



10

MOBILE TECHNOLOGIES

Openness and New Business
Models





Alto rendimiento. Hecho realidad.

Fundación Accenture has worked with **Fundación de la Innovación Bankinter** on the production of this Future Trends Forum (FTF) study and also helps to disseminate the work of this leading independent voice in the field of prediction and innovation. The consultancy firm has placed all its knowledge at FTF's disposition, together with its extensive expertise in turning companies and institutions into high performance organisations.

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Executive summary



The rapid development of both wireless technology and mobile devices is transforming some fundamental aspects of modern society. These breakthroughs represent another victory in the quest to improve people's quality of life as their mobility improves. This is translating into changes in their lifestyle, the way they relate to and communicate with one another, and the way they work. The phenomenon has been driven by the unstoppable rise of the mobile phone: no known technology—not even the Internet—has become so widespread so quickly or evolved so much in such a short time.

Behind the surprising statistics on the penetration rate of mobile technologies around the world, **two markets** exist with clearly disparate dynamics: mature markets in developed countries and emerging markets. In mature markets the demand for new subscriptions is lower, however users request services with a higher level of quality and sophistication for which they are willing to pay a higher price. By contrast, in emerging markets, even when the number of potential users is greater (who do not even have a subscription), the price barrier means that the revenue per user will be lower. In the near future, the success of businesses will be about achieving the right balance when addressing these two markets.

To face up to this two-fold challenge, operators are starting to ease up on their "walled gardens" (closed business models) and cooperate with other market players (manufacturers, developers, etc.). Within the current trend toward the **opening of the mobile market**, this new manner of operating is considered an essential requirement, albeit insufficient.

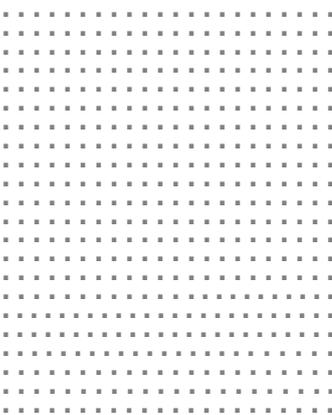
But what exactly is an **open mobile market**? Basically, one in which the users have easy, affordable access to any service, from any provider, with any device. From the human perspective, an open mobile network should encourage cooperation among subscribers. Moreover, any company can freely offer its products or services to all consumers.

Thus, the opening of the market will mean an exponential increase in the innovation of products and services, and, ultimately, that consumers will no longer use their mobile phones simply for talking or text messaging. Now, they will use them to connect to the Internet, link up with anyone, anywhere, locate people and products based on their location, and countless other uses that are currently almost nonexistent.

Nevertheless, in order for that scenario to unfold, there will have to be **cooperation** among the key market players (Government, operators, manufacturers, developers, etc.) so as to debilitate the many **potential barriers** to a truly open mobile network, some are technical, some commercial and others are social.

What seems clear is that this context of openness will give rise to more opportunities for **new actors** in the mobile market, with many coming from other sectors.

Mis notas



While the market opening promises new business opportunities, it also portends new challenges. For instance, **operators** will see increased competition and their status quo put in jeopardy, and will thus be forced to adapt their business models to the new context. Meanwhile, mobile device **manufacturers** will have to develop new, more usable phones that can handle the most sophisticated services at affordable prices. They will also reach revenue-sharing agreements with operators (similar to those promoted by **Apple** for the iPhone) as well as service providers. Finally, **service providers** will be faced with fragmentation and the lack of tools and resources for developing applications for the mobile environment and turning quick profits. This will ultimately promote models of cooperation with all of the market's players as they look for content options that can bring added value and allow them to offer their services directly to the end customer.

The expanding range of mobile devices and services

Users are being offered increasingly more sophisticated services that can be accessed from their mobile devices (Internet, mobile TV, etc.). This means greater requirements on them, which in turn becomes a strategic element in the value chain. Handsets have evolved at a blistering pace in recent years: they have gone from simple models, which were limited to voice transmission, to small pocket PCs or smartphones. These smart handheld devices are capable of connecting users to the Internet and, by doing so, opening the door to a wide variety of services that are sure to change the consumption patterns of mobile users. The outstanding issue, however, is that out of the billions of handsets in circulation throughout the world, fewer than 10% are smartphones. It is therefore vital that operators and application developers not limit their innovation to these devices alone, as that would mean excluding a large part of the population, which in many cases resides in emerging countries.

With regard to the innovation, variety and quality on the mobile services offer, we have seen evidence that, so far, have not enticed most consumers, whose use essentially boils down to voice and SMS messaging. The factors that have produced this situation include: market fragmentation (dynamics and technology), the tight control of the operators, the price of services, the shortage of specific content tailored to the mobile devices, the lack of business models that justify investments, etc.

Once these barriers have been overcome, or at least reduced, the mobile services providing the best business opportunities will be location-based services, social networks and mobile Internet connections. To a lesser extent, financial services, commerce and health services will also be successful among mobile users.

The impact of mobile technology on businesses

It seems clear that the trend towards opening will change the dynamics of the mobile market, but how will it affect the business models of telecommunication companies? Or those of companies from other sectors that use mobile solutions?

And, most importantly, will we see the emergence of innovative business models that justify the development of new mobile products and services?

Companies from all sectors will enjoy numerous advantages in their business processes thanks to the improved range of mobile devices and services resulting from the opening of the mobile market. The ability to tailor the range of products and services being offered to each individual consumer, the increased mobility for employees, and the prospect of having a new marketing channel: these will be the aspects that contribute most to the improvement of their businesses. The use of the mobile device as a sales channel (m-commerce) is still in its early stages and, despite the potential it offers, a number of things need to happen before it can take off. Aspects such as security and privacy are fundamental in that regard. Finally, machine-to-machine communication (M2M) is becoming more prevalent and can provide major opportunities to companies that are able to apply this technology to improve their internal processes or customer service.

With respect to the companies competing in the mobile market, it seems clear that rehashing their current business models in the new open landscape is not going to work. **Operators' new business models** must factor in the dichotomy existing between consumers' needs in developed and emerging markets, as well as their newly evolved relationship with consumers resulting from the diversification of their services. They also need to take into account the change in their relationship with other market agents through the proliferation of agreements and their involvement at points of the value chain that they had not previously explored. With regard to viable sources of revenue in this new landscape, advertising will play an important role, but will merely be one part of a far more complex marketing mélange. Flat-rate subscriptions, service packages and profit-sharing on content revenues are just some of the options available to operators looking to improve their financial situation.

Meanwhile, **manufacturers**, facing pressure to lower prices on their devices, will be forced to reinvent themselves as online service providers.

With regard to the services that promise to bring the greatest business opportunities to companies, such as location based services or social networks, it is necessary to settle the unclear commercial framework in which those services will be offered to consumers. With respect to **mobile social networks**, some have started to integrate advertising. In terms of **mobile location-based services**, it seems that one of the best alternatives is to design the range of services being offered according to a clear user segmentation and to establish specific sales policies for each one.

In short, the opening of the mobile market offers new opportunities for companies from all sectors, provided that they design innovative services that are attractive to consumers and built on a solvent business model. When this happens, the impact that mobile solutions have on businesses and society will be quite similar to, if not greater than, that of the Internet a decade ago. From that moment on, consumers will no longer use their mobile phones as mere means of communication but instead as a "remote control for their lives."

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Chapter 1

Foreword

1

Foreword



What do we mean by “open” mobile networks? A deceptively simple question, but with many answers, as the results of the recent Future Trends Forum in Madrid (June 2008) will testify. The lazy answer is the demise of the operator “walled garden”, but that would be too simplistic and above all “old news”.

This publication explores the many potential “barriers” to a truly open mobile network, some are technical, some commercial and others are social. The technical barriers are perhaps the most apparent, after all, if you don’t have radio coverage then worrying about how “open” the network is, may seem somewhat academic. It is important to understand the potential of mobile, as this may be the only form of access to the Internet for the majority of the world’s population and for some time to come. More than 3.5 Billion people have mobile phones today, but less than 400 Million have broadband access.

The exponential growth of mobile broadband (HSPA, EVDO, etc.) is encouraging, indeed mobile has already overtaken fixed broadband in some markets. However, continued growth requires more spectrum and governments have a clear role to play in providing timely access to spectrum and in the right frequency bands. The digital TV switchover is a one-off dividend and should not be squandered. The current trend in increasing regulation of telecommunications providers is also troubling at a time when governments are expecting billions of dollars of investment in broadband service, particularly in rural areas.

Reaching the next 3 Billion users presents new problems, as many live “off the grid” with either no electricity or an unreliable supply. The growing cost of energy dictates that being “Green” makes very good business sense in 2008 and we should see a lot more investment in both reduced energy consumption and alternative energy sources in the coming months.

Mis notas

Enough about access, for even those who have coverage still need an Internet capable device. Of the billions of devices in circulation worldwide, less than 10% are so-called smartphones. The iPhone, the Blackberry, the Nokia S60 phones may steal all of the headlines, but the majority of the world’s population do not have access to such a device. What kind of devices will open the door for the other 90%?

How open are today’s networks to application developers? Which software “platform” will have the widest reach and present the least challenge when porting applications across devices? Java is common, but fragmented. Symbian, Windows Mobile and the like are possible contenders, but reach less than 10% of the mobile population. Will new operating systems (Android, LIMO, Openmoko) solve this problem, or are we looking too far down the software stack? Will the browser become the “platform” of the future?

Enough of the technical challenges, what of the commercial, what kind of sustainable business models will we see in future? The lazy answer is that mobile advertising will pay for all, but annual revenues from telecommunications services (~US \$2 Trillion) dwarf those from global advertising, which in turn are orders of magnitude larger than those from online/mobile advertising today. Advertising clearly has an important role to play, particularly in local search, but in reality this will be just one component of a more complex commercial mix.

There is a clear "expectation gap" between the mobile operators on one hand and developer communities on the other. Developers expect operators to make their communication services available for free, with the promise of additional "traffic". Operators want a return on their investment and need to see incremental revenue not just incremental traffic.

Whilst "flat free" tariffs remove the tariff uncertainty for end users, they present a headache for network operators. Truly "flat fees" are a modern marketing myth, read the small print and the reality is large bundles with caps and fair usage policies. This is simple economics, in the absence of incremental cost, traffic increases exponentially. This is already becoming a problem with fixed ISPs (e.g. the **BBC** iPlayer in the UK), but the problems for mobile networks will be more severe, as they are inherently supply limited on the radio access.

When it comes to staking a claim on future revenues there are many other large fish in the sea. Companies like **Google** will continue to push more applications away from the desktop operating systems and in to "the cloud". Device manufacturers like **Nokia** also see an open door ("Ovi") and are reinventing themselves as online service providers. However, even the largest of today's players should remember that tomorrow's competitors may be different. In a truly open mobile environment, new players may emerge quickly (**YouTube** was only founded in 2005), but they may also disappear just as quickly.

It would be short-sighted in the extreme to imagine that the open mobile networks of tomorrow will be simple extensions of today's fixed Internet. The mobile experience is fundamentally different to the desktop PC, it is personal and it is immediate, the world in your pocket. The ability of tomorrow's devices to interact with their environment will be far more widespread. Short-range technologies like NFC and RFID are already being trialled for banking, transportation, smart-posters, health monitoring, utility metering etc. The list of potential applications is virtually endless.

It would also be wrong to imagine that open mobile networks will only be used by human beings for person-to-person communications. Machine-to-machine communications is on the increase. Many of today's social networking concepts are now being replicated in the enterprise sector. Governments too see the broader benefits of "ubiquitous" networks and are experimenting with mobile

voting, visa applications, tax returns, access to online medical records, education and other interesting applications.

The word "open" has many connotations, but not all are positive. Open may also mean "open to attack", "open to misuse" and sadly "open to abuse". Concerns around Internet security are not new, the recent flaws in the global DNS system are just a case in point. However, as applications become more personal they open up new kinds of risks to individuals. Identity theft is already a reality, as is "bullying" by text or via social-networking sites.

As more data about the individual is stored and exchanged, the potential misuse increases. The hacking of Governor Palin's **Yahoo** account is one high-profile example, but some of the risks are more subtle. What about data privacy and content ownership? How many of us actually read those End User License Agreements before we click on "accept"? How will permissions to share personal data really be managed in future and by whom?

The social changes that open mobile networks will bring about will also be profound. Already there are applications that take social networking to the next level, interacting with total strangers in your vicinity, breaking down the barriers to entering into a dialogue with fellow travellers for example.

Predicting the future is a perilous business, but it is clear that the barriers to open mobile networks are coming down. Mobile broadband is already reaching where fixed cannot. Device capabilities are increasing and prices are falling. Today's devices offer far more interaction with their environment than ever before. We are living in "interesting times", as the contents of this publication will clearly demonstrate. I hope that you too will find it interesting and thought-provoking, but above all enjoyable.

Alex Sinclair

CTO, GSM Association

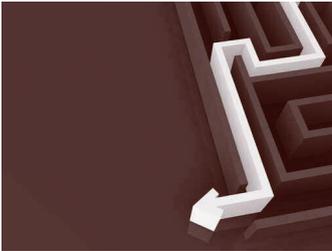
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Chapter 2

Introduction

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Introduction



In a constantly evolving world, being able to anticipate the changes and possible impacts awaiting us in the medium and long term is vital for success. This enables us to identify and take advantage of the business opportunities that present themselves in the future. In order to achieve this, it is essential to have tools that are as useful as an analysis of future trends.

Bankinter created the **Fundación de la Innovación** with a clear objective in mind: to influence the present by looking into the future, and to stimulate the creation of business opportunities based on the cutting edge of both technology and management, in order to promote innovation in Spanish business. It is an ambitious and innovative project, which **Bankinter** is making available to society as a whole to foster the creation of business opportunities arising from a situational change. A project that involves over 200 multidisciplinary, international experts who are opinion formers from all over the world, along with an exceptional board of trustees, and one that also aims to reinforce **Bankinter's** commitment to society.

The Future Trends Forum (FTF) is the main and most well-established project of the **Fundación de la Innovación Bankinter**. It showcases the **Bankinter** culture: innovation and a commitment to cutting-edge thought. This is the first forum on futurology and innovation in Spain, and features the participation of leading international scientists and intellectuals. It is the only multidisciplinary, multisector, international forum in Europe. Its mission is to convey the objectivity of a forum that has been enriched by various points of view and that is not biased by any type of vested interests.

It is a forum that seeks to anticipate the immediate future, by detecting the social, economic, scientific and technological trends that can change the way we act and live today, by an analysis of the possible scenarios and impact on current business models in the sectors that are most affected, so as to obtain recommendations on how wealth can be generated from this situation, which must then be passed on to the various strategic focus areas of society.

The subjects debated at the meetings are freely proposed and chosen by a vote of the FTF members. The end result of each of these processes is the dissemination of the conclusions of this research work from entrepreneurs, professionals, senior managers, companies and institutions. The dissemination includes this publication as well as a series of conferences held in Spain's largest cities.

This latest publication, produced in collaboration with Accenture, presents the conclusions of the FTF concerning the changes taking place in the mobile technology market. The opening of the market is creating new business opportunities for companies in all sectors and is boosting innovation.

Mis notas

First, a diagnosis is given for the current situation in the mobile technology market and to what extent this will change as the market opens. The barriers currently limiting innovation in the sector are also examined.

Consideration is then given to the evolution of the range of mobile devices and services, and how that will be altered by the opening of the market. The barriers restricting the use of data services are also analyzed, along with investigation into the possible measures for removing them. The services providing the greatest business opportunities for companies are also identified.

Then follows a discussion on the impact of mobile technologies on the development of emerging countries, on helping underprivileged groups, and on the service that governments provide to their citizens.

Finally, there is an assessment of the extent to which the business models of traditional companies will change as a result of the breakthroughs taking place in the mobile market. Consideration is also given to the alternatives available to companies competing in the mobile market for improving their income.

The **Fundación de la Innovación Bankinter** once again trusts that this new publication will be a source of knowledge and, above all, a stimulus and orientation for professionals and entrepreneurs from different sectors, so that they may make the most of the advantages and opportunities that the latest breakthroughs in mobile technologies can offer them.

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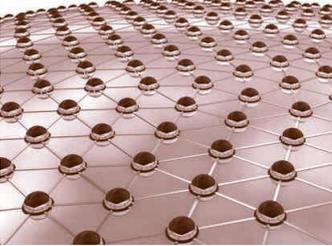
Chapter 3

Understanding the mobile technology market

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Understanding the mobile technology market

3.1. Introduction



The rapid development of both wireless technology and the range of mobile devices is transforming some fundamental aspects of modern society. These breakthroughs represent another victory in the quest to improve people's quality of life as their mobility increases. This is translating into changes in their lifestyle, the way they relate to and communicate with each other, and the way they work. This phenomenon has been driven by the unstoppable rise of the mobile phone, and has led some to describe it as "the mobile revolution."

New "urban nomads" and "nomadic workers" flood the streets with the latest models of mobile devices: smartphones, PDAs, laptop computers, etc. They use them to work and to stay in touch with their loved ones, and shopping, checking out what's playing, or to book a flight while waiting in line at the supermarket. Since these devices make their lives easier, they are always on hand. It is an unstoppable phenomenon, because users value mobility; in fact, it has become a basic need in their everyday lives.

The mobile phone is the obvious flagship of this new era. No known technology—not even the Internet—has become so widespread so quickly or evolved so much in such a short time. It has become the most personal and, at the same time, the most social, technological device: the worldwide penetration is 61%, that is four billion subscribers, compared to the billion who have a PC-based Internet connection. Over the next five years, another 2.5 billion subscribers in the world will own one. In other words, this amounts to 1.3 million new subscribers every day and 16 new subscribers every second¹. By the time you have finished reading this page, another 1,200 subscribers will be added to the list of mobile-services users. Even more importantly, for many of them it will not only be their first mobile phone: it will be their first telephone. And, for at least half of them, it will be their first camera, their first music player and, of course, their first means of access to the Internet.

In the mature markets of developed countries, having a mobile phone is a given. The next step is to cover the higher levels in **Maslow's** hierarchy of needs. A qualitative leap has taken place in recent years: the mobile handset is no longer being used merely as a means of contact (voice and SMS)—it is becoming a "remote control for our lives." This gives access to an **enhanced reality** where it is possible to find out who and what is around us. With a mobile device, we can connect to social networks, go shopping, get on the Internet, watch television, find out about nearby services wherever we happen to be, check blood sugar levels, just to name a few. Nonetheless, however attractive these data services may initially appear, the statistics show that they are not growing at the rate that one might expect.

