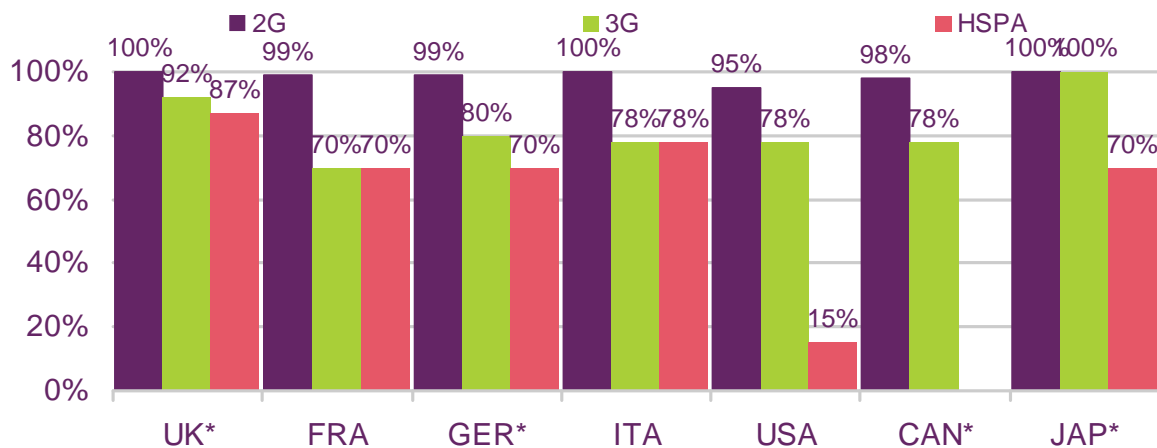
- quality of service (QoS) – to improve the consumer experience for services such as VoIP or video streaming; and
- on the need to recover their infrastructure investment costs.

3.3.1.4 Mobile distribution

UK leads the comparator countries in HSPA availability

Mobile networks, some of which can now carry a whole range of content types, vary in their availability by country:

- **2G** – second generation networks are near-universal across all the countries in this study, and several have effective 100% population coverage;
- **3G** – Japan has universal 3G coverage, reflecting earlier roll-out and higher take-up of 3G services there. Apart from in France where the figure is only 70%, 3G is available to at least 78% of the population in all the comparator countries; and
- **HSPA** - in the UK 87% of the population can access HSPA, the highest availability of all the key comparator countries (Figure 3.19). Outside North America, HSPA coverage is at least 70% of the population. As discussed in section 2.1.3, the low US figure for HSPA coverage reflects the availability of fast mobile data services over other 3G standards, the geographical size of the US, and the late deployment of HSPA technologies.

Figure 3.19 Mobile distribution: 2G, 3G and HSPA availability

Source: IDATE

Note: *Some figures for the UK, Germany, Canada and Japan are estimates. No data are available for HSDPA availability in Canada.

3.3.1.5 Converging distribution networks

The relatively high residential penetration of WiFi and the increasing number of public wireless hotspots make WiFi increasingly important for fixed-mobile convergence (FMC) – see Figure 5.67, section 5.3.5.4 for an analysis of WiFi hotspots. FMC sees voice and data originating from the same device travelling over different networks to its recipient depending on the location of the user and the networks available. Very often this involves potentially cheaper backhaul over the fixed network using a WiFi device (rather than a cellular network) when a WiFi signal is available. Examples include

- dual-mode handsets (handsets that function as a ‘cordless’ fixed handset when in range of a WiFi network and as a mobile elsewhere, such as those provided for Orange’s *Unik/Unique* service). This is sometimes supported using technology known as unlicensed mobile access (UMA);
- mobile handsets that can access public WiFi networks;
- VoIP on mobile handsets (e.g. Skype on 3UK);
- ‘home zone’ offerings, where users are offered low price calls when they use their mobiles at home, although the network that carries the call doesn’t change; and
- femtocells (see below).

‘Home zone’ offers more popular than dual-mode propositions

Take-up of dual-mode FMC services has so far been poor (Figure 3.20). Reasons for this include the limited range and availability of handsets, poor battery life and modest cost savings. Additionally, due to the cannibalisation of fixed services by FMC services, FMC products can lead to disagreements in pricing between operators’ fixed and mobile arms.

BT has now stopped offering its Fusion services to new customers. This leaves Orange’s *Unik/Unique* services, with 470,000 subscribers across four countries, as the main and most popular offering in Europe. In comparison the ‘home zone’ offering from Bouygues claims 1.25 million subscribers.

Figure 3.20 Selected fixed-mobile convergence offerings

FMC offering	Country	Subscriber numbers
Dual-mode/UMA		
BT Fusion	UK	35,000
Orange Unik	FRA/UK/POL/ESP	470,000
T-Mobile	USA	125,000
Home Zone		
T-Mobile	GER	1,400,000
Bouygues	FRA	1,250,000
Vodafone	UK/GER	1,000,000

Source: IDATE/Ofcom

Femtocells – an important development in fixed-mobile convergence

Femtocells are yet another example of converging use of distribution networks. A femtocell is a miniature cellular base station that can connect to the core mobile network through a residential or business broadband connection. When in range of the femtocell, a mobile user can make calls on his or her cellular network. This has the benefit of providing high quality cellular coverage in areas not well served by macrocells, usually rural areas or indoor environments. Compared to other FMC solutions, femtocells have the advantage that they do not require a dual-mode handset as they use existing licensed spectrum.

At the moment only two operators have started femtocell deployment for advanced coverage – Sprint in the US and NTT DoCoMo in Japan. In the US this technology allows Sprint to serve rural areas outside its current coverage footprint cost-effectively. In Japan DoCoMo uses femtocells to provide coverage to blackspots particular to the environment of many Japanese cities – high buildings and basements. Several other operators, including Vodafone, Verizon and Telefonica, have initiated technical trials in various markets.

3.4 Consumption

3.4.1 Introduction

In this section we examine the ways in which consumers are accessing content and services over new delivery platforms, and how the availability of these platforms is changing the way in which people consume communications services. Its findings include:

- Our research shows that among the countries for which we had data, internet users in the UK were most likely to have a broadband connection (93% claimed to do so), a PVR (30%) or a digital radio set (34%).
- There was almost one fixed broadband connection for every four people in our comparator countries at the end of 2007 (23 per 100 people, up from 19 in 2006) while the UK figure was 26 per 100, up from 21 in 2006, and the use of mobile broadband services is also increasing.
- Internet use was highest in the US, where the average internet user spent over 15 hours a week online in August 2007 (the figure for the UK was just under 14 hours a week – the highest of the European countries for which we had data).
- Consumers in Japan were most likely to say that the internet was their main source of information for two of the three topics which we asked about (sports at 33% and entertainment at 42%) and second most likely to say the internet was their main source of national news information (at 36% one percentage point lower than the US). Twenty-four per cent of people in the UK said the internet was their main source of national news, 23% for sport and 28% for entertainment news.
- Research suggests that people are increasingly using social networking sites to stay in touch with people, and the UK had the second highest growth in the proportion of internet users using social networking sites to contact each other – up 11 percentage points on a year previously.
- More than seven in ten internet users in all of the countries where data were available said that they accessed the internet while watching TV (in the UK 74% of internet users said that they did so mostly or sometimes).
- Respondents in Japan were the most likely, and those in Germany least likely, to mainly use their mobile phone while at home – in the UK 51% of people said that they always or mostly used a fixed-line phone when in the house.

3.4.2 Device take-up

The mobile phone probably remains the most widely adopted converged device; but the internet connectivity available with many new devices (in particular games consoles) enables device manufacturers to roll out new services as required, via firmware updates. This, along with hardware add-ons, enables device functionality to evolve over time; product capabilities are no longer set at the point of manufacture. Examples in the UK include the Nintendo Wii, which can now offer consumers access to the BBC iPlayer, the Microsoft Xbox 360, which BT broadband customers can now use to access BT Vision's VoD IPTV services, and the PlayStation 3, which can now function as a DVR with a hardware add-on, PlayTV.

