



European Mobile Industry Observatory 2009



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1. Introduction and Summary



Introduction

The European Mobile Observatory was first published in 2008 as a comprehensive review of the European mobile communications industry. This report updates the Observatory with the latest statistics and market developments, providing a reference point for participants in the mobile industry, for policy makers and other interested stakeholders. It covers the state of the industry, including the evolution of competition, innovation in new products, services and technologies and the industry's contribution to social and economic development in Europe. A similar report has recently been published for the large and dynamically evolving mobile communications market of the Asia-Pacific region. These reports underline the industry's commitment to transparency and to engaging with a wide set of stakeholders in planning its future direction.

This report is based in part on data collected from European mobile operators on their financial performance and estimated contribution to the European economy. Confidential data was collected from almost fifty European mobile operators and aggregated and anonymised to provide non-confidential statistics for individual countries and for Europe as a whole. The report also integrates data from a wide range of existing sources to provide a comprehensive picture of the European mobile industry. These include public sources such as Eurostat, the OECD and research by National Regulatory Authorities as well as commercial providers such as Wireless Intelligence, Bloomberg, Pyramid, Quantifica and IDC. Where appropriate, data from different sources has been combined to show more complete industry trends.

The regular geographic scope of this study consists of the 30 countries of the EEA¹. Some figures also include data for Switzerland. Where this report refers to Europe, it refers to the 30 EEA countries. In some cases, where data is only available for EU countries, the report may refer to different groups of EU Member States, such as the EU15, EU25 and EU27. Where this report refers to 2009 YTD, it refers to the first six months of 2009.

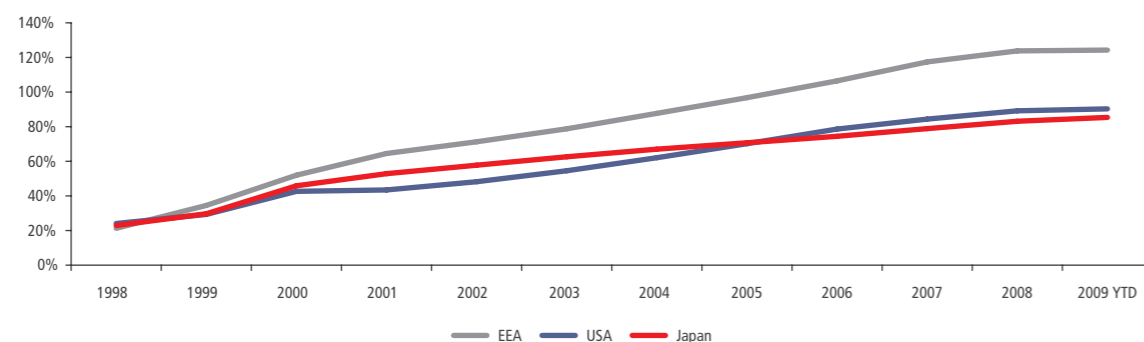
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Summary

Since the large-scale introduction of mobile services in the early 1980s, the market has grown at an impressive rate. Mobile communication is now a key European industry, comparable in size to pharmaceuticals or aerospace, with total revenues amounting to €178 billion in 2008. Today mobile services are ubiquitously available, with a population coverage rate of nearly 100% and a mobile penetration rate of 124% in Europe. This represents 632 million individual subscriptions (measured as active SIM cards) held by an estimated 424 million Europeans (83% of the population), many of whom have more than one subscription. Mobile services are now being used across all age groups and socio-economic segments of the population. Indeed mobile services are often the only viable communication services for some socio-economic groups.

¹ The contracting parties to the EEA Agreement are three of the four EFTA states – Iceland, Liechtenstein and Norway – and the 27 EU Member States.

Penetration Rate of Active SIMs in EEA Countries, 2009 YTD

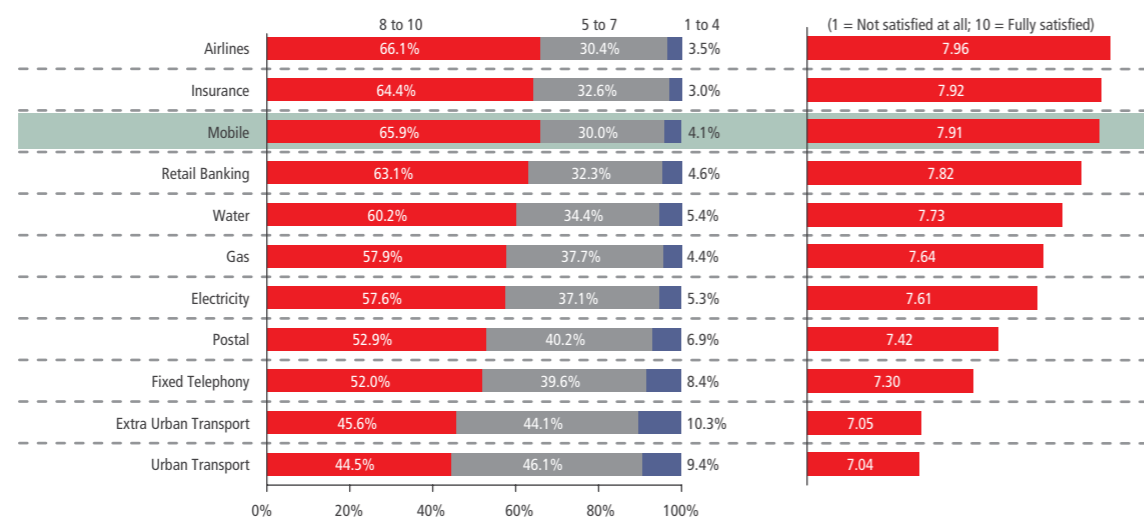


Source: Wireless Intelligence; EIU

The usage of mobile services continues to grow strongly. Voice call volumes grew by an average of 17% per annum from 2000 to 2008, with European consumers making 126 minutes of outgoing mobile calls per head of population per month in 2008. The strong growth of mobile voice calls only partly comes at the expense of fixed line calls. Instead, mobile services have driven a significant increase in communications overall – with total calls per inhabitant increasing from 200 minutes per month in 2001 to 260 minutes per month in 2008. Mobile messaging services have grown strongly too, with customers sending an average of 45 messages every month. Other mobile data services, such as mobile broadband, have recently become more widespread and are forecast to grow strongly.

The adoption and usage of mobile services reflects strong customer satisfaction. A survey conducted for the European Commission in 2007 showed that consumers ranked mobile number three in overall satisfaction when measured against a range of other services such as fixed telephony, utilities, banking, insurance and transport.

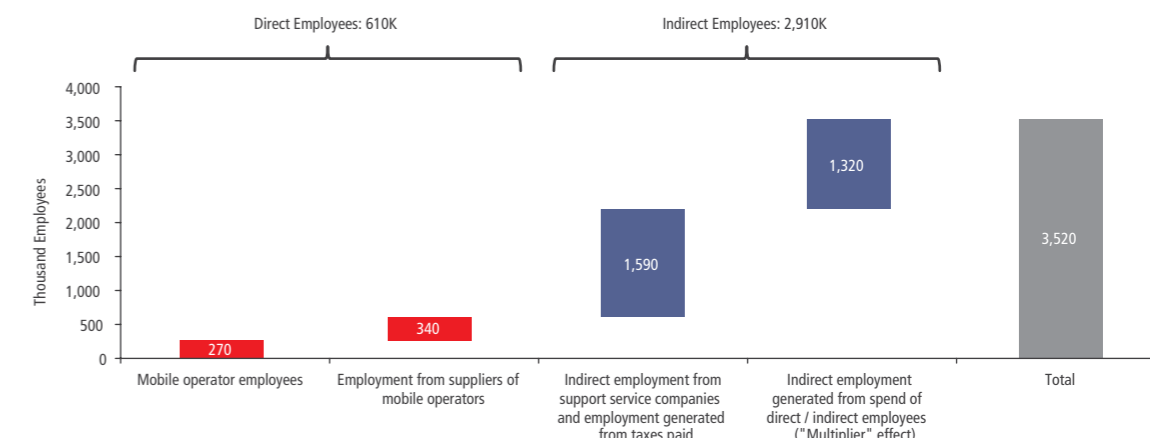
Levels of Customer Satisfaction with Mobile and Other Services in the EU25, 2007



Even during the current economic recession, mobile services continue to make a strong socio-economic contribution to Europe:

- Mobile services are increasing the accessibility of voice and, more recently, data communication services thanks to lower entry and fixed monthly costs than fixed line;
- The mobile industry makes a very substantial contribution to the European economy, generating an estimated 3.5 million jobs for Europeans. Key contributions include in 2008:
 - Mobile operator contribution to GDP of €138 billion (1% of total EEA GDP);
 - Contribution to public funding amounting to approximately €44 billion – plus a further £86 billion estimated as the indirect contribution
 - Direct employment of 610,000 Europeans, and indirect employment of a further 2.9 million.
- Mobile services are making an important contribution to improving the health and safety of European citizens – by enabling better access to health and safety services, increasing emergency service response times and permitting the development of innovative services to protect vulnerable groups such as children or the elderly;
- The mobile industry also demonstrates strong commitment to social responsibility – as exemplified by comprehensive initiatives to protect children from inappropriate content, promote low carbon technology, reduce handset theft and prevent spam.

Direct and Indirect Employment created by the European Mobile Industry, 2008



Source: Operator provided data; Wireless Intelligence; IDC; Ovum; Indepen; Eurostat; AFDOM; A.T. Kearney analysis

Whilst the mobile industry has enjoyed strong service revenue growth averaging 8% per annum this decade, the global financial crisis has had a significant impact in the last year. Many operators have reported stagnating or declining revenues so that the period 2009-2010 will mark a difficult period for the entire industry. The financial crisis has intensified trends already seen in an intensely competitive market, for instance consolidation of operators and their vendors.

Competition between mobile network operators is very strong and there is additional pressure from the MVNOs (Mobile Virtual Network Operators). Many larger European countries now have more than twenty MVNOs. This competitive intensity is clearly evidenced by high customer churn rates and steeply declining prices – to an extent rarely witnessed in any other industry. Churn rates have increased from 18% in 2004 to 23% in 2008. This demonstrates that customers find it easy to switch between mobile service providers and actively shop for the most advantageous offers. Across the EU25, mobile prices fell by an average of 10% per annum between 2004 and 2008.

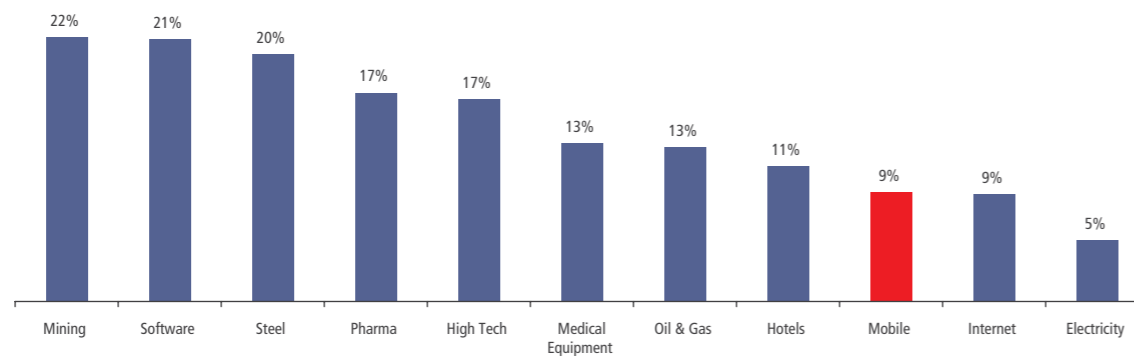
Annual Price Reductions for Baskets of Mobile Services in the EU

Price Basket	Region	Period	Average Annual Growth Rate
OECD domestic mobile medium usage price basket	EU25	2004-2008	-10%
OECD domestic mobile medium usage price basket	EU27	2006-2008	-10%
OECD domestic residential fixed line price basket	EU15	1998-2008	-4%
OECD domestic residential fixed line price basket	EU27	1998-2008	-1%
OECD domestic mobile high usage price basket	EU25	2004-2008	-11%
OECD domestic mobile high usage price basket	EU27	2006-2008	-10%

Source: Telecoms Price Developments from 1998 to 2008, Teligon for the European Commission; A.T. Kearney analysis

Data for 2008 suggest that operators generated profits at a similar modest level to 2006 and 2007 – with returns on capital employed (ROCE) of 9% and a spread in published returns for companies which are primarily focused on mobile communications in Europe between 5% and 15%. Contrary to popular belief, such returns lag those of numerous other sectors, as illustrated in the exhibit below. The impact of the financial crisis may of course depress average returns for 2009, although operators have also accelerated initiatives to improve efficiency in order to maintain cash flow. No major operator has reported severe financial problems of the type seen in banking or other sectors of the economy. This shows the robust economic foundations of the industry and its importance to consumers who may have cut back their expenditure on some other goods and services.

ROCE for Mobile and Other Industries (Europe, 2008)



Source: Confidential Operator data; Bloomberg; A.T. Kearney analysis

Mobile operator revenue growth rates have been declining for the past few years due to voice market maturity and regulatory interventions. While this report focuses on 2008 data, it is important to recognise that the trend in 2009 has been impacted by the economic crisis. Cautious consumer spending and reductions in business expenditure are leading to a decline in revenues. A recent Credit Suisse report estimated that Q3 2009 saw a 7% decline in mobile voice revenues versus the same period in 2008. Data growth has continued, albeit more slowly, with a decline in SMS revenues partially offsetting strong growth in broadband connected to sales of smart phones and dongles. Credit Suisse forecasts a decline in European ARPU for 2009 of 6.1%. Mobile operators are also facing strong competition for consumer spending and share of total industry margin from other industry players, such as fixed line operators, device manufacturers and developers of applications and content.

To ensure competitiveness and reignite long-term revenue growth, the mobile industry continues to invest in product and service innovation. Over the last year, mobile data services have begun to yield the impressive results awaited for many years. Mobile broadband services have become increasingly popular and this service experienced a 139% increase in penetration from 2006 to 2008, with 13 million subscribers in Europe. These new services are increasingly “bandwidth hungry” and will require investments into new, higher capacity networks. Mobile operators have already started trialling and planning the deployment of new technologies, such as Long Term Evolution (LTE), to satisfy the future requirements for mobile voice and data services.

If given the right opportunities, the mobile industry is expected to continue investing strongly in new technologies and new services. Based on research for the GSMA ahead of the G20 summit in London earlier this year, further investment could create around 25 million new jobs worldwide in the next five years and yield productivity gains which would add 3 to 4% to worldwide GDP. Few mobile operators will be able to commit to this scale of investment, however, if faced with significant erosion of revenues and margins. Regulatory authorities and policy makers can have tremendous influence on the further development of the mobile industry. They need to carefully balance the potential short-term objectives of further regulation on prices and spectrum with those of longer-term growth, investment and jobs.

2. High Usage and Customer Satisfaction with Mobile Services



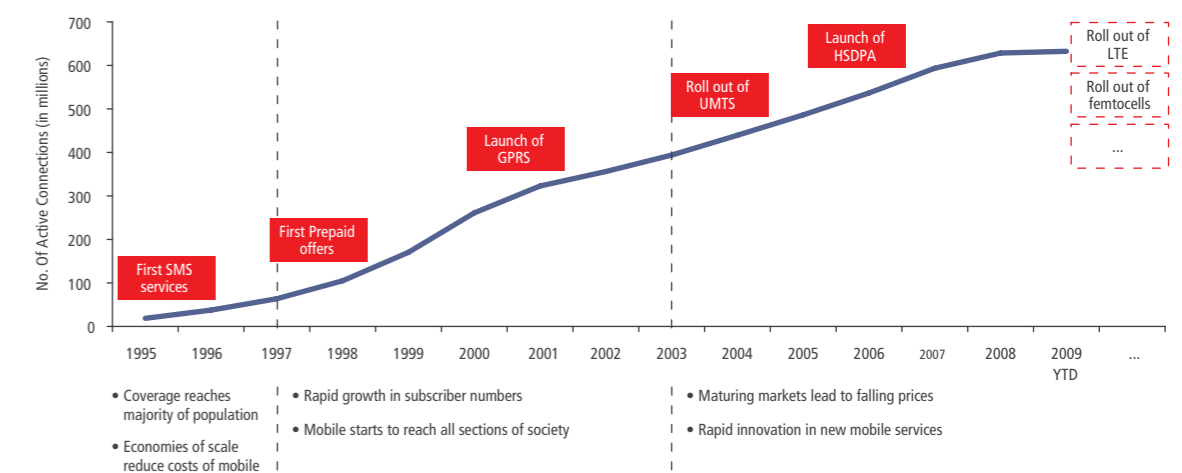
Key Messages

- Mobile services have enjoyed strong growth since the 1980s, underpinned by substantial network and service investments. With total revenues of €178 billion, mobile now ranks amongst Europe's most important industries;
- Mobile services are available to nearly 100% of the population and 424 million Europeans have a mobile phone. Europe has the highest mobile penetration rate in the developed world – as a result of very competitive price offers, including subsidised handsets and zero commitment “prepay” propositions;
- Usage of mobiles has increased strongly. On average, Europeans now make 126 minutes of calls from their mobiles and send 45 mobile messages every month (per head of population). Though still emerging, adoption of mobile data services such as mobile broadband is accelerating;
- The benefits of mobile are illustrated by very high levels of customer satisfaction. Consumers are far more satisfied with mobile than other services, including fixed line, banking and utilities.

Summary of the Historical Development of Mobile Services

The development of mobile services has led to the creation of an entirely new industry sector, the size of aerospace and pharmaceuticals, in just twenty years. The pace of network and service investments has been particularly rapid and is expected to continue in the future. Mobile services were introduced with first generation analogue networks (“car phones”) in the early 1980s. The roll-out of digital, second generation mobile networks (GSM) in the early 1990s paved the way for rapid network and service innovation. In the late 1990s, enhanced digital technologies (2.5G) enabled the introduction of data services. From 2003, mobile operators deployed UMTS networks (3G), which were later upgraded to HSPA starting in 2006. These investments have led to a 400 fold increase in data transmission rates, from 9.6 kbps with GSM to over 14 Mbps with HSDPA³ today. With higher network transmission speeds, mobile operators have introduced a raft of innovative services – from SMS in the late 1990s to today's mobile data services, such as mobile email, music or video. In the next few years, LTE⁴, a new generation of technology, is expected to further increase transmission rates and thus allow the introduction of further products and services, effectively bringing the full power of the Internet to mobile devices. At the same time, convergence of fixed and wireless networks is becoming much more prevalent.