On the other hand, mobile devices are covering people's more basic needs in emerging countries, as in many cases it is their only means of long-distance communication. Mobile technology will undoubtedly revolutionize their lives. Al-

¹ International Telecommunication Union: "Worldwide mobile cellular subscribers to reach 4 billion mark late 2008", <http://www.itu.int/osg/blog/2008/09/25/WorldwideMobileCellularSubscribersToReach4BillionMarkLate2008.aspx>. IntoMobile: "Ericsson chief expects 6.5 bn mobile subscriptions by 2013", <http://www.intomobile.com/2008/05/15/ericsson-chief-expects-65-bn-mobile-subscriptions-by-2013.html>, 15 de mayo de 2008.

most a decade later, it will enable them to participate in the Internet phenomenon, with everything that entails. Estimates suggest that 85% of the next billion subscribers will come from emerging countries².

This dichotomy between developed and emerging markets is a challenge for businesses, and their success in the near future will be based on achieving the right balance in terms of focusing on both. The demand for new subscriptions is lower in the mature markets, but there is a demand for higher quality and more sophisticated services, for which consumers are willing to pay a higher price. Meanwhile, in the emerging markets, although there is a greater number of potential users (those who do not have a specific device), the price barrier means that the profit per user will be lower.

In order to adapt to this new context, operators are starting to open up their closed models (**walled gardens**) in hopes of encouraging innovation in the sector and providing a response to the new demands of consumers, and thereby compensate for the declining income from their more traditional voice and SMS services. This is leading to an irretrievable loss in terms of their **control** over basic aspects of customer service, and therefore creates opportunities for new business models and methods of cooperation that are attracting companies from other sectors.

Walled garden is a term referring to the wireless environment in which operators control the user's access to Internet content or services, so that the user's browsing is limited to specific areas or material. Although access to other areas is not limited, access to that environment is made more difficult. The operators offer content from their portal and apply premium rates for browsing outside it.

All this supposes that the mobile market is undergoing profound changes that are sure to transform the way consumers use their mobile devices, to make them the "remote control for their lives." When this happens, major business opportunities will emerge for companies that can provide services with three dimensions—mobility, the Internet and communication—and make consumers feel the need to use them and become willing to pay for them.

3.2. Some revealing figures on the demand for wireless services

In order to understand the importance that mobile solutions have acquired in modern society, it is useful to analyze the high penetration figures. This year, the number of mobile subscribers worldwide reached four billion, which represents a 61% penetration rate, according to the International Telecommunications Union³.

² *The Next Billion: How Emerging Markets Are Shaping the Mobile Industry*. Pyramid Research. October 2007.

³ International Telecommunications Union. <http://www.itu.int/net/home/index-es.aspx>.

For operators, mobile services are also very important, as they are a way of compensating for the loss of profits in other business areas. Given the declining revenue generated by fixed-line services and the slow growth of Internet-derived profits, it seems clear that the future of the telecommunications sector lies in wireless services. However, despite the increase in subscriptions internationally, the ARPU (average revenue per user) continues to drop, albeit at a slower rate than in previous years (falling 8% in 2007 compared to 10% in 2006)⁴.

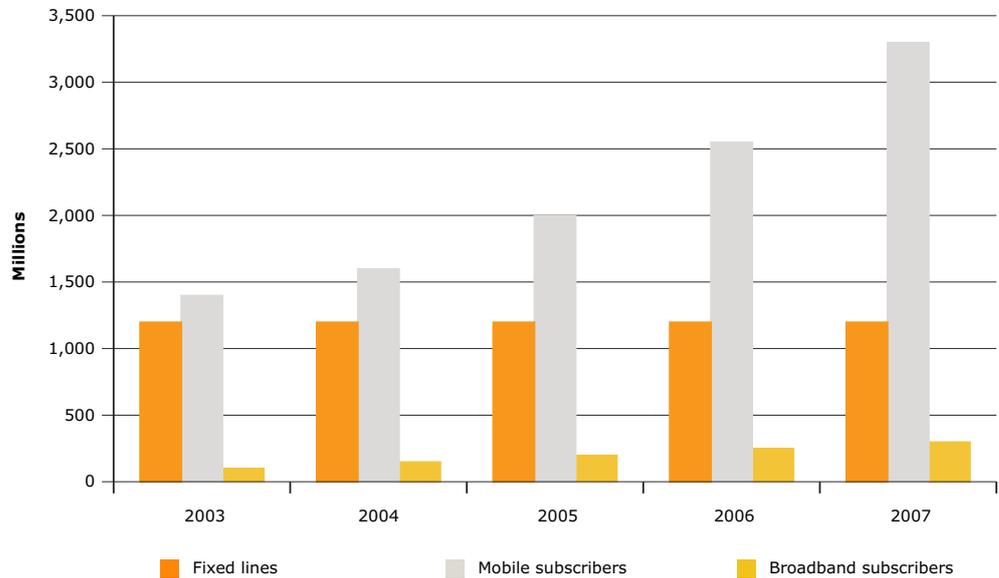


Figure 1. Subscriber bases around the globe (2003-2007).
Source: Enter, Idate, IT Deusto.

A closer look at the contribution made by the various geographical areas to this figure shows us that the total number of subscriptions is undoubtedly higher in developed countries than in developing countries: in regions such as Western Europe, penetration is above 100%, while in Africa and Southeast Asia just 20% of the population has a mobile phone. These figures clearly show that the future of the mobile technology market mostly lies in emerging economies⁵. In fact, Pyramid Research⁶ predicts that the next billion subscribers will sign up by late 2009, and 85% of them will come from emerging markets. Of the thirty markets that will add to the list of subscribers, ten are in Africa and the Middle East and eight are in Asia. The United States is the only non-emerging market on that list. Bearing these figures in mind, it is understandable that the operators are focusing on these markets⁷.

⁴ *Mobile 2008. Market & Trends. Facts & Figures.* Enter, Idate, IT Deusto. 2008.

⁵ Pyramid Research: *op. cit.*

⁶ Pyramid Research: *op. cit.*

⁷ Pyramid Research: *op. cit.*

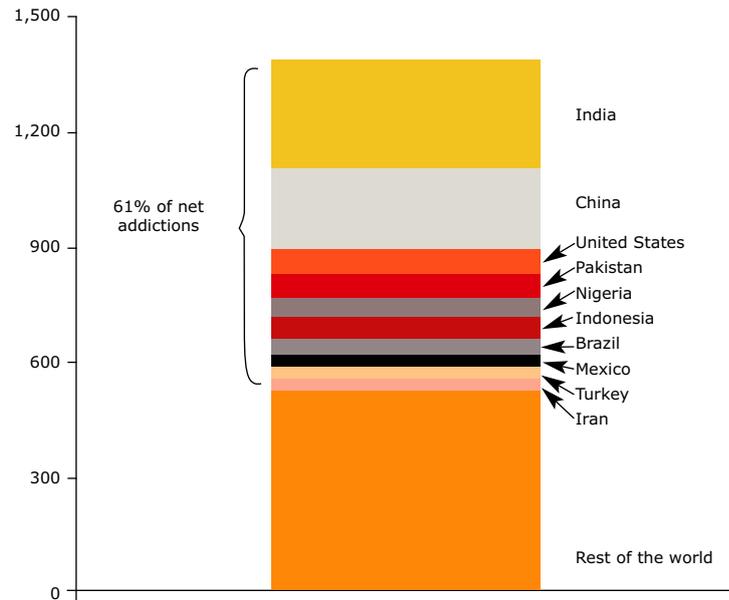


Figure 2. Net mobile additions (2007-2010): 1.4 billions.
Source: Pyramid Research.

Pyramid Research⁸ also shows the relationship between a country's level of urbanization and its penetration rate for mobile technology. Of the next subscribers, 71% will come from emerging countries in Africa and Asia, where the level of urbanization is below the global average. In this type of region, manufacturers and operators are working together to develop low-cost networks that work effectively for subscribers.

One of the major differences of subscribers in the near future, at least initially, is that they will use their mobile phone as a means to generate income rather than as a means of communication. For them, the device is a way to support their economic activities and help generate more income. This will be their main reason for buying one; personal use will gradually increase over time.

According to the FTF experts, Asia will lead the mobile market in the next five years, in terms of both the number of users and impact on society. If this is true, the decline in the central role of countries like the United States within the framework of a multipolar world would be evident.

⁸ Pyramid Research: *op. cit.*

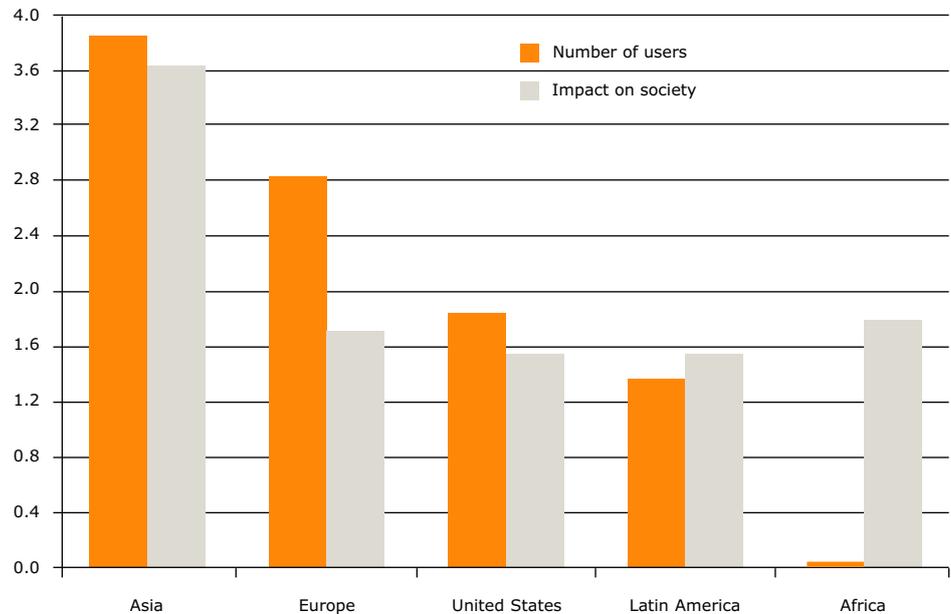


Figure 3. Ranking of geographical areas according to the number of users and to the impact on society (five-year forecast).

Source: drawn from the conclusions within the Future Trends Forum.

3.2.1. Spanish market

The usage figures for the Spanish market are typical of developed countries, which show high penetration rates. According to figures from Spain's National Institute of Communication Technologies⁹ (INTECO), the penetration of wireless technologies in the country's residential market reached high levels in wireless services during the first six months of 2007, and the trend remains clearly upward.

According to INE data, distribution of this technology in households¹⁰ shows that 17.7% have only a mobile phone, and 73.1% have both a fixed line and a mobile phone. 80% of Spanish small or medium-sized companies with more than ten employees use wireless services as part of their work. Furthermore, four of every ten organizations use advanced mobile devices, such as PDAs and Black-Berrys.

Saturation levels of voice services in the Spanish market are forcing operators to seek alternative means of generating profits, while reducing the control that they currently have over the market, in order to encourage innovation in products and services.

⁹ *Estudio sobre la situación de seguridad y buenas prácticas en dispositivos móviles y redes inalámbricas*. Information Security Observatory. INTECO. June 2008.

¹⁰ INE: http://www.ine.es/inebmenu/mnu_tic.htm.

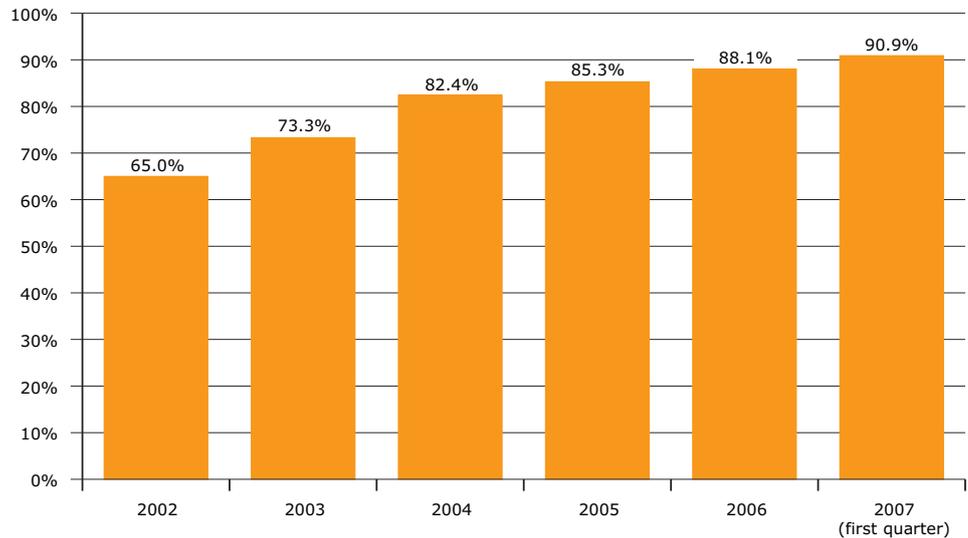


Figure 4. Mobile telephone penetration rate in Spanish households.
 Source: Survey on information and communication technology equipment and use in homes published by the INE, Spain's National Statistics Institute.

3.3. The opening of the mobile market

The opening of the mobile market is undoubtedly the hottest topic in the wireless technology sector. Several projects in this field have been featured on the covers of industry magazines in recent months. **Google**¹¹ is heading up a partnership called the **Open Handset Alliance**¹², which is creating an open platform for the development of applications and services for mobile handsets, and includes more than 30 technology companies. In order to quicken the pace of innovation in these devices, the company has also developed the first complete, open and free mobile platform, the operating system Android used on its Google Phone. **AT&T**¹³, the largest mobile operator in the United States, has opened up its networks to any device designed under GSM standards. A few weeks before that, **Verizon Wireless**, a joint venture of **Verizon Communications**¹⁴ and **Vodafone**¹⁵, announced its intention to open up its network to any device complying with its technical standards.

Other projects, such as the OMA (Open Mobile Alliance)¹⁶, are clear evidence of the growing interest in opening up the market and in cooperation among all the agents involved. The OMA is a standards organization that was formed in June 2002 for the purpose of standardizing mobile services and applications, independently of transport technology and access. Its members include the main mobile operators, manufacturers of network computers and devices, service and content providers, and information technology companies from all over the world. It also consolidates and integrates various groups: the WAP Forum, the Location Interoperability Forum (LIF), the SyncML Initiative, the MMS-IOP (Multimedia Messaging Interoperability Process), Wireless Village, the Mobile Gaming Interoperability Forum (MGIF) and the Mobile Wireless Internet Forum (MWIF).

¹¹ Google: <http://www.google.com/>.

¹² Open Handset Alliance: <http://www.openhandsetalliance.com/>.

¹³ AT&T: <http://www.att.com>.

¹⁴ Verizon: <http://www.verizon.com>.

¹⁵ Vodafone: <http://www.vodafone.com>.

¹⁶ OMA: <http://www.openmobilealliance.org/>.

3.3.1. What is an open mobile market?

The FTF experts define an open mobile market as one in which users have easy access to any service, from any provider, using any device. Moreover, they say that it is a market in which any content developer, service provider, etc., can freely offer their products or services to all consumers. To achieve this, they consider it essential to move from the current fragmentation that typifies the mobile market to across-the-board standardization (devices, operating system, etc.).

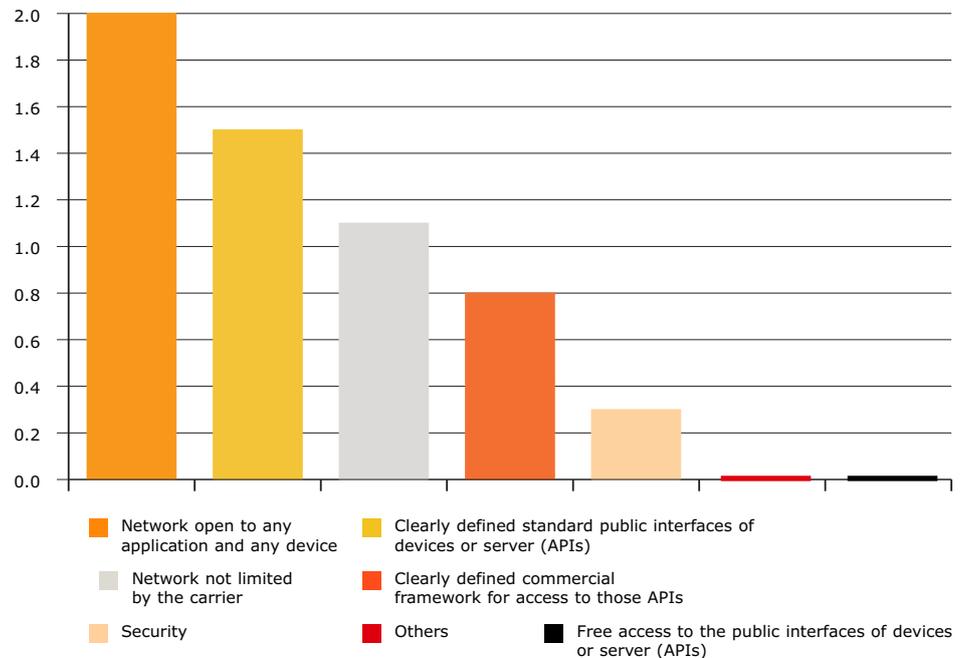


Figure 5. Determining factors in the opening of the mobile market.
Source: drawn from the conclusions within the Future Trends Forum.

The FTF experts consider that from a human point of view, an open mobile network should encourage cooperation between its users, meaning that it must be an **open-source community**. This cooperation implies significant benefits for the market, as we have seen in other environments, such as the Internet. Under the right conditions, open-source projects will lead to new services and high-quality applications.

The FTF experts believe that the opening up of the market will lead to an increase in innovation in products and services, and that consumers will therefore no longer use their mobile handsets simply to talk or send SMS. Now, they will use them to connect to the Internet, link up with anyone, anywhere, locate peo-

ple and products based on where they are, and countless other uses that are currently almost nonexistent.