Device convergence is not just concentrated among games consoles: in the US hardware manufacturer Samsung and online movie rental service Netflix recently announced that some of Samsung's Blu-ray players will be able to play video content streamed from the Netflix website (Netflix also has a similar deal with hardware manufacturer LG). French electrical and entertainment retailer FNAC has also recently launched hardware which combines an HD digital terrestrial receiver, a PVR, access to FNAC's on-demand IPTV services and internet access via either an Ethernet port or WiFi.

3.4.2.1 Internet users in the UK most likely to have broadband, a DVR and digital radio

Our research asked internet users about the communications devices and services that they used, and from the results we were able to calculate whether people in each country were less or more likely to use a device than the average for all seven countries.

Figure 3.21 Take-up of consumer communications devices

Is there a landline phone in your home that can be used to make and receive calls?
Which of the following devices do you own and personally use?

	UK	FRA	GER	ITA	USA	CAN	JPN
Fixed telephone line	95%	95%	96%	92%	79%	89%	90%
Mobile phone	93%	91%	94%	95%	83%	77%	91%
Broadband connection	93%	74%	81%	84%	78%	72%	67%
Mobile broadband connection	22%	25%	17%	22%	16%	16%	10%
PVR	30%	17%	11%	21%	20%	20%	13%
Digital radio set	34%	15%	21%	32%	12%	14%	7%

Source: Ofcom Understanding International Communications Behaviour research, October 2008

Base: All adults aged 18+ who use the internet (UK 1001, France 1000, Germany 1002, Italy 1003, USA 1010, Canada 1000, Japan=1003)

Note: As the questionnaire was answered online it may not reflect the attitudes of a representative sample of the whole population; figures in green are statistically significantly higher than average, while those in red are statistically significantly lower than average.

Internet users in the UK, France and Germany were more likely than average to have access to a fixed-line phone (all at least 95%), while those in the US (79%) were less likely than average, perhaps as a result of widespread internet access via cable, which does not require a voice line in the way that most DSL internet access does (Figure 3.21). Respondents in the US (83%) and Canada (77%) were less likely than average to own a mobile phone, while those in the UK, Germany and Italy were more likely to. Use of broadband among internet users was lower than average in France, Canada and Japan, and higher than average in the UK (93%) and Italy (84%).

Internet users in the UK, France and Italy were more likely than average to use a mobile broadband connection, while those in Japan (10%) were less likely. The UK had the highest level of PVR use among the nations for which data were available, at 30% of internet users, while take-up was lower than average in Germany (11%) and Japan (13%). Take-up of digital radio sets was also higher than average in the UK (34%) along with Italy, and it was lower than average in France, the US, Canada and Japan.

The UK was the only country where take-up of all of the services / devices among internet users was higher than average.

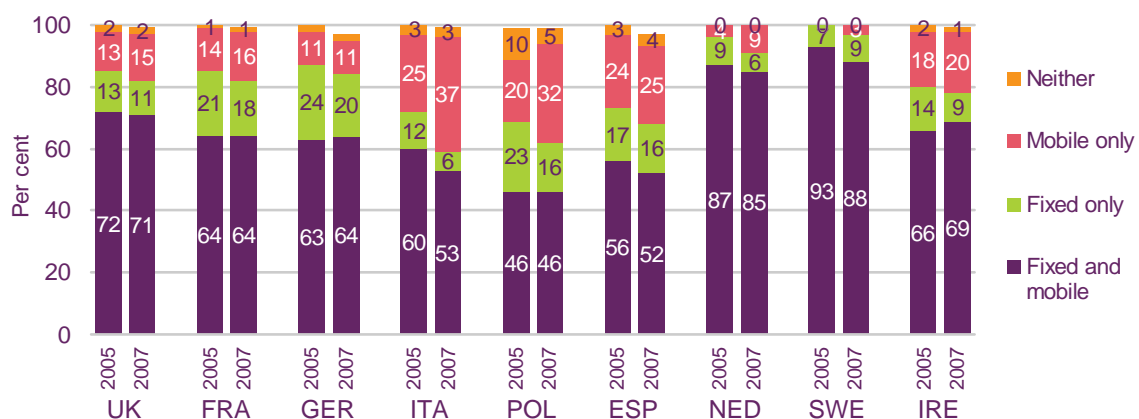
3.4.2.2 People in Italy are most likely to live in a mobile-only home

The European Commission's *Household Survey Special Eurobarometer* reports show cross-ownership of household telecoms technologies. This survey was conducted among all households, rather than just those with an internet connection as in our own research, so the two sets of figures are not directly comparable.

The report shows that at the end of 2007 Italy had the highest proportion of mobile-only households among our European comparator countries, up by 12 percentage points in three years to 37% (Figure 3.22). The number of mobile-only households is high in Italy as fixed-line take-up has historically been relatively low, and many households went straight to mobile telephony rather than fixed, a pattern which is also evident in a number of developing and Eastern European countries, including Poland.

People in Germany were the most likely among our EU comparator nations to live in a fixed-only household in 2007, at 20% (down from 24% two years previously), as a result of relatively expensive historic mobile pricing. (Price benchmarking information for our main comparator countries can be found in Section 2.1). Homes in Sweden were most likely to take both fixed and mobile telephony in 2007, with 88% doing so - 35 percentage points higher than Poland (53%) where people were least likely to take both. Those living in Poland were also most likely (5%) to have no access to telephony services in the home, although the proportion in this category has halved since 2005.

Figure 3.22 Cross-ownership of household telephony services: December 2005 to January 2006 and November to December 2007



Sources: European Commission *E-Communications Household Survey Special Eurobarometer* reports, number 249 (published July 2006) and 293 (published June 2008)

3.4.3 Consumers' use of mobile handsets

3.4.3.1 Fixed to mobile substitution most prevalent in Japan

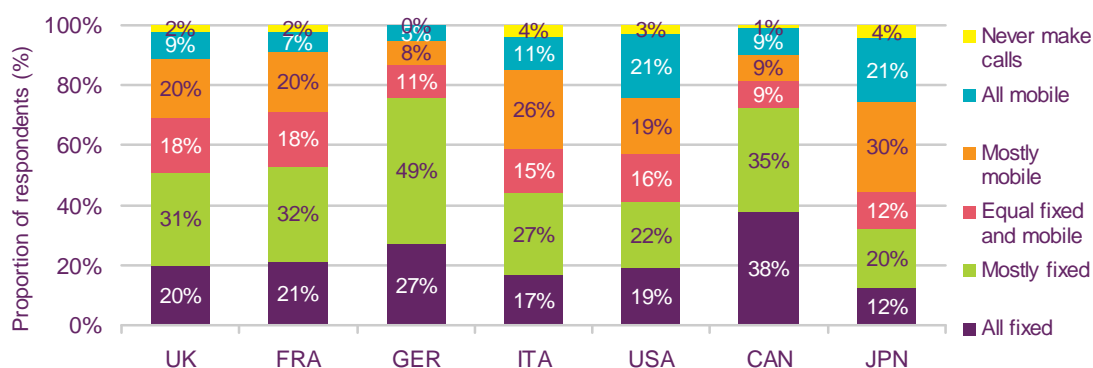
The interplay between established technologies, such as fixed-line telephony, and newer devices is illustrated well by consumers' relationship with mobile phones. There are marked differences between the ways in which telephony services were used in the home among the key comparator nations considered in our report.

Respondents in Germany were the most likely to use their fixed line to make a call while in the home, with 76% of people saying that they only, or mostly, used their fixed line to make calls while at home, and only 13% saying that they only, or mainly, used a mobile to make calls at home (Figure 3.23). This may be explained by historically high mobile prices in Germany, and the fact that, until recently, many mobile packages did not include a bundle of inclusive call minutes.

By contrast, people in Japan were the least likely to use their fixed line to make a call at home, with less than a third of respondents (32%) saying that they only, or mainly, used their fixed line, and over half (51%) claiming to only, or mainly, use their mobile. Consumers in the US were more likely to claim to be more even-handed in their use of fixed lines and mobiles in the home - 41% mainly, or always, using a fixed line to make calls in the home, compared to 40% for mobile, and 16% saying that they used both equally.