Figure 1: Key Developments in Mobile Services



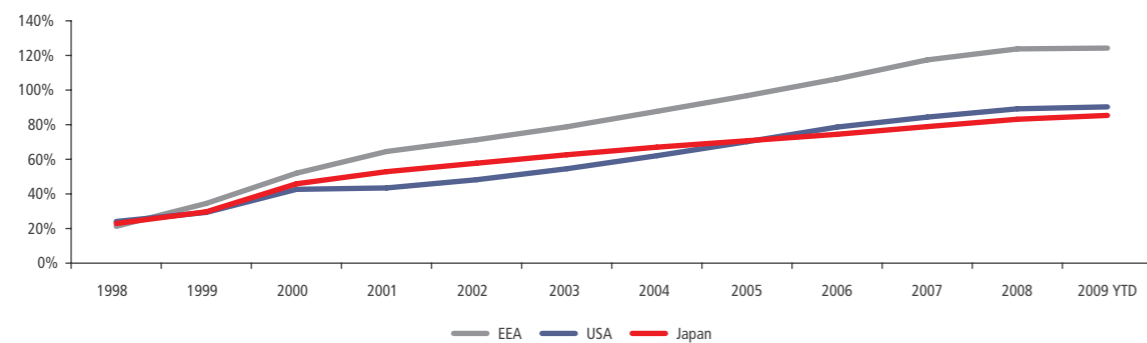
Source: International Telecoms Union; Telecoms Development Bureau; Wireless Intelligence; A.T. Kearney analysis

In the 1990s, Europe had lagged behind the US and Japan in number of mobile subscribers. The launch of services based on the GSM standard, accompanied by lower-priced services and handsets, triggered rapid subscriber growth and the creation of a true mass market for mobile services. Mobile penetration rates now stand at 124% in Europe versus 85% in Japan and 90% in the USA. Today there are 632 million active SIM cards, with 424 million individual Europeans having access to mobile services. Many customers have more than one subscription.

³ Download speed.

⁴ For more detailed explanations of the technologies discussed in this section, please refer to the GSMA's website, www.gsma.com/technology/index.htm

Figure 2: Penetration Rate of Active Subscriptions in the EEA, USA and Japan



Source: Wireless Intelligence; EIU

The European mobile industry's success has stemmed from a number of factors. These include:

- Rapid adoption of the GSM standard across the EU, leading to economies of scale in handset and equipment manufacturing and therefore lower costs;
- Ubiquitous mobile service availability in Europe with almost 100% geographic coverage, whereas coverage in other parts of the world is lower, partly reflecting differences in population density;
- Adoption of calling party pays pricing model, whereas US operators typically follow a receiving party pays model for mobile calls;
- Significant handset subsidies to reduce entry costs for new subscribers in many European countries;
- Widespread availability of attractive "prepay" offers which require no regular commitment and thus no credit checks (56% of European subscriptions are prepaid).

In essence, European mobile operators have been able to make mobile services affordable to all segments of the population, including lower income groups.

Ubiquitous Availability of Mobile Services

Today mobile services are ubiquitously available – with 98% geographic coverage (an increase of 4 percentage points relative to last year) and nearly 100% population coverage in the EEA. There is now little difference in levels of coverage for voice and messaging (2G services) between Eastern and Western Europe, with population coverage close to 100% in almost all countries.

Figure 3: Mobile Network Coverage in the EEA, 2009 YTD

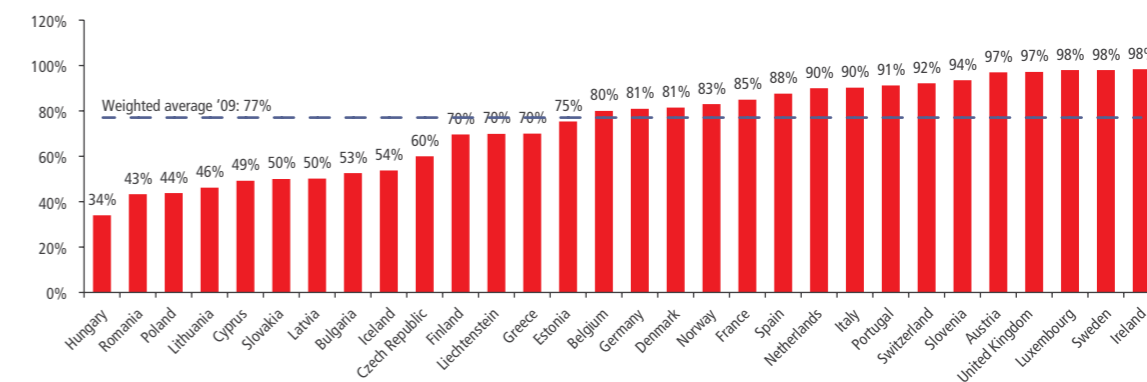


Source: GSMA World GSM Coverage Database

Moreover, mobile operators have increased the extent of in-building coverage, by reinforcing network density and installing pico-cells. Also, voice quality has increased substantially to match fixed line through improved voice codecs.

Coverage of 3G networks has also increased significantly and in 2009 YTD amounted to approximately 77% of the European population. Coverage is still considerably higher in Western Europe, with 86% of 3G population coverage versus 39% for Eastern Europe.

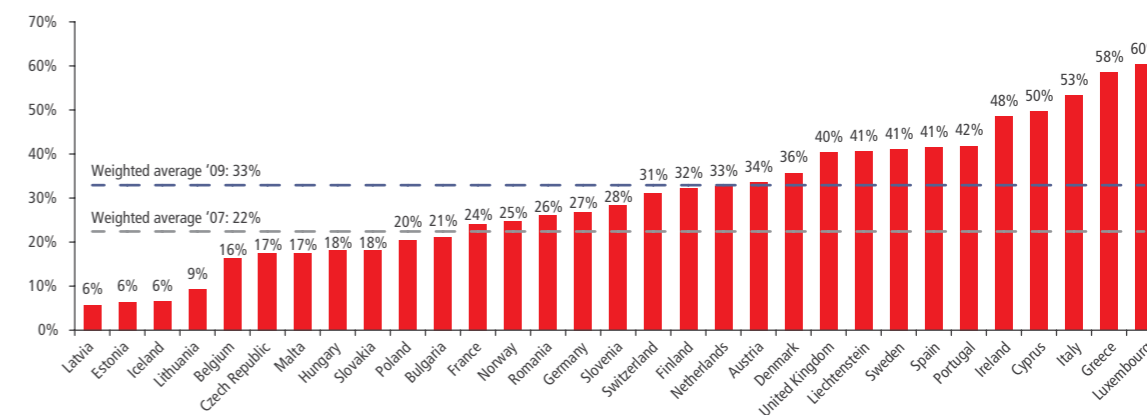
Figure 4: UMTS (3G) Population Coverage in the EEA, 2009 YTD⁵



Source: GSMA World GSM Coverage Database; Broadband Coverage in Europe 2008, IDATE & European Commission

The number of mobile subscribers with 3G-enabled handsets has also been growing rapidly. The penetration rate for 3G-enabled phones has now reached approximately 33% of the EEA population, having been just 22% in 2007. However, there are substantial differences between countries as shown in the figure overleaf.

Figure 5: Percentage of the EEA Population with 3G Enabled Phones in 2009 YTD

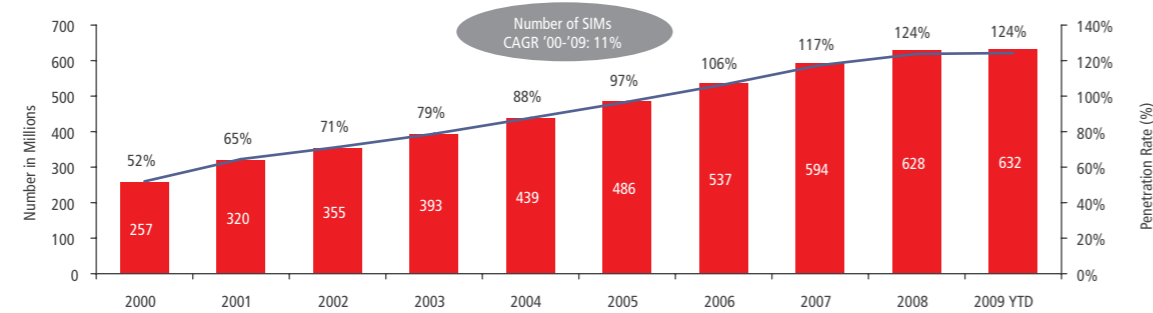


Source: Wireless Intelligence

⁵ Weighted average calculated based on country population.

Approximately 83% of the population uses mobile services – an extremely high penetration rate, considering the significant share of the population, such as very young children, which is unlikely to use a mobile phone. Many customers own multiple devices for a variety of reasons, such as having both a private and a business mobile, having separate subscriptions for voice and data services or simply optimising tariffs across offers.

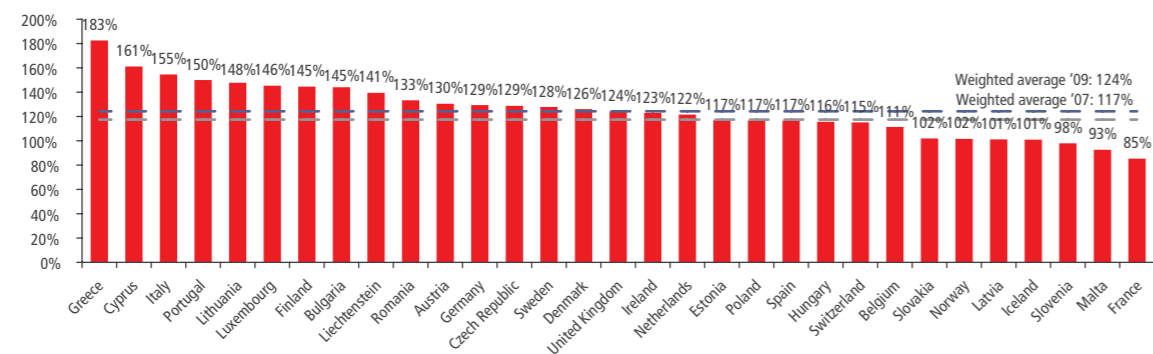
Figure 6: Number of Active SIMs and SIM Penetration Rate in the EEA⁶



Source: Wireless Intelligence, EIU

SIM card penetration rates vary significantly between countries. Greece has the highest penetration rate at 183%, while France has the lowest at 85%. These differences are mainly a result of varying levels of multi-SIM ownership, reflecting differing consumer preferences and current and historic operator pricing models.

Figure 7: Penetration Rate of Active SIMs in EEA Countries, 2009 YTD



Source: Wireless Intelligence, EIU

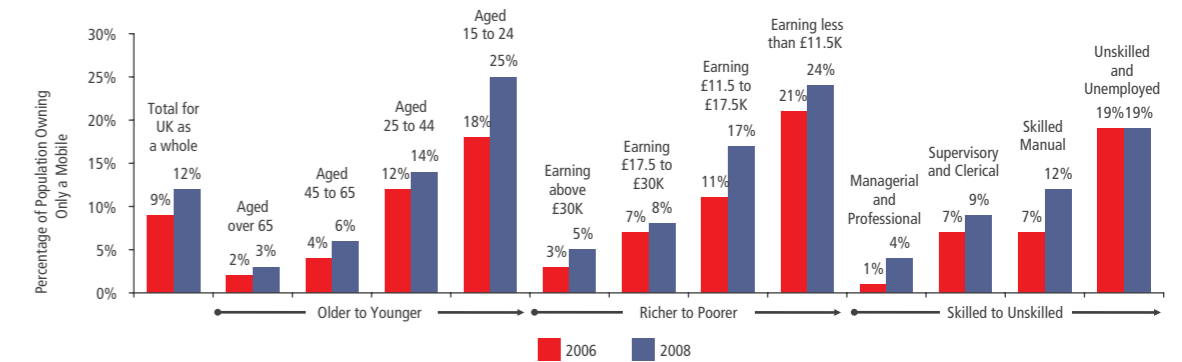
In 2007, according to Eurobarometer, the share of the EU27 population having a mobile service was approximately 95% for people aged under 29, 83% for those between 30 to 59, and 50% of those over 60. Older consumers are still less likely than other age groups to own a mobile, but this is changing fast. In the UK for example, Ofcom reports that 77% of 65 to 74 year olds had a mobile phone in 2008, an increase of 21 percentage points since 2006, while more than 42% of over 75 year olds had a mobile phone in 2008, an increase of 9 percentage points since 2006.⁷

⁶ An active SIM is a SIM that is currently in use, i.e. it represents an active customer relationship and a working mobile phone number. Operators deactivate a SIM if it has not been used for a specific period, usually six months. The SIM penetration rate is the number of active SIMs as a percentage of the population.

⁷ The Consumer Experience, Ofcom (2008), page 21.

People from all social backgrounds rely on mobile for day to day communications. In France, 55% of people with no qualifications and 66% of people with a salary below €900 per month have a mobile phone. While lower than the 78% total population average, this is still a very high level when compared to adoption of other goods and services by the less fortunate.⁸ In the UK, younger and less fortunate segments of the population are much more likely to rely exclusively on mobile for communication services. Households with limited budgets place a higher priority on mobile services than on fixed, which shows that mobile operators have successfully made mobile services affordable. Despite the difficult economic conditions in the second half of 2008, penetration of mobile services continued to increase across all segments. According to Ofcom's latest Communications Market report, "consumers remain attached to their communications services, even in the face of more challenging economic circumstances. When selecting three products or services that they would cut first from their household budget, communications services were among the least likely to be chosen. Less than a fifth of consumers selected their mobile phone in their top three; that proportion fell to 16% for pay-TV, 10% for broadcast and 10% for home phone calls. Only spending on groceries and toiletries/cosmetics were less popular responses".

Figure 8: Profile of Consumers Owning a Mobile but not a Fixed Line in the UK, 2Q 2006 vs. 2008



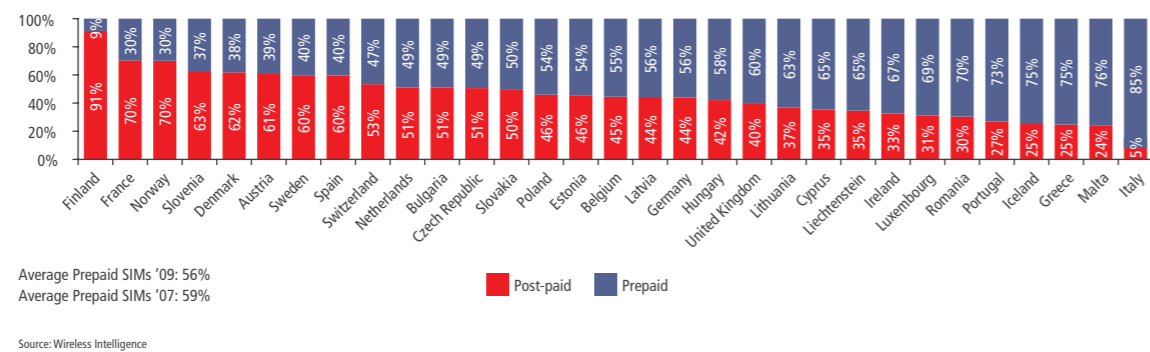
Source: Communications Tracking Survey, Ofcom (2Q 2006 and 2008)

Since the 1980s, most European mobile operators have stimulated mobile penetration by subsidising handsets. The levels of subsidy vary considerably between operators, countries and offers. The average subsidy for a new post-paid subscriber's handset is approximately €100, but can amount up to €300 in some cases. As a result, consumers can today find numerous offers where the handset is free.

Meanwhile, the introduction of prepaid offers has allowed more budget-conscious consumers to access mobile services at a low entry cost, while making it easier for them to control their mobile bills. There are now 357 million prepaid subscriptions in Europe but the relative weight of prepaid and post-paid customers across Europe varies widely. In Italy, 85% of total SIMs are prepaid versus only 9% in Finland. This illustrates substantial differences across European countries in business models and customer needs. The high prepaid penetration rate in Italy, for instance, relates to a combination of handset subsidies for prepaid subscriptions (typically not available in other European countries) and greater consumer interest in offers without significant contractual commitments.

⁸ La diffusion des technologies de l'information et de la communication dans la société française, CREDOC CGTI (2008) page 35.

Figure 9: Percentage of Pre- and Post-Paid SIMs in EEA Countries, 2009 YTD



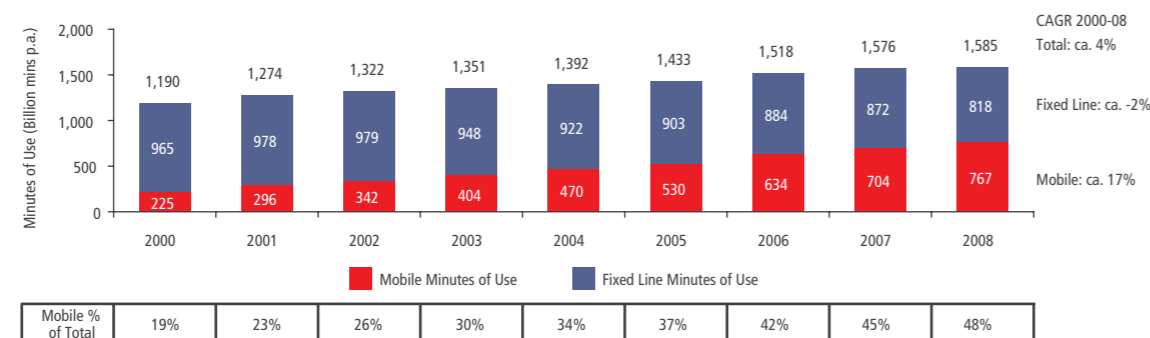
On average, prepaid SIMs now represent 56% of the market in the EEA, having decreased slightly from 59% in 2007, although as expected significant variations on this trend are seen across Europe. The relative decrease of prepaid SIMs has been partially driven by the popularity of new post-paid, SIM-only tariffs that have appeared in the market with low usage tariffs. For example in the UK the number of prepaid mobile connections fell during 2008 for the first time. Low-cost post-paid contracts there, including SIM-only tariffs, accounted for nearly a quarter of new contract sales in the first five months of 2009.

Vibrant Growth in Mobile Service Usage

The use of mobile services continues to grow strongly. Voice call volumes grew by an average of 17% per annum from 2000 to 2008, with European consumers making 126 minutes of outgoing calls per head of population per month in 2008 (116 in 2007). In total, Europeans made 767 billion minutes of outgoing calls from their mobiles in 2008 versus 704 billion in 2007.

The growth of mobile voice calls only partly comes at the expense of fixed line calls. Instead, mobile services have driven a significant increase in communications overall – with total calls per inhabitant increasing from 200 minutes per month in 2001 to 260 minutes per month in 2008.