What is obvious is that this opening is gradually becoming achievable in the mobile market, and is leading to various models of cooperation between operators, manufacturers, content developers, etc. These changes give consumers greater freedom of choice between the wide variety of devices, products and services. Some companies, such as **Google**¹⁷, even advocate freedom of choice of operator, according to the quality of service or price, which depend on the time frame and location. To that end, they have applied for a patent for software that would enable the user to change operator several times a day¹⁸.

According to a recent study published by the consulting firm CSMG *Devices at the Center of Change in Wireless*¹⁹, the trend towards opening is showing itself in all the phases of the mobile services supply chain (see Figure 6).

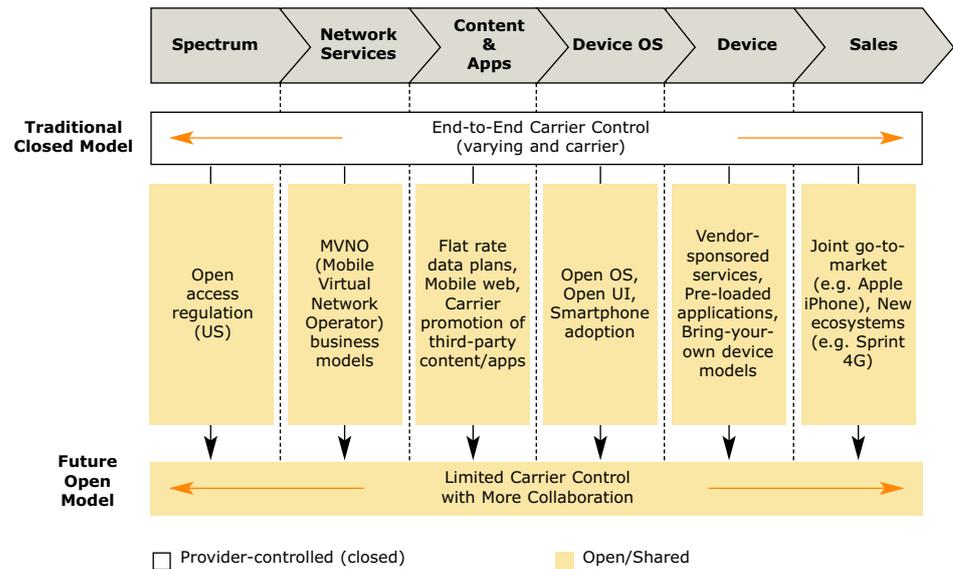


Figure 6. Trend Towards Openness in Mobile Service Delivery. Source: *On the Edge: Devices at the Center of Change in Wireless*. CSMG.

¹⁷ Google: <http://www.google.com/>.

¹⁸ IDG News. 26/09/2008. Article: "Google seeks patent to break mobile subscriber shackles." <http://news.idg.no/cw/art.cfm?id=A0694D76-17A4-0F78-31375219C5AEB934>.

¹⁹ *On the Edge: Devices at the Center of Change in Wireless*. CSMG. Spring 2008.

There are several factors making this opening possible, and giving users an increasing freedom of choice: the boom of smartphones, breakthroughs in the development of open-source operating systems, the proliferation of applications based on market standards, the possibility of personalizing devices, Internet access and flat-rate subscription offers are a few good examples.

However, for the opening to be effective, the FTF experts feel it is vital for all those involved in the value chain to participate and cooperate, especially the operators, who must evolve towards more open models, and reduce the control they currently have. For them, the **opening** should take the form of:

- **Making the regulatory framework more flexible**, something the experts feel is a key factor for opening the market. They consider the current regulation too strict, adding that it will tend to increase in certain areas such as the European Union. On the flip side, in the United States, as well as in other countries, the government is committed to the opening of the market, and as a result has freed part of the available **spectrum**. The available spectrum is one of the factors closing the market and therefore any initiative in this respect constitutes progress.
- **Promoting optimum use of the digital dividend by governments**: a good government policy consists of distributing the spectrum made available by the shift from analog to digital TV among mobile operators. This movement is not only being seen in the United States, but also in Europe, where its adoption is not yet standard. For example, the United Kingdom is already in a consolidation phase, while France, Belgium and the Netherlands are in the launch phase, and Spain²⁰, Ireland and Italy are in the preparation phase²¹.
- **Facilitating the entry of new operators** that compete with the existing ones and thereby offer consumers more options (MVNOs).
- **Encouraging the development of new applications and services**. For most experts, offering users a flat-rate subscription is a key factor in getting the potential returns on open networks. With this type of pricing, subscriber usage will increase and in turn boost investment and innovation in the market.
- **Standardization and opening up of mobile operating systems and mobile-handset user interfaces**.
- **Reinventing the commercial framework of access to mobile networks**. The FTF experts believe that the commercial framework is one essential aspect that is often forgotten.

So far, operators have controlled the market, dominating almost all the aspects associated with commercialization of services and mobile content, but this situation is changing. The FTF experts predicted the degree of opening that will be achieved in the next five years at various points in the value chain of the mobile market. They reached the conclusion that there will be a gradual loss of control by operators over some aspects that they have dominated until now, especially those related to the services provided by the telephone: access to devices and operating systems, and the creation of content and different applications.

²⁰ <http://www.expansion.com/edicion/exp/empresas/telecomunicaciones/es/desarrollo/1129335.html>.

²¹ *Los Operadores Móviles Virtuales: impacto en el sector de la telefonía móvil*. Enter. February 2006.

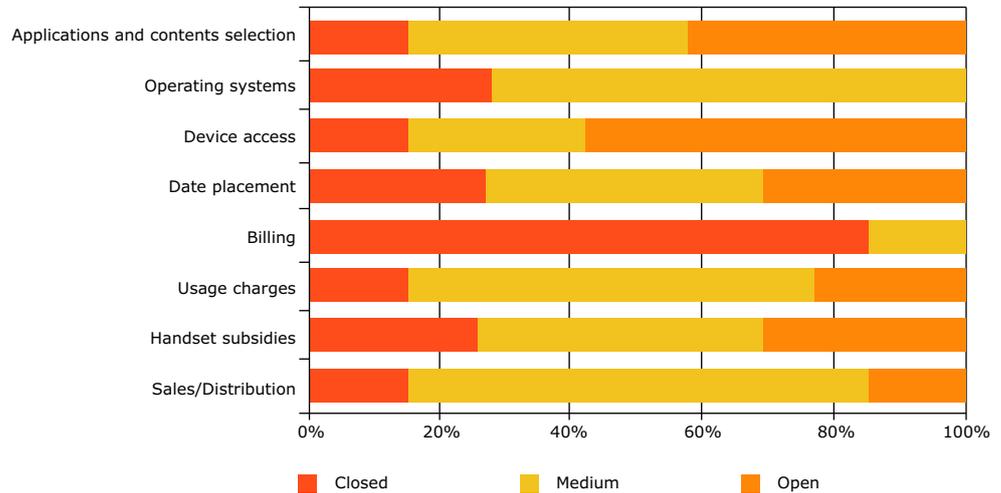


Figure 7. Level of openness in the next five years.
Source: drawn from the conclusions within the Future Trends Forum.

As a consequence of this imminent loss of control by the operators, more opportunities will arise for new actors in the mobile market, many of whom will come from other sectors.

However, as in other aspects of the market, the level of opening will not be the same everywhere. The experts believe that Asia, followed by Europe, is the geographical area that will lead the way in opening up the mobile market. It is also by far the area that will lead the way in innovation in this market, followed by the United States (see Figure 8).

3.3.2. Cooperation becomes a necessity

The FTF experts believe that opening and cooperation will become established in the near future, with new alliances between companies in the sector, more open technologies and agreements. They believe that alliances between companies will be more frequent than mergers or takeovers (see Figure 9).

In this area, they came to the conclusion that the most frequent alliances will be between operators and manufacturers, such as the agreements made by **Apple**²² with various operators worldwide (see Figure 10). The experts believe that to be successful, these alliances must avoid taking up defensive strategies, or making desperate attempts to expand. The number-one key is for the participating companies to have aligned business objectives.

²² Apple: <http://www.apple.com/>.

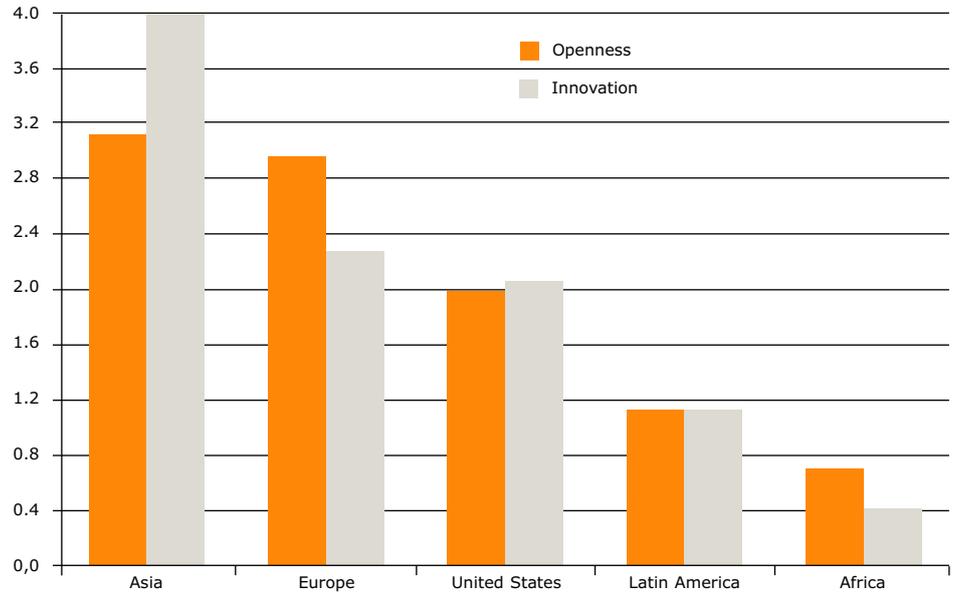


Figure 8. Ranking of geographical areas according to the level of openness and mobile innovation.

Source: drawn from the conclusions within the Future Trends Forum.

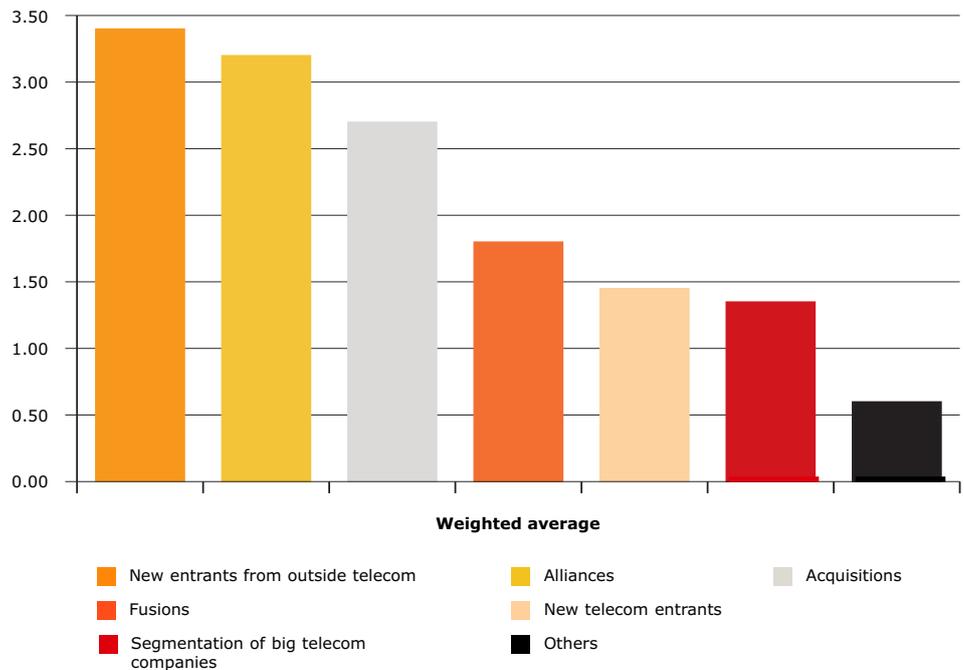


Figure 9. Most frequent operations in the mobile market in the near future.

Source: drawn from the conclusions within the Future Trends Forum.

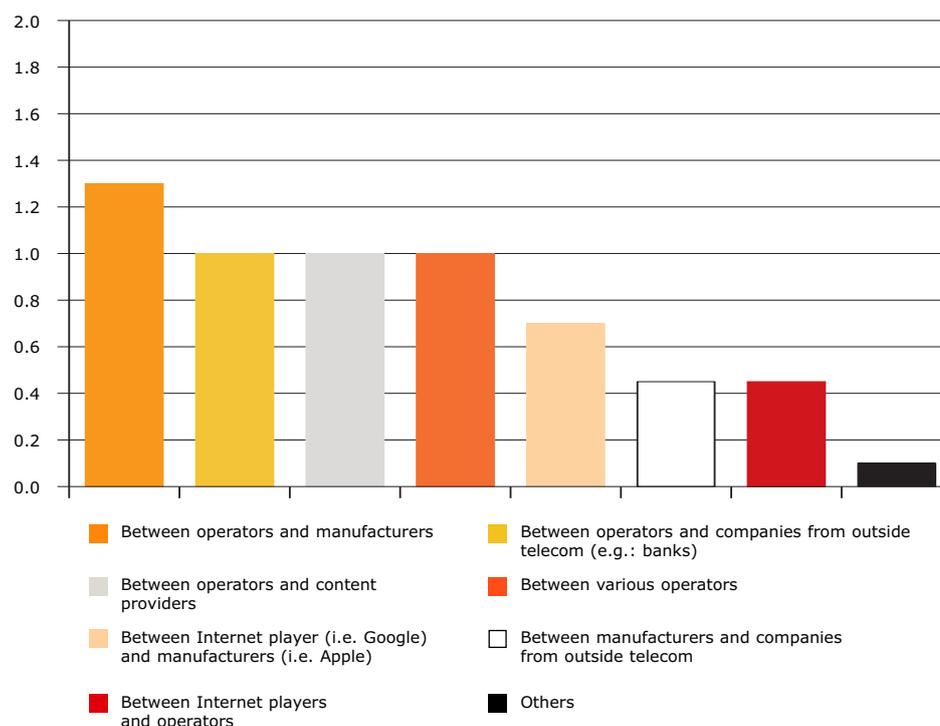


Figure 10. Most frequent alliances in the near future in the mobile market.
Source: drawn from the conclusions within the Future Trends Forum.

3.3.3. Benefits of the market opening

For the FTF experts, although the opening of the market will involve a loss of control for the **operators**, it will also provide clear advantages:

- Traffic on their networks will increase and therefore so will their profits, thanks to the development of new applications by different agents in the market.
- The use of data services will increase, which will compensate for the decline in profits from voice and SMS services.
- They will participate in a larger and more innovative ecosystem.
- They will be able to modify their business models and become service providers.
- More efficient use will be made of their networks.

The **manufacturers** will also benefit from the opening:

- Their portfolio of potential customers will increase, as the number of users increases.
- They will be able to include new innovative services on their devices.

- They will gain power over the operators when attracting new consumers (e.g., the iPhone).

The **content providers** and **developers** will have:

- The capacity to distribute their products to more users, in some cases directly, without being controlled by the operators beforehand.
- The opportunity to develop applications that work on more devices.
- The advantages of participating in an ecosystem in which Internet-style innovation predominates.
- Increased acceptance of new applications as they become accessible on more usable mobile devices (e.g., the iPhone).

Finally, the FTF experts believe that **consumers** will be the main beneficiaries of the opening/cooperation:

- They will have more options when selecting devices, applications, services and supplier companies.
- They will enjoy personalized services and devices, adapted to their lifestyle.
- They will have lower prices, different payment methods and purchasing channels.
- They will experience greater ease of mobile device use, thanks to improvements in usability.
- They will have more relevant information anywhere and at any time, which will have important economic and social benefits, especially in emerging economies.

However, the opening of the market will also create new challenges for all agents in the market, as well as the operators, who will have to adapt their business models to the new situation.

3.3.4. The Internet: a model to follow?

When discussing the opening of the mobile market, many people use the model of the Internet as a benchmark. The Internet was a revolution on many levels, and the question that is yet to be resolved is whether mobile networks will have the same impact. The majority of the FTF experts are convinced that its impact will be very similar, if not greater. However, for that to happen, they believe that several basic conditions must be in place:

- The opening of the market, to encourage innovation and access for all those involved.
- The development of services that take the user's location and time into account.
- The existence of rate plans that give meaning to the business models of innovative companies.

The FTF experts feel that **the impact may be greater than that of the Internet**, given that mobile networks:

- Are better adapted to the “nomadic” lifestyle of modern society.
- Enable people and things to be located, and therefore add a new dimension to social interactions. Mobile social networks are one of the services with the most potential.
- Allow users to personalize the Internet.
- Can provide Internet access for a large proportion of the world’s population that is still without it.

As for the **main factors preventing this from happening**, the experts point to:

- The fragmentation of the market: devices, operating systems, operators, etc.
- Problems with devices: usability, batteries, processing capacity and the fact that they are not open to all applications.
- The lack of services and applications that attract users.
- The high cost of services and devices.
- The tight control exercised by the operators.
- The limited capacity of the networks.
- The lack of business models for companies from other sectors looking to enter the market.
- Users’ concerns about privacy and security.
- The lack of demand from subscribers who do not appreciate the usefulness of the services being offered.
- The heavy regulation of the sector, which is on the rise, especially in Europe.

The FTF experts believe that special attention should be paid to the risks involved in open networks. They feel that security is extremely important and that the “weaknesses” of the Internet model should not be replicated. It should be able to identify individual users and businesses securely, to thereby prevent undesired messages (spam), undesirable content (e.g., child pornography), fraud (**phishing**, false identities, etc.), virus attacks, etc.

To the FTF experts, the mobile phone is a very personal device and thus it is important that the consumer’s experience be secure, as well as open and varied.

Operators must also learn from the experience of the Internet in order to avoid making the same mistakes. Initially, telecommunications companies providing Internet services (**ISPs**) tried to lead users to their portals or those of their partners. Obviously, this strategy failed because users very quickly realized that the Internet offered much more than the ISPs were attempting to promote. Companies and consumers quickly exploited the open architecture of the Internet in order to develop alternative applications and services. This market dynamic led to the current environment, in which consumers relate to the brands they choose instead of the ISPs. The profits of fixed-line Internet providers were

not curtailed by this situation and there is no reason why those of mobile operators should be. In the same way, the mobile operators could experience exponential increases in data traffic and profits, which would compensate for the loss of earnings from voice services. A clear example of this phenomenon is the operator **NTT DoCoMo**²³, whose innovative idea of opening its networks to approximately 17,000 service providers has led to increased profits from its data services.