Figure 3.23 Main method of making voice calls while in the home

Which of the following best describes how you make voice telephone calls from home?



Source: Ofcom Understanding International Communications Behaviour research, October 2008

Base: All adults aged 18+ who use the internet (UK 1001, France 1000, Germany 1002, Italy 1003, USA 1010, Canada 1000, Japan=1003)

Note: As the questionnaire was answered online it may not reflect the attitudes of a representative sample of the whole population

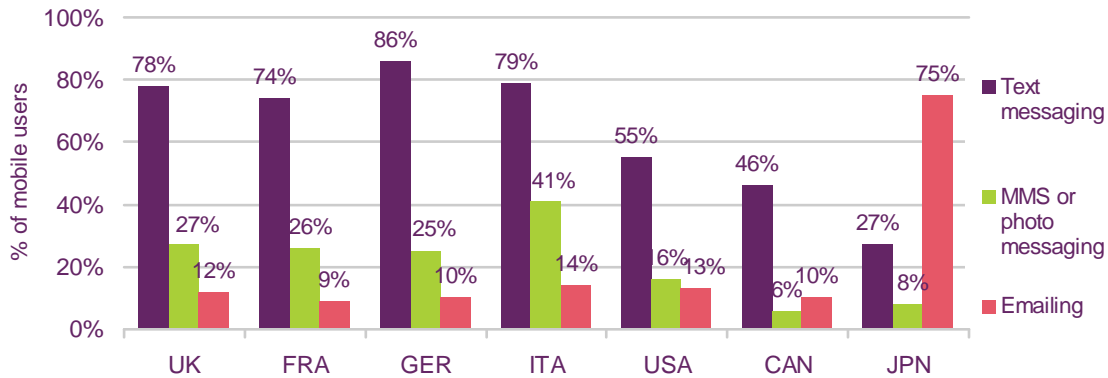
3.4.3.2 SMS remains the most popular non-voice mobile function

SMS messaging was the most popular non-voice mobile function among consumers in all of our comparator countries except Japan (Figure 3.24). European mobile users were more likely than those living in the US, Canada or Japan to use SMS: use in Europe ranged from 74% of mobile users in France to 86% in Germany, while in all of the non-European nations less than 60% of mobile phone users claimed to send SMS messages, despite the fact that use increased in all of these countries during the year.

Emailing was more popular than SMS among Japanese consumers, with 75% of respondents saying that they used mobile email (18 percentage points more than had done so in the previous year) compared to just 27% who said that they used SMS. Use of mobile email in Japan was exceptional among our comparator countries – people in Italy were the

second most likely to claim to use mobile email, but they accounted for less than 15% of those whom we surveyed.

Figure 3.24 Use of mobile phone functions to contact people
Which of the following do you use your mobile phone for?



Source: Ofcom Understanding International Communications Behaviour research, October 2008

Base: All adults aged 18+ who own a mobile phone (UK 929, France 914, Germany 946, Italy 952, USA 834, Canada 765, Japan=914)

Note: As the questionnaire was answered online it may not reflect the attitudes of a representative sample of the whole population

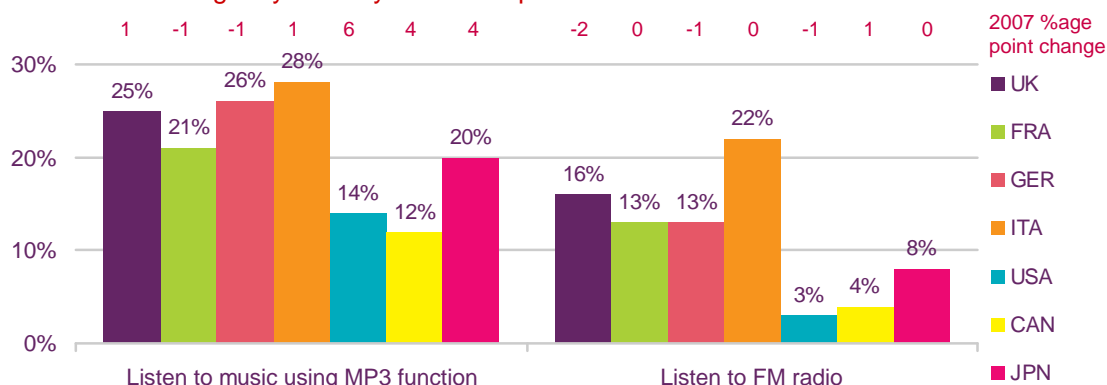
3.4.3.3 MP3 and radio functions still popular on mobile handsets

There were few changes in the proportion of people who used their mobile handset to listen to music, MP3s or FM radio in the year to October 2008 (Figure 3.25). Use of a mobile handset's MP3 / music player function ranged from 12% of respondents in Canada to 28% in Italy, where consumers were also most likely to use the FM radio function on their handset, with 22% of people claiming to do so.

Use of a mobile handset as a music player was unchanged in all countries during 2008, except the US and Canada, where it increased. The proportion of people listening to FM radio on their mobile handset was also unchanged in all of our comparator countries over the same period. Internet users in the US and Canada were the least likely to listen to FM radio on their mobile handset (at just 3% and 4% respectively), possibly a result of the availability and popularity of satellite radio services in both countries.

Figure 3.25 Use of mobile phone to listen to music or FM radio

Which of the following do you use your mobile phone for?



Source: Ofcom Understanding International Communications Behaviour research, October 2008

Base: All adults aged 18+ who own a mobile phone (UK 929, France 914, Germany 946, Italy 952, USA 834, Canada 765, Japan=914)

Note: As the questionnaire was answered online it may not reflect the attitudes of a representative sample of the whole population

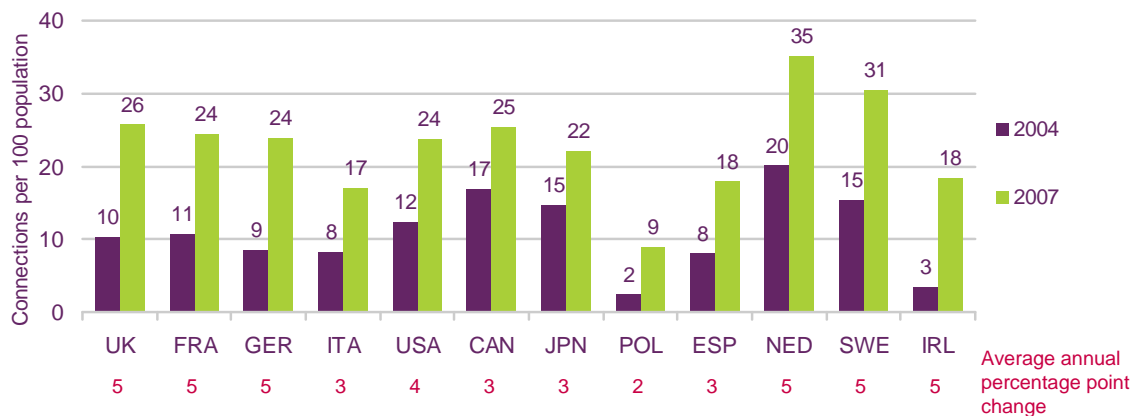
3.4.4 Access to the internet and broadband connections

3.4.4.1 There is almost one fixed broadband connection for every four people across our comparator countries

Broadband internet services are changing the ways in which consumers access and consume media. In 1998, almost all internet connections were narrowband, unable to support many of the services which we now take for granted with today's faster, more stable connections. Radio streaming, VoIP and web-based video-conferencing were available to some, but were often poor quality and unreliable, a casualty of dial-up's slow 56kbit/s connections speeds and frequently dropped connections.

By the end of 2007 there was almost one broadband connection for every four people living in our comparator countries (Figure 3.26). Many consumers are now able to use services over the internet which would have been unthought-of by most users a decade ago, such as accessing broadcast-quality audio-visual content.

Among our comparator countries, the number of fixed broadband connections per 100 population ranged from nine in Poland to 35 in the Netherlands, averaging 23 per 100 across all 12 comparator countries. In all these countries the number of fixed broadband connections increased in the three years to 2007, rising fastest in the UK, France, Germany, the Netherlands, Sweden and Ireland.