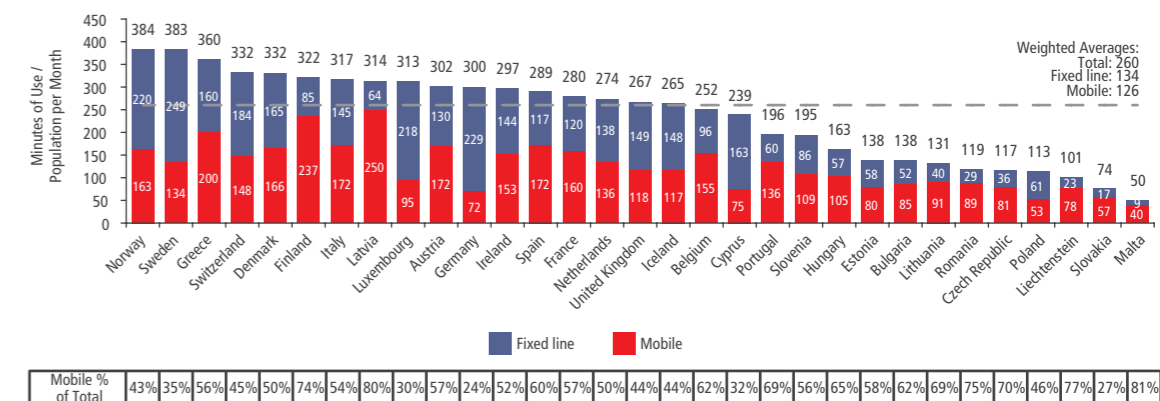
Figure 10: Minutes of Use on Mobile and Fixed Lines in the EEA⁹



⁹ Minutes of use for outbound traffic only. Minutes of use for fixed line telecoms exclude VoIP traffic.

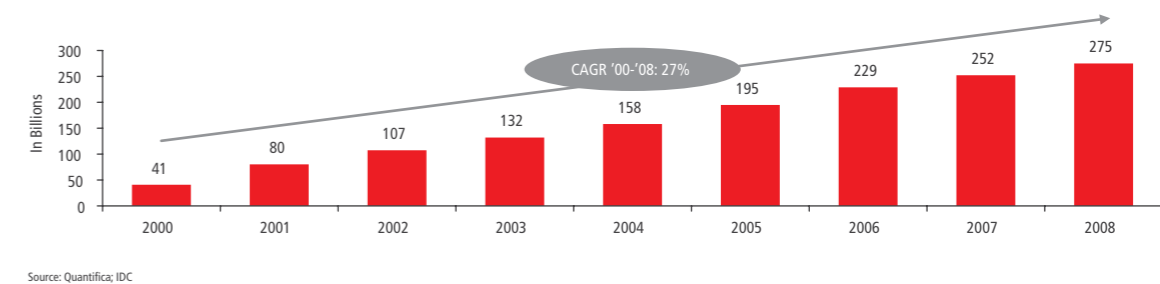
There are significant variations across Europe in total voice usage and in the relative weight of mobile versus fixed line. The Latvians and Finns spend the largest amount of time on their mobiles, with 250 and 237 minutes of use per head of population per month, while Polish and Maltese subscribers spend the least time on their mobiles with 40 and 53 minutes of use per head of population per month. Germans make most of their calls (76%) from fixed lines, while Maltese make most of their calls (81%) from their mobiles. There are many reasons for these differences, including levels of fixed and mobile penetration, differences in prices and consumer preferences.

Figure 11: Minutes of Use by Mobile and Fixed Line per Head of Population/Month in the EEA, 2008



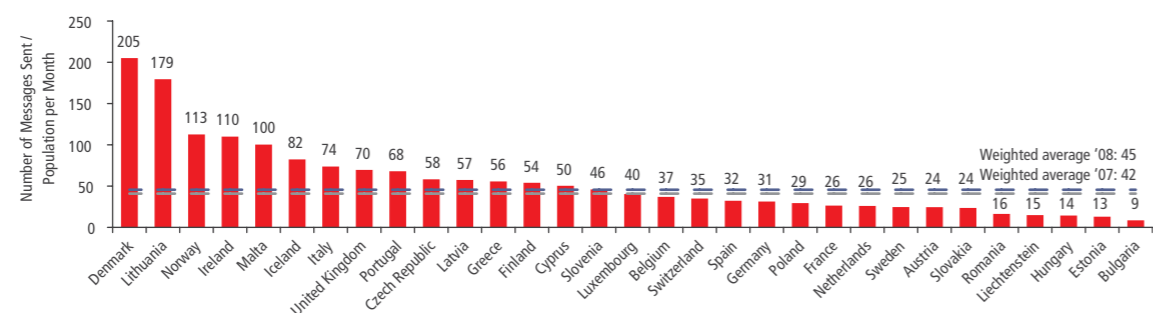
The growth in mobile messaging traffic (SMS and MMS) has also been very strong, with 275 billion messages now sent per year (a growth of 9% versus 2007). This represents on average 45 mobile messages sent per head of population per month.

Figure 12: Number of SMS and MMS Sent per Year in the EEA



Again, there are significant differences in patterns of use across countries. In Denmark, on average, mobile users send 205 SMS messages per month, while the level in Bulgaria is only 9 SMS messages per month.

Figure 13: Number of SMS and MMS Sent per Head of Population/Month in EEA Countries, 2008



Source: Quantifia; IDC; EIU

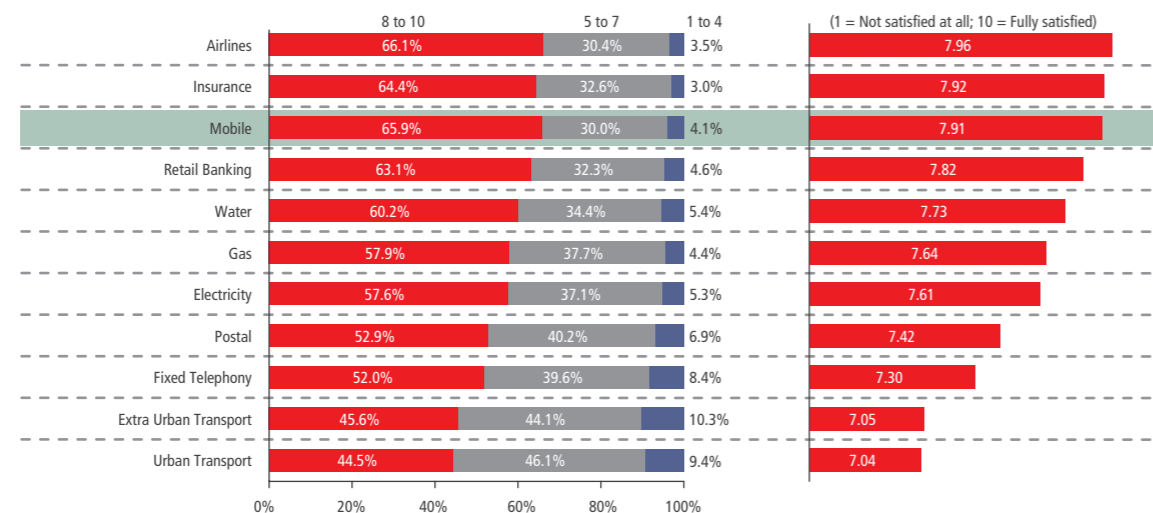
Mobile services have significantly increased total volume and frequency of communications between individuals. There are on average 5-8 calls per week per household on a fixed line compared to approximately 10 per week per mobile user, albeit with wide differences between countries and segments. Mobile usage is no longer confined to calls made on the move. On average, 40% of all calls are made from home or work, in close proximity to a landline. This suggests that customers value the personal nature of mobile communications and the convenience of mobile handsets, including the address book function.

Mobile communications have now become particularly central to European citizens' personal and business life. Mobile handsets have become a central tool for users and are used as a watch, calculator, alarm clock, personal information management device, GPS navigator, music player, camera, etc. For business users, mobile communication services have become essential, especially for the estimated 30% of employees who spend at least two to three days away from their workplace each week. The popularity of mobile email and internet access devices (such as BlackBerry and iPhone¹⁰) demonstrates the strong customer interest in ubiquitous connectivity.

Very High Customer Satisfaction with Mobile Services

Customers express very high satisfaction with mobile services, particularly when compared to other services. In fact, a survey conducted for the European Commission showed that consumers ranked mobile number three in overall satisfaction, against a range of other services such as fixed telephony, utilities, banking, insurance and transport.

Figure 14: Levels of Customer Satisfaction with Mobile and Other Services in the EU25, 2007¹¹

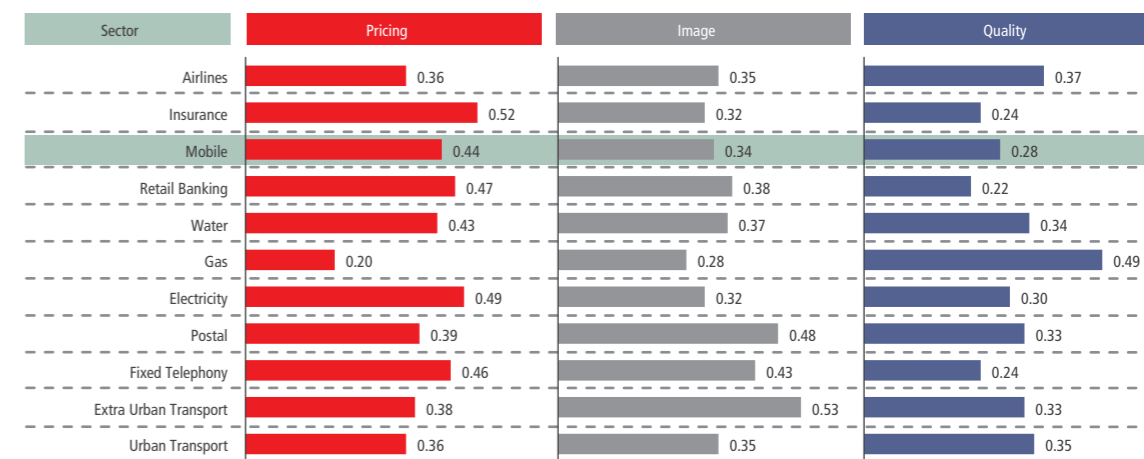


¹⁰ Company and/or brand names used throughout this paper may be registered trade or service marks – please refer to company websites for details.

¹¹ The survey comprised over 29,000 interviews across the EU25.

As in the majority of the other industries surveyed, price was the most important criterion influencing consumers' overall satisfaction with mobile services, followed by image and quality.

Figure 15: Relative importance of quality, pricing and image in consumers' overall satisfaction, 2007



Source: Customer Satisfaction Survey, Directorate-General Health and Consumer Protection, Ipsos INRA for the European Commission (2007)
Note: Weights are determined by regression coefficients and can have a value ranging from 0 to 1, with 0 meaning that the criteria has no influence on overall consumer satisfaction and 1 meaning that it has total influence

3. Substantial Socio-Economic Contribution



Key Messages

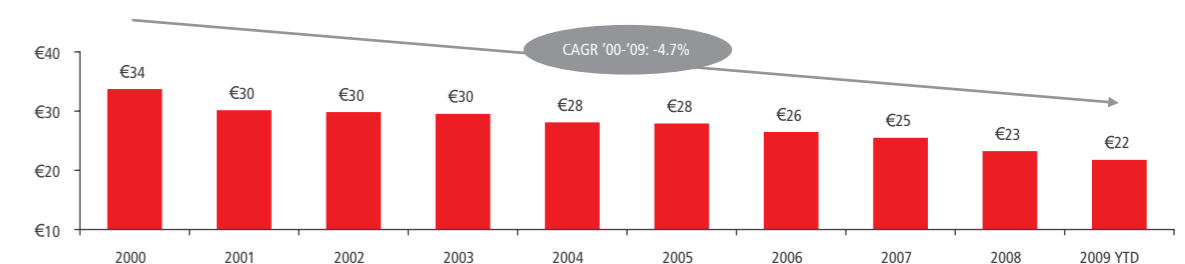
- Mobile services are increasing the accessibility of voice and data communication services, thanks to lower upfront and recurring monthly costs compared to fixed line;
- The mobile industry also makes a very substantial contribution to the European economy, generating an estimated 3.5 million jobs for Europeans. Key contributions include:
 - Mobile operator GDP contribution of approx. €138 billion (1% of total EEA GDP);
 - Contribution to public funding amounting to approx. €44 billion plus €86 billion indirect contribution;
 - Direct employment of 610,000 Europeans and indirect employment of 2.9 million more.
- The industry continues to work hard to reduce its carbon footprint. Important progress has been made with initiatives such as network sharing agreements, solutions to reduce radio network power consumption, a universal charger solution and 'green' handsets;
- Mobile services are making an important contribution to improving the health and safety of European citizens – by increasing emergency service response times and by permitting the development of innovative services to protect vulnerable groups such as children or the elderly;
- The mobile industry demonstrates strong commitment to consumer protection – as exemplified by comprehensive initiatives to protect children from inappropriate content, reduce handset theft and prevent spam.

Increasing the Accessibility of Communications Services

Mobile services make communications significantly more accessible. They offer a lower entry cost to households facing economic difficulties, with minimal or no monthly spend commitments compared to fixed line services. In addition, mobile prepaid services have also alleviated barriers preventing marginalised groups from gaining a fixed line telephone – such as having a fixed address, a bank account and a credit history – although recent crime prevention measures have increased the administrative requirements to register a prepaid subscription.

As shown below, Average Revenue per User (ARPU) across Europe has been declining consistently over the last decade and now stands at an average of €22 per month, 35% less than in the year 2000. The decline is even more significant if we consider that the average usage of voice and data services has seen a dramatic increase over the same period (as discussed in the previous section).

Figure 16: Evolution of ARPU in Europe



Source: Wireless Intelligence; A.T. Kearney analysis
Note: Weighted average ARPU based on country population

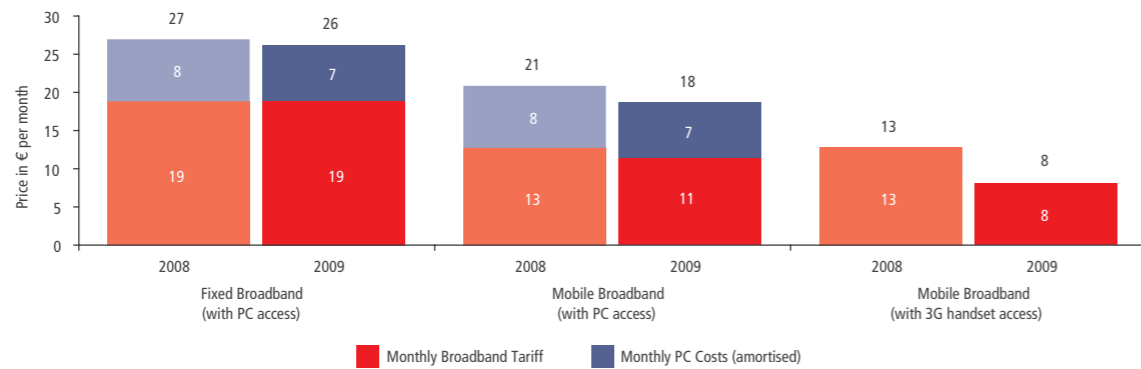
According to Eurobarometer, 24% of European households have access to one or more mobile phones but not to a fixed line, a significant increase versus 2006, where this figure was 18%. 29% of these households stated that the monthly rental charges for a fixed line were too high, while 12% stated that the initial connection costs were too high.¹² By contrast, only 14% of households had fixed line access but no mobile subscription.

The competitive mobile market has therefore been more successful than the Universal Service Obligation for fixed line telecoms in making telecoms services accessible to less fortunate segments of society.

Mobile will also play an important future role in bridging the digital divide. Today, 51% of European households do not have access to the Internet at home because of the high costs of subscription fees and personal computers, compared to 60% in 2006.¹³ With increased availability of 3G/HSPA mobile devices, mobile can provide a lower entry cost option to broadband for low income customer segments. The recent introduction of prepaid mobile broadband tariffs enables mobile users to access the Internet on an ad hoc basis without making a long-term commitment to paying a monthly charge.

In the UK, for example, a cheaper broadband package with a fixed line operator, coupled with the cost of owning a personal computer, costs about €26 per month. By contrast, it would be possible for a mobile broadband subscriber to access the Internet with their 3G handset for as little as €8 per month. However the choice between these packages depends on usage profile as they do not offer the same data transfer speed and usage allowance.

Figure 17: Illustrative Monthly Costs of Fixed and Mobile Broadband in the UK¹⁴



Source: Operator websites; A.T. Kearney analysis

Major Contributor to the Economy and Employment

The mobile industry's economic contribution can be measured in terms of both supply and demand. On the supply side, this consists of:

- GDP contribution of approximately €138 billion (1% of total EEA GDP);
- Contribution to public funding estimated at approximately €130 billion – of which €44 billion from mobile operators directly;
- Direct employment of 610,000 Europeans, and indirect employment of 2.91 million.

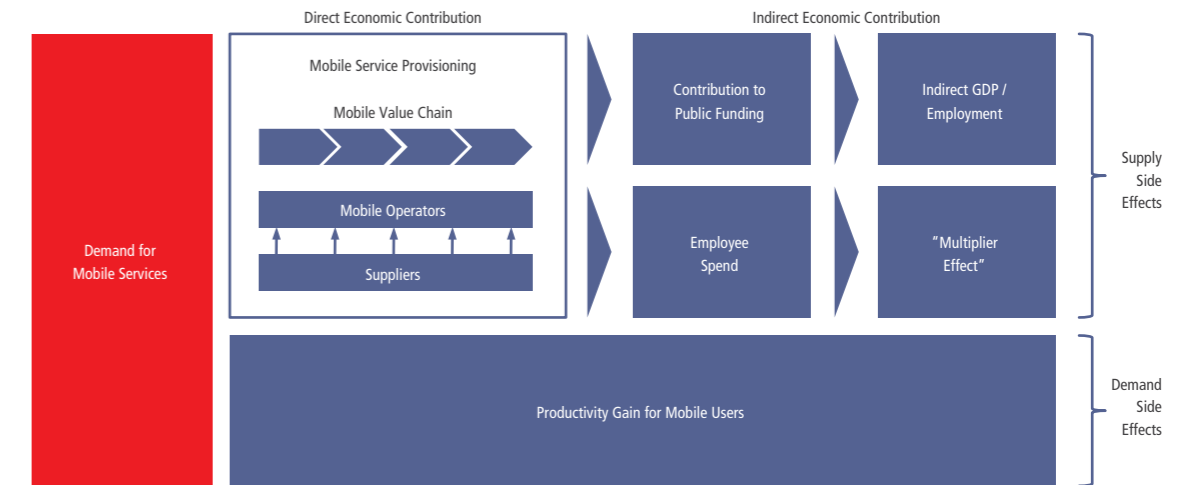
In total, the mobile industry contributes to the employment of an estimated 3.5 million Europeans.

¹² E-Communications Household Survey, Eurobarometer (2008).

¹³ E-Communications Household Survey, Eurobarometer (2008).

¹⁴ Based on a comparison of cheaper offers from a fixed line operator and a mobile operator (in both cases for 18 month contracts) and the monthly costs of owning an entry level personal computer (amortized over four years). The fixed line package offers a higher maximum usage and data transfer speed than the mobile package.