3.4. The impact of the market opening on competition

The fact that the opening of the mobile market is attracting new businesses and increasing competition is a problem that is undoubtedly being faced by the operators. The FTF experts believe that the opening of the mobile market will change the competitive landscape in the medium term, with the entry of companies from other sectors becoming more common. The mobile network operators (**MNOs**), mobile virtual network operators (**MVNOs**), service providers and manufacturers that usually operate in this market will suffer from the pressure of these newcomers.

One example of this is Sweden, where prices fell by 40% in 2004 as a consequence of an offer launched by the virtual mobile operator **Djuice**²⁴, which was followed by another from the country's second-largest operator²⁵. As the mobile market opens up, competition will increase and operators will have to learn from other markets where that battle is even more intense. With it, they will be able to design strategies that represent an alternative to lowering prices.

3.4.1. The new competitors from other sectors

The opening will change the nature of competition in the mobile market. Companies from other sectors will start to offer their products and services, and as a result, the quantity, variety and quality of what is offered will be increased. In the final analysis, it will be the consumers who benefit from this phenomenon.

The FTF experts analyzed the areas in which companies from other sectors will compete in the mobile market, and concluded that content will be the area to attract the most newcomers (see Figure 11).

²³ NTT DoCoMo:
<http://www.nttdocomo.com/>.

²⁴ Djuice: <http://www.djuice.com/>.

²⁵ *Growing the mobile voice market*. InCode. November 2004.

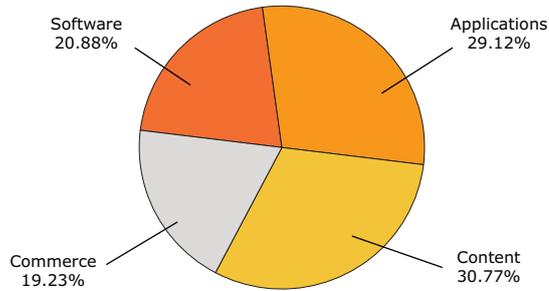


Figure 11. Areas in which the new entrants will compete.
Source: drawn from the conclusions within the Future Trends Forum.

According to the FTF experts, these new entrants in the mobile market will mainly come from the media and entertainment sector, and from the software and Internet industries (see Figure 12).

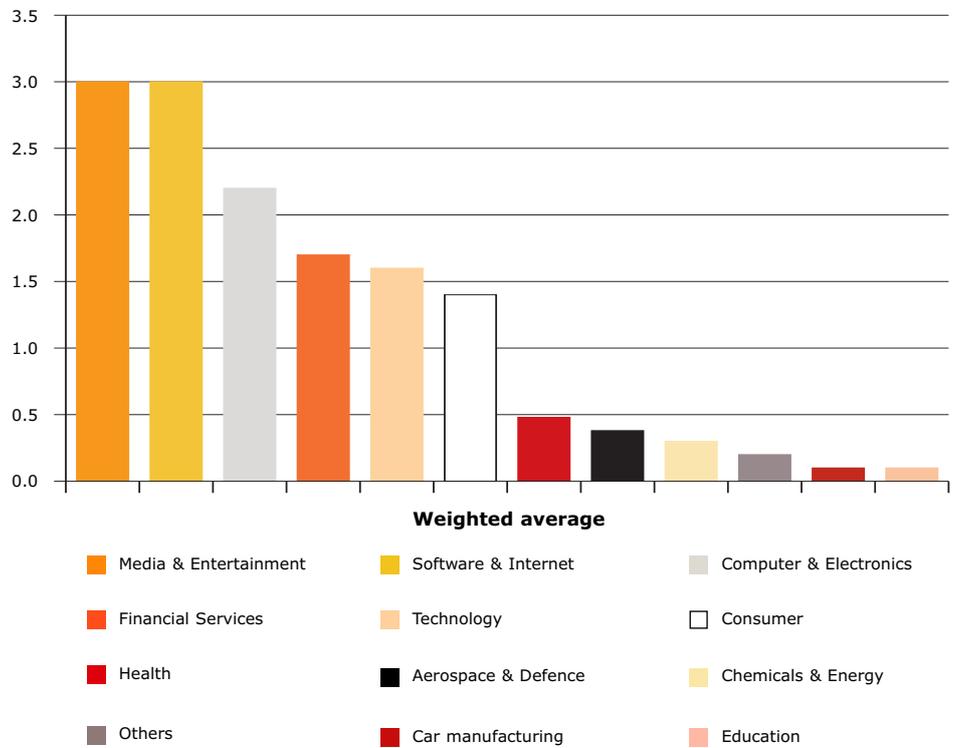


Figure 12. Industries providing the new entrants to the mobile market.
Source: drawn from the conclusions within the Future Trends Forum.

The FTF experts looked at what would potentially be the **main opportunities** offered by the mobile market to these new entrants, and identified the following:

- Location-based services.
- New applications with medical purposes.
- Personalization of the range of products according to the customer's location and preferences.
- An increase in the portfolio of customers for online sales of products and services.
- Improved knowledge of the tastes and preferences of consumers.
- The opportunity to offer financial services on mobile devices.
- Marketing on mobile devices, primarily that adapted to the customer's location.
- Creation of social networks that take into account the customers' location.

3.4.2. The opening and competition between the MNOs

If the increased competition resulting from the opening of the market is to bring about increased efficiency, this must start with the operators. The MVNOs, service providers and manufacturers can subsequently contribute to its intensification and benefit consumers, thanks to both the drop in prices and the increase in the range and quality of services.

The competition in Europe between existing MNOs has increased due to the high penetration rate of mobile devices. However, the mobile market has still not opened to other companies. The spectrum available is clearly controlled by the governments, which limit the entry of new competitors. As owners of the networks, and therefore the main pioneers in the opening of the mobile market, MNOs are increasingly feeling pressure from all sides to open their networks.

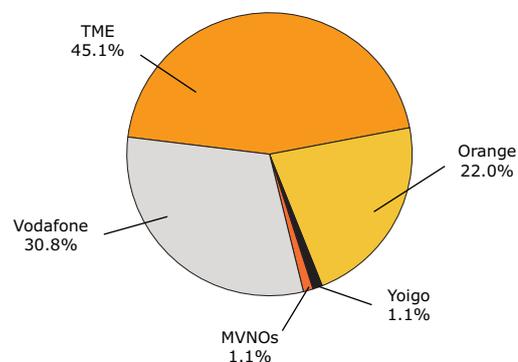


Figure 13. Distribution of the Spanish market by number of personal lines (data from February 2008).
Source: CMT.

In Spain, three companies were operating until late 2006: **Movistar**²⁶, **Vodafone**²⁷ and **Orange**²⁸ (formerly Amena). Their competitive strategy was based particularly on subsidizing devices and an extremely complex range of offers. The opening of the market has allowed for new entries. These included a fourth operator, with a network that is one part proprietary and one part hired, **Yoigo**²⁹ and virtual operators, who hire the network or purchase minutes from the MNOs and design a range of offers for the end consumer. The virtual operators employ a simpler strategy, which makes no distinction between time frames and has even forced **Movistar** to eliminate two thirds of its rate plans, and obliged all the operators to give away free minutes or cut prices in order to match their average per-minute rate. They also started offering free calls between subscribers of the same operator, something previously unseen in wireless voice services, although the unlimited offer quickly had to be restricted to a certain number of hours as otherwise it was not financially sustainable.

With this strategy, they have succeeded in wooing 2% of the customer base away from the three long-standing operators in one year. However, their profitability level remains to be seen. For example, **Yoigo** has 0.9% of the lines, but its market share in terms of income is 0.2%³⁰.

3.4.3. Virtual mobile network operators (MVNOs)

The types of companies that are trying their luck in virtual waters are highly varied, and range from retail companies to communications operators or companies specializing in marketing fuel. However, they all have one common feature: solid brand recognition.

Why are these new companies emerging? First, the consolidation of the wireless services market is encouraging the proliferation of these new operators. Second, consumers are anticipating more options as free markets become consolidated. Furthermore, brand awareness is also leading to an upturn, especially among younger consumers. The traditional brands in the communications industry apparently do not appeal to young people in their twenties (and those even younger) to the same extent as companies in the market with a more fashionable image. These companies are not aiming to make vast profits like the MVNOs, but instead to create loyalty among their customers and increase cross-selling of their other products and services.

However, there are two main barriers restricting the opening of the market to MVNOs: regulation, and control by the operators.

Regulation plays a very important role in defining the MVNO landscape, as depending on the level of regulation, it is possible to make a distinction between the different types of MVNOs³¹:

- **Promoted:** the regulations force fixed-line operators to share their spectrum with MVNOs. Agreements with them must be made public (e.g., in Denmark, Sweden and Austria).

²⁶ Movistar: <http://www.movistar.es/particulas/index.html>.

²⁷ Vodafone: http://www.vodafone.com/hub_page.html.

²⁸ Orange: <http://www.orange-es.com/>.

²⁹ Yoigo: <http://www.yoigo.com/>.

³⁰ *Informe Anual 2007*. Spain's Telecommunications Market Commission (CMT). June 2008. http://www.cmt.es/cmt_ptl_ext/SelectOption.do.

³¹ *Los Operadores Móviles Virtuales: impacto en el sector de la telefonía móvil*. Enter. February 2006.



- **Supported:** the regulation supports the MVNOs that want to operate (e.g., in Spain, Germany, France, Ireland and Finland).
- **Not supported:** MVNOs are allowed to enter but the regulations do not support them (e.g., in Portugal, Belgium, the Netherlands and Greece).
- **Not permitted:** the entry of MVNOs is specifically prohibited (e.g., in Italy).

As regards control by the operators, the MVNOs face the challenge of finding one that is willing to share their network with them. When they find one, they have to pay a great deal of money to use the network, as well as providing strong guarantees in order to reach agreements that create a very high level of dependence on the MNOs once they have been reached. The MNOs see the virtual operators as competitors, as well as partners, as on one hand they can contribute to the MNOs' business, but on the other, they also increase competition in the market.

In recent years, more and more MNOs have been opening their networks to a greater or lesser extent and reaching agreements with MVNOs all over the world. This has led to an increase in competition and a reduction in prices and operator profits in markets such as Denmark and Sweden. For this reason, it is vital for both agents to define strategies that seek mutual benefit.

For Accenture, the factors in the success of the MVNOs are as follows³²:

- **Understanding the value proposal.** The experiences of the consulting firm show how difficult it is for companies to clearly define their business plan, focus and value proposal. In this respect, **TuYo**³³ is a good practice. It is a pre-paid mobile service for the Spanish-speaking market, which provides downloads of ringtones and specific graphics for this segment. The operator has bilingual agents that are able to provide services to customers whose primary language is Spanish.
- **Have a recognized brand and specific knowledge in telecommunications.**
- **Reach reliable agreements with communications operators.** MVNOs must be aware that a top-flight network that provides quality and speedy service is the basis for consolidation, as well as a distinguishing factor of added value for the product.
- **Define the operational processes and technological platform correctly.** Clear definition of the operational processes and implementation of back-office systems, invoicing, customer service, network interfaces and the service-delivery platform are vital for the success of the MVNO.
- **Successful management of the launch.**

³² El auge de los MVNO". Accenture Digital Forum. February 2007. <http://www.digitalforum.accenture.com/DigitalForum/Argentina/CurrentEdition/Faces/El+auge+de+los+MVNO.htm>.

³³ TuYo: <http://www.tuyo.com/chooser.aspx>.

The evolution of MVNOs in various geographical areas

Europe has led the way for MVNOs over the past five years. This type of operator has flourished to a lesser extent in North America, where almost fifty companies occupy this space. Their services already have over 30 million subscribers in Western Europe, and have recorded a market growth of 60% over the past two years, according to a recent study by IDATE³⁴, one of the most renowned European research centers for the telecommunications sector.

Spain has more than 20 operative virtual mobile operators although they only account for 2% of the market, unlike markets such as Denmark, where they have shares of 15%. However, these new entrants have succeeded in convincing a good proportion of customers to take their telephone number with them by means of portability. Even so, virtual operators' customer churn is up to 40.5% (Annual Report of the CMT, Spain's Telecommunications Market Commission)³⁵.

In Spain, forecasts suggest that the number of MVNOs will rise to 40 within two years. However, due to processes of concentration and natural selection, this figure will decline to around 15 or 20 in a period of five years, with a joint market share of over 10%³⁶.

Value proposition

Mobile virtual network operators have so far developed an array of highly varied business models. However, a common feature can be seen across the board: they are customer-focused businesses, in which the brand, personalization and, above all, the capacity to adapt to the consumer's needs are becoming increasingly important. For that reason, their customer relationship capacities are the cornerstone used by virtual mobile operators when providing their services.

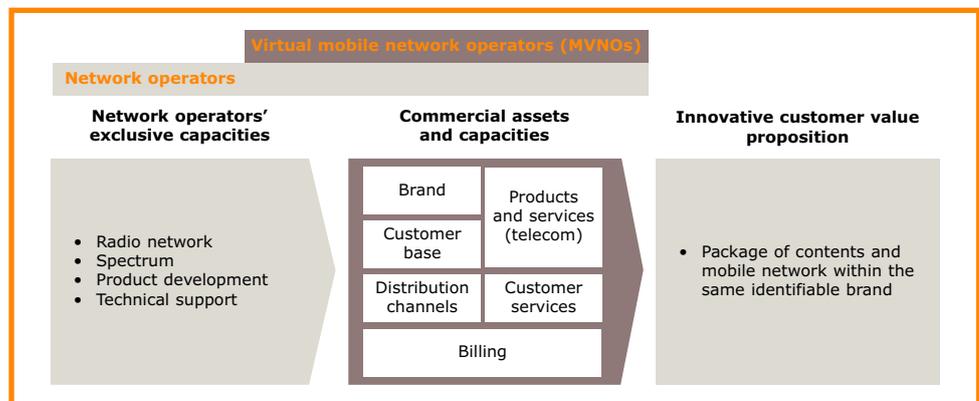


Figure 14. Capacities of virtual operators and network operators. Source: Enter.

³⁴ "MVNO - La nouvelle donne". IDATE. 2008. <http://www.idate.fr/pages/index.php?idrbis=24&title=MVNO%20-%20The%20new%20deal&idl=7&rubrique=etude&idr=16&idp=145#2>.

³⁵ *Informe Anual 2007*. Spain's Telecommunications Market Commission (CMT). June 2008. http://www.cmt.es/cmt_ptl_ext/SelectOption.do.

³⁶ *RedesTelecom.es*. 01/09/2008. Article: "Operadores Móviles Virtuales: Oportunidad o Amenaza". <http://www.redestelecom.es/Reportajes/200809180009/Operadores-Moviles-Virtuales--oportunidad-o-amenaza.aspx>.

Political parties, NGOs and radio stations are studying projects of this type, which can be grouped under a single heading—"emotional MVNOs"—which aim to attract customers based on brand-associated values. For example, **XL Móvil**³⁷, whose slogan says that "family is most important," offers discounted prices and conditions for members of the same family. The case of **Lebara**³⁸ is also symptomatic, with its target market almost exclusively focused on the 5.5 million immigrants in Spain.

The MVNOs have the opportunity to offer a specific product for each market niche, which does not necessarily have to be based solely on the price, but instead on an interesting value proposition for consumers. Restricting the operator's strategy to price slashing may have its risks and lead consumers to consider these services among those with the most negative connotations of the term "low-cost".

Profiles of the MVNOs

According to a study conducted by Enter (Information Society and Telecommunications Analysis Center), the profiles of the companies potentially interested in operating as MVNOs are highly varied; in fact, the initiatives that have been undertaken in Spain to date have been carried out by companies from various sectors and with widely different assets, capabilities and interests, including³⁹:

- **Telecommunications operators**, who are either fixed-line operators looking to include mobility in their range, or mobile operators wanting to begin operations in other markets where they do not have a license. These operators can use their technical capabilities for infrastructures and products and services for leverage, as well as their knowledge and even their relationship with the customer, and thereby generate additional revenues. Fixed-line operators can use it as a port of entry for fixed-mobile convergence, without this involving an excessive cost. Examples of this include **Euskaltel**⁴⁰, **Telecable**⁴¹ and British **Telecom**⁴².
- **Other companies in the telecommunications sector**, such as distributors. These can take the opportunity and operate based on their knowledge of the sector, a range of complementary products and services, a brand that may be familiar to the user and a distribution network that is already operational for this service. Examples include **ONO**⁴³ and **Jazztel**⁴⁴.
- **Companies in the multimedia sector** seeking ways to market their content. This sector will be especially important with UMTS / 3G voice services and the development of wireless broadband. For example, **Virgin Mobile**⁴⁵.
- **Companies in the financial sector**, such as **Bankinter**⁴⁶, which offer their mobile services exclusively to their customers. Other MVNOs in the financial sector are expected to see the light in 2009, including **BBVA**⁴⁷ and **La Caixa**⁴⁸.

³⁷ XL Móvil:
<http://www.xlmovil.es/>.

³⁸ Lebara: <http://www.lebara-mobile.es/en>.

³⁹ *Los Operadores Móviles Virtuales: impacto en el sector de la telefonía móvil*. Enter. February 2006.

⁴⁰ Euskaltel:
http://www.euskaltel.es/web/home_int_particulares.jsp?linea=telefoniamovil.

⁴¹ Telecable:
<http://web.telecable.es/portal.do?IDM=4&NM=2>.

⁴² British Telecom:
<http://www.btglobalservices.com/business/es/es/index.html>.

⁴³ ONO: <http://www.ono.es/>.

⁴⁴ Jazztel: <http://www.jazztel.com/>.

⁴⁵ Virgin Mobile:
<http://www.virgin.com/gateways/mobile/>.

⁴⁶ Bankinter:
<https://www.bankinter.com/>.

⁴⁷ BBVA: <https://www.bbva.es/>.

⁴⁸ La Caixa:
<http://www.lacaixa.es/>.

- **Electricity and utility companies**, with their opportunity to exploit their positioning and brand recognition, as well as their invoicing and customer-management capacities.
- **General-interest distributors**, which can use their brand and a significant customer base for leverage, as well as distribution channels that are already in place. **Eroski**⁴⁹ has entered the mobile market by creating its own operator company.
- **Niche operators** that take advantage of all types of segmentation opportunities. An example of this type of operator is **Lebara**⁵⁰, which targets the immigrant population.