Figure 3.26 Broadband connections per 100 population, 2004 and 2007

Source: IDATE / industry data / Ofcom

3.4.4.2 Mobile internet services are gaining in popularity

The take-up of fixed broadband connections only tells part of the story since a growing number of consumers are accessing the internet using a mobile internet connection. Internet services have been available on mobile handsets since the late 1990s, evolving from simple text-based sites (often managed by and exclusive to the mobile network operator) to today's more sophisticated open-access mobile-optimised internet sites. These offer access to text, picture, audio and video content as well as applications such as instant messaging and email. However, a mobile phone's small screen and keypad is not always ideally suited for navigating around internet sites, viewing content and entering information.

Alongside offering access to the internet on mobile phones, mobile operators have for many years also offered internet connections to laptops, using 2G and now 3G datacards. However, until recently these services were expensive, did not generally offer connection speeds in excess of 512kbit/s and were targeted primarily at business users.

But in the last two years the target audience for so-called 'mobile broadband' has widened, as 3G operators have sought to monetise their unused network capacity by launching lower priced mobile broadband services aimed at residential consumers. With the roll-out of high-speed HSDPA on 3G networks, the speeds offered are comparable to those from basic fixed broadband services, while competitive pricing has also resulted in service charges on a par with fixed offers. Section 5.1.4.3 shows that some households are using a mobile broadband connection instead of a fixed-line broadband service.

3.4.5 The profile of internet users

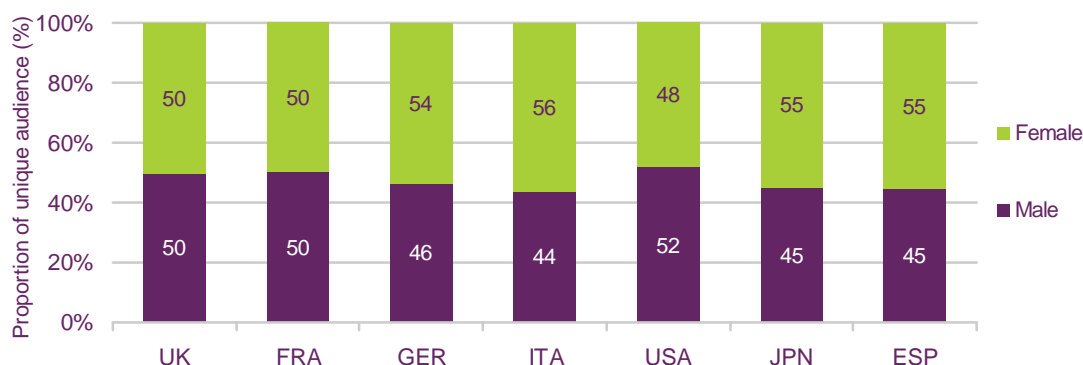
3.4.5.1 More women than men accessed the internet in most countries in August 2008

According to Nielsen Online, in August 2008 the number of internet users was split equally between men and women in the UK and France, while in Germany, Italy, Japan and Spain more women went online than men, accounting for between 54% and 56% of the total unique audience. The US was the only nation where the majority of internet users (52%) were men.

Browsing habits may change from month to month (depending on current affairs and sports events, etc) and the figures will also be partly determined by the differing population profiles of each country: in the countries in question the proportion of the population who were

female ranged from 50.4% in Canada to 51.2% in Japan, according to the CIA's World Factbook¹³.

Figure 3.27 Internet unique audience, by gender



Source: Nielsen Online, August 2008

Note: Home and work use including applications, except Germany (home use only) and Japan (home use only excluding applications)

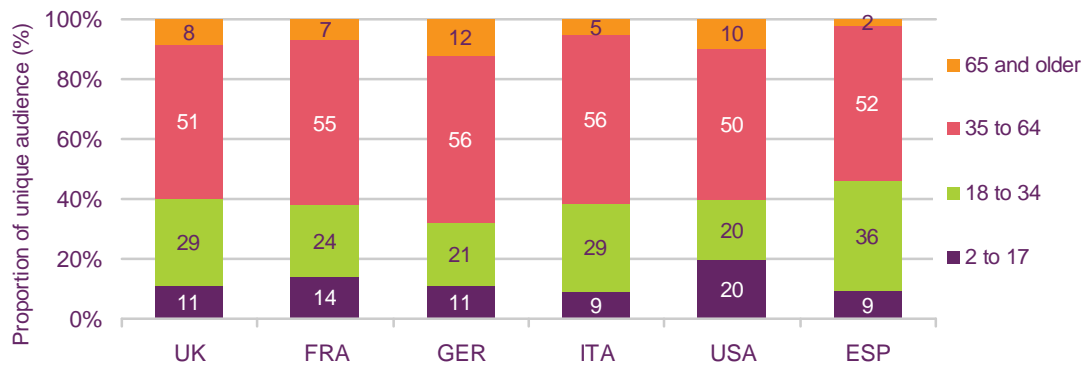
3.4.5.2 Internet users in the US most likely to be under the age of 18

The US had the highest proportion of internet users who were under 18 among the comparator countries where data were available; 20% of the unique internet audience were aged 2-17 in August 2008 (Figure 3.28). This was significantly higher than in the other nations, where the proportion ranged from 9% in Italy and Spain to 14% in France. Other key findings from the data are:

- in all of the nations for which data were available at least half of all internet users were aged 35-64;
- Spain commanded the highest proportion of internet users who were aged under 35, at 46%;
- although the US had the highest proportion of internet users who were children, it had the lowest proportion of users aged 18-34, at 20%; and
- Germany was the nation with the highest proportion of internet users aged 65 or older, at 12%, while in Spain just 2% of users fell into this age group.

It should be noted that the data below will partly reflect the differing age profiles of the populations in each country.

¹³ <https://www.cia.gov/library/publications/the-world-factbook/geos/sp.html>

Figure 3.28 Unique internet audience, by age

Source: Nielsen Online, August 2008

Note: Home and work use including applications, except Germany (home use only)

3.4.6 Internet consumption patterns

3.4.6.1 Internet users in the US spend the most time online each week

Among the countries for which data were available, internet users in the US spent the most time online in August 2008, with an average of 913 minutes, or over 15 hours a week (Figure 3.29). This includes internet use at home and at work and not all of this time will be active surfing, as the figures include use of applications such as email and the streaming of audio and video content.

Among the European countries covered in this report, UK internet users ranked first in terms of time spent online in 2008 (with 839 minutes or just under 14 hours a week) having overtaken France during the previous four years. Average time spent online by internet users rose in all the countries for which data were available over the period, possibly driven by the fact that average connection speeds have increased, as have the number of online services which users are able to access.

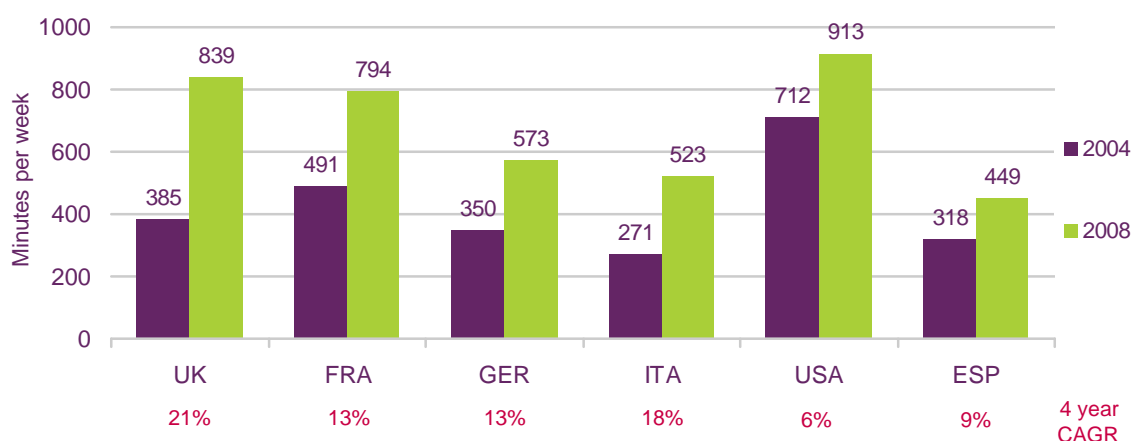
While UK internet users ranked second for the weekly use of the web, growth in weekly use among UK users rose at an average of 21% per annum in the four years to 2008, the highest among the nations for which data were available. The second fastest increase in time spent online was in Italy where it rose by 18% a year, albeit from a relatively low base point, to just under nine hours a week in 2008.