Figure 18: Overview of the Mobile Industry's Economic Contribution

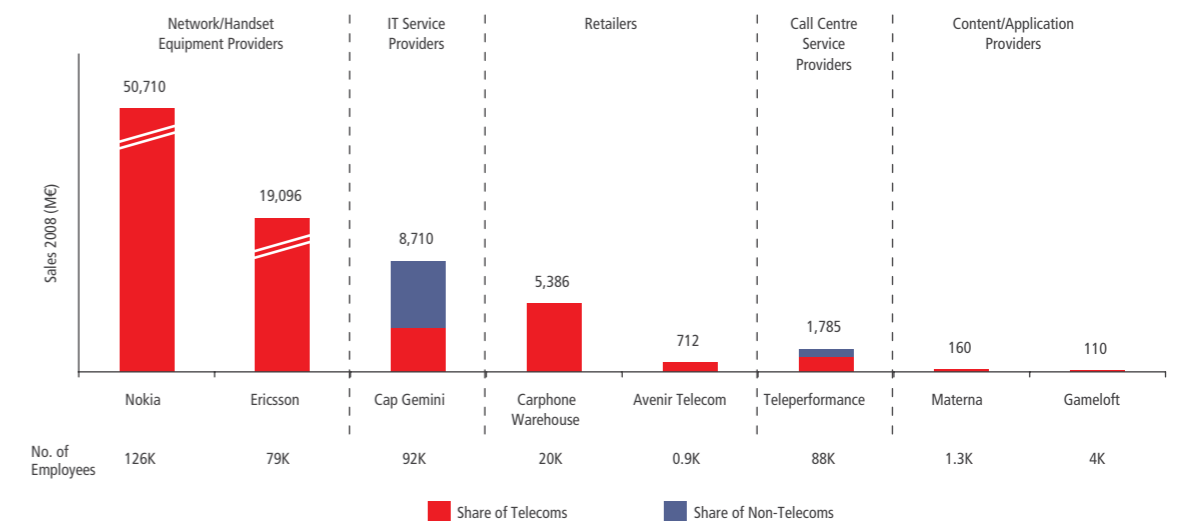


With steady revenue growth, the mobile industry has been making an increasingly important contribution to total GDP in Europe. The European mobile operators' total revenues grew from €88 billion in 2000 to €178 billion in 2008. The mobile industry now contributes approximately 1% of total EEA GDP.

Mobile operators rely heavily on a wide range of suppliers, such as network and handset equipment manufacturers, retailers, providers of key services such as IT development or call centre operation and content/application provisioning. The growth of the European mobile industry has enabled the creation and development of global industry champions.

For instance, Ericsson and Nokia are leading providers of mobile network equipment and handsets globally. Similarly, the development of outsourced call centre services has been driven by the telecoms industry, which accounts for 50% of the market (of which half is mobile). Teleperformance, the second largest call centre provider globally, has developed rapidly thanks to its strong presence in telecoms and now employs 88,000 staff. The mobile industry has also seen the rapid growth of specialised mobile content and application start-ups such as Materna or Gameloft.

Figure 19: Sales and Employees for Selected European Suppliers to Mobile Operators, 2008

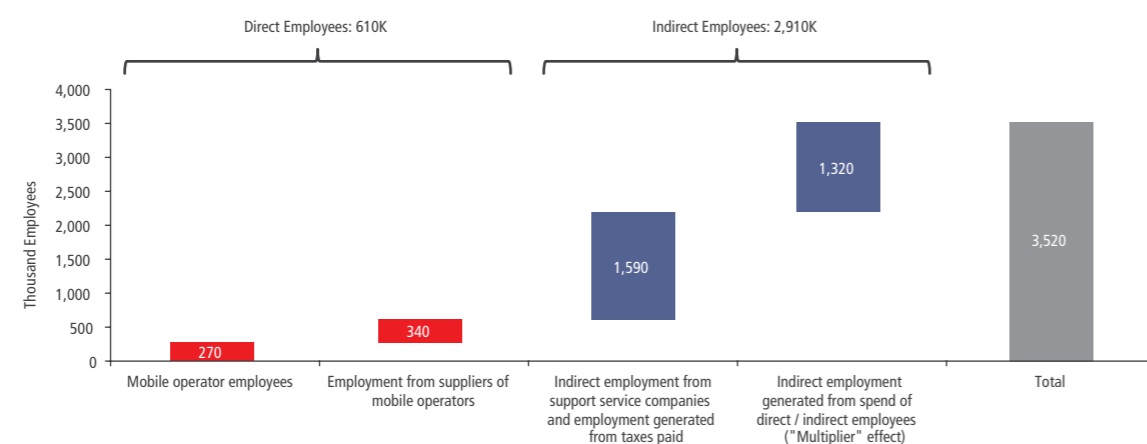


Source: Companies' websites; A.T. Kearney analysis

The mobile industry contributes to the employment of an estimated 3.5 million Europeans:

- 610,000 employed directly by mobile operators and their suppliers, of which 270,000 directly employed by mobile operators in 2008, an increase of 4% versus 2007;
- 1.6 million indirect jobs, from support services and the mobile industry's contribution to public funding;
- 1.3 million jobs generated by the multiplier effect, i.e., by the mobile industry's direct and indirect employee spend. This is based on ratios from economic research as outlined in section 6 on methodology.

Figure 20: Direct and Indirect Employment created by the European Mobile Industry, 2008



Source: Operator provided data; Wireless Intelligence; IDC; Ovum; Indepen; Eurostat; AFDIOM; A.T. Kearney analysis

Contribution to Public Funding

The mobile industry is making a major contribution to European public finances, through a variety of corporate and personal taxes¹⁵.

In 2008, A.T. Kearney estimates that the industry's total contribution to public funding amounted to €130 billion, an increase of €6 billion versus 2007. The mobile industry's direct contribution to public funding amounted to an estimated €44 billion, around half of this being the net VAT contribution. The remaining contribution reflects taxation of economic activity induced by the mobile industry. Social security and income tax levied on those directly or indirectly employed by mobile operators generated an estimated €74 billion for public finances.

Figure 21: Mobile's Contribution to Public Funding in the EEA, 2008¹⁶



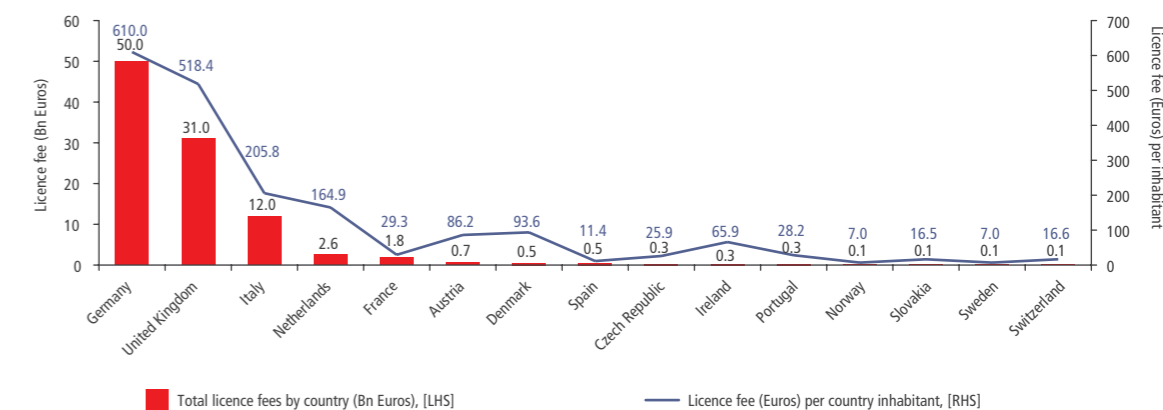
Source: Operator provided data; Wireless Intelligence; IDC; World Bank; A.T. Kearney analysis

¹⁵ Local Property Taxes include special taxes for masts and base stations in some countries.

¹⁶ Order of magnitude estimates. Annual spectrum licence fees exclude upfront one-off licence fees; Net VAT is the VAT paid by consumers on purchases of service and non-service items, and excludes business VAT expenditure. Social security tax includes personnel and social security taxes paid by employers and contributions from employees.

In addition, mobile operators contributed substantially to EU public finances with over € 100 billion paid in 3G licence fees in the early 2000s.

Figure 22: 3G Licence Fees for Selected European Countries



Source: UMTS World; European Commission

Mobile Services' Impact on Productivity

By providing easy access to telecoms on the move, mobile services have allowed companies to use their employees' time more efficiently, respond more quickly to unforeseen events and minimise unnecessary travel. For large numbers of travelling workers, ranging from technicians to chief executives, mobile has made it much easier to coordinate activities, allocate resources effectively and reduce wasted travel and time.

Mobile has also allowed the creation of new business models in the service sector, such as one-person and small businesses which would not be viable if they had to rely on fixed-line communications from a single site.

Governments are also taking advantage of the productivity gains possible via mobile services and applications via e-Government programmes. There are many examples of European countries that have been implementing e-Government programmes which not only provide productivity gains but also address administrative costs. These can include paying fees via a mobile device or completing simple registration tasks via SMS messages. An example of such a programme is the "SIMPLEX" in Portugal, with measures such as payment of car taxes online or via mobile.

New mobile applications are allowing companies to offer services in a more efficient way. A growing market is telematics, which has experienced significant growth over the last few years. In the automotive sector, for example, BMW ConnectedDrive comprises five services: BMW Assist, BMW Online, BMW Tracking, BMW TeleServices and in-vehicle Internet access. The system works in conjunction with the BMW Navigation system, which has an integrated SIM card, to offer a host of innovative features. For example, in an emergency situation, the system automatically transmits the vehicle's status and position directly to a BMW service centre, or in the case of a breakdown, the system activates the BMW breakdown service which sends a full report on the car's technical status to the nearest BMW service centre. For everyday use, the system can be used to receive general information such as recommendations for hotels, restaurants and places of interest.

It is estimated that around 3.5 million cars in Europe will have on-board telematics by the end of 2009¹⁷. Currently the most common applications for on-board telematics systems are theft prevention and recovery. Other promising telematics applications include: secure remote diagnostics and maintenance, navigation and online entertainment. For example, GM's OnStar system allows the locking and unlocking of a car's doors remotely when it is reported stolen. The system can also cut off and immobilise the car's engine.

¹⁷ "Car Telematics and Wireless M2M", Berg Insight, October 2009".

Electronic toll collection based on GSM/GPS tracking is another initiative that so far has only been introduced for commercial vehicles but it is expected that in a few years time it will be possible to travel around Europe paying all tolls electronically. Similar technology can be used for vehicle taxation in the future. Continuous development in this market is likely to bring many more innovative services. Though still at an early stage, the insurance industry is investigating innovative uses of telematics such as PAYD (pay-as-you-drive) insurance models which would provide bespoke insurance premiums based on a driver's behaviour.

It is difficult to quantify the precise impact of mobile services on innovation and productivity in developed countries, because of the wide range of factors that influence productivity growth. However, Waverman, Meschi and Fuss estimate that a developing country that had an average of 10 more mobile phones per 100 of population between 1996 and 2003 would have enjoyed per capita GDP growth that was 0.59% higher than in an otherwise identical country. They also suggest that for developed markets, impact on productivity is substantial, without offering a precise estimate. For instance, they estimate that Canada would have enjoyed a 1% higher average GDP per capita growth rate if it had matched Sweden's higher levels of mobile penetration from 1996 to 2003.¹⁸

Other academic studies have linked economic growth to mobile adoption. A study by Williams (2005) investigates the relationship between mobile telecoms infrastructure and Foreign Direct Investment (FDI) in Africa. It concludes that FDI tends to be higher in countries where the mobile penetration is higher.¹⁹

It is likely that continued advances in mobile technology will lead to further productivity improvements across the economy. For example, mobile access to the Internet is making it easier for workers to communicate with colleagues, gain information and use time productively on the move.²⁰

The Green Agenda

The mobile industry has made a significant effort to reduce its carbon emissions in recent years. Mobile operators have launched a plethora of high profile initiatives, including low energy and renewable powered base stations, infrastructure optimisation and network sharing. Telefónica and Vodafone announced an agreement in 2009 for network sharing in multiple EU markets and there are a number of local agreements already in operation.

Infrastructure optimisation and network sharing represent an attractive proposition for most operators, as they combine reduction of carbon emissions with cost savings. Nonetheless, implementation is complex and in some countries there are regulatory and anti-trust restrictions.

Other "green" initiatives include the Universal Charger Solution. The GSMA and 27 mobile operators and manufacturers²¹ have committed to implementing a standard for a Universal Charger for new mobile phones. The new standard aims to reduce the use of energy when the device is not connected or when it is fully charged. It will also reduce the need for multiple charger accessories by adopting a single industry-wide micro-USB interface. It is estimated that the adoption of the Universal Charger will lead to a 50% reduction in standby energy consumption and will eliminate up to 51,000 tons of chargers every year²². The Universal Charger Solution (UCS) will be widely available in the market by 2012.

Manufacturers of handsets are also starting to launch "green" handsets. These phones aim to save energy and reduce carbon footprint by introducing features such as reminders when the phone is fully charged, solar energy charging and reduced packaging. For example, SonyEricsson has launched a GreenHeart portfolio of mobile phones, which includes an e-manual, lighter packaging (thus reducing CO2 emissions in the supply chain), recycled plastics and a low-power-consuming charger.

Finally, initiatives to recycle handsets have been adopted throughout the industry, with recycling points in stores for old mobile phones, buy-back campaigns and discounts on "new for old" swaps. Additionally, manufacturers are increasingly using recyclable materials for mobile phones.

The telecoms industry also contributes indirectly to the reduction of the carbon footprint of other industries. Indeed "Mobile's Green Manifesto"²³, launched in November 2009, demonstrates the key role that mobile communications can play in this respect. The induced reduction in CO2 emissions for those other industries has been estimated as equivalent to 5 times that of the telecoms industry²⁴.

An example of mobile applications reducing the carbon footprint of other industries is the use of Machine-2-Machine (M2M) transmission systems for smart logistics applications and fleet management. Fleet management systems contribute to the reduction of fuel consumption: these systems combine satellite tracking with onboard telematics to monitor fleets and plan routes more efficiently. By using fleet management systems, the UK supermarket chain Asda has reduced travel by almost 30 million kilometres, the equivalent of 28 kilotonnes of CO2 emissions and fuel cost savings of 23% over three years.

Figure 23: Real Time Traffic Information

Vodafone and TomTom have established an agreement in the Netherlands to provide real time traffic information (since 2007). The service uses signals from mobile phones to identify areas with traffic congestion and recommends alternative routes.

Mobile phones send their signal to the nearest base station which provides an approximate location. Areas with a high concentration of mobile phones during a long period of time are identified as areas of traffic congestion and TomTom advises drivers to avoid those routes.

This service is expected to contribute to a reduction in traffic congestion and ultimately CO2 emissions.

Improving the Health and Safety of European Citizens

Mobile services are making a significant contribution to improving the health and safety of European citizens, by supporting advanced telemedicine applications, enabling faster response times to emergency situations, safeguarding vulnerable groups and increasing the efficiency of medical services.

Telemedicine can enable the provision of medical services in remote areas and its services are expected to grow at a fast pace in the future²⁵. Examples of telemedicine applications include:

- The use of mobile wireless AirStrip Technology on hospital monitoring machines to allow the remote monitoring of patients. The system can be used to remotely monitor the vital signs of foetus and mother during high risk pregnancies;
- The use of digestible nano chips that are placed inside pills to monitor medicine intake and/or to trigger intake reminders via SMS.

Telecom Italia is planning the launch of MYDoctor@home, a mobile service that allows doctors to remotely monitor patients at home. Telenor offers a 24 hour HealthLine mobile connection to customers in rural areas, giving them direct communication with health services.

There are also many examples of the industry's contribution to improving safety and safeguarding vulnerable groups. The European eCall project is probably one of the best examples as it will potentially represent an important development towards saving lives. The project aims to introduce a new in-car safety system that will automatically dial emergency services after a crash. Emergency services will then be able to dispatch resources to the exact location of the accident, effectively cutting the service response time by 50% in rural areas and 40% in urban areas. The new initiative is expected to save up to 2,500 lives per year in the European Union. Fifteen EU Member States have already signed a formal commitment to deploy eCall and six others have expressed their interest. Although the deployment of this project has been delayed due to cost concerns, it is expected to be available across Europe in the near future.

18 The Impact of Telecoms on Growth in Developing Countries, Leonard Waverman, Meloria Meschi and Melvyn Fuss, 2005.

19 The Relationship between Mobile Telecommunications Infrastructure and FDI in Africa, Williams, 2005.

20 Impact in emerging markets is even more substantial given lower fixed line penetration.

21 Initiative launched at the Mobile World Congress 2009 in Barcelona and includes 3 Group, AT&T, HTC, KTF, LG, mobilkom Austria, Motorola, Nokia, NTT DOCOMO, Orange, Qualcomm, Rogers Wireless, Samsung, Softbank Mobile, SonyEricsson, Telecom Italia, Telefonica, Telenor, Telstra, T-Mobile, Vodafone, Banglalink, Mobilink, Mobinil, Orascom Telecom, Tunisiana and Wind.

22 GSMA analysis from UNEP, Gartner, European Commission Integrated Product Policy Pilot on Mobile Phones, University of Southern Queensland data.

23 Mobile's Green Manifesto, GSMA, November 2009.

24 "SMART 2020: Enabling the low carbon economy in the information age", The Climate Group and GeSI, 2008.

25 "Telemedicine: Opportunities for Medical and Electronic Providers", BCC Research, 2007.

Protection of Children

Mobile operators, together with the European Commission, have created a European Framework for Safer Mobile Use by Younger Teenagers and Children. Within the Framework, operators have offered to provide mechanisms for parents to control access to content by children on their mobiles; provide advice and raise awareness regarding the safe use of mobile communications by children; support the classification of commercial content according to national standards; and support national authorities in the fight against illegal content on mobiles.

As part of the agreement, the mobile operators and content providers agreed to develop self-regulatory codes of conduct to roll out the Framework at national level. In its implementation report to the European Commission dated April 2009, two years after the signature of the Framework, GSMA Europe explained that operators in all the 27 EU Member States, covering 96% of all EU mobile customers, have now developed codes of conduct to deliver the Framework.²⁶ There are now 83 participating mobile operators. Under the initiative, operators are taking a wide range of measures to ensure that parents and guardians can control their children's access to mobile content. A central component is a classification framework for content, consistent with standards in other media (such as video games and films), which identifies mobile content that is unsuitable for under-age consumers and can therefore be blocked.

This initiative received strong praise from Viviane Reding, the EU Commissioner responsible for Telecommunications and Media in recent years: "This agreement is an important step forward for child safety. I congratulate the mobile phone industry for moving towards protecting minors. It shows that responsible self-regulation can work at European level."

In addition, in February 2008, the GSMA launched the "Mobile Alliance Against Child Sexual Abuse Content" to obstruct the use of the mobile environment by individuals or organisations wishing to consume or profit from child sexual abuse content (child pornography). The Alliance is an international initiative by the GSMA, Hutchison 3G Europe, mobilkom Austria, Orange FT Group, Telecom Italia, Telefónica, Telenor Group, TeliaSonera, T-Mobile Group, Vodafone Group and dotMobi to create significant barriers to the misuse of mobile networks and services for hosting, accessing, or profiting from child sexual abuse content.