3.4.4. The entry of service providers

The challenge for service providers entering the mobile market arises from the lack of tools and resources for developing applications and quickly translating them into profits. Many of these companies come from the world of personal computers, in which platforms are standardized (e.g., Windows, Mac, Linux), or the Internet world, in which applications and content are accessible from any browser. With some effort, traditional game companies and large media firms have found efficient ways to define successful strategies amidst this chaos. On the flip side, the new entrants are starting to become aware of the challenges involved in attempting to reach billions of mobile users who normally purchase content from their mobile phone.

The consulting firm **CSMG**⁵¹ believes that the opening of the market will force service providers to:

- Seek options in terms of content and value-added services for all mobile segments.
- Promote new models of cooperation that benefit everyone involved in the market.
- Develop a go-to-market strategy for each type of content, service or application (in some cases, alliances with operators; in others, massive standardization; in others, solo launches).
- Identify new "emerging" devices and opportunities, in terms of the content and services they offer.

3.4.5. Rising competition in mobile device manufacturing

The opening of the mobile market will involve new challenges for device makers, who will be forced to:

- Develop new models to boost sales and value-added services.
- Define their role in the value chain with greater precision: what applications and services are they going to focus on?

⁴⁹ Eroski:
<http://www.eroski.es/es>.

⁵⁰ Lebara:
<http://www.lebara-mobile.es/en>.

⁵¹ *On the Edge: Devices at the Center of Change in Wireless*. CSMG. Spring 2008.

- Optimize the relationship between personalization of devices and cost effectiveness.
- Demonstrate a capacity to reach revenue-sharing agreements, similar to those promoted by **Apple** for the iPhone.
- Identify new business models that involve cooperating with operators and service providers.

3.5. Conclusions on the current situation of the mobile market

There are two facets to the mobile market: First, in developed societies, which are characterized by a high level of mobility, mobile devices will be increasingly important for citizens, who will demand more sophisticated services. Second, in emerging countries, where the number of subscriptions is increasing exponentially, the mobile phone represents an opportunity to improve their level of development.

In order to meet the demands of consumers and increase revenues, operators are making their models more flexible and therefore giving greater control to other agents, while opening up the market to new competitors. This opening will benefit everyone in the market and, in the final analysis, the consumers as well, as they will have greater freedom of choice of devices, services, service providers, etc. For that to happen, companies must adapt to the new landscape, which will be characterized by intensified competition with the entry of new competitors, and by the proliferation of cooperation agreements.

4

Chapter 4

The expanding range of smart handheld devices

4

The expanding range of smart handheld devices



The conquest of mobility requires a parallel evolution in wireless technologies and mobile devices. Small, lightweight devices with high processing power are needed in order to enjoy all the advantages offered by wireless technologies. Handsets have become the main differentiating feature for competition in the mature market of developed countries, where growth in subscriptions is slow. In 2007, most operators in the United States and Europe changed their brand strategies and focused on devices and their capabilities rather than on networks. However, not only the operators, but all the players involved in the mobile market, such as service providers, applications providers, portals, manufacturers, etc., are focusing on and investing in mobile devices.

At the same time, they are offering users increasingly sophisticated data services, and in so doing, upping the requirements for mobile devices. These devices allow users to access those services (TV, mobile Internet, etc.), thus making them a strategic item on the value chain. Handsets have evolved very rapidly in recent years: they have changed from simple models, which were limited to voice transmission, to small pocket PCs or smartphones.

With regard to mobile devices, operators have so far applied their own walled-garden policies. As a result, they selected the handsets that they wanted to distribute and influenced their sales. However, the situation is changing, and the opening of the mobile market will make it possible for the device manufacturers to establish direct commercial relationships with their customers, and to control aspects that have so far been under the operators' control. In recent months, we have witnessed new initiatives arising from this opening, such as the iPhone from **Apple**⁵², **Nokia's** Ovi service⁵³, or the alliance formed by **Google**⁵⁴ to create an open programming platform: Android⁵⁵.

Projects like the "Open Mobile Terminal Platform"⁵⁶ clearly show the growing interest in opening the market in the mobile-device segment. The OMTP is an organization consisting of more than 31 participants from various businesses related with the sector ranging from software and hardware developers, to device manufacturers such as **Ericsson**⁵⁷ and **Nokia**. The objective of the OMTP is to establish a series of unique standards in order to simplify the development of mobile applications and their use by the end customer.

The FTF experts analyzed the mobile devices of the future and 45% felt that the trend is towards **convergence** (see Figure 15).

However, they feel that if a mobile device is to be successful in the market, it does not need to have voice services; if it does, it must be targeted at a customer segment or niche, its sales will be lower and its prices will therefore be higher, as they will not benefit from economies of scale.

As the mobile phone is the device that has experienced the most success and growth among the world's population, the analysis in this chapter will focus on

⁵² Apple: <http://www.apple.com/es/iphone/>.

⁵³ Ovi: <http://www.ovi.com/services/>.

⁵⁴ Google: <http://www.google.es/>.

⁵⁵ Android: <http://www.android.com/>.

⁵⁶ OMTP: <http://www.omtp.org/>.

⁵⁷ Ericsson: <http://www.ericsson.com/>.

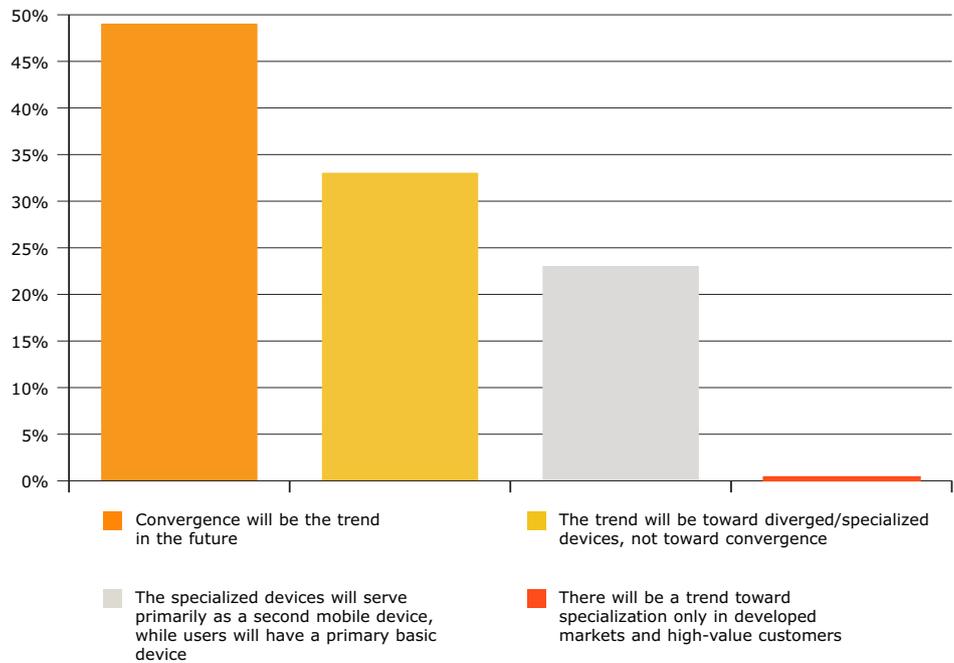


Figure 15. Trend towards convergence of mobile devices.
Source: drawn from the conclusions within the Future Trends Forum.

the devices used mainly for telephone services, without taking laptop computers or other specific mobile devices into account.

4.1. Mobile phones for all tastes

The mobile phone was conceived for making voice calls, and as statistics show, that remains its primary use. However, new models including the latest functions are being released every day, and these go far beyond mere voice services. Phones with limited features (basic or improved) currently coexist in the market with others that have a plethora of advanced functions or smartphones, such as **Apple's** iPhone or the BlackBerry⁵⁸ by **RIM**.

Worldwide sales of these devices were estimated at 991 million units in 2006, according to figures from Gartner⁵⁹. Most are basic and enhanced phones although their relative importance will decrease in the medium term (see Figure 16).

In what regards to devices in Spanish households, 64% have a mobile phone with enhanced functions, compared to the 19.8% that have a basic model (see Figure 17)⁶⁰.

⁵⁸ BlackBerry: <http://www.blackberry.com/>.

⁵⁹ *Key Issues for Mobile Devices, 2008*. Gartner, April 2008.

⁶⁰ *Estudio sobre la situación de seguridad y buenas prácticas en dispositivos móviles y redes inalámbricas*. Information Security Observatory. INTECO. June 2008.

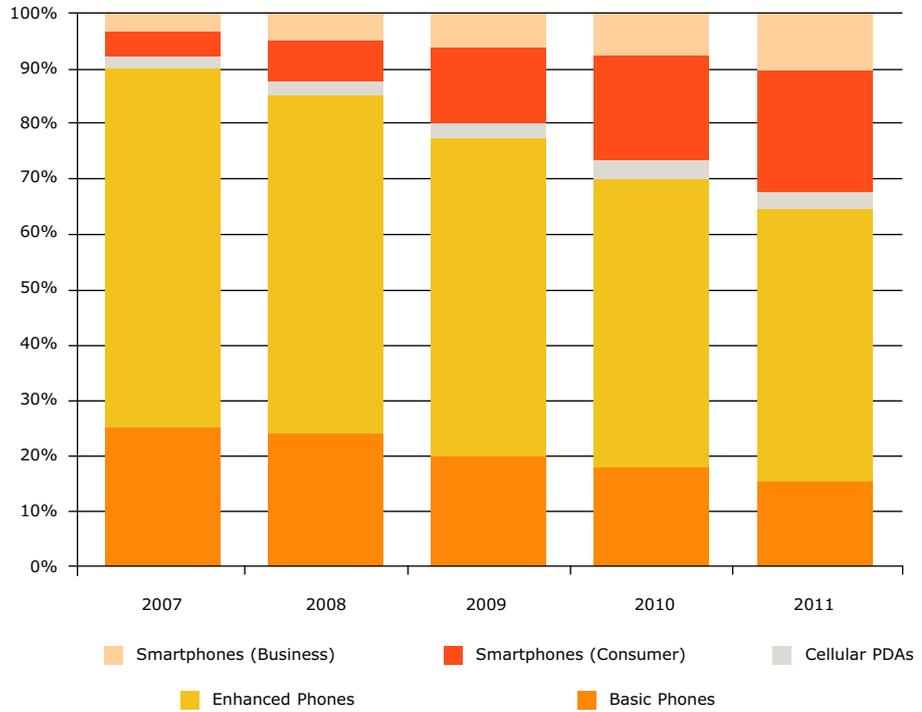


Figure 16. Evolution of handset sales according to features.
Source: Gartner.

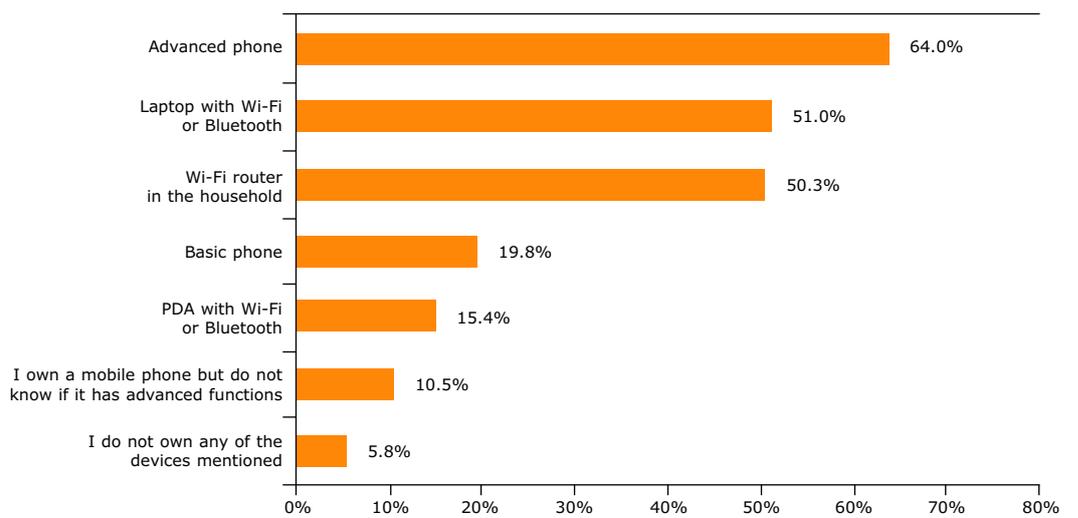


Figure 17. Devices in Spanish households.
Source: INTECO, May 2008.

International sales on smartphones are currently very limited: just 5-10% of users have one. The FTF experts therefore emphasized the need for operators and applications developers **not to limit their innovations to smartphones**, as by doing so they would only reach a limited number of users, which could hinder the opening of the mobile market. This is especially important if the aim is to make developing countries—where most users have basic phones—participants in this opening.

The FTF experts also feel that the price of mobile devices has a direct impact on sales, especially in emerging countries, and affects the opening of the market. In order for their prices to fall, or for them to even be sold, it is necessary to have a significant number of customers. For most people with insufficient income, the price they have to pay to get one of these handsets is more than they can afford. If the aim is to make mobile handsets the main means of access to data and Internet services, then they need to be made affordable. Governments and manufacturers must work towards achieving this.

Furthermore, most consumers in **developing economies** with any purchasing power do not buy a computer as their main electronic device. Instead, they buy a mobile handset, which is less expensive and easier to carry around. This is the approach that has led **Microsoft's** Chinese division⁶¹ to design Phone Plus, a software application that turns mobile handsets with the Windows Mobile operating system into a small computer that can be wirelessly connected to monitors, keyboards and storage devices, as well as other functions native to PCs.

Most manufacturers are developing basic models to offer them to the next billion subscribers in emerging countries—geographical areas that are making an increasingly large contribution to mobile handset sales figures. In fact, according to figures from Pyramid Research⁶², sales in developing countries in 2006 exceeded those in more advanced countries for the first time. As the mobile handset becomes a social status symbol in developing countries, manufacturers are paying more attention to the design of their basic models.

4.1.1. The sale of smartphones

Internet connection from mobile devices is a basic requirement for the opening of the market and will contribute to creating a similar ecosystem of innovation to that of fixed-line Internet. The problem is that only users with a smartphone (i.e. 10%) can access the Internet. The question on everyone's lips is, who will open up the market to the other 90%?

Although these figures are disheartening, consumers in developed countries are driving their expansion as they are the most sought-after mobile device, only surpassed by **memory cards/pen drives**, and are a long way ahead of any other type of mobile device, such as desktop computers, laptop computers, etc. (see Figure 18).

⁶¹ El Argentino: "Microsoft lanza el phone plus", <http://argentino.ferengi.com.ar/nota-4090-Microsoft-lanza-el-Phone-Plus.html>.

⁶² *The Next Billion: How Emerging Markets Are Shaping the Mobile Industry*. Pyramid Research. October 2007.

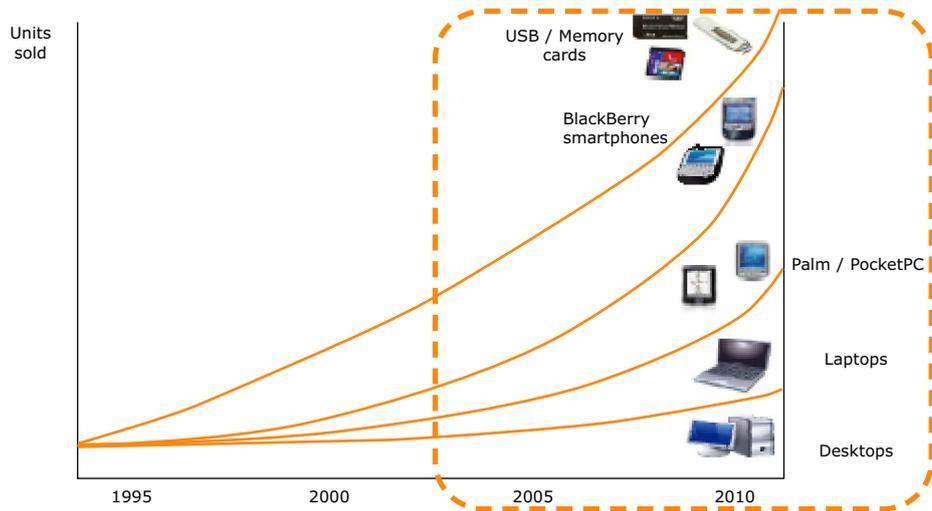


Figure 18. Evolution of units sold by type of device.

Source: *Estudio sobre la situación de seguridad y buenas prácticas en dispositivos móviles y redes inalámbricas*. Information Security Observatory. INTECO. June 2008.

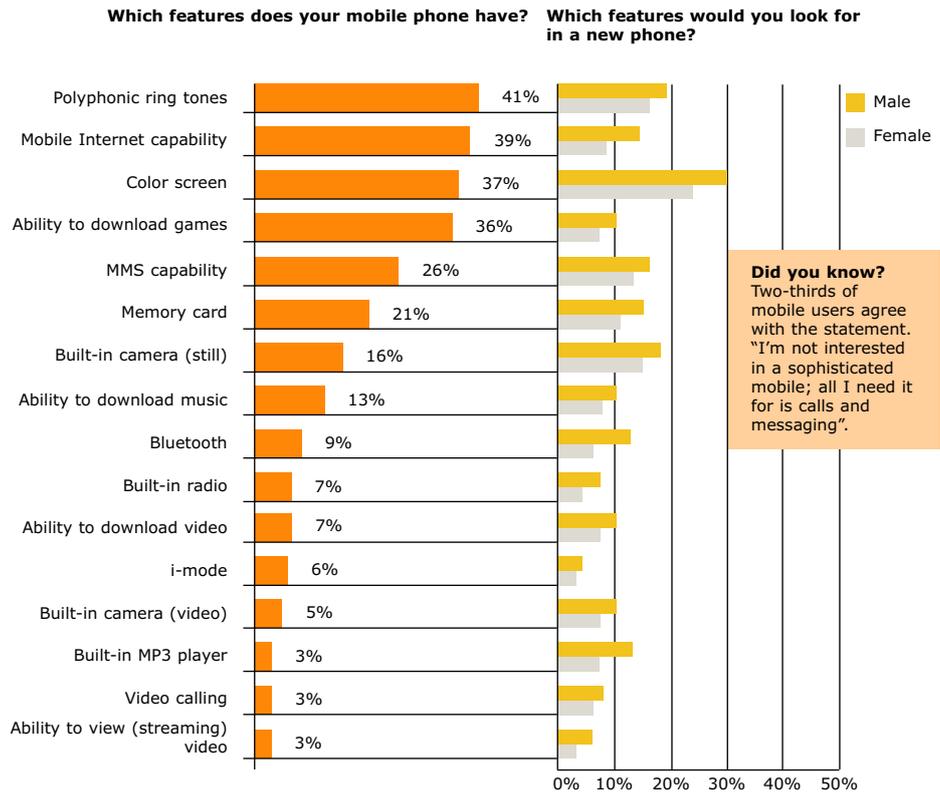
Worldwide sales of smartphones exceeded 32 million units in the second quarter of 2008, which is a 15.7% increase on the same period in the previous year, according to Gartner (see Figure 16). This same analyst⁶³ anticipates that the sale of smartphones will increase by 42% compared to the figures for 2007 and exceed 1 billion units in 2010.