3.4.6.2 Web 2.0 services are helping to drive web use

Web 2.0 is a term used to describe a perceived second generation of web-based communities and services (such as social networking sites and wikis) which facilitate collaboration and sharing between users. The growing prevalence (and popularity) of Web 2.0 sites, which for many users have made using the internet a more creative, engaging experience is another factor that may be driving increasing average times online.

Websites such as Facebook, Wikipedia and YouTube allow users to create their own profiles and/or upload content (such as text, pictures and video) for others to view and comment on, and this increased user involvement is having an upward effect on total surfing times. For example, according to Nielsen, the average UK internet user spent three hours and 40 minutes on 'member community sites' in September 2008, up 42% on the figure of two hours and 35 minutes for a year previously.

Figure 3.29 Time spent online: 2004 and 2008



Source: Nielsen Online, August 2004 and 2008

Note: Home and work use including applications, except Germany & Spain (home-only data), a new methodology was introduced in 2006

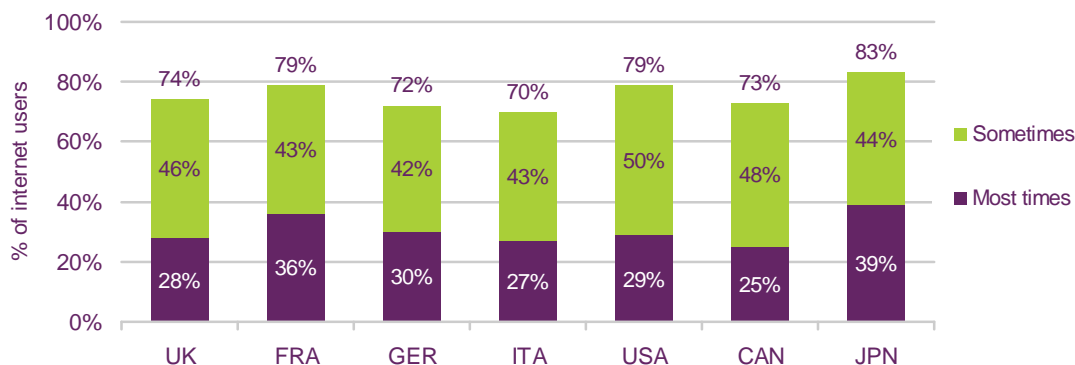
3.4.7 Concurrent use of different types of media (media ‘stacking’)

3.4.7.1 More than seven in ten internet users access the web while watching TV

Our research asked explored internet users’ concurrent use or ‘stacking’ of media services. The results showed that media stacking was commonplace; between 70% (in Italy) and 83% (in Japan) of internet users across the countries we surveyed said they ‘sometimes’ or ‘most times’ accessed the internet while watching TV.

Figure 3.30 Frequency of surfing the internet while watching TV

Do you ever watch TV at home and go on the internet at the same time?



Source: Ofcom Understanding International Communications Behaviour research, October 2008

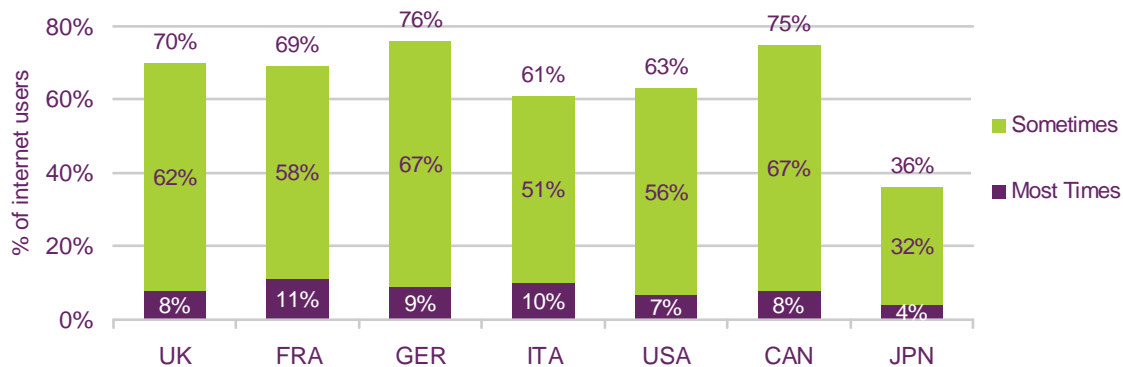
Base: All adults aged 18+ who use the internet (UK 1001, France 1000, Germany 1002, Italy 1003, USA 1010, Canada 1000, Japan=1003)

Note: As the questionnaire was answered online it may not reflect the attitudes of a representative sample of the whole population

There was greater variation between our comparator countries when it came to the proportion of respondents who used a fixed phone while watching TV – perhaps reflecting cultural differences relating to people’s need to give the person on the line their undivided attention (Figure 3.31). Less than 4 in 10 (36%) of Japanese internet users said they ‘sometimes’ or ‘mostly’ used a landline when watching television, while the figure rose to nearly eight in ten (76%) in among those in Germany.

Figure 3.31 Frequency of using a landline phone while watching TV

Do you ever watch TV at home and use a landline phone at the same time?



Source: Ofcom Understanding International Communications Behaviour research, October 2008

Base: All adults aged 18+ who use the internet (UK 1001, France 1000, Germany 1002, Italy 1003, USA 1010, Canada 1000, Japan=1003)

Note: As the questionnaire was answered online it may not reflect the attitudes of a representative sample of the whole population

Our research also showed that using a fixed phone while watching TV at home was more common than using a mobile phone while watching TV in both Germany and Canada, while the opposite was true in Italy and Japan. Using either a fixed or a mobile phone while watching television was significantly more commonplace than was listening to radio or music or playing a games console while watching TV.

3.4.8 How consumers use online services and information

3.4.8.1 Websites visited: Google and Microsoft are the only brands that appear in the top ten of every comparator country

Only Google and Microsoft appeared in the top ten sites (by reach) of those comparator countries where data were available. And since visits to Microsoft's site are not under the control of the user – PCs running a Windows operating system automatically check for updates from the Microsoft domain - its appearance in the lists does not necessarily reflect internet users' actions and preferences.

Google's nearest competitors in search, Yahoo! and MSN/Windows Live, each appeared in the top ten of six of the seven countries (they did not rank in Germany or Japan). Other than search engines, sites that encourage user participation also proved popular with internet users in 2007. YouTube, eBay and Wikipedia / Wikimedia Foundation all appeared in five out of the seven top tens.