Several operators have also launched individual initiatives, usually advising on their websites on the safe use of mobile and Internet for youngsters. For example, Orange has a webpage "Safety Online" to promote safe and responsible use. It also offers a service called "Safeguard", which filters Internet content and prevents anyone under 18 from accessing adult content via their mobile.

Tackling Handset Theft

With the widespread use of mobiles in public places, and increasingly valuable handsets, users have unfortunately experienced significant levels of theft, sometimes involving the threat of, or actual, assault. Mobile operators have taken an active lead to deter theft, by preventing the reuse of stolen mobile phones. In the event of theft, operators will block calls from the account, bar the SIM card and disable the phone. The GSMA maintains a database of the international mobile equipment identity (IMEI) serial numbers for all GSM devices. It also holds a "blacklist" of IMEIs that have been reported lost or stolen, and which should be denied service on mobile networks. This allows networks to share their individual blacklists of blocked handsets, ensuring that devices blocked by one network will not work on other networks, even if the SIM card has been changed.

Operators have taken additional measures to tackle handset theft. In 2006, mobile operators, high street retailers and handset manufacturers in the UK agreed a crime reduction charter setting out further commitments to tackle handset theft. The participants committed to block 80% of mobile handsets across all UK networks within 48 hours of them being reported stolen. Independent tests have subsequently shown that 90% of phones are blocked within this time period and over two million phones have been disabled. The participants also committed to establish a specialist marketing group to raise awareness of mobile phone theft and to provide call centre and retail sales staff with specialist training. Immobilise, an organisation which was set up to encourage people to add their details to the National Mobile Phone Register in the UK, enables the police to identify the original owner of recovered phones.

Initiative Against Mobile Spam

Mobile spam (unsolicited commercial communications sent via SMS or MMS) is today minimal, particularly when compared to email spam. To prevent this becoming an issue, the GSMA has developed a Mobile Spam Code of Practice, which brings together the world's leading operators in a coordinated effort. Under the Code, the signatories commit to:

- Include anti-spam conditions in all new contracts with third party suppliers;
- Provide a mechanism that ensures appropriate customer consent and effective customer control of their own marketing communications;
- Work co-operatively with other operators, including those who are not signatories to the Code;
- Provide customers with information and resources to help them minimise the levels and impact of mobile spam;
- Undertake other anti-spam activities, such as prohibiting the use of the mobile network for initiating or sending mobile spam, and adopting GSMA recommended technical measures for detecting and dealing with fraudulent mobile spam; and
- Encourage governments and regulators to support the industry's initiative.

Leading operators from around the world in over 70 countries representing over 900 million mobile users, have joined forces to tackle mobile spam and have signed the Code of Practice. The GSMA has developed an anti-spam toolkit, which is available to all GSMA operator members, and is not conditional on signing up to the Code of Practice.

The measures to ensure safe and environmentally responsible use of mobile communications are all based on voluntary measures adopted by the industry. This reflects the industry's recognition that it is a major contributor to society in the widest possible sense and not simply in its economic impact on jobs, investment and contribution to public funding.

4. A Maturing and Highly Competitive Industry



Key Messages

- The mobile industry has enjoyed strong service revenue growth of 8% per annum since 2000 – however, voice market maturity and intense competition on pricing triggered a significant deceleration of growth to 3% in 2008.
- The economic crisis is having an impact on revenues in 2009, with a recent analyst report forecasting a 6% decline in ARPU across Europe. Lower revenue growth rates actually mask continuing growth in volumes but significant price declines, reflecting strong competition between mobile network operators and the additional pressure from MVNOs (Mobile Virtual Network Operators) over the last five years;
- This competitive intensity is clearly evidenced by growing customer churn rates and steeply declining prices – to an extent rarely witnessed in any other industry. Across the EU25, mobile prices fell by an average of 10% per annum between 2004 and 2008;
- Mobile operators generate profits which are lower than generally assumed – with returns on capital employed (ROCE) remaining at 9% in 2008, significantly below those of some other capital intensive sectors;
- To mitigate margin erosion in the context of steep price decreases, mobile operators have had to reduce costs drastically and engage in major transformation of their operations. Operators reduced costs per customer by an average of 8% in 2008 and continue to do so in 2009;
- In addition, operators have also started to look at consolidation as a possible way to improve their scale and competitive position. In many cases this has been limited to network sharing agreements but it has also involved M&A activity in Europe.

Impact of the Economic Crisis on the Industry

The financial crisis that engulfed the world last year is now playing out in full proportions. This has spread to each industry and the telecom industry is no exception. According to A.T. Kearney's research paper "Telecom: Facing the Global Crisis"²⁷, the communications sector at least initially fared somewhat better than some other industries in this crisis. Between June 2008 and March 2009, the share prices of telecommunications companies fell at a lower rate than most other sectors, as investors recognised the importance of communications, especially mobile, to consumers. As one observer noted, "Economic crises come and go, but the basic human need to communicate continues unchanged."²⁸ Mobile operators' financial positions were also supported by cost reduction programmes which predated the economic crisis and by the flexibility to delay investments. Surviving the downturn will require further rationalisation and many analysts and industry executives have spoken of the likely reshaping of the market through consolidation.

While this report focuses on 2008 data, there are indications of the impact in 2009. A recent Credit Suisse report estimated that Q3 2009 saw a 7% decline in mobile voice revenues versus the same period in 2008. Data growth has continued, albeit more slowly with a decline in SMS revenues partially offsetting strong growth in broadband connected to sales of smart phones and dongles. Credit Suisse forecasts a decline in European ARPU for 2009 of 6.1%²⁹.

The recession is therefore clearly affecting the mobile industry, leading European operators to lower their growth estimates. It is expected that 2009-2010 will mark a difficult period for the entire industry, although no major mobile operator has encountered serious financial difficulty. The industry's strong foundations should enable a return to a long term growth trajectory. The remainder of this section will provide an overview of the key performance metrics by which the evolution of the industry can be assessed.

Decelerating Revenue Growth

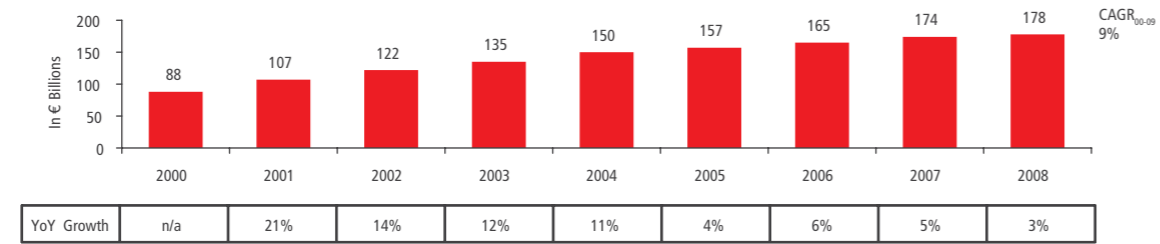
European mobile operators' revenues have grown at approximately 8% per annum over the last nine years, rising from €88 billion in 2000 to €178 billion in 2008. However, revenues are expected to decline slightly in 2009 by circa 1%.

²⁷ "Telecom: Facing the Global Crisis – Challenges and opportunities for the communications and high-tech industry", A.T. Kearney, 2009.

²⁸ Dr. Tim Kelly, Lead ICT policy specialist, infoDev / World Bank in "Confronting the Crisis – Its impact on the ICT industry", ITU, February 2009.

²⁹ European Mobile Sector Review, Credit Suisse, 19 November 2009.

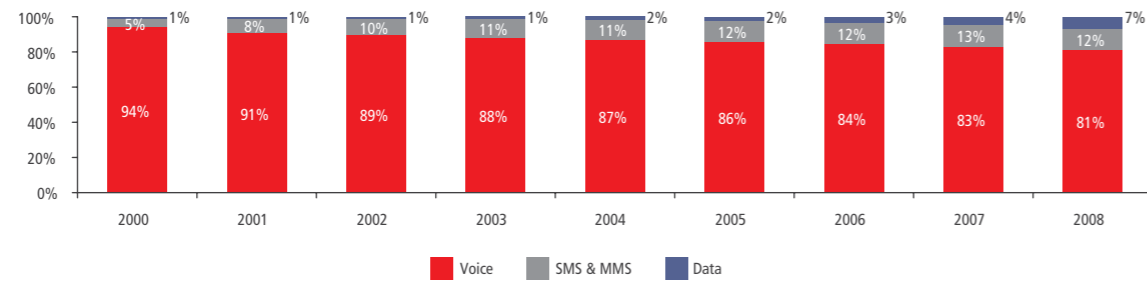
Figure 24: Growth in European Mobile Operators' Total Revenues³⁰



Source: Quantifica; IDC; A.T. Kearney analysis

Across Europe, voice calls still account for the majority of mobile revenues. However, non-voice services such as SMS and data continue to grow in importance. In 2000, voice calls accounted for 94% of operators' service revenues. By 2008, SMS and data had grown to account for 19% of service revenues.

Figure 25: Percentage Breakdown of Service Revenues for European Mobile Operators

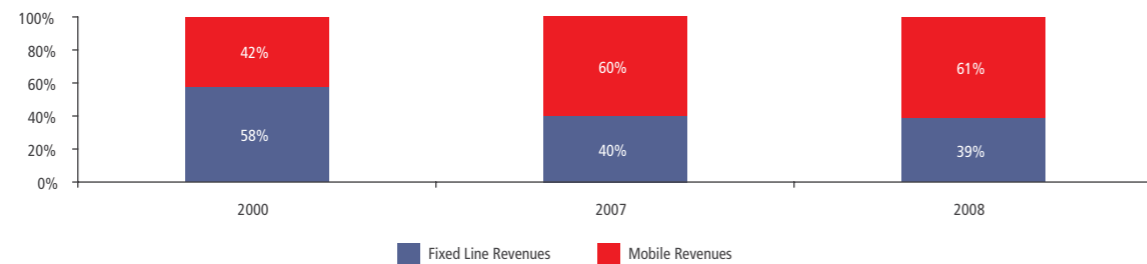


Source: Quantifica; IDC; A.T. Kearney analysis

Although total revenues have continued to increase in 2008, average retail revenues per mobile subscriber have decreased from €29 per month in 2000 to €23 per month in 2008 and €22 in the first half of 2009. Intense competition between mobile operators has led to rapidly decreasing mobile prices for voice and data services. The relative growth in mobile operators' total revenues stems from increasing take up and usage of mobile services, which have compensated for declining prices.

The mobile sector now has the largest share of total telecoms revenues. In 2008, the mobile sector accounted for 61% of total telecoms revenues. Mobile is overtaking fixed line as the main access tool for the full range of personal telecoms services.

Figure 26: Mobile and Fixed Line as a Percentage of Total Telecoms Revenues in the EEA³¹



Source: Quantifica; IDC; A.T. Kearney analysis

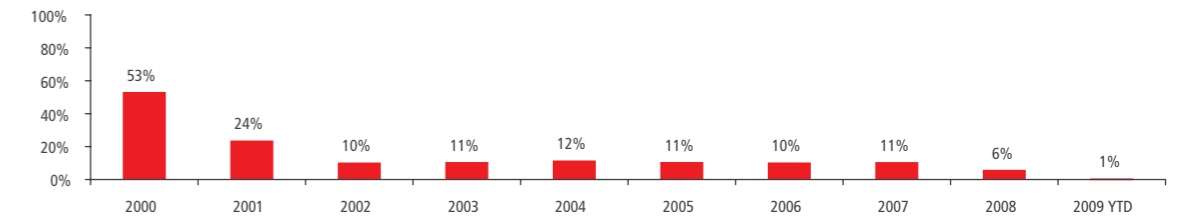
³⁰ Includes mobile operators' voice and data service revenues as well as non-service revenues such as those generated by the sale of handsets. Not adjusted for inflation or exchange rate movements.

³¹ Includes total revenues for mobile (including non-service revenues). Fixed line revenues include VoIP and data revenues.

Evolution of the Number of SIMs

For the past six years, growth in the number of active SIMs in EEA markets has been relatively stable at a rate of around 11%, but the trend has changed significantly in the past 18 months. In 2008, growth fell to 6% and effectively stopped in the first half of 2009.

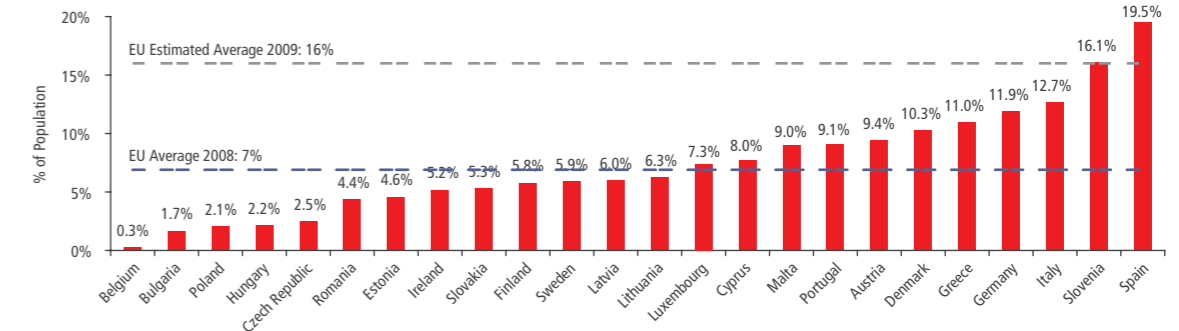
Figure 27: Evolution of Number of Active SIMs in EEA Countries



Source: Wireless Intelligence

Consumers are increasingly using mobile networks for data access. In fact, the number of active users of data services in Europe is thought to have more than doubled in the last twelve months, from 7% to 16%. This mirrors the substantial growth in the number of mobile users with a 3G-enabled device.

Figure 28: European 3G Active Users, 2008³²



Source: Broadband Access in Europe, situation at 1 July 2008, European Commission

Strong Competitive Intensity

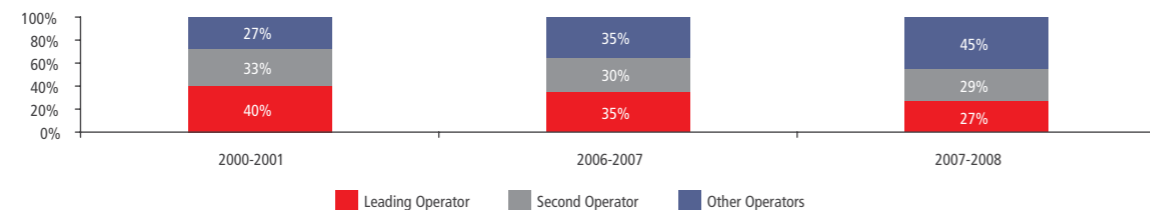
In the early 1980s, the mobile industry in Europe typically saw one or two operators per market – reflecting the high fixed costs involved in deploying mobile networks and initially modest expectations for consumer demand. With the emergence of a mass market for mobile services in the mid-1990s, competition from new entrants has grown steadily and led to a major de-concentration of the industry.

Across Europe, smaller mobile operators including recent entrants have successfully attracted new subscribers. From 2000 to 2001, the largest and second largest mobile operators were able to capture the highest share of net additions (new subscribers). However, by 2006-2007, the smaller operators had become equally or more successful than the larger operators in attracting new customers on a net basis, a trend that strengthened in 2007-2008.

³² 3G Active Users - are those using broadband dedicated data services via data modems/cards/keys and other active 3G equivalent users using mobile terminals in last 90 days.

Some operators' internal data does not distinguish between 3G and 2.5G in services as mobile email. However the data in this graph is purely for 3G, as collected by the European Commission.

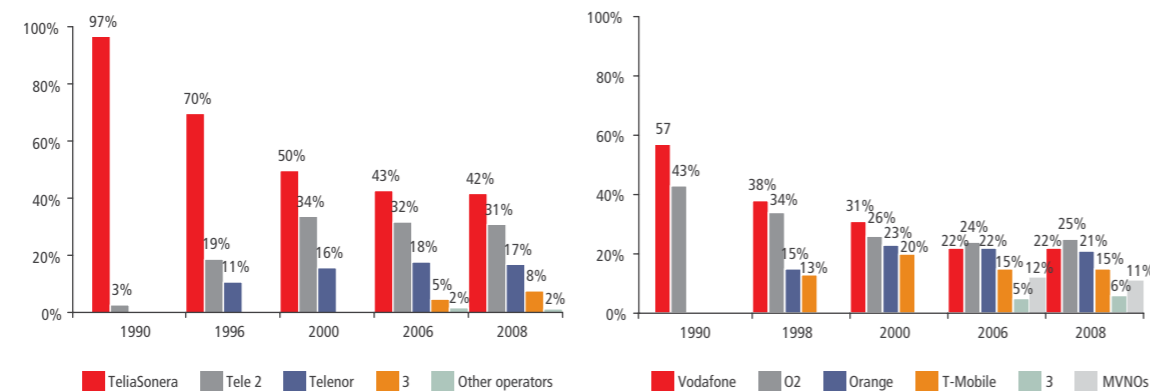
Figure 29: Leading and Other Mobile Operators' Market Shares of Net Additions in the EEA



Source: Wireless Intelligence; A.T. Kearney analysis

The examples of Sweden and the UK demonstrate how competition has increased in the mobile industry. In Sweden, Telia and Tele2 held 97% and 3% of the mobile market respectively in 1990. By 2008, Telia and Tele2's market shares were at 42% and 31%, while Telenor had gained a market share of 17%. Hutchison Whampoa's "3", which entered the market in 2003, captured 8% of the market. In the UK, the two major operators, Vodafone and O2 (formerly BT Cellnet) had 72% of the market in 1998. By 2008, the share for these two operators had dropped to 47%, as Orange, T-Mobile and "3" made substantial market share inroads.

Figure 30: Historical Evolution of Market Shares in Sweden and the UK³³

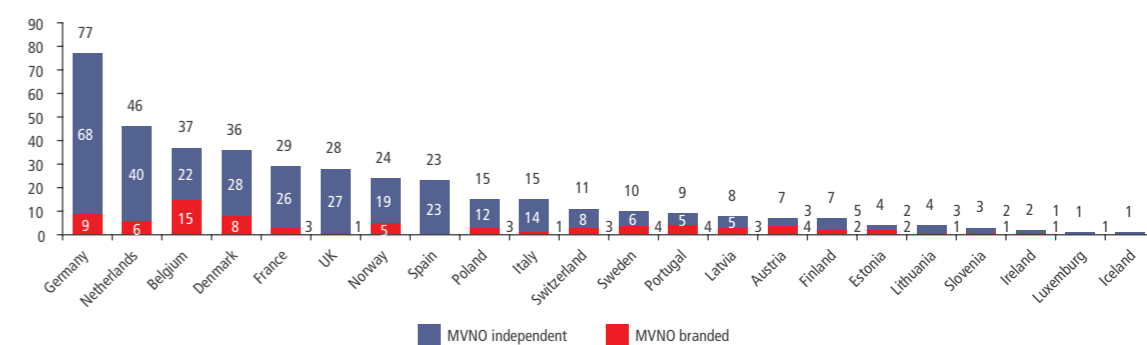


Source: The Economics of Mobile Telecommunications, Harold Gruber (2005); Swedish Post and Telecoms Agency; Ofcom

In addition, the entry of Mobile Virtual Network Operators (MVNOs) from the late 1990s has placed increasing competitive pressure on mobile network operators. MVNOs are companies that offer mobile services without owning a physical radio network. They purchase bulk volumes of minutes and data traffic from existing network operators on a wholesale basis, which they then resell to customers. Some larger European countries now have more than 20 MVNOs.