The rising demand for these handsets, which are equipped with a wide range of functions, is in contrast to the characteristics that consumers say they are looking for when buying a mobile phone. **Two thirds of European mobile phone users say they are not interested in a sophisticated model** but rather a simple handset for making voice calls and sending SMS. At the time of purchase, the most highly valued functionality is a color screen (30% of consumers). The other trendy functions in great demand (downloading games and music, radio, **i-mode**, video, etc.) are valued by few users, and most of them by less than 10% (see Figure 19⁶⁴).

⁶³ *Key Issues for Mobile Devices, 2008*. Gartner, April 2008.

⁶⁴ *Europe's Mobile Consumer*. Christof Herzog, Ph.D. Forrester. June 2005.

Simple mobile features, not advanced ones, appeal to mobile consumers most



Base: European mobile users (multiple responses accepted).

Figure 19. Features sought in handsets.
Source: Forrester.

According to the data, it appears that many consumers have functions on their mobile phones that they are not interested in (for example, polyphonic ring tones: 41% of users say their phone has these functions and only 20% take this into account when buying a mobile handset). Under these circumstances, companies in the sector are faced with the challenge of boosting usage of data services. Companies like **Apple** are taking giant steps in order to achieve this with the introduction of the iPhone into the market.

4.2. What's so good about the iPhone?

The iPhone is a clear case of successful cooperation between various agents in the mobile market and is therefore evidence that the opening of the market benefits everyone. Many people already believe that the new telephone from **Apple** is going to transform the mobile market in record time. This device has high-

lighted the important role that operators can play in the sale of a handset. In fact, **Apple** has reached very lucrative agreements with the main operators on three continents. What is new about these agreements is that they have given Apple greater control over the design, sale and medium, as well as a share in profits.

The iPhone is the dream of any mobile handset manufacturer or operator. In February 2008, its launch in Spain was announced for June/July of that year, which was enough for **Telefónica**⁶⁵ to receive more than 300,000 orders in advance for a 3G iPhone in the United Kingdom and Spain. On the day it hit the market, hundreds of people lined up at the points of sale⁶⁶.

⁶⁵ Telefónica: www.telefonica.es.

⁶⁶ Mundo Mac. 25/06/2008. Article: "300.000 pre-registros en Telefónica para el iPhone 3G".

⁶⁷ International Business Times. 3/04/2008. Article: "Apple iPhone Users Do All But Talk". <http://www.ibtimes.com/articles/20080403/apple-iphone-ipod-rimm.htm>.

⁶⁸ They spend 46.5% of their time of use on calls, compared to the 71.7% reported for users of other mobile handsets.

Apple has undoubtedly developed the product that many people were waiting for. The iPhone has shown how a handset can change users' consumer habits by becoming a medium for many of their daily activities, such as checking email, surfing the Internet, watching television, etc. It is increasing usage of data services, which is what everyone in the telecommunications market was waiting for. According to a study conducted by iSuppli⁶⁷, iPhone users spend proportionally less time on making calls⁶⁸. However, they use it more for other functions such as reading email, connecting to the Internet, looking at videos, photos, etc. (see Figure 20).

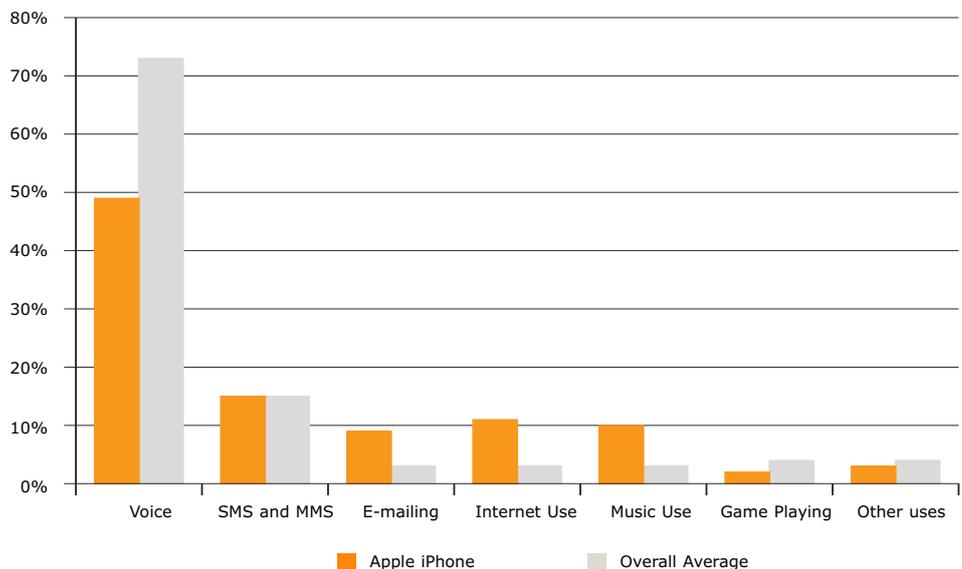


Figure 20. iPhone Time Usage Breakdown for U.S. Consumers.
Source: iSuppli Corporation, April 2008.

A survey conducted by Rubicon Consulting⁶⁹ confirms the most optimistic predictions: the iPhone is revolutionizing the use of smartphones and is generating rich profits for mobile operators that have purchased its distribution rights, such as **O2**⁷⁰, **T-Mobile**⁷¹, **Orange**⁷², **Telefónica**, etc. It will also be an important magnet for attracting users from the competition and for selling other products to consumers.

The iPhone is breathing new life into the market and increasing competition. In this situation, all the operators are preparing strategies to take on this tough competitor and are developing a number of handsets with similar functions and providing cheaper data services (see Figure 21).



In the medium term, if **Apple** and the operators distributing it want to continue to increase sales beyond early adopters and differentiate their product from the new handsets hitting the market, possibly at a lower price, they will have to invent new ways of offering the added value represented by the iPhone, and educate consumers about the advantages of having unlimited access to data services.

4.3. A new horizon for innovation in mobile applications

⁶⁹ *The Apple iPhone: Successes and Challenges for the Mobile Industry*. Rubicon Consulting. March 2008.

⁷⁰ O2: <http://www.o2.com/>.

⁷¹ T-Mobile: <http://www.t-mobile.com/>.

⁷² Orange: <http://www.orange-es.com/>.

The mobile sector has always been an area closed off for users and developers. Handsets have been sold with closed applications and settings that were difficult to change, which forced developers to enter into agreements with operators, manufacturers and other actors in the sector in order to create applications and promote them. This situation was restricting innovation in this area, but the trend is now changing.

The highlight of 2007 in mobile technology was the appearance of **Apple's** iPhone and the impetus that gave to the sector after years of voice services being at the core of the industry. The mobile market is increasingly focused on data services as profits from voice services decline. It is anticipated that in 2010, mobile Internet will be used by most wireless users in developed countries. As a result, we are witnessing a battle in which the operators, device makers, Internet providers, technology companies and software developers are fighting for a share of the future mobile Internet access market. The areas in which each key player works are becoming diluted, meaning that they are moving towards direct competition with one another.

4.3.1. May the best mobile operating system win

In this context, as mobile handsets become pocket-sized PCs, the choice of an operating system—the basis for the development of programs and applications—constitutes an unbeatable business opportunity, which no company in the sector is willing to turn down. One need only consider the case of **Microsoft**—which became the world's most successful company in the 1980s thanks to the massive implementation of its Windows operating system—to see that while there are a billion computers in the world, by the end of 2008 there will be over 4 billion mobile phones among the world's population⁷³.

The most common operating system currently used in mobile handsets is Symbian, with a presence of 60%. It is followed by Windows Mobile (15%), BlackBerry/RIM (10%) and the iPhone/Mac OS X (7%)⁷⁴. This distribution of the market share will soon change. These projects have been joined by other important players, such as **Google's** Android platform⁷⁵.

In response to this threat, **Nokia** wants to relaunch the Symbian operating system, which it recently acquired, as a free and open platform to boost the development of applications. To that end, **Nokia** has created the Symbian Foundation⁷⁶, with which it aims to ensure that this system remains the most widespread on the market and even to improve its competitive position against its rivals. The LiMo Foundation⁷⁷, which is working on the creation of a Linux operating system for mobile devices, was established with the same goal in mind. Most mobile operators and manufacturers are taking part in these projects, although they expect that the market will have the last word.

The benefits are obvious, as an open and free software platform means everyone in the sector is a winner:

- **Manufacturers reduce their software costs.**
- **Developers have an open platform for building their single applications**, which will be used on a vast number of handsets and of networks.
- **Operators can increase the value of their network.** Taking into account the potential of data services for operators, the development of new applications will connect users to the Internet without them realizing it.

⁷³ Gizmodo. 27/09/2008. Article: "Mobile Phone Subscriptions to Reach 4 billion by Year's End". <http://gizmodo.com/5055914/mobile-phone-subscriptions-to-reach-4-billion-by-years-end>. IntoMobile. 15/05/2008. Article: "Ericsson chief expects 6.5 bn mobile subscriptions by 2013". <http://www.intomobile.com/2008/05/15/ericsson-chief-expects-65-bn-mobile-subscriptions-by-2013.html>.

⁷⁴ Gartner. 08/09/2008. Article: "Gartner Says Worldwide Smartphone Sales Grew 16 Per Cent in Second Quarter of 2008". <http://www.gartner.com/it/page.jsp?id=754112>.

⁷⁵ Android: <http://code.google.com/android/>.

⁷⁶ Symbian Foundation: <http://www.symbianfoundation.org/>.

⁷⁷ LiMo Foundation: <http://www.limofoundation.org/>.

4.3.2. Please develop for my handset!

The development and implementation of an open and free operating system will be a breeding ground for applications developers. Today, very few users download specific applications for mobile devices and if they do so, it is from their operator's portal, such as **Vodafone Live!** and **AT&T MediaNet**, or from distributors like **Buongiorno**⁷⁸ and **zed**⁷⁹.

Although users are starting to download applications very slowly—apart from ring tones and games—very few download from Google Maps, Yahoo! Go, or World-Mate. The mobile content market is evolving very quickly and attention is now being focused on applications that go beyond traditional games (see chapter 5).

As a result, the aim of the brands is for communities of developers to create applications for their operating systems:

- **Microsoft** wants communities of developers to create applications so that Windows can easily convert them to its mobile version.
- **Apple** has launched a development program⁸⁰ for the iPhone and an online shop⁸¹ so that developers can sell or give away applications for this device.

Apart from these projects, **many of these players also have their own platforms** for developers to create applications on, thus adding value for the end users⁸²:

- **Movistar**⁸³ has MovilForum⁸⁴ and its version for free software Open MovilForum⁸⁵.
- **Vodafone**⁸⁶ operates Betavine⁸⁷, where it aims to concentrate developers' talent in order to create applications and services that are compatible with the operator's systems.
- **Tira wireless**⁸⁸ recently launched the Tira 'Go Mobile' Community⁸⁹, a portal for content developers with information on how to take advantage of the opportunities offered by the mobile market.

Communities like GetJar⁹⁰, founded in 2004, contribute to smoothing the path towards the opening of the market. Its business model is based on connecting all the agents participating in it: consumers, developers, advertising companies, content managers in an interactive environment, etc., in order to develop products.

Meanwhile, Plusmo⁹¹ is a free service providing widgets for mobile devices, those being the mini applications that make the user experience more exciting. There are more than 20,000 widgets on Plusmo, most of which were created by users.

The opening of the market to new developments of applications will lead to an increase in consumer services, which in many cases will be integrated in the mobile device as a standard, with no need to download them. Finally, it should kept

⁷⁸ Buongiorno:
<http://www.buongiorno.com/>.

⁷⁹ Zed: <http://www.zed.com>.

⁸⁰ Apple Development Program:
<http://developer.apple.com/iphone/program/>.

⁸¹ Apple Store:
<http://www.apple.com/es/iphone/appstore/>.

⁸² Soitu.es. 3/07/2008. Article:
"Por favor, desarrolla mi móvil".
http://www.soitu.es/soitu/2008/07/03/vidadigital/1215081442_723422.html.

⁸³ Movistar:
<http://www.movistar.es/particulares/index.html>.

⁸⁴ MovilForum:
<http://www.movilforum.com/>.

⁸⁵ Open Movil Forum:
<http://open.movilforum.com/>.

⁸⁶ Vodafone:
http://www.vodafone.com/hub_page.html.

⁸⁷ Betavine:
<http://www.betavine.net/>.

⁸⁸ Tira wireless:
www.tirawireless.com.

⁸⁹ Tira Go Mobile Community:
<http://gomobile.tirawireless.com/xwiki/bin/view/Main/WebHome>.

⁹⁰ GetJar:
<http://www.getjar.com/software/>.

⁹¹ Plusmo: <http://plusmo.com/>.

in mind that consumers do not understand software platforms, and what they are really concerned about is design, usability, efficiency and price. Developers may design the most wonderful applications in the world, but they will not succeed on the market if they are not included in a handset that appeals to consumers. Design and functionality should go hand in hand.

4.4. Competition and trends in the mobile handset market

The mobile handset market is one of the most competitive in the world and is dominated by five major brands: **Nokia**, **Samsung**⁹², **Motorola**⁹³, **Sony-Ericsson** and **LG**⁹⁵, which **control more than 80% of the market**. Together, they managed to break sales records for mobile handsets in 2007, reaching 1.13 billion units, according to figures from Ovum⁹⁶.

Their global profits fell slightly in 2007; however, **Nokia** was the real market winner (see Figure 22).

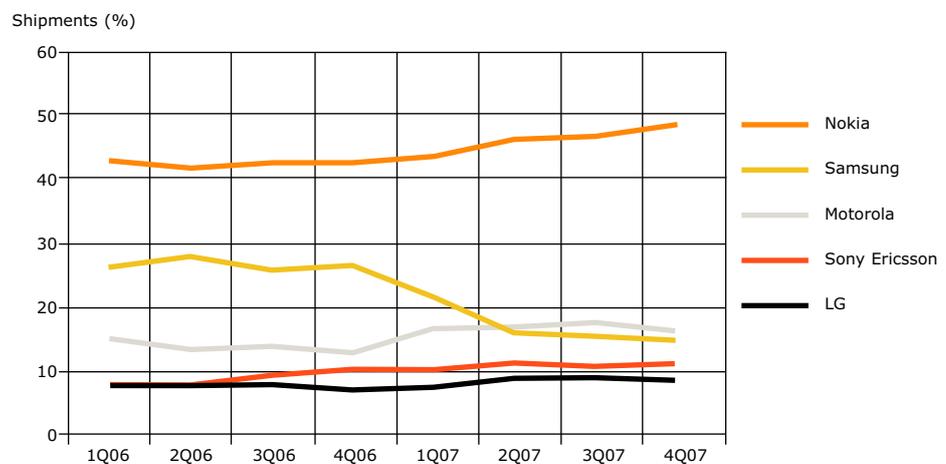


Figure 22. Market share of mobile device manufacturers.
Source: Ovum.

⁹² Samsung: <http://www.samsung.com/es/>.

⁹³ Motorola: <http://www.motorola.com/es/>.

⁹⁴ Sony: <http://www.sony.es/>.

⁹⁵ LG: <http://es.lge.com/index.jhtml>.

⁹⁶ Ovum: *Round-up of the major handset vendors in 2007*, febrero de 2008.

Handset manufacturers have been at the center of some of the paradigms of opening in recent months. As mentioned above, **Apple**, with its iPhone, has succeeded in reducing the operators' control over some points they traditionally controlled.

An example of this loss of control is the emergence of new and alternative means of distribution. Some manufacturers, such as **Nokia**, **Motorola** and **Apple**, have started to sell their devices in their own shops, as well as distributing them through operators.

Another change in their business models in recent years is that these handset manufacturers are diversifying their business and becoming service providers. **Nokia** is a clear example of this trend, with Ovi, Maps, Mosh, Medeo, Comes with Music, Internet Radio, Download! **Motorola** has become involved in this change with Screen 3 and SEMC (TrackID, PlayNow).

Another trend is the establishment of agreements with other parties, as occurred with:

- **Sony Ericsson:** Walkman, Cybershot.
- **Nokia:** E-series, N-series, Zac Posen, Versace, Aston Martin, WESC.
- **LG:** Prada, Shine, Chocolate, SC410 sports.
- **Samsung:** Armani, B&O Serene, B&O Serenata, credit-card sized phones.
- **Motorola:** D&G, Pininfarina, Aston Martin, Vivienne Westwood, Red.

As well as this more sophisticated range of products from the manufacturers, the operators are launching new handsets with their own brand onto the market. In fact, Vodafone announced that between 10% and 20% of its range could focus on these products (May 2007).

The FTF experts analyzed what the **trends** in the handheld market will be in the next three years and identified the following as **the main currents**:

- **The expansion of a single handset (fixed/mobile).** The FTF experts feel that these single handsets will see a greater increase than the mobile handset market. New manufacturers will enter the market and consumers will increase demand (see Figure 15).
- **Usability as a distinguishing feature in handsets.** 2007 was the year of handsets with large, tactile screens like the iPhone, which clearly demonstrates the importance of usability in satisfying customers and therefore in increasing sales. Consumers are willing to pay more for handsets that are easier to use.
- Special emphasis on **older mobile multimedia functions**, especially due to the lower cost of storing digital content (music, videos, movies, etc.).
- The introduction of **technical improvements** to handsets, such as an increase in battery capacity and processing power, with some reaching 32 Gigabytes (GB).
- An increased role for applications with **GPS location systems**, which open the door to new location-based services. This will boost the rise of handheld devices with this type of service, targeted at specific niches, including those that will not necessarily include voice services.
- The **platforms and applications available** on the handset, which will be a competitive advantage (operating system, browser, etc.).