Figure 3.32 Top ten website brands, by share of unique audience

	UK	FRA	GER	ITA	USA	JPN	ESP
1	Google	Google	Google	Google	Google	Yahoo!	Google
2	MSN/Windows Live	MSN/Windows Live	Microsoft	MSN/Windows Live	Yahoo!	Google	MSN/Windows Live
3	BBC	Microsoft	eBay	Microsoft	MSN/Windows Live	Rakuten	Microsoft
4	Yahoo!	Orange	AOL Media Network	Virgilio	Microsoft	NTT Comms	Yahoo!
5	Microsoft	Free	MSN/Windows Live	Yahoo!	AOL Media Network	GMO internet	YouTube
6	eBay	Yahoo!	Wikipedia	Libero	YouTube	Microsoft	Blogger
7	Facebook	TF1 Network	Amazon	eBay	Fox Interactive Media	Nifty	Terra
8	YouTube	PagesJaunes	T-Online	YouTube	eBay	FC2	Wikipedia
9	Amazon	L Internaute Magazine	Web.de	Wikipedia	Wikipedia	Wikimedia Foundation	Orange
10	AOL Media Network	eBay	YouTube	eMule	Apple	Livedoor	eMule

Source:

Nielsen Online, August 2008

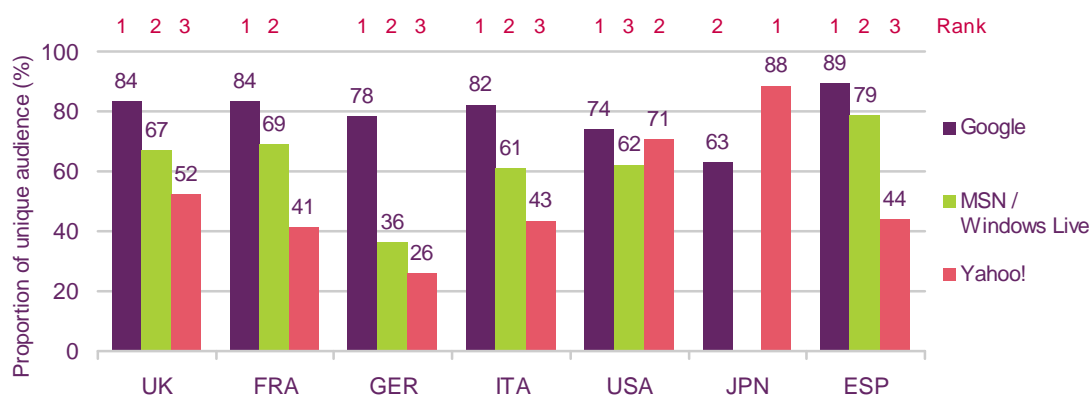
Note: Home and work use including applications, except Germany (home data only) and Japan (home use excluding applications)

3.4.8.2 Search: Google is the search engine with the highest reach in all countries but Japan

Among most comparator countries where we had data, Google emerged as the most popular search engine when ranked by unique audience reach (defined as the proportion of the total active internet population visiting a website at least once in the period in question). The notable exception was Japan, where Google ranked second (63%) behind Yahoo! whose reach stood at 88% (Figure 3.33).

In the other nations, Google's reach ranged from 78% in Germany (where until recently its use had lagged behind that in other nations) to 89% in Spain. In the US Yahoo! was also popular, with a reach of 71%, just 3 percentage points behind Google. The US was the only nation where Google, MSN / Windows Live and Yahoo! each individually benefited from reach of over 60% of internet users.

Figure 3.33 Selected search websites' reach and rank among all sites, by reach



Source: Nielsen Online, August 2008

Note: Home and work use including applications, except Germany (home data only) and Japan (home use excluding applications)

3.4.8.3 Internet users in Japan are most likely to use the web to explore a variety of different types of information

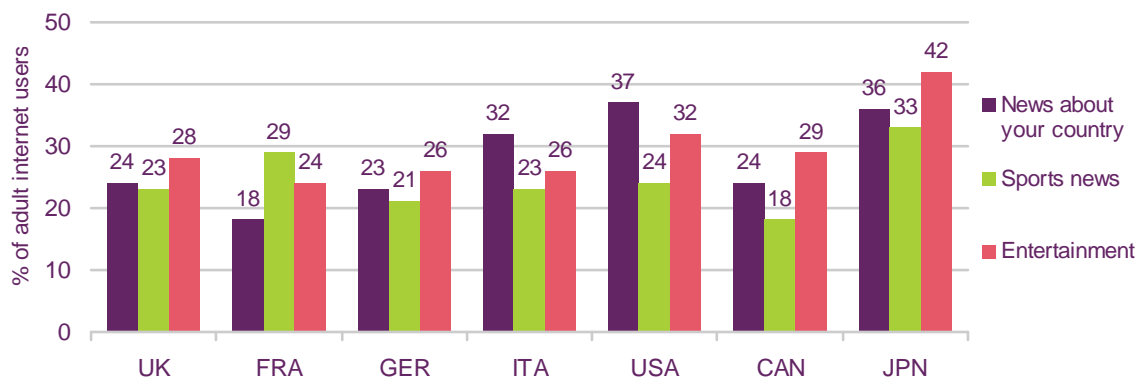
As part of our online consumer research we asked about the ways in which people research different topics. It showed that there was wide variation in how respondents use the internet to find information on different topics. For example, for national news stories, internet users in the US were most likely to cite the internet as their main source (37%), while less than half this proportion (18%) did so in France (Figure 3.34).

Internet users in Japan were more likely than average to say that the web was their main source in searching for a variety of different types of information:

- thirty-six per cent said it was their main source of national news stories, the second highest proportion among the nations for which data were available after the US; and
- for sports news, a third (33%) claimed that the web was their principal source, while 42% made the same claim about entertainment news, both the highest proportions among the countries for which we had data.

Figure 3.34 Use of the internet as a main source of information

Which is your main source of information for the following interests?



Source: Ofcom Understanding International Communications Behaviour research, October 2008

Base: All adults aged 18+ who use the internet (UK 1001, France 1000, Germany 1002, Italy 1003, USA 1010, Canada 1000, Japan=1003)

Note: As the questionnaire was answered online it may not reflect the attitudes of a representative sample of the whole population; figures include not interested and other responses

3.4.9 Accessing audio and audio-visual content online

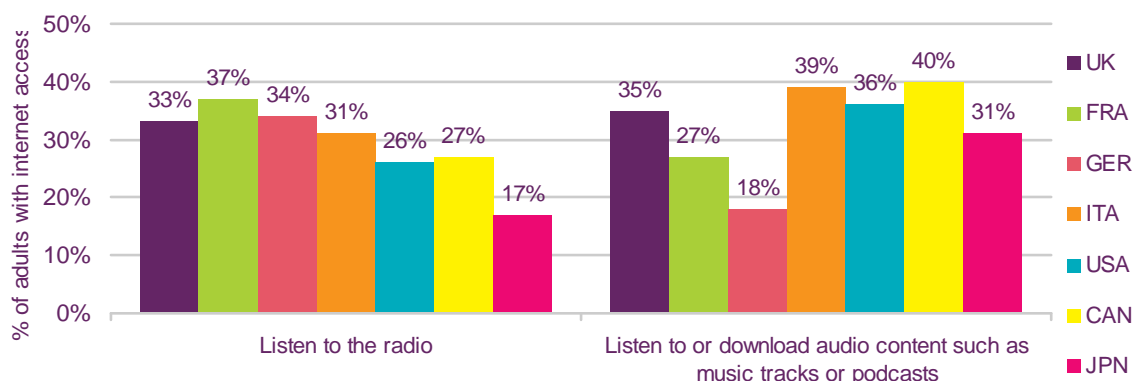
3.4.9.1 Accessing audio content online is most widespread in Canada and Italy

Listening to and downloading audio content over the internet is relatively well-established – even when dial-up was the principal method of internet access, streamed audio was popular because audio data files are relatively small (at least when compared to video content) and do not require high bandwidth broadband connections to access or download them.

Our research showed that listening to the radio over the internet was most popular in France, where 37% of internet users claimed to do this, followed by Germany and the UK (34% and 33% respectively). Audio on demand services, such as music downloads and podcasts, were most popular in Canada and Italy, where 40% and 39% respectively of internet users said that they did this (Figure 3.35).

Figure 3.35 Use of the internet to consume audio content

For which of the following do you use your home internet connection?