³³ Market shares are for numbers of subscribers including those serviced by MVNOs (except for UK in 2006 and 2008 where the MVNOs' split is readily available).

Figure 31: Number of Independent and Branded MVNOs in the EEA, 2008



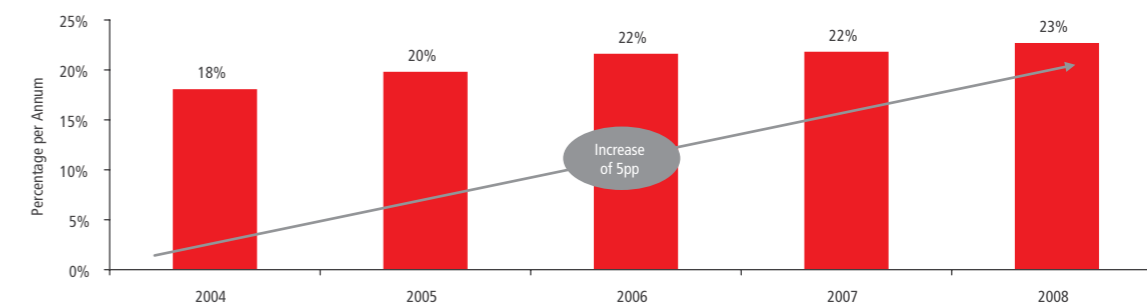
Source: Wireless Intelligence

Despite their relatively recent entry, some MVNOs have already succeeded in gaining a substantial share of the retail market from network operators. In Denmark, for example, the MVNO Telmore succeeded in capturing an 11% share of mobile subscribers in just three years³⁴.

Growing Churn Rates and Steep Price Reductions

Growing churn rates and steep price reductions provide clear evidence of the strong competitive intensity prevailing today in the European mobile industry. Consumers are finding it easy to shop around for the most attractive offers. Price comparison websites such as www.uSwitch.com have made it extremely easy for consumers to select the most competitive offers based on their personal usage patterns and requirements. Consumer research also suggests that customers find it easier to compare different mobile offers than to compare offers for other services. The number of consumers switching mobile operator has risen dramatically and churn rates now amount to 23% on average across Europe. The increase of churn rates has been partially driven by consumers swapping to different deals to combat the economic crisis. On the other hand, this has encouraged all companies to compete vigorously to attract and retain customers.

Figure 32: Evolution of Average Customer Annual Churn Rates in EEA Countries³⁵



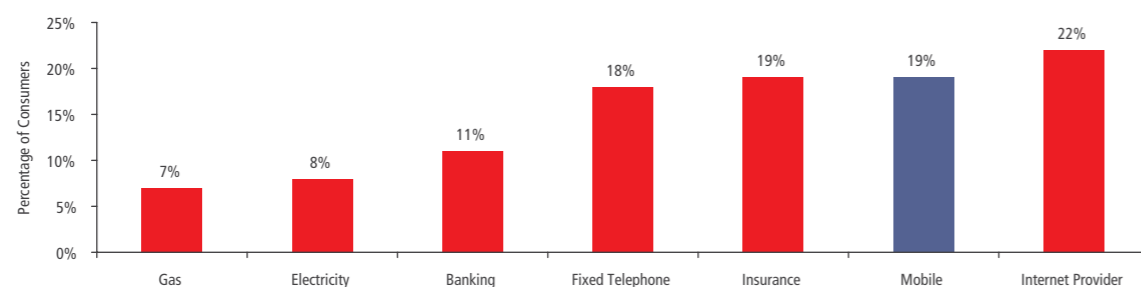
Source: Wireless Intelligence

³⁴ The Moment of Truth - A portrait of the Discount MVNO/Mobile Operators' success - Case Telmore, Strand Consult (2008).

³⁵ Customer churn is the proportion of total customers changing operator per annum. Based on a sample of 17 countries in EEA.

Churn rates in the mobile industry are substantially higher than for comparable services, such as utilities or financial services. In a recent Eurobarometer survey of consumer behaviour across Europe, 19% of participants responded that they had changed their mobile provider in the last two years. Although a consumer survey is not directly comparable with operator internal data on churn rates, it provides an indication of how regularly consumers switch providers for different services. Less than 8% of participants responded that they had changed their electricity or gas provider, for instance.

Figure 33: Percentage of EU27 Consumers that Changed Supplier in the last two years, 2008



Source: Consumers' view on switching service providers, Eurobarometer, January 2009

In addition, the implementation of number portability since 2003 has allowed consumers to keep their mobile number when switching to a new mobile operator. Growing numbers of consumers are "porting" their number when changing operator. According to the European Commission, 14.1 million EU consumers ported their mobile number in 2008 alone (7.1 million in 2007). By the end of 2008, a total of 60.2 million subscribers (approximately 10% of mobile subscriptions) had ported their number between 2003 and 2008³⁶.

With intense competition and high levels of switching, prices in the mobile industry have declined at a particularly steep rate across Europe. In December 2008, the consultancy Teligen published detailed research for the European Commission on telecoms price developments from 1998 to 2008. The report compares the prices for baskets of mobile services over time and highlights rapid reductions in mobile prices across the EU. For example, prices for a medium usage basket of mobile services declined by 10% per annum in the EU25 from 2004 to 2008 and in the EU27 from 2006 to 2008; the high usage basket saw a similar price decline. The report indicates that national fixed line call prices have decreased by an average of just 4% per annum from 1998 to 2008.

Figure 34: Annual Price Reductions for Baskets of Mobile Services in the EU³⁷

Price Basket	Region	Period	Average Annual Growth Rate
OECD domestic mobile medium usage price basket	EU25	2004-2008	-10%
OECD domestic mobile medium usage price basket	EU27	2006-2008	-10%
OECD domestic residential fixed line price basket	EU15	1998-2008	-4%
OECD domestic residential fixed line price basket	EU27	1998-2008	-1%
OECD domestic mobile high usage price basket	EU25	2004-2008	-11%
OECD domestic mobile high usage price basket	EU27	2006-2008	-10%

Source: Telecoms Price Developments from 1998 to 2008, Teligen for the European Commission; A.T. Kearney analysis

³⁶ Progress Report on the Single European Electronic Communications Market 2008, European Commission (2009) page 16.

³⁷ The report compares prices using the OECD's low, medium and high mobile price baskets, which contain varying numbers of calls, SMS and other services, reflecting different usage levels. Prices adjusted for inflation.

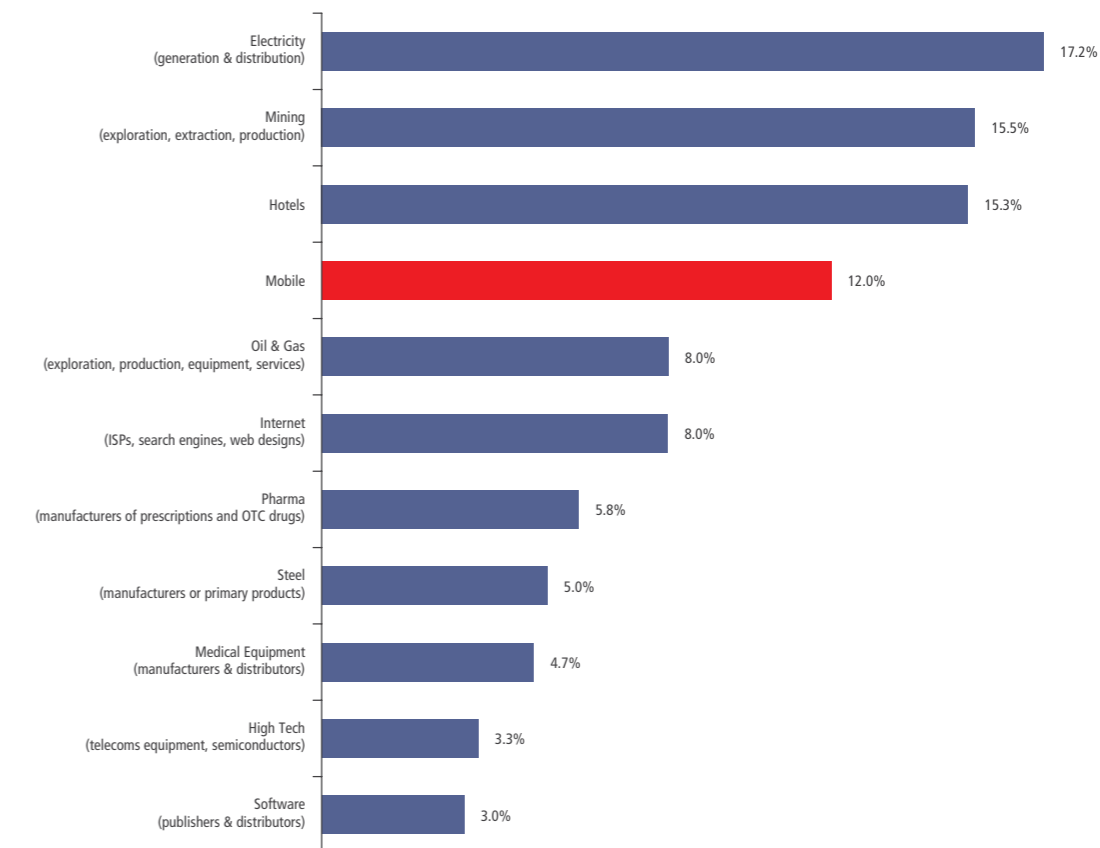
Returns in the Mobile Industry Not as High as Assumed

The industry's current profitability is in line with some other sectors but is neither exceptional nor excessive. One reason for the misconception here is the common emphasis on Earnings Before Interest, Tax, Depreciation (of capital assets) and Amortisation (of intangible assets such as licences) - EBITDA³⁸

Since mobile operations are capital intensive, with heavy investment requirements to launch and then maintain a network and the supporting IT platforms, the emphasis on EBITDA is of limited value for economic analysis. It may be useful for day-to-day management decisions to ignore these "sunk" costs and seek to maximise EBITDA but it is certainly not appropriate to judge an industry's long-term economic performance. Evaluating the performance of a power company without the cost of the power stations or airlines without their planes would be absurd, and evaluating a mobile operator's profits without taking into account the cost of building the network is equally inappropriate. National regulators typically – and rightly – look at returns on capital in this sector and others, and investors also pay increasing attention to such metrics.

The mobile industry is one of the most capital intensive industries, with capital expenditures representing 12% of sales on average in 2008. The mobile industry's investment demand is considerably higher than for other fast-moving, innovation-based industries such as pharmaceuticals, high tech, software and internet services. In 2008, for example, Europe's high tech and software industries cut investment to just 3.3% of sales.

Figure 35: Capital Intensity of Mobile and Selected Industries, Europe, 2008³⁹



Source: Confidential Operator data; Bloomberg; A.T. Kearney analysis

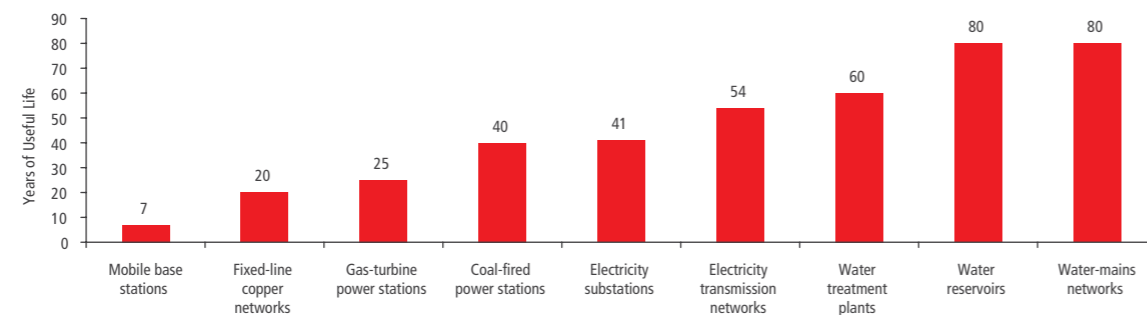
³⁸ According to confidential operator data, Bloomberg company financial data and A.T. Kearney analysis, the European mobile industry's average EBITDA margin is in the mid-30%'s (although there is a broad range depending on various operator-specific factors including, but not limited to, regional variations in costs, market maturity, degree of vertical integration/outsourcing) which is higher than some capital intensive industries (e.g. EBITDA for power generation and distribution is around 22%) but lower than others (e.g. EBITDA for mining is around 39%).

³⁹ Weighted average capex/sales. All data are for the EEA only.

Not only is mobile highly capital-intensive, but the pace of asset replacement and investments in new technologies is extremely rapid. Having rolled out new analogue networks in the 1980s, mobile operators upgraded their infrastructure to digital networks in the early 1990s. These investments were then followed by GPRS/EDGE upgrades, roll-out of UMTS networks in the early 2000s and, more recently, investments in HSPA. Mobile operators made significant bets on the revenue generation potential of new services associated with each of these investments.

The rate of asset depreciation in the mobile industry is faster than for other industries. In many industries, infrastructure has a relatively long lifespan. In electricity generation, coal-fired and gas turbine power stations have a useful lifespan of 25 to 40 years. In fixed line telecoms, the copper wire network has a useful lifespan of at least 20 years. Meanwhile, water and sewerage systems developed in the nineteenth century are still being used today in many cities. Mobile operators' base stations have a useful life of just seven years – operators must continually replace existing infrastructure as technology advances and consumers demand more data intensive services.

Figure 36: Useful Life Spans of Mobile versus Other Utility Infrastructure



Source: Energy System Development in Germany, Europe and Worldwide, IER (2007); Transmission and Distribution 2007, UBS Investment Research; Australian Commissioner for Sustainability; Press reports; A.T. Kearney intellectual capital and analysis

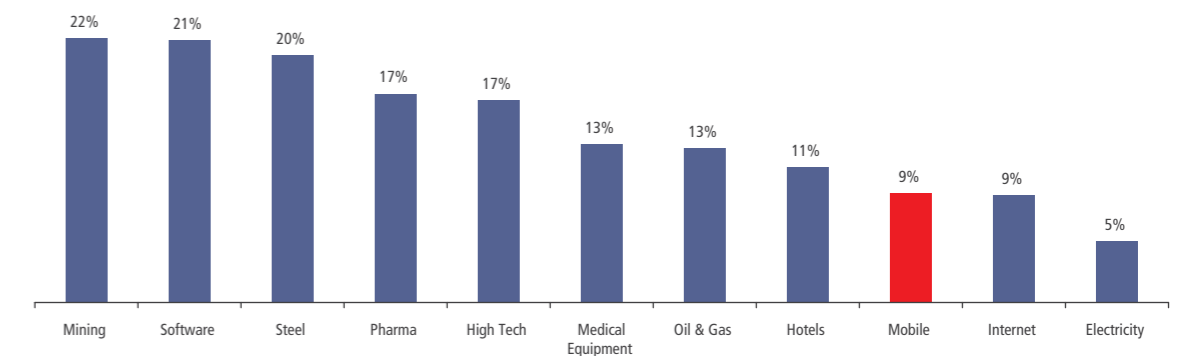
In addition to its capital intensity, mobile is also still a somewhat risky industry. Utility companies generate most of their profits from well-established products and services. By contrast, mobile operators have launched waves of new services, most notably investing substantially in 3G networks which were mainly intended to support broadband services delivered to mobile devices – services and devices which did not exist at the point of investment. Given their innovative nature, there is a high degree of uncertainty regarding future demand for these services. Operators make repeated investments in new technology, infrastructure and spectrum licences to deliver such services, with no certainty regarding long-term profitability. Operators must also consider the risk of future regulation when making these investments. Even a decision to enter a market as a third player, while often a “safe bet” in hindsight, depended on business cases that seemed ambitious at the time and which have not worked out in every European country. There have been exits from the market, such as the German 3G licence-holders (Mobilcom, Quam) who chose to return their licences and write off a massive investment.⁴⁰

Mobile operators also face risks because of the pace of change in the wider communications industry. Just as mobile operators rolled out new networks over the last 20 years, emerging technologies raise the possibility of creating alternative networks which could compete with mobile. For example, Wi-Fi technology allows consumers to access the Internet on the move when they are within the range of a Wi-Fi hotspot. Meanwhile, new WiMax networks may provide the possibility of wireless Internet access over long distances, and are potentially suitable for providing wireless telecoms and high-speed data transfer. Manufacturers of very popular mobile broadband devices have been able to extract favourable terms for exclusive supply arrangements to operators, taking a significant share of the available margin pool.

Return on capital employed (ROCE) provides a useful measure of financial performance, particularly in high-risk, capital-intensive industries, capturing how successfully companies are using capital to generate profits.

In 2008, European mobile operators generated ROCE which was lower than many other industries considered. This is based on analysis of confidential operator financial data specifically related to European mobile operators.⁴¹ European operators generated ROCE of just 9% in comparison with ROCE in excess of 17% for industries including steel, software, mining and high tech. These returns only just cover the mobile industry's cost of capital or WACC.⁴² Given that the costs of capital in the other industries appear to be broadly in line with mobile, it is clear that profitability for the mobile industry is under more pressure than for many other industries on a long-term, structural basis – notwithstanding the recent downturn. Some mobile operators are suffering greater margin pressure and therefore may have ROCE below their target cost of capital. Others have made balance sheet adjustments to write down the value of recently acquired mobile assets – such operators may demonstrate very low ROCE for the year of adjustment.

Figure 37: ROCE for Mobile and Other Industries, Europe, 2008⁴³



Source: Confidential Operator data; Bloomberg; A.T. Kearney analysis

Intense Cost Reduction Efforts

To protect margins in the face of persistent price reductions, mobile operators have had to scale back planned capital expenditures and operating costs significantly. According to A.T. Kearney's Cost Benchmarking of European mobile operators in 2007, the most significant cost reductions were achieved in network/IT, support functions and customer management. In 2008, the most significant reductions were seen in marketing, as operators broadened the scope of their efficiency programmes, followed by support (or overhead) functions and networks/IT.