- The inclusion of **new systems** such as accelerometers and movement sensors, which enable movement as part of device handling functionality, along with RFIDs and Wi-Fi in all mobile phones.
- The spread of new applications for **medical uses** included in handsets. Some of these sensor-supported applications will enable monitoring of health, blood sugar levels, etc.
- Mobile devices able to use **M2M (machine-to-machine) services**.
- The **inclusion of new functions** boosting the exchange of information between consumers and the carrying out of various transactions.
- **The option of personalizing mobile devices**. New manufacturers have emerged in recent months that may change the way mobile handsets are produced if their business models succeed. They give users the opportunity to design their own devices. For example, the company **zzzPhone**⁹⁷ lets customers select the colors, features and software.
- **The falling prices of handsets**.
- An increased **concern for security**, which will become apparent as usage of data services increases.
- An increased **concern for the environment** in the use and manufacture of handsets (e.g., green mobile). Of particular note in this area is the increase in the use of nanotechnology and environmentally friendly energy sources. There are also various initiatives for recycling handsets, of which the best alternatives seem to be those that increase their useful life. Numerous organizations are following this trend towards recycling handsets:
 - **Greenphone**⁹⁸: This company, a pioneer in recycling mobile phones, is developing innovative new measures for promoting this field, by offering an attractive rewards system. The program mainly targets young people, who are the people who have access to millions of used handsets.
 - **ReCellular**⁹⁹, **Collective Good**¹⁰⁰ and **GRC Wireless Recycling**¹⁰¹, are other organizations working on collecting and reselling recycled handsets.

⁹⁷ ZzzPhone:
<http://www.zzzphone.com/>.

⁹⁸ GreenPhone:
www.greenphone.com.

⁹⁹ ReCellular:
www.recellulartradein.com.

¹⁰⁰ Collective Good:
www.collectivegood.com.

¹⁰¹ GRC Wireless Recycling:
www.grcrecycling.com.

¹⁰² IGo:
http://corporate.igo.com/iGo_Green/index.htm.

Other projects are also contributing to the preservation of the environment. For example, the new brand of intelligent universal chargers **iGo**¹⁰², which are compatible with over 9,000 mobile devices and allow users to dispense with the numerous appliances that are currently necessary for charging the batteries on all mobile devices.

4.4.1. Factors influencing the sale of mobile devices

The FTF experts analyzed the characteristics that will determine the success of device sales in the coming years and concluded that the first consideration will

be the usability of the handsets, as shown by **Apple's** iPhone and the smartphones by **Nokia**, followed by their design (see Figure 23).

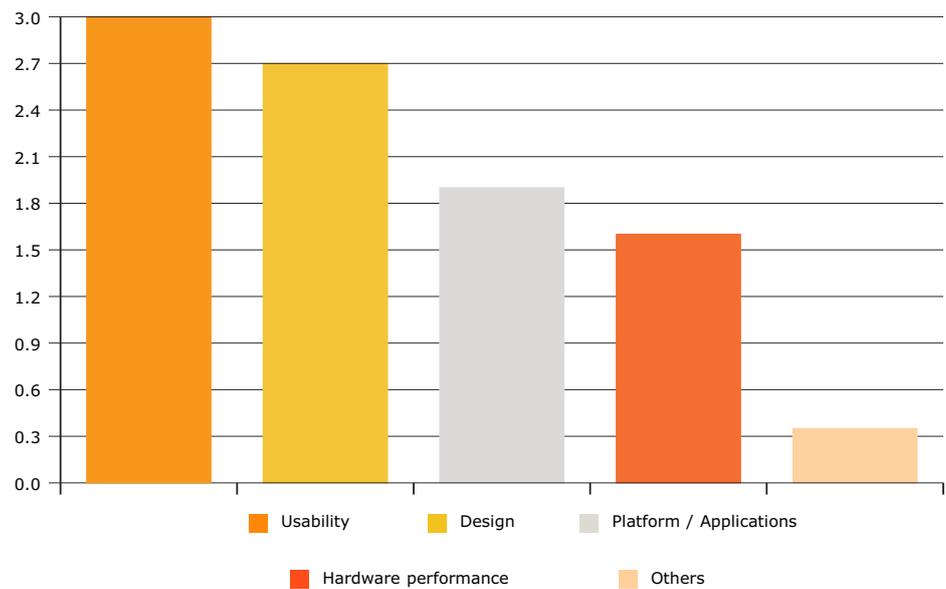


Figure 23. Differentiating features in handset sales in the near future.
Source: drawn from the conclusions within the Future Trends Forum.

For the FTF experts, usability is a key aspect in opening the mobile market up to an increasingly numerous group: older people. The aging of the population is a fact (see the previous **Fundación Bankinter** study "Aging Population and Immigration"¹⁰³) and failing to take these consumers into account would leave a growing number of users outside the market (see Figure 24).

¹⁰³ "Publication IX:
[http://publishing.yudu.com/Freedom/Adizk/09RENuevosConsumidor/resources/index.htm?referrerUrl=.](http://publishing.yudu.com/Freedom/Adizk/09RENuevosConsumidor/resources/index.htm?referrerUrl=)

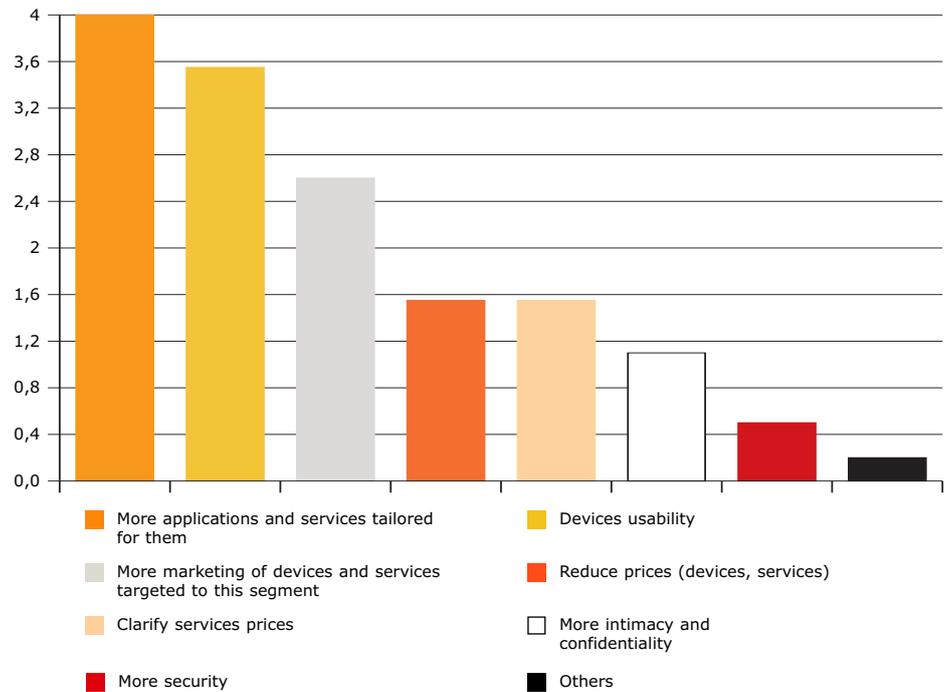


Figure 24. Efforts to increase the sale of handsets and use of data services among older people.

Source: drawn from the conclusions within the Future Trends Forum.

4.5. Case studies of smart handheld devices

A good practice in the personalization of handsets is that of **OpenMoko**¹⁰⁴, which designs handsets with the input of its community of developers. This company has been working on the creation of **a handset based on an open system** for years, with a stated mission of designing the mobile devices of the future. Last year it launched the Neo1973 onto the market, which has a touch-screen, GPS, music and other functions, and sold all the units from its website in three days.

Other companies like the startup **Modu**¹⁰⁵ have also joined the trend that allows mobile devices to be personalized. In particular, Modu has developed its Modu telephone, which is a very basic model with 1 GB of internal memory and an MP3 player, and can only make calls from the address book and send SMS messages. However, the basic functions of this modular mobile can be expanded by slipping it into *accessories such as jackets or mates*.

The success of other companies is based on providing a response to the changes taking place in society, such as the aging of the population. For this reason, several manufacturers are marketing mobile handsets that are simple to use, being

¹⁰⁴ OpenMoko:
http://wiki.openmoko.org/wiki/Main_Page.

¹⁰⁵ Modu:
<http://www.modumobile.com/>.

designed specifically for this group. For example, the Austrian company **Emporia Telecom**¹⁰⁶ has designed the emporiaLIFE model in which the screen uses its entire size for letter display, the speaker has a frequency that is low enough not to interfere with hearing aids, and has a simple operating menu. It also includes an emergency key, which automatically makes a call to a preset telephone number when pushed for three seconds.

4.6. Conclusions on the handset market situation

This market is showing a trend towards a greater importance of handsets in the commercial strategies of companies (operators, manufacturers, content suppliers, etc.). The more sophisticated data services demanded by users also increase the requirements made of handsets. However, the main problem lies in the fact that most handsets do not support these services. Only smartphones do so, and only 10% of the population own them. The question, which has already been raised, is who will open up the market to the other 90% of users? Cooperation is essential for breaking down this entry barrier for millions of users, who mostly live in emerging markets.

As for mobile devices, operators are also giving more flexibility to the models they formerly used for selecting the handsets they wanted to distribute. To a certain extent, they have been forced to change this way of doing business due to the ability of new devices like the iPhone to attract customers. There has also been a noticeable change in the business models of the manufacturers, who are shifting towards offering services.

Furthermore, the technological fragmentation of operating systems in handsets is limiting openness and innovation in the area of applications and services. New projects involving multiple industry players are trying to standardize this field in order to promote the development of innovative new services on mobile devices. All the agents in the industry will reap the benefits of this standardization, from mobile operators, who will increase their volume of data services, to device manufacturers and content developers, whose developments will be simplified thanks to standardization.

¹⁰⁶ Emporia Telecom:
<http://www.emporia.at>.

5

Chapter 5

A whole world of services in the consumer's pocket

5

A whole world of services in the consumer's pocket



Although consumers in developed markets are slowly increasing their purchases of sophisticated handsets such as smartphones, there has been no similar increase in the usage of advanced services, those going beyond voice or SMS services. The gradual decline in profits obtained from voice services in these countries is making operators focus on increasing data services as a means to generate more revenues and increase their market share.

Despite the significant increase in data services in recent years, of between 10% and 20% annually¹⁰⁷, the level of usage is still low and is mostly limited to sending SMS, which in many cases replace other, the more expensive voice services. Using mobile phones to access the Internet, watch TV or connect to social networks is done by very few consumers, and they can be considered niche services. The companies are working on finding a new **killer application** that increases usage exponentially in the way that SMS or ringtones did, with little success so far, despite significant improvements in downloading speeds.

The opening of the mobile market will not be sufficient to boost the demand for data services. New models of cooperation that add value for the customer and reduce the costs of services will be necessary.

The situation in Spain is no different from that in the rest of the world, as seen in Figure 25.

For the FTF experts, the main factor hindering the use of data services, from the consumer's point of view, is the price, followed by technical problems with the device, and the lack of knowledge on rates, as shown in Figure 26.

However, not all the barriers derive from consumers. The consulting firm CSMG¹⁰⁸ identifies other important barriers, such as:

■ **The ecosystem:**

- The variety of standards in the industry, which affects interfaces, invoicing platforms, etc., and makes interoperability between mobile operators and devices difficult.
- Strong control by mobile operators, which has limited involvement and investment by new participants.

■ **Content and applications:**

- Fragmentation of mobile devices, which complicates and delays the development of applications.
- Limited development of specific content specifically for mobile handsets.
- Lack of Internet applications optimized for mobile use.

■ **Economies of the mobile operators:**

- Lower profit levels generated by the mobile operators with data services compared to voice services, due to the cooperation necessary with third parties.

¹⁰⁷ Network World. 3/10/2008.
Article:
<http://www.idg.es/comunicaciones/articulo.asp?id=166031>.

¹⁰⁸ *On the Edge: Devices at the Center of Change in Wireless*. CSMG. Spring 2008.

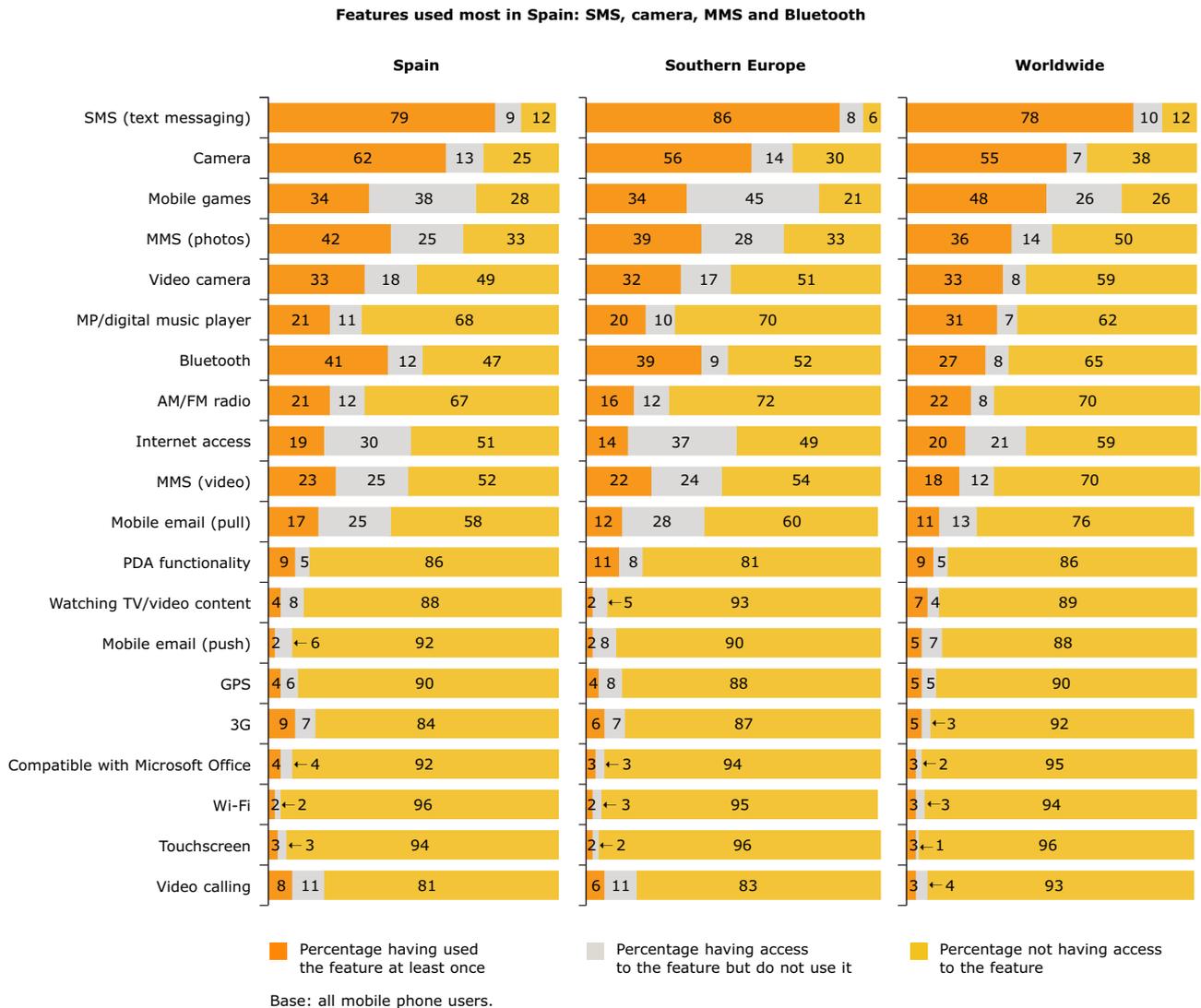


Figure 25. Most commonly used features on mobile phones.
Source: TNS Global Technology Insight 2008.

- High cost and complexity in the development of advanced data services.
- Small target market for data services in comparison with voice and SMS services.

■ **Networks:**

- Limited spectrum, especially for applications intensive in **broadband** use and especially for video or games on mobile handsets.
- Limited coverage of broadband networks (3G and 4G).

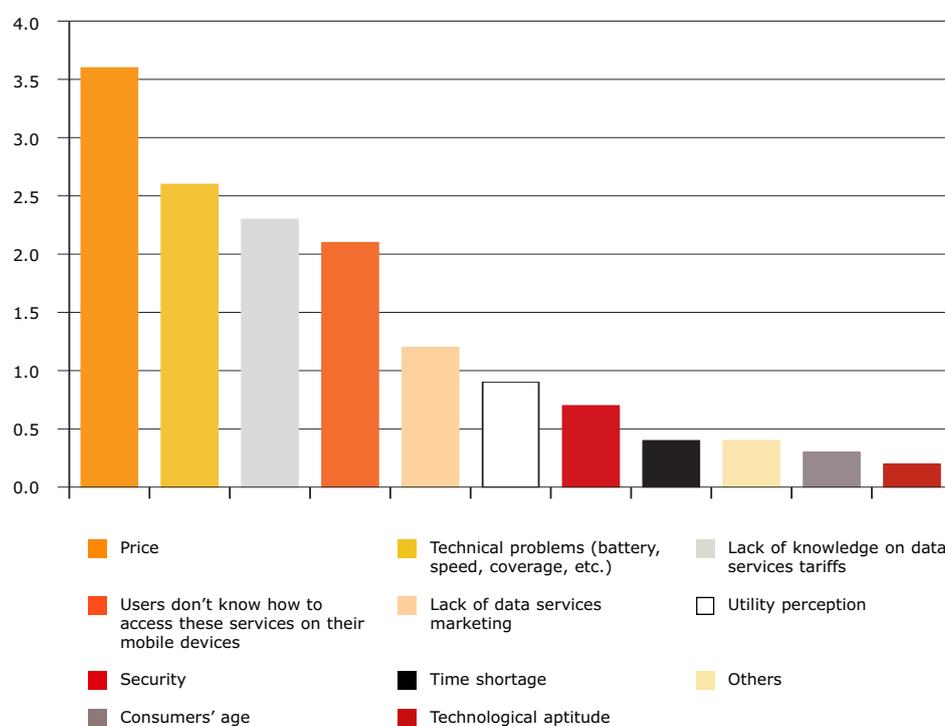


Figure 26. Barriers to data use.
Source: drawn from the conclusions within the Future Trends Forum.