Source: Ofcom Understanding International Communications Behaviour research, October 2008

Base: All adults aged 18+ who use the internet (UK 1001, France 1000, Germany 1002, Italy 1003, USA 1010, Canada 1000, Japan=1003)

Note: As the questionnaire was answered online it may not reflect the attitudes of a representative sample of the whole population; figures are not comparable to those in the 2007 report

3.4.9.2 Almost half of all internet users access video clips online

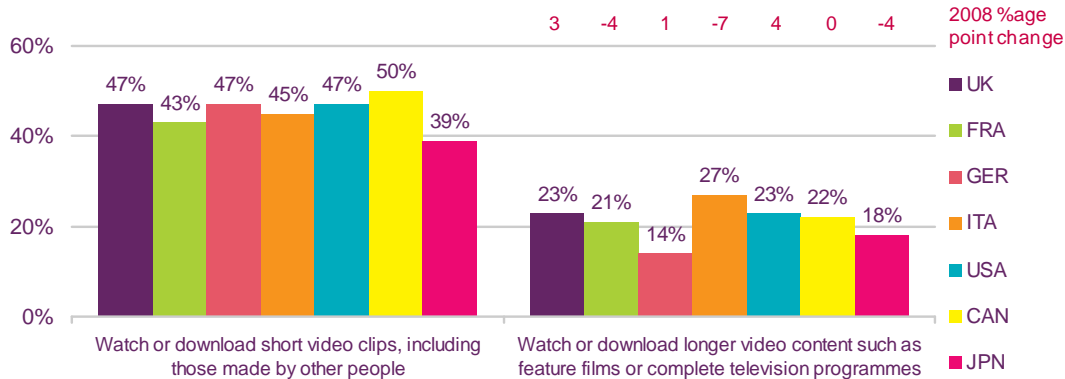
In all of the comparator countries we surveyed, internet users were more likely to say they downloaded or watched short video clips online (including those made by other people) than longer video content such as movies or complete TV programmes (Figure 3.36).

The proportion watching shorter clips varied between 39% of internet users in Japan to 50% in Canada; by contrast, those watching longer video content ranged from 14% in Germany to 27% in Italy. This might reflect:

- the popularity of sites such as YouTube (which mainly contain short clips of user-generated content);
- the fact that there are relatively few sites where professionally produced full TV programmes and movies can be downloaded or viewed legally, although the number is growing with the recent launches of sites such as BBC iPlayer, Hulu and Joost; and
- the possibility that not all internet users feel comfortable sitting in front of a PC or laptop to view full-length television programmes or films.

Figure 3.36 Use of the internet to consume audio-visual content

For which of the following do you use your home internet connection?



Source: Ofcom Understanding International Communications Behaviour research, October 2008
 Base: All adults aged 18+ who use the internet (UK 1001, France 1000, Germany 1002, Italy 1003, USA 1010, Canada 1000, Japan=1003)
 Note: As the questionnaire was answered online it may not reflect the attitudes of a representative sample of the whole population; figures for shorter video clips are not comparable to those in the 2007 report due to questionnaire re-phrasing

3.4.10 Consumers' use of the internet as a communication tool

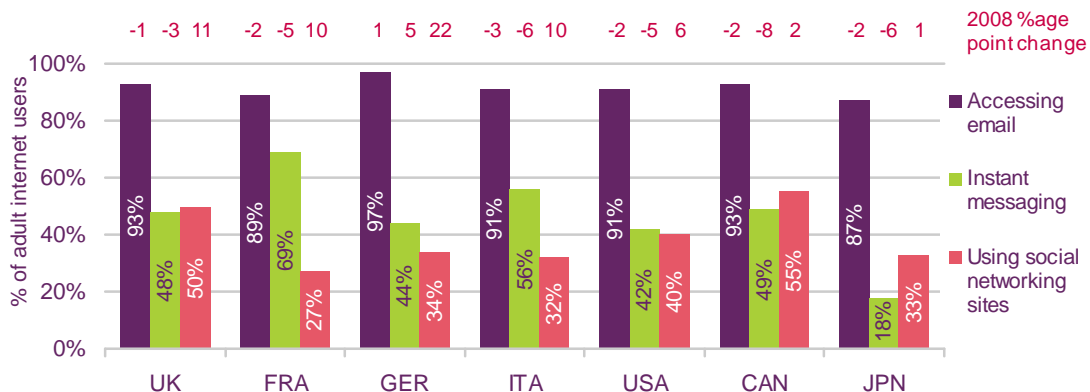
3.4.10.1 Social networking sites are increasingly being used to contact people

We asked internet users about the methods they used to contact other people. The results suggest that there has been a significant increase in the number of people using social networking sites (SNS) such as MySpace and Facebook to contact each other (Figure 3.37). This has been accompanied by a reduction in the use of instant messaging (IM) services in some countries.

People in every country except Canada and Japan were more likely in 2008 to claim they used social networking sites to contact each other, compared to 2007 - in Canada and Japan the figures remained unchanged since last year. Use of IM was unchanged in all of the countries except Italy, Canada and Japan, where it fell. There were no changes in the use of email in any of our countries in the year to October 2008.

Figure 3.37 Uses of the internet to contact people

For which of the following do you use your home internet connection?



Source: Ofcom Understanding International Communications Behaviour research, October 2008
 Base: All adults aged 18+ who use the internet (UK 1001, France 1000, Germany 1002, Italy 1003, USA 1010, Canada 1000, Japan=1003)
 Note: As the questionnaire was answered online it may not reflect the attitudes of a representative sample of the whole population

3.4.11 The impact of the internet on consumers' use of offline media

3.4.11.1 TV viewing among US internet users affected the least by the internet

Section 3.4.6 illustrated how internet users are spending large and growing amounts of time online. Up to a point, this may result in consumers substituting the internet for other media-related consumption (e.g. newspapers). Our research suggests that some consumers believe they spend less time on other, 'offline', media since acquiring access to the internet, while others believe the opposite. Analysis earlier in this section showed that concurrent media consumption, or 'stacking', does not necessarily mean that more time on the web results in less time spend on other media consumption.

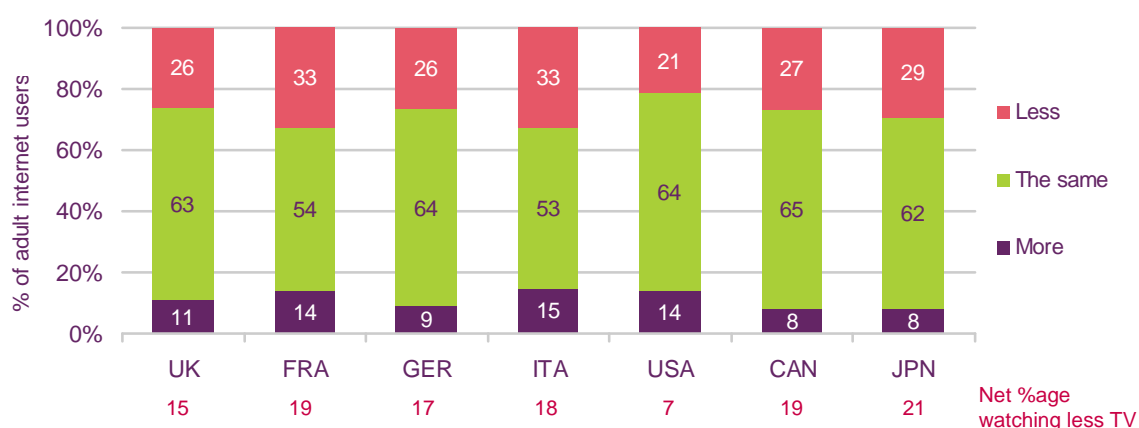
Figure 3.38 shows that among the nations where data were available, between a fifth (21% in the US) and a third (33% in Italy and France) of respondents said that they believed they watched less TV than they had done before having access to the internet. By contrast between 8% (in Canada and Japan) and 15% (in Italy) of internet users said that they believed they watched more TV.

Subtracting the proportion of people who said they believed they were watching less TV from those that believed they watched more, we calculated the net proportions of people who believed they watched less TV since having access to the internet. This analysis suggests that TV has been least affected by increasing internet use in the US (where the net difference was seven 7) while among other countries the net proportion of people who said they thought they watched less television ranged from 15 to 21 percentage points, the impact on TV viewing appearing to be most significant in Japan.

It is important to note that this calculation does not take into account the extent to which people think they are watching more or less TV, and that no other data were available to support these findings, therefore any conclusions drawn from the analysis are only indicative.

Figure 3.38 Impact of the access to the internet on watching television

Since starting to use the internet, which if any of the following activities do you believe you undertake more or less offline?