To achieve these cost reductions, mobile operators have engaged in extensive operational transformation efforts, such as:

- Re-designing key operating processes to achieve greater levels of effectiveness and efficiency;
- Renegotiating terms with key suppliers – as the largest proportion of mobile operators' costs is external spend;
- Achieving higher economies of scale in network operations – through outsourcing or network sharing agreements with competitors;
- Offshoring selected labour-intensive activities such as call centres or IT development;
- Increasing use of lower cost equipment vendors which operate offshore manufacturing facilities.

Nevertheless, despite cost per customer (measured as active SIMs) having decreased, overall cost levels remained relatively flat in 2008, because volume growth dictated a degree of reinvestment of lost savings.

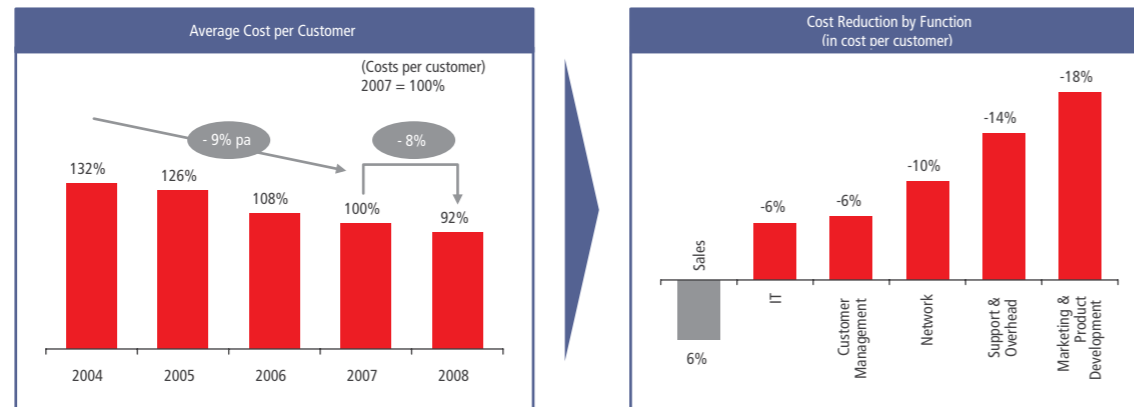
⁴¹ Financial analysts do publish ROCE estimates but these are based on publicly quoted telecoms companies which include fixed and mobile, EU and Non-EU operations.

⁴² Weighted Average Cost of Capital or WACC, represents the firm's blended cost of funds or the minimum return (or “hurdle rate”) it must achieve in order to satisfy its investors' (shareholders and debtholders) expectations.

⁴³ All industries shown are for EU/EEA only. ROCE defined as EBIT x (1 – Effective Tax Rate) / [Total Assets – Current Liabilities], where total assets include goodwill and intangible assets. Refer to section 6 for more detail on the methodology employed.

⁴⁰ Other examples include Blu in Italy and Orange in Sweden which exited completely.

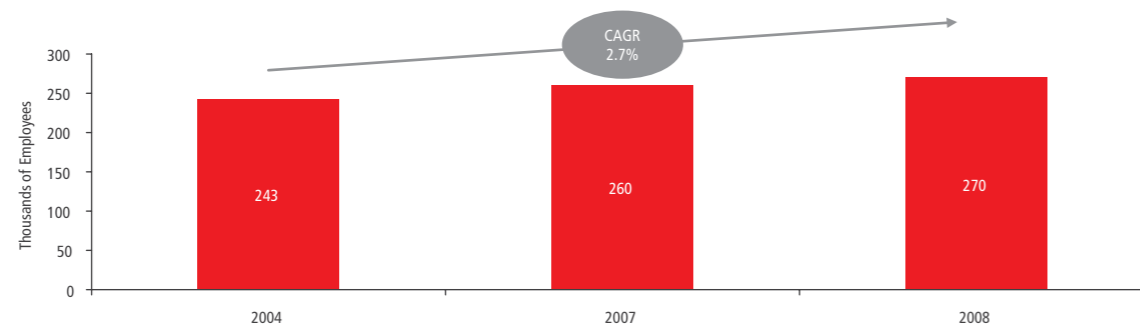
Figure 38: Evolution of Mobile Operator Costs



Source: A.T. Kearney – European Cost Benchmarking for European Mobile Operators

The financial crisis and the industry focus on cost reduction have impacted direct employment. Within mobile operators there was still slight growth during 2008 but across the full industry supply chain, this has not always been the case. Equipment vendors have already closed European factories due to declining operator budgets and cost pressures. With further competitive and regulatory pressure likely, actual declines in sector-wide employment may be expected. At this stage, mobile operators have rarely resorted to service quality reduction. In fact, mobile operators have continued to improve network quality, distribution and customer service and many added sales staff in 2008. The situation in 2009 is not yet clear, but there have been cases of operators reducing headcount.

Figure 39: Evolution of Mobile Operator Direct Employees



Source: Operator provided data; Quantifica; Wireless Intelligence; IDC; Factiva; A.T. Kearney analysis

Consolidation Trends in the Industry

Operators have started to look at consolidation as a possible route to improve in-country scale and competitiveness. In many cases this has been limited to network sharing agreements but it has also involved M&A activity, for instance in the Netherlands, Austria and most recently Switzerland and the UK.

Consolidation in such a highly competitive industry is common, especially given the high investment requirements for LTE in future years. Three consolidation trends will affect the industry in the next few years: in-country consolidation; increasing fixed-mobile convergence; and some degree of multinational expansion to expand groups' footprint. These trends would be a combination of:

- Companies with insufficient cash flow looking to consolidate in order to be able to afford the next generation of technological innovation;
- Market push towards fixed-mobile integration, both for mobile companies trying to enter the fixed market and fixed operators developing a mobile proposition to offset the decline in their market;
- Need for expansion across borders to reduce risk and leverage key scale effects through a multinational footprint.

Where consolidation produces stronger operators with the appetite and ability to invest, this will enhance consumer benefit and the contribution made by the industry to social and economic welfare in Europe.

5. The Mobile Industry into the Future



Key Messages

- The mobile industry has transformed the way in which we live, work and play by continuously improving and introducing new services and products. In Europe, future innovation is likely to come from the implementation of new technologies such as LTE and advanced devices;
- Mobile broadband has grown by 139% CAGR from 2006 to 2008, with subscribers rising from 2 million to 13 million in Europe;
- Smart phones have also grown significantly with an estimated 32 million smart phones in Western Europe by the end of 2008;
- Looking ahead, the mobile industry is expected to continue investing strongly in new technologies and services, creating around 25 million new jobs worldwide in the next five years. Productivity gains of mobile broadband could increase GDP by 3 to 4% worldwide;
- European regulatory authorities and policy makers can have tremendous influence on the investment profile and long-term development of the mobile industry. They need to carefully balance the potential short term objectives of further regulation with those of longer-term growth, investment and job creation as they reach key decisions, for instance on spectrum allocation.

Developing New Technologies

Over recent decades, the mobile industry has transformed the way in which we live, work and play by continuously improving and launching new products and services. Operators' commitment to innovation has been backed by years of investment in new technologies. In Europe, future investments are expected to be driven by the deployment of LTE (Long Term Evolution). This technology is a step towards so-called fourth generation networks, providing mobile speeds much higher than 3G networks. According to the European Commission and various technical bodies, LTE is expected to enable faster mobile broadband (even up to 100 Mbps) to more users at lower prices, potentially revolutionising Europe's mobile telecoms market. LTE Advanced could potentially allow users to benefit from high quality TV or video-on-demand while on the move.

Continuing the long-term trend of technology improvement, LTE uses radio spectrum more efficiently. Signals will travel further than with current technology and reduce the number of antenna sites needed to achieve the same network coverage, preserving Europe's landscapes and reducing energy consumption. LTE could also bring mobile broadband to less populated regions and contribute to the reduction of the "digital divide" between rural and urban areas. In late 2008, 23% of the population in rural areas of the EU still could not subscribe to a DSL Internet connection.

In Europe, this new technology is currently being trialled by mobile operators in Austria, Finland, Germany, Norway, Spain, Sweden and the UK and is expected to be commercially available in Sweden and Norway in the first half of 2010. Some operators have already announced their commitment to deploy LTE in the 2010-2012 timeframe. In January 2009, Ericsson and TeliaSonera announced an agreement for a first commercial LTE network deployment to cover Stockholm. T-Mobile, Vodafone, France Telecom and Telecom Italia have also announced their commitment to LTE and Telefónica has selected a set of countries to launch field tests. Mobile operators, such as TeliaSonera, T-Mobile and Orange, and manufacturers, such as Alcatel-Lucent, Ericsson, Huawei and Nokia Siemens Networks, have committed to use the LTE standard by 2013.

According to EU Commissioner Viviane Reding in August 2009, "with LTE technologies, Europe's research 'know-how' will continue to set the tone for the development of mobile services and devices around the globe, just as we did in the past decades with the GSM standard. LTE will create tremendous opportunities and plenty of space for growing the digital economy."

To promote the deployment of this new technology the European Commission announced, at the same time its intention to invest a total of €18 million into researching the deployment of LTE and LTE Advanced. Operators are expected to invest circa €6 billion in LTE over the next few years, but the speed and timing of the deployments are likely to be driven by economic conditions and the regulatory framework. Availability of spectrum on favourable terms is a prerequisite. Fortunately the "digital dividend" of frequencies freed by the switchover from analogue to digital TV in Europe provides a great opportunity to free up spectrum for LTE-based services such as mobile broadband.

Operators are also looking at improving the performance of existing networks. Recent developments in this area include the addition of femtocells to the 3G networks. Femtocells are small cellular base stations intended to extend service coverage and offload traffic from the mobile network in home and small office environments. It connects to the service provider's network via broadband and typically supports two to four mobile phones in a house. A femtocell allows service providers to extend service coverage indoors, especially where access would otherwise be limited or unavailable. Moreover it minimises the deployment and engineering cost of expensive network base stations.

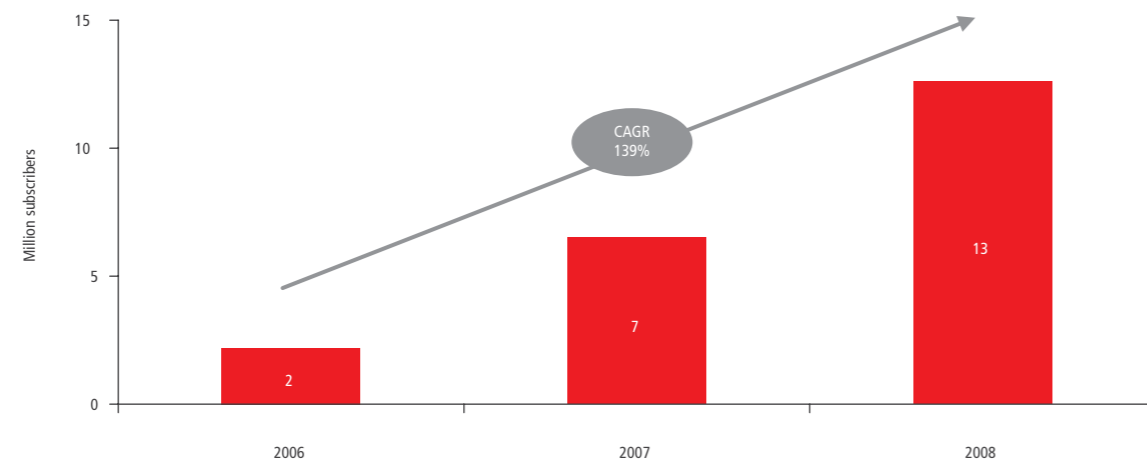
Several mobile operators already sell femtocell base stations and many others are trialling the technology. In November 2008, Starhub (Singapore) rolled out its first nationwide commercial 3G Femtocell service. In Europe, Vodafone released a femtocell network extender in July 2009 that can be bought via their online shop (Vodafone Access Gateway).

Other emerging technologies include Worldwide Interoperability for Microwave Access (WiMAX). The technology promises to provide up to 10 Mbit/s wireless broadband speed and it is currently being trialled in different countries in the world.

The Boom of Mobile Broadband, Smart Phones and Mobile Applications

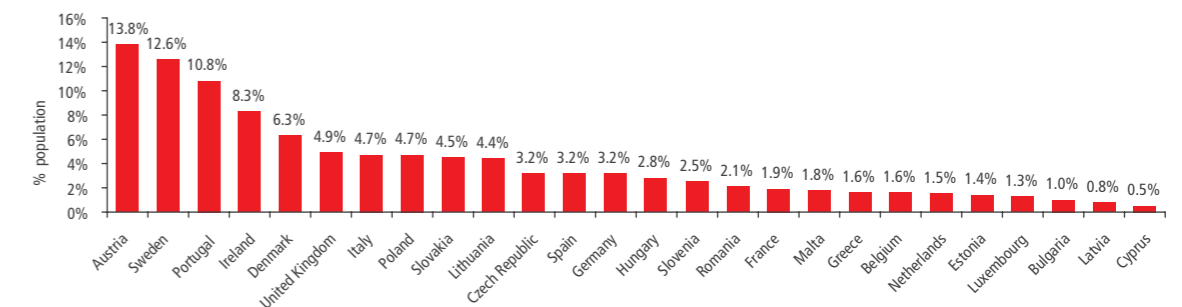
The last twenty years have seen a boom in both mobile and Internet usage in developed countries. Until recently, Internet usage was largely limited to fixed line broadband. This is now changing, as usage of mobile broadband services has recently accelerated. Mobile broadband penetration has grown by 139% from 2006 to 2008 – driven by increased network speed and capacity, better devices (such as USB-based “dongles” or SIMs embedded in laptops), a reduction in prices and the introduction of new bundles and offers, including prepaid.

Figure 40: Mobile Broadband Subscribers in Europe



Source: InfoCom's Broadband Monitoring Service, 2008; Disruptive Analysis, Mobile Broadband Computing 2008; A.T. Kearney analysis

Figure 41: Mobile Broadband Penetration, Q2 2009

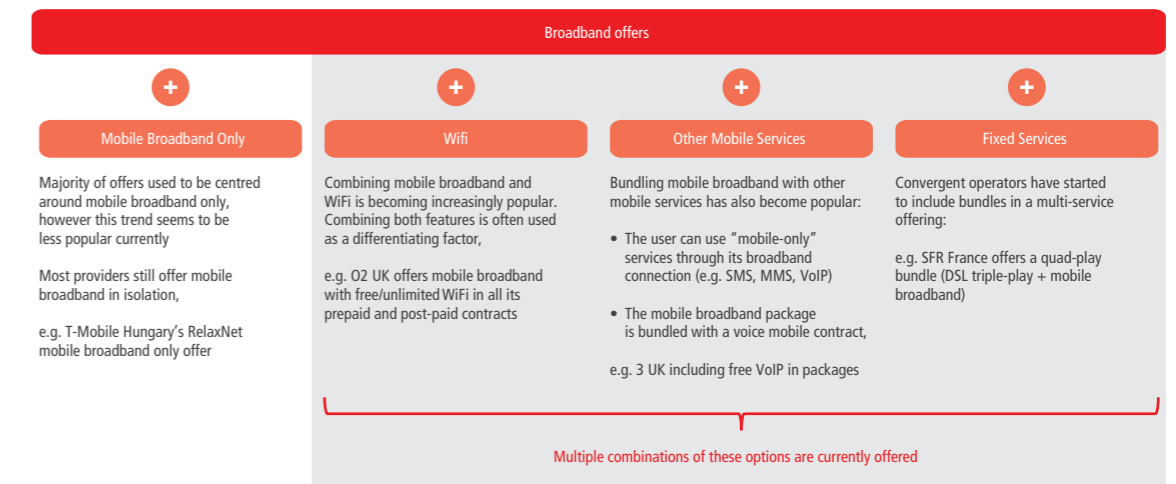


Source: Broadband Access in the EU: situation at 1 July 2009, European Commission

Penetration of mobile broadband is still at early levels and varies significantly across Europe. In mid-2009, some countries had penetration rates above 10%, such as Austria, Sweden and Portugal. Austria had the highest penetration rate at 13.8%, while Cyprus still had only 0.5% penetration. The growth trend is expected to continue with forecasts of 20% penetration within the next 2 to 3 years.

Furthermore operators are starting to enhance their mobile broadband offering by bundling this service with other mobile and non-mobile services, as outlined in the exhibit below.

Figure 42: Broadband Offer Structure

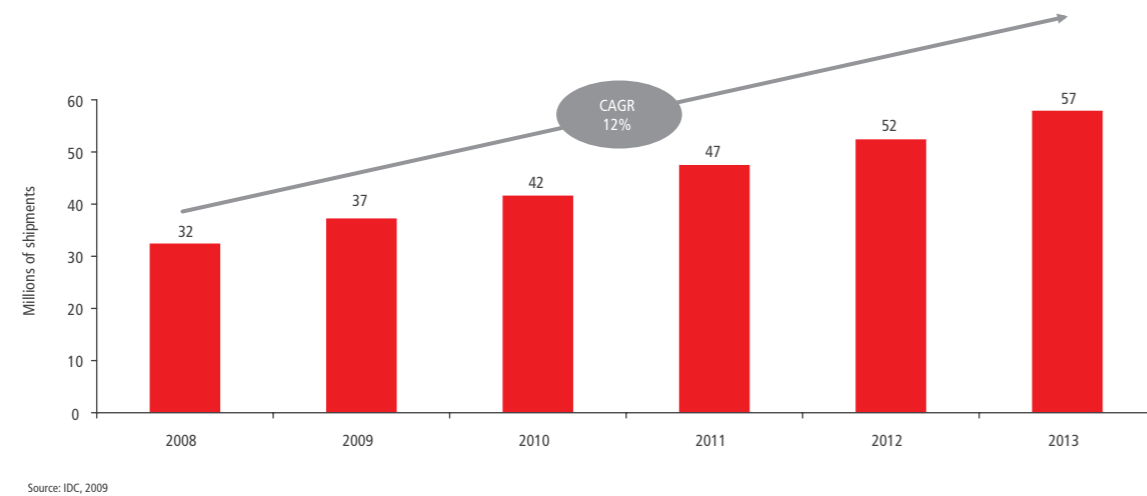


The success of mobile broadband has been long awaited in the industry and will represent a welcome opportunity to recoup the large investments made in 3G networks. However, the success of mobile broadband will also represent a challenge for operators as the service is bandwidth-hungry and will intensify the requirements for further network investment.

Mobile broadband is not simply a phenomenon for laptop users. The past year has also seen strong growth in “smart phones” which enable mobile broadband. Indeed the relationship between the two is expected to increase as smart phones become more sophisticated and the boundary between laptops, netbooks and smart phones becomes blurred.