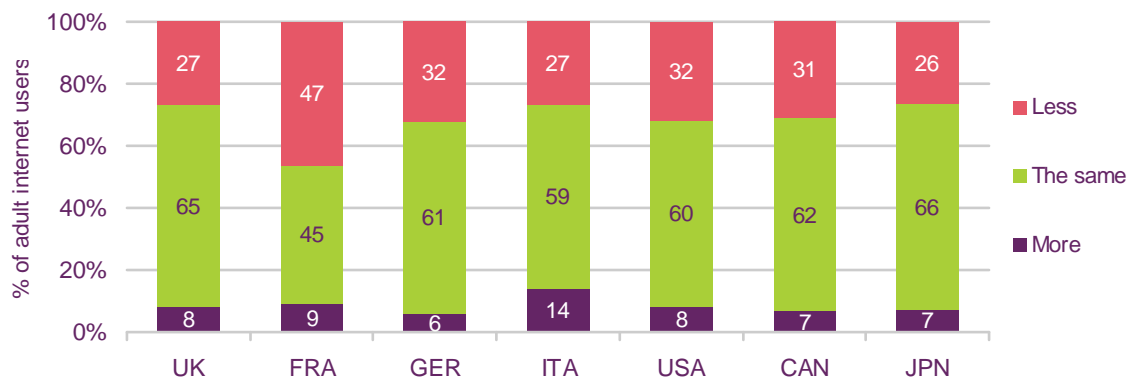
Source: Ofcom Understanding International Communications Behaviour research, October 2008
 Base: All adults aged 18+ who use the internet (UK 1001, France 1000, Germany 1002, Italy 1003, USA 1010, Canada 1000, Japan=1003)
 Note: As the questionnaire was answered online it may not reflect the attitudes of a representative sample of the whole population

3.4.11.2 Newspaper reading impacted most by the internet – watching DVDs the least

Reading national newspapers is the offline media activity which appears to have been hit most by increasing internet use. In all the nations for which data were available, over a quarter of people said that they believed they read national newspapers less now that they had the internet, and in France that figure rose to nearly half of all respondents (47%). In all but one country (Italy, at 14%), less than 10% of people believed that they read national newspapers more than they had done before going online.

Figure 3.39 Impact of the internet on reading national newspapers

Since starting to use the internet, which if any of the following activities do you believe you undertake more or less offline?



Source: Ofcom Understanding International Communications Behaviour research, October 2008

Base: All adults aged 18+ who use the internet (UK 1001, France 1000, Germany 1002, Italy 1003, USA 1010, Canada 1000, Japan=1003)

Note: As the questionnaire was answered online it may not reflect the attitudes of a representative sample of the whole population

Our research also showed that the offline activity which had been least affected by growing internet use was watching videos or DVDs. A possible reason for this is that online promotion and discussion of films arouses consumers' interest in new video and DVD releases, and competition between online retailers has led to lower prices for both DVD purchases and rental.

3.4.12 Dependence on different types of media

3.4.12.1 Internet users say they would miss web access more than any other media activity

Consumers spend comparatively large amounts of time watching TV, surfing the internet and, in some countries, reading newspapers or listening to the radio. This suggests some level of dependency among consumers on these types of media, which our consumer research explored by asking people which they would miss most, if it were taken away.

A word of caution must be attached to these results – as the questionnaire was answered *online* it may not reflect the attitudes of a representative sample of the whole population, as only internet users were able to answer it. For example, internet users will be more likely to say that they would miss using the internet most out of all media activities than the population as a whole.

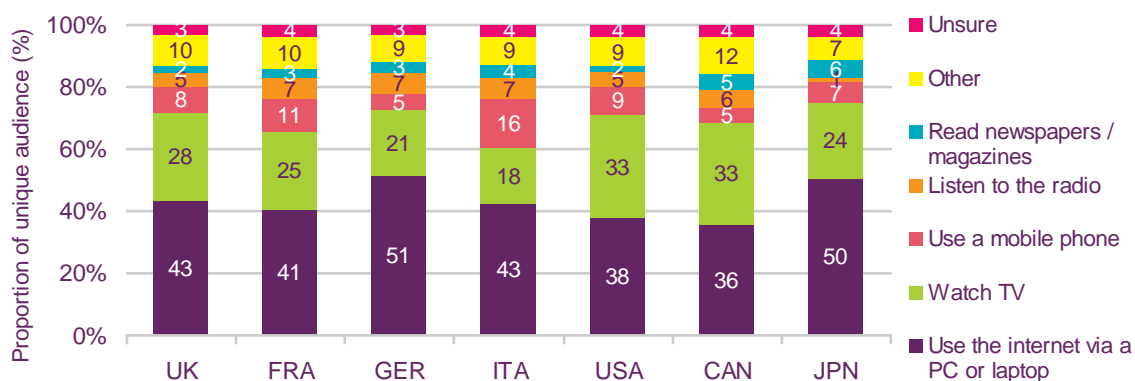
In all of the countries covered by our research, internet users were more likely to say that they would miss accessing the internet via a PC or a laptop than any other medium. The proportion of people giving this answer ranged from 36% in Canada to 51% in Germany

(Figure 3.40). Considering the relative newness of the internet, this indicates a strong attachment to the internet on the part of some people.

But other media also play an important role in consumers' lives; 16% of consumers in Italy would miss their mobiles the most – the highest proportion among our comparator countries and consistent with the high levels of take-up of mobiles. Respondents in Italy were also the least likely to miss TV the most (18%), while those in the US and Canada were the most likely, with a third citing television as their most-missed media activity.

Figure 3.40 Most-missed media activity

Which of these activities would you miss doing the most?



Source: Ofcom Understanding International Communications Behaviour research, October 2008

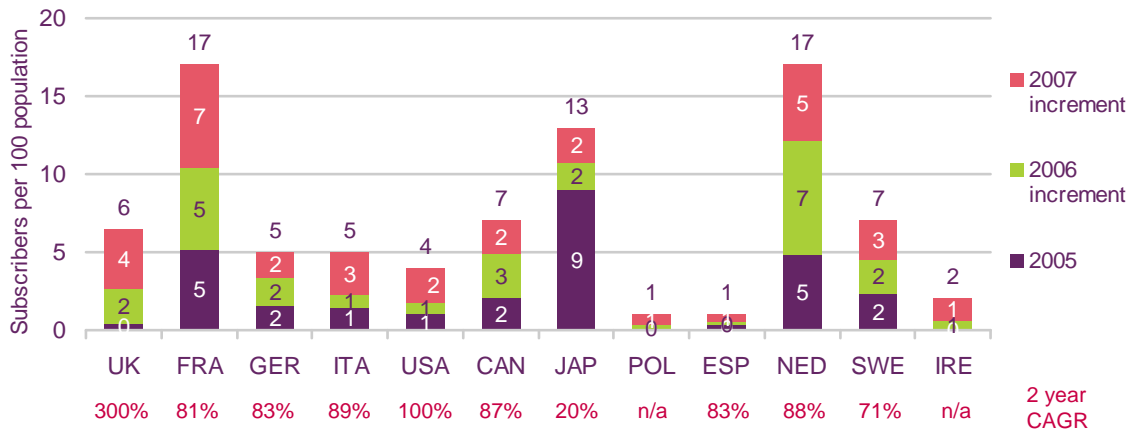
Base: All adults aged 18+ who use the internet (UK 1001, France 1000, Germany 1002, Italy 1003, USA 1010, Canada 1000, Japan=1003)

Note: As the questionnaire was answered online it may not reflect the attitudes of a representative sample of the whole population

3.4.12.2 One in six internet users take VoIP in the Netherlands and France

VoIP's popularity continues to grow rapidly in most of the comparator countries, especially in France and the Netherlands, where nearly one in six internet users take a subscription (Figure 3.41). In Japan, 13% of internet users took a VoIP subscription, illustrating that this service's popularity is not just a European phenomenon. In both France and Japan telecoms operators have played an important role in pushing VoIP take-up. In France VoIP has been an important part of operator strategies to retain customers through the deployment of triple- and quad-play options. Examples include France Telecom's *Livebox* service and Free's *Freebox* offering.

Figure 3.41 Use of Voice over IP subscribers per 100 population: 2005-2007



Source: IDATE

Note: Excludes users who only make PC to PC calls; two year CAGR unavailable for Poland or Ireland