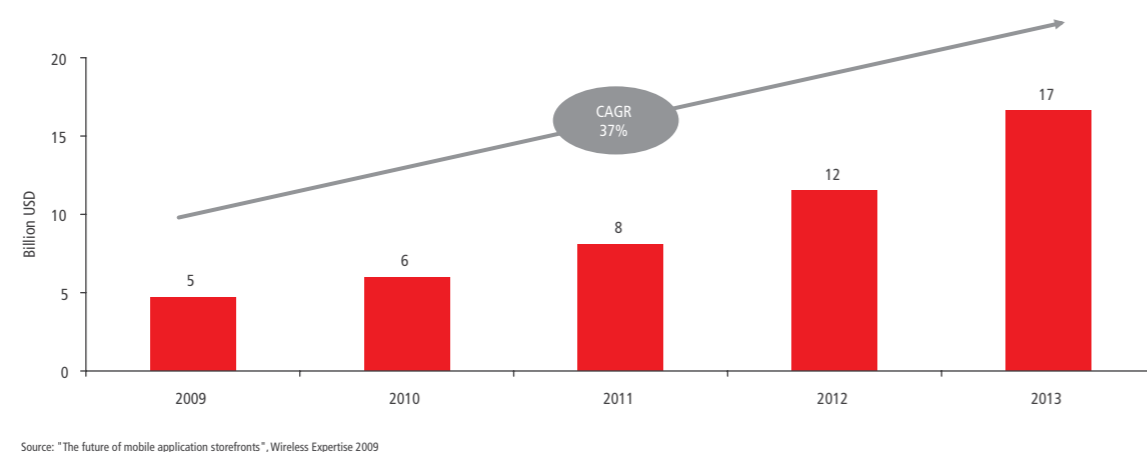
In 2008, the estimated number of smart phones in Western Europe was 32 million and forecasts put this number at 57 million by 2013. This will represent a growth of 12% per year.

Figure 43: Number of Smart Phones in Western Europe, Current and Forecast



The increase in the number of smart phones has been partially driven by technology and design innovation and this development has created a new market - the mobile application (or "app") industry. Currently, the global mobile apps market is estimated at \$4.7 billion and is expected to climb to \$16.6 billion by 2013. This is impressive, especially considering that the music market is worth around \$30 billion today and that mobile "apps" is almost a completely new market. With four mobile phones for each PC in the world, mobile apps have a huge market potential.

Figure 44: Mobile Applications Revenue Worldwide, Current and Forecast



A new twist brought by mobile apps is the role of small, entrepreneurial businesses. With Apple's App Store, 'garage developers' have the same opportunity as global content providers and publishers to establish the popularity of their app among consumers. This has enabled the creation of new micro-businesses and is leading to new levels of innovation and positive economic impact.

Apple's App Store was launched in July 2008, tied to its iPhone launch, and within days there were 500 apps available. On 28th September 2009, Apple announced that there were more than 85,000 apps available and over 125,000 developers in Apple's iPhone Developer Program.

Apple's CEO Steve Jobs commented: "The rate of App Store downloads continues to accelerate with users downloading a staggering 2 billion apps in just over a year. The App Store has reinvented what you can do with a mobile handheld device, and our users are clearly loving it."

But Apple is not the only company that has invested in mobile apps – RIM and Nokia have also launched their own app stores, BlackBerry App World and Ovi respectively. The BlackBerry App World was launched in April 2009 and is accessed via the handset's web browser, with the content being automatically adapted to the device. Ovi was launched in May 2009 and has a potential market of 50 million Nokia devices. Mobile operators are developing their own app stores and, in some cases, cooperating with major vendors to maximise the range of applications available to their customers.

Figure 45: Examples of App Stores



Vibrant Service Innovation

Mobile apps are just the latest manifestation of how the mobile device is an increasingly important channel for information, entertainment and transactions. Some of the key service innovation areas of recent years include:

- **Mobile entertainment:** Mobiles constitute an ideal entertainment platform for usage on the move. Initially, mobile operators and content providers focused on providing basic mobile music, gaming and short video services. Increasingly, mobile services will include multimedia rich content. The game industry, as well as 'garage developers', have created games for mobile phones like the ones in gaming consoles or PCs. Nowadays, everyone with a smart phone has direct access to YouTube, music download services and social networking sites such as Facebook.
- **Mobile commerce:** Mobiles offer new, more convenient mechanisms for carrying out payments, ticketing and other transactions. Public authorities are using mobile services to provide more convenient, cost-effective means of payment for transport and parking, banks are offering mobile banking services, and airlines are introducing mobile ticketing and check-in. According to Telecoms Market Research, 87 million mobile users in Europe will be using their mobiles for mobile ticketing by 2010.⁴⁴ Increasingly, basic information services will be enhanced by transaction capabilities, such as making a secure reservation at a hotel or restaurant identified through mobile web browsing.
- **Mobile monitoring and surveillance:** Mobiles are enabling companies to monitor equipment, people and the natural environment remotely. As discussed in section 3, healthcare providers are using mobiles to monitor patients remotely, while security and law enforcement agencies are using mobiles to track criminals and carry out surveillance. With mobile technology, these new applications are allowing companies and public sector bodies to reduce costs while increasing safety and the speed/quality of service for consumers and citizens.
- **Mobile advertising:** Mobiles provide new ways for companies to reach potential customers, with opportunities to communicate with customers in more personalised and interactive ways. Marketeers are exploring a wide range of different mobile advertising options including SMS texts, video clips, location-based advertising and "click-to-call" advertising.

Figure 46: Case Studies of Innovative Mobile Services

Source: Company and other websites

If successful, these service innovations have the potential to generate substantial revenue growth for the mobile industry as a whole. This will provide further growth opportunities and job creation potential.

Future Contribution to the Economy

As discussed throughout this report, mobile industry developments have a major impact in a variety of ways on Europe's economy. From reducing CO2 emissions directly and indirectly, contributing to productivity gains in related industries and public services and potentially bringing broadband access to rural areas, the mobile industry will continue to play a crucial role in bridging the digital divide and building the digital society.

Looking ahead, the mobile industry is forecast to invest \$800 billion worldwide in the next five years with mobile broadband access estimated to represent more than 60% of this investment. The deployment of mobile Internet is expected to not only secure current employment but also to lead to around 25 million new jobs worldwide. All in all, the productivity gains of mobile broadband in the future could increase GDP by 3 to 4% worldwide.

Growing Regulatory Pressure

In the initial stages of the development of mobile services, it was envisaged that sector-specific regulation would reduce as competition in the industry developed. However, regulatory scrutiny of the mobile industry is currently increasing – despite rigorous competition between mobile operators and growing competition with other communications providers. In addition to close oversight by national regulators, the European Commission is playing an increasingly interventionist role in the mobile sector.

In November 2007, the European Commission proposed a series of modifications to the EU's telecoms regulatory framework that aim to create a more harmonised market for electronic communications services across the region. A compromise deal on the "Telecoms Package" was reached by the EU institutions at the end of November 2009 under third reading, which will establish the regulatory framework for mobile and other electronic communications until at least 2015.

The Package comprises three key elements: the "Better Regulation Directive", which amends the existing Framework, Access and Interconnection, and Authorisation Directives; the "Citizens' Rights Directive", which amends the Universal Services / User Rights and ePrivacy Directives; and a Regulation establishing the Body of European Regulators for Electronic Communications (BEREC). The BEREC would replace the European Regulators Group but have similar functions including the provision of non-binding opinions on

Commission draft decisions, recommendations and guidelines. There is a possibility that this will lead to more intrusive regulation of mobile markets through the establishment of a new EU regulatory authority and introduction of greater powers for the European Commission to intervene in mobile markets.

In 2007, the Commission took the controversial decision to regulate mobile operators' retail and wholesale voice roaming prices for a minimum of three years. In 2008, the European Parliament adopted changes to that Roaming Regulation, extending the voice roaming regulation in time (until 30 June 2012) and intensity as well as introducing SMS and wholesale data roaming price caps and transparency measures. Most of the new rules applied from the summer of 2009, with some of the transparency measures due to come into effect in spring 2010.

Under current scrutiny also is the GSM Directive. EU Member State representatives have agreed to follow the European Parliament in approving changes that will open up the 900 MHz band to UMTS systems. Further evolutions of 3G including LTE will also be possible in the band once these are demonstrated not to interfere with existing systems in the band. The updated Directive was formally signed off by the European Parliament and the Council of Ministers in September 2009. The GSM Directive has played a key role in promoting the pan-European take up of mobile telephony and driving the success of the European mobile industry. Updating the Directive is crucial to supporting the roll-out of next generation mobile technologies.

The forthcoming switchover from analogue to digital broadcasting in Europe will release an unprecedented amount of radio spectrum for new uses. In 2007, the Commission published a communication on the "digital dividend", proposing a common plan for allocating the spectrum. Here again, regulatory decisions will have a profound impact on the future of the mobile industry. Digital dividend spectrum is in the UHF range, so it has very good propagation characteristics (being less attenuated by obstacles such as buildings) and is highly suitable for the roll-out of mobile broadband in rural areas. The World Radio Communications Conference (WRC) in 2007 identified the digital dividend sub-band 790-862MHz as suited for mobile services in Europe. A harmonised approach by European countries will enable cost effective deployment of mobile services through economies of scale which will drive down handset and network equipment costs and encourage innovation.

Mobile has so far delivered greater added value per megahertz of spectrum than any other industry.⁴⁵ With a sufficient proportion of the new spectrum allocated on fair economic terms, mobile could help to bridge the digital divide, bringing broadband to rural areas and less affluent consumers. The new spectrum would also facilitate the development of innovative services such as mobile TV. However, inadequate spectrum allocation would inevitably stifle these new services.

A European Commission study on the Digital Dividend which concluded in September 2009 found evidence that the sub-band 790-862 MHz should be cleared on an EU-wide basis and the EU is expected to announce a decision on the 800MHz band which will support harmonisation and ensure that interference is minimised. As at October 2009, the following EEA countries had already announced that they will follow the WRC recommendations and allocate the 790-862MHz sub-band to mobile broadband: Finland, Sweden, France, Switzerland, Germany, Spain, the UK, Denmark and Norway.

From a policy and regulatory perspective, this coming year will be critically important as the European Union decides on the scope, focus and direction of its European Digital Agenda. The outgoing Commission is completing its consultation on post i2010 and the new one will be looking to advance the agenda. Momentum is also provided by the current and future EU Presidencies as they structure a vision of Europe's digital future. With the new European Parliament also engaging in the discussion it is clear that the mobile industry must ensure its voice is heard as this key policy area is shaped, developed and rolled out. It will set the legislative and regulatory agenda for the next five years.

The GSMA and its members are committed to constructive engagement with policy makers to ensure a fair, pro-investment framework for future industry evolution. There is great potential for the mobile industry to build on its powerful socio-economic contributions to date and play an even greater role in European society in the decade ahead. With this in mind the GSMA has launched a European Mobile Manifesto⁴⁶ that details the contribution that the mobile industry can make and the role government can play in ensuring that the enabling role of mobile is leveraged to maximum effect.

⁴⁵ See for example, "The economic impact of the use of radio spectrum in the UK", Europe Economics (2006).

⁴⁶ The European Mobile Manifesto, GSMA, November 2009, http://www.gsmworld.com/our-work/public-policy/mobile_manifesto.htm

6. Report Methodology and Sources of Information



Overall Methodology and Sources of Information

The mobile industry Observatory report has been conducted independently by global management consultants A.T. Kearney. The data in the report has been extracted from both primary and secondary research. Primary research consisted of collecting data from almost fifty European mobile operators⁴⁷. The confidential information submitted by the operators was aggregated and anonymised to provide non-confidential statistics for individual countries or Europe as a whole. Secondary research included publicly available sources such as Eurostat, the OECD and research by National Regulatory Authorities and other recognised providers such as Wireless Intelligence (part of the GSMA), Bloomberg, Quantifica and IDC. The data collected from European mobile operators was used for determining the capital intensity and ROCE of the mobile industry. Primary research enabled the extraction of detailed data to provide accurate capital intensity and ROCE for the mobile industry. Primary data from mobile operators was also used to determine some elements of the socio-economic contribution.

Other primary research included operator websites, for example in determining the cost of accessing telecoms services. Furthermore, some of the insights shared in this document are supported by A.T. Kearney management consulting experience within the telecoms sector.

For the evolution of mobile operator costs, A.T. Kearney's Cost Benchmarking database⁴⁸ was used. A.T. Kearney has been conducting cost benchmarking exercises for mobile operators since 2002. The initiative started in the European markets but now extends to mobile operators around the world.

Publicly available sources included those of a macro-economic nature such as Eurostat and the OECD as well as reports such as the most recent customer satisfaction Ipsos survey for the European Commission and the Eurobarometer e-communications household survey. Telecoms-specific databases such as Wireless Intelligence, Quantifica and IDC were used for both country and European level mobile market figures. Where appropriate, data from different databases has been combined to show more complete industry trends. From this data, A.T. Kearney calculated the necessary metric/s, average, CAGR or percentages as displayed in the figures and/or commentary.

Socio-Economic Contribution

This paper estimates the European mobile industry's creation of employment (both direct and indirect) and contribution to public funding. It should be noted that the socio-economic contributions are of necessity estimates.

Employment

The number of mobile operator direct employees was estimated from employment data collected from mobile operators and extrapolated to a country level. The country level data was then aggregated to a European level. The operator sample with directly provided employee data represented circa 70% of total European mobile operator revenues.

The indirect employment was derived through macro-analysis of the industry, starting with the European mobile operator total revenue of €178 billion (based on Quantifica and IDC data). The value chain for the industry was quantified based on this market revenue figure and Ovum research⁴⁹. This consisted of understanding the value add across the value chain from the purchase of services and devices by consumers all the way through to the companies that create the components that go into making the network equipment and devices.

Companies that operate along this value chain for example include: independent service providers that bill a proportion of end-users, independent dealers, MNOs (Mobile Network Operators), handset makers, network equipment suppliers, component suppliers to handset makers and network equipment suppliers. The percentage of value add that flows outside of Europe was removed to determine the European retained value add along the value chain.

The number of jobs generated directly by mobile operators and indirectly was determined by dividing the corresponding value add by the average salary from Eurostat⁵⁰ including social security charges. It was assumed that governments spend the taxes raised from the industry, and that owners and funders spend their returns from the industry in a way that generates further employment.

⁴⁷ Counted at a country rather than group level.

⁴⁸ A confidential exercise repeated annually by mobile and fixed line operators.

⁴⁹ The Economic Contribution of Mobile Services in the Europe Union, Ovum, 2005.

⁵⁰ The average salary used was the European average for professionals from Eurostat, (and the social security uplift from Ovum).

In addition to the above, there is the ‘multiplier’ effect, whereby jobs are generated by the mobile industry’s direct and indirect employee spend. This multiplier is calculated based on standard ratios – a multiplier of 1.6 was used, which is the average of the Association Française des Opérateurs Mobiles figure of 1.7 and the UK Office of National Statistics estimate for the telecommunications sector of 1.5.

Contribution to Public Funding

The contribution to public funding should be considered an order of magnitude estimate. Mobile operator VAT was estimated from the mobile operator revenue by country and the VAT rate in that country, after which the proportion generated from business spending was removed to arrive at Net VAT. Mobile operator corporate taxes were calculated from the European mobile industry revenue multiplied by industry profit margins and the effective tax rate.

Local property taxes were obtained from operator provided data and extrapolated at a country level pro-rata based on revenue. Local property taxes from the other companies along the value chain were estimated based on number of employees but assuming that non-MNOs tend to locate in cheaper locations. Employee income taxes were estimated by multiplying the number of employees by the European average professional salary and the corresponding tax rate from Ovum. Social security taxes were similarly estimated.

Other mobile operator contributions to public funding were obtained from operator provided data and extrapolated based on revenue. This includes other taxes, annual spectrum licence fees, and annual regulatory fees. The annual spectrum licence fee estimate excludes upfront (one-off) licence fees.

Return on Capital Employed (ROCE)

ROCE is a ratio that indicates the profitability of a company’s capital investments. It is calculated as:

$$= \frac{\text{Operating Profit After Tax}}{\text{Capital Employed}}$$

The numerator, or the return, represents the operating profit after tax but before borrowing expenses (interest). The denominator, the capital employed, is total assets (current assets plus non-current assets, including goodwill and intangible assets) minus current liabilities. The denominator shows how much capital is being employed in the operation of the business.

We include goodwill in our definition of capital employed for three reasons:

- Goodwill is an important factor in the nature of the mobile industry – MNOs have gone through major acquisitions in order to take advantage of scale economies
- Exclusion of goodwill could be misleading as this is capital that the firms concerned have had to deploy in order to remain viable in this industry
- In order to make the ROCE metric comparable to target returns (often referred to by the measure weighted average cost of capital, or WACC), goodwill is included as the cost of raising the debt and equity capital to make the acquisitions (which have resulted in the goodwill) are included in calculations of WACC

Because ROCE measures profitability in relation to invested capital, ROCE is important for capital-intensive companies, or firms that require large upfront investments to start producing goods. ROCE should always be higher than the rate at which the company derives its capital from lenders and shareholders (i.e. the WACC), otherwise shareholders will see the value of their investment decline the more the company invests.

The profit after tax and the capital employed was part of the primary data collected from European mobile operators. Because the data was collected directly it was possible to obtain mobile specific figures from telecoms operators that have both mobile, fixed and potentially other businesses. The profit after tax and capital employed was used to calculate a European mobile industry (weighted average) ROCE. More national operators submitted data this year than for the prior report, but on a weighted basis the panel is substantially unchanged versus our prior calculations.

For calculating ROCE for comparator industries, the financial data was obtained from Bloomberg and an industry weighted average ROCE was calculated as described above. Industry standard classifications (namely ICB and GICS⁵¹) were used to define the comparator industries.

⁵¹ ICB (Industry Classification Benchmark) was created by the FTSE Group and Dow Jones Indexes. GICS (Global Industry Classification Standard) was developed by Morgan Stanley Capital International.

About this study

About this study

The European Mobile Observatory was a joint research study between the GSMA, A.T. Kearney and Wireless Intelligence, a part of the GSMA.

Any questions on the content of this document can be directed to the authors of the study.



GSMA

The GSM Association (GSMA) is the operator-led trade association representing the global mobile industry. Spanning 219 countries, the GSMA unites nearly 800 of the world's mobile operators, as well as more than 200 companies in the broader mobile ecosystem, including handset makers, software companies, equipment providers, Internet companies, and media and entertainment organisations. The GSMA is focused on innovating, incubating and creating new opportunities for its membership, all with the end goal of driving the growth of the mobile communications industry.

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Wireless Intelligence

Wireless Intelligence is the leading market data and analysis service focused on the operational performance of mobile network operators worldwide. With over 2.4 million individual data points covering 1,700 networks in 200 countries it is the de facto industry tool for market intelligence with a subscriber base of over 600 of the world's mobile operators and leading equipment manufacturers.

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A.T. Kearney

A.T. Kearney is a global management consulting firm that uses strategic insight, tailored solutions and a collaborative working style to help clients achieve sustainable results. Since 1926, we have been trusted advisors on CEO-agenda issues to the world's leading corporations across all major industries. A.T. Kearney's offices are located in major business centres in 36 countries. The firm's telecoms practice works with the senior management teams of fixed line, mobile, cable and satellite operators as well as vendors on their most important strategic and operational challenges.

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