■ **Devices:**

- Devices optimized for voice rather than data services.
- Technical limitations such as size, battery duration, storage and processing capacity, screen, camera and others.
- Capacities yet to be developed: touchscreens, voice recognition, etc.

According to the CSMG study¹⁰⁹, some of these barriers are anticipated to fall gradually over the next five years, although not to the point where they have been completely removed. Despite the technical breakthroughs in handsets and networks, increasing the use of data services will be a challenge for operators and manufacturers.

Once these barriers have been overcome, or at least reduced, the FTF experts expect the services providing the best business opportunities to be mobile location-based services and mobile social networks. In their opinion, films will be the services experiencing the least growth (see Figure 27).

¹⁰⁹ CSMG: *op. cit.*

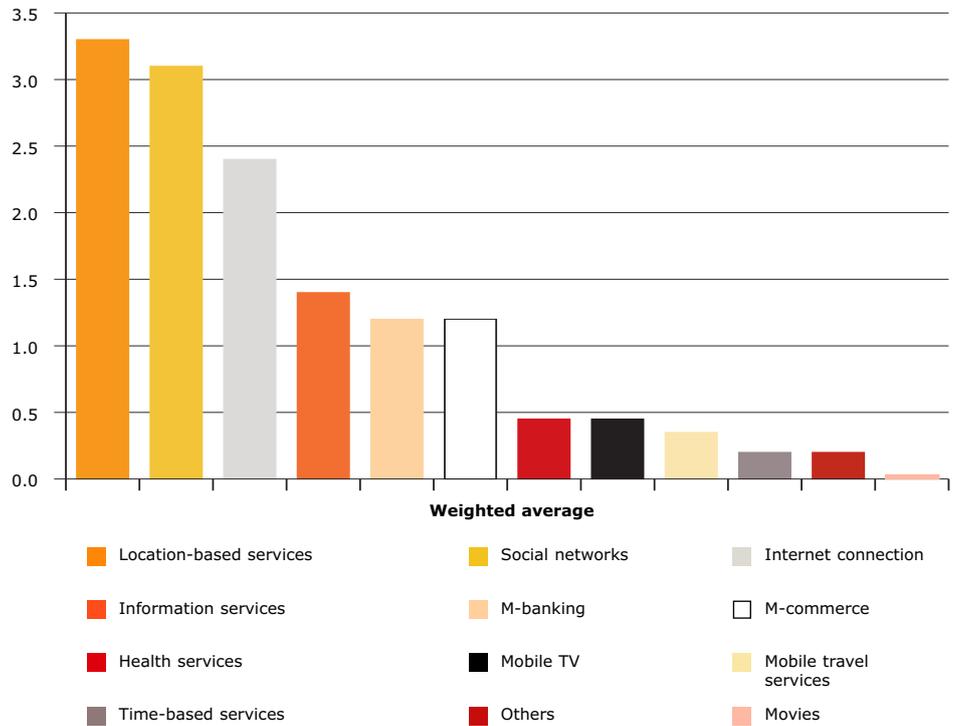


Figure 27. Mobile services with the greatest opportunities for growth.
Source: drawn from the conclusions within the Future Trends Forum.

5.1. SMS, the big winner

A lot has happened in the last 16 years, since December 3, 1992, when Neil Papworth, a young engineer at **Airwide Solutions**¹¹⁰, sent the first text message in history to the director of **Vodafone**¹¹¹, Richard Jarvis. The message was sent from a computer to a bulky mobile handset and said "Merry Xmas." Nobody would have suggested then that it was going to become a cultural phenomenon¹¹².

The level of SMS consumption has not been the same in all geographical areas. SMS use in the United States is much lower than in Europe, where 71% of mobile users send them. 55% send an SMS at least once a week and over half of young people aged 12 to 24 years old send at least one a day. In Spain, an average of 50 text messages per person are sent each month¹¹³.

The SMS has been the clear winner in data services that can be accessed from the mobile handset, a surprise to those in the sector and outside it. Furthermore, it does not appear to be a passing fad, as usage is increasing. The most important thing in terms of the massive take-up of SMS is the fact that it marks **the turning point in the transition of wireless from voice to data services.**

¹¹⁰ Airwide Solutions: <http://www.airwidesolutions.com/>.

¹¹¹ Vodafone: http://www.vodafone.com/hub_page.html.

¹¹² Flowme, 14/12/2007. Article: "The SMS celebrated its 15th birthday as a cultural phenomenon."

¹¹³ *Europe's Mobile Consumer*. Christof Herzog Ph.D. Forrester. June 2005.

The latest innovations mean that some mobile handsets (i.e., iPhone, BlackBerry) read text messages "out loud," which is a very useful functionality for people with visual impairment. However, improvements are also taking place in voice messaging, with breakthroughs such as "visual voice mail" like SimulSays for the BlackBerry. With this software, users can move around on the screen, click and hear voice messages, and select any of them to listen again, instead of having to browse between messages.

5.1.1. Uses and opportunities for businesses and society

The high level of SMS use is undoubtedly generating rich profits for the operators. According to the Association of Mobile Services Companies¹¹⁴, both normal and premium short messages account for 12% of the revenues of mobile operators¹¹⁵.

However, SMS do not only generate profits for operators. There are also an increasing number of companies in other sectors that are taking advantage of their consumer appeal. Some of their uses are:

- **Interaction with television.** SMS have enabled the media to combine economic profits with audience participation. These messages create major revenue for both the media and operators alike.
- **Communication and marketing channels.** Traditional businesses are increasingly using the SMS as a channel of communication with their customers, as with **Neck and Neck**¹¹⁶, which notified customers of sales by an SMS (see the "Marketing goes mobile" section in Chapter 6).
- **A new format for passing on news.** Traditional communication companies like **Univision**¹¹⁷ are reaching agreements with companies specializing in mass message delivery, such as **Tapioca Mobile**¹¹⁸, for them to distribute news alerts to mobile handsets using text messages.
- **The SMS and MMS are important first steps in the promotion of social networks.** These messages enable friends to be invited to a party, as in the case of **Tvienes**¹¹⁹, or a request to be sent to the social network for members to recommend restaurants, cinemas, shows, etc., that may be convenient, depending on the member's location.
- **The SMS as a search engine.** For example, in India, **Google**¹²⁰ launched a pilot project in which users sent an SMS to a telephone number and the system responded with local information about the opening hours of cinemas, restaurants, hospitals and taxi services.

The SMS has also started to work for society:

- Many **government bodies**, as part of their m-government policies, are using text messaging to communicate with citizens, to whom they send information

¹¹⁴ AESAM: <http://www.aesam.org/>.

¹¹⁵ Consumer. 24/01/2007. Article: "El fenómeno de los SMS."

¹¹⁶ Neck and Neck: <http://www.neckandneck.com/web07/>.

¹¹⁷ Univision: <http://www.univision.com/>.

¹¹⁸ Tapioca Mobile: <http://www.tapiocamobile.com/>.

¹¹⁹ Tvienes: <http://tvienes.com/>.

¹²⁰ Google: <http://www.google.com/>.

on public transportation, university grades, or to remind patients of their doctor's appointment at the health center (see Chapter 7).

- They are also being used for social purposes, such as for **donating funds to NGOs**. Donors send a message to a number and part or all of the money collected is sent to NGO projects (see Chapter 7).
- Even the Vatican has succumbed to SMS fever. On World Youth Day, Pope Benedict XVI sent text messages to thousands of young pilgrims encouraging them to reaffirm their Catholic faith.

5.1.2. Is the end of the SMS approaching?

Instant messaging on handhelds is now a reality and operators are launching it with mixed results. Several operators, such as **Vodafone** and **Orange**, pioneered this movement in 2004, and interest in it has now been renewed. Companies like **Google**, **Yahoo!**¹²¹ and **Microsoft**¹²² have made contributions in this field.

Because of the success of instant-messaging networks, especially among young people, it is to be expected that the billions of potential users will make this service one of the most popular since its predecessor, the SMS. The growth of instant messaging on handhelds will continue in the next five years, at a constant rate in nearly all markets, with the consequent decline in SMS use.

Demand for MMS services will remain stable. Forrester¹²³ predicts that by the end of 2013, 24% of mobile device users will use instant messaging services. For this to happen, several conditions must be fulfilled:

- Mobile operators must lose their fear of the decline in the profits obtained from SMS, invest in this new type of messaging and **offer more attractive prices**.
- Manufacturers must **ensure the usability** of their handsets and include instant messaging capabilities, without any need for additional applications.
- Developers must **promote their use on mobile social networks**.

Some examples of innovative companies in this area are **Funambol**¹²⁴, a pioneer in mobile messaging 2.0 for open sources and **The Gizmo Project**¹²⁵, a supplier of instant messaging and a call service using voice over IP technology. This type of program enables users to talk to each other completely free of charge or at a very low cost.

Meanwhile, the opportunity **to connect to email** services from mobile handsets is very successful among users. Nomadic citizens need to be connected anywhere and at any time. The fact that many smartphones support this type of service contributes to increasing use, and as the prices of these devices fall and operating systems become compatible with various mail suppliers, the upward

¹²¹ Yahoo: <http://es.yahoo.com/>.

¹²² Microsoft: <http://www.microsoft.com/en/us/default.aspx>.

¹²³ *Mobile IM Adoption Forecast Europe: 2007 to 2013*. Niek van Veen, Michelle de Lussanet, Charles S. Golvin and Lauriane Camus. Forrester. January 2008.

¹²⁴ Funambol: <http://www.funambol.com/>.

¹²⁵ The Gizmo Project: <http://gizmo5.com/pc/>.

trend will continue. In the future, more and more operators will include some type of email access and in many cases, they will sell it with other services in a single package.

One of the possible strategies that should be followed is the sale of telephones configured to use an email account, so that users are encouraged to use this service, and other data-related services offered by the operator, in order to compensate for the decline in profits from sending SMS. This is being done by **Momail**¹²⁶ which offers free email compatible with most mobile handsets.

Applications such as System 7.0 which is a flexible mobile email solution compatible with over 115 operators and 240 handsets all over the world, and supported by most mobile platforms, will contribute to the increase in email on mobile handsets. This solution enables emails to be received immediately, at both workstations (Lotus, Microsoft Exchange) and in private accounts (Google, Hotmail, Yahoo, etc.).

5.2. The future of the Internet is mobile

One of the most widely discussed subjects today in the mobile technology market is Internet connections using these devices. Mobile Internet entails access to a new dimension in customer service, which will have personalized information and services, depending on the location and time of connection, anywhere and at any time. What other channel can compete with that?

The fact that many mobile devices include Internet access is indicative of the trend towards the opening of the market. However, this will not guarantee an increase in connections if the consumer's experience is not a good one. Users are demanding increased freedom of choice, as can be seen by the fact that in 2007, approximately 70% of the traffic generated by **NTT DoCoMo's** data services¹²⁷ in Japan took place using connections to "unofficial" pages outside the operator's portal.

The industry is implementing ideas aimed at achieving **uniformity on the mobile Internet** that are conducive to the opening of the market. The World Wide Web Consortium (W3C) launched the Mobile Web Initiative (MWI) in 2005, supported by highly influential companies in the sector, such as **France Telecom**¹²⁸, **Ericsson**¹²⁹, **Nokia**¹³⁰ and **Hewlett-Packard**¹³¹. The focus was initially on two key areas: first, on identifying best practices for websites and second, on producing descriptions of the telephones to help content developers design for all types of telephones. Another standardization initiative was the Mobile Top Level Domain (mTLD), which was the basis for the .mobi domain. Mobile Internet users know when a website is adapted to their telephone when it ends in .mobi, as owners wanting to register their pages must have applied the mTLD best practices in the development of content.

Mobile Internet is even more important due to the fact that **many of its users live in emerging countries** (see Chapter 7). In fact, their first contact with

¹²⁶ Momail:
<http://www.momail.es/>.

¹²⁷ NTT DoCoMo:
<http://www.nttdocomo.com/>.

¹²⁸ France Telecom:
http://www.francetelecom.com/en_EN/.

¹²⁹ Ericsson:
<http://www.ericsson.com/es/>.

¹³⁰ Nokia: <http://www.nokia.es/>.

¹³¹ Hewlett-Packard:
<http://welcome.hp.com/country/es/es/welcome.html>.

the Internet will not take place on a personal computer, but instead on a mobile phone. For companies participating in the mobile Internet boom, this means access to a market with a portfolio of millions of potential consumers. As mentioned above, the problem in this case is that in emerging countries, most handsets do not have an Internet connection capacity or even have access to the network.

However, **carriers see the mobile Internet as a means of increasing the profits generated by data services** in light of the heavy pressure they are facing due to lower voice and SMS prices, which are the result of enormous competition and strict regulation. **Content providers** have, on the Internet, a new distribution channel that offers huge opportunities.

All the FTF experts agreed that having an Internet connection on mobile handsets will be vital in changing the way that customers currently use their devices.

5.2.1. Mobile Web 2.0

The context could not be more positive. All the agents participating in the mobile technology sector would benefit from the mobile Internet boom. However, **the current level of use in absolute terms is disappointing** for everyone and clearly shows that something has to change. This need for transformation has led to the term **Mobile Web 2.0** being coined to refer to the revolution, which has already started and which will radically change the use of mobile Internet. The idea is based on mobile devices becoming the main means of Internet access in many countries in the world during the next decade, with hybrid devices and more powerful networks. In the same way as Web 2.0 has led to a substantial change in the Internet world, initiatives are being taken to transfer its vague principles to the mobile world. The advocates of this movement emphasize the need for opening and the use of open standards, which have given such good results in the Internet world.

Mobile Web 2.0 also seeks to replicate **the social aspect and creative role of the citizen** which characterized the Web 2.0 movement, with new ways of communication and sharing experiences with other users. In this area, there are already applications that provide access to classic web services (such as MySpace¹³², Flickr¹³³, Wikipedia¹³⁴, etc.), and services especially designed for handsets, like the traditional Dodgeball¹³⁵ and Twitter or Bluepulse¹³⁶.

Although mobile Internet use is currently rather low, the figures for Europe provide grounds for optimism, according to Forrester¹³⁷ (see Figure 28):

- Almost all European users have mobile devices with an Internet connection capacity.
- Less than half of them are aware that they can connect to the Internet from their handset.

¹³² MySpace:
<http://www.myspace.com/>.

¹³³ Flickr: <http://www.flickr.com/>.

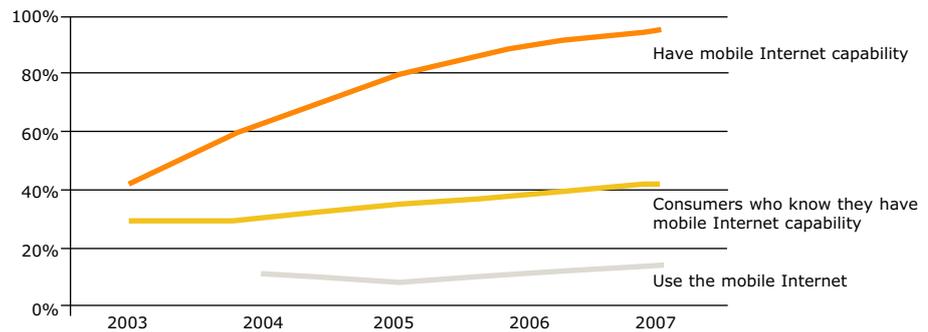
¹³⁴ Wikipedia:
<http://www.wikipedia.org/>.

¹³⁵ Dodgeball:
<http://www.dodgeball.com/>.

¹³⁶ Bluepulse:
<http://www.bluepulse.com/>.

¹³⁷ *Mobile Internet Users Lead In Advanced Mobile Services' Adoption In Europe*. Pete Nuthall with Michelle de Lussanet and Dan Wilkos. Forrester. May 2008.

- Only 14% of mobile users use the Internet regularly. Although this figure does not constitute a substantial increase, Forrester's predictions since 2004 have suggested that use will reach 38% by the end of 2013.



Base: European mobile phone users.

Figure 28. Mobile Internet User Penetration: 2003 To 2007.

Source: Forrester Research, Inc., *European Mobile Forecast: 2008 To 2013*, March 14, 2008.

According to Forrester's figures¹³⁸, the European users that connect to the Internet most are the English (15%), followed by the Germans and the French (9%). Spain ranks fourth (8%), followed by Italy (5%).

5.2.2. What is preventing the mobile Internet boom?

The nature of the factors limiting mobile Internet use is highly varied. Overcoming these barriers will require all those involved (carriers, developers, etc.) to work together:

a) Lack of consumer interest

Consumers do not appear to be interested in using their mobile device to connect to the Internet. As mentioned above, this connection capability is a functionality that few consumers take into consideration when buying a mobile handset. Some alternatives that could change this situation include:

- **Providing users with relevant information according to where they are and when they are connecting.** Operators should promote this type of service if they want to increase connections. For example, **Vodafone**¹³⁹ has announced that it is going to include Google Maps in its Vodafone Live! portal, which will enable users to locate addresses and make reservations.
- Promoting the use of **instant messaging** or **email** on mobile devices, instead of SMS.

¹³⁸ Pete Nuthall with Michelle de Lussanet and Dan Wilkos: op. cit.

¹³⁹ Vodafone: http://www.vodafone.com/hub_page.html.

- Promoting more open models in which the Internet access point is **highly successful search engines** such as **Google**¹⁴⁰ or **JumpTap**¹⁴¹, as well as the content provided from operators' portals (the "walled garden" model). As a result, consumers will find and have access to more websites and more relevant content, and the operators will benefit from new business models based on profits from advertising. For example, **KDDI**¹⁴² added **Google's** search engine to its EZweb portal, which enabled it to increase the portal's traffic, and boost advertising profits by 30%. Furthermore, it encouraged opening, as 78% of searches led users to other pages¹⁴³.
- Capitalizing on the potential of **social networks**. Connection to these networks, which are increasingly popular on the fixed Internet, with examples such as **Bebo**¹⁴⁴ in the U.K. and **StayFriends**¹⁴⁵ and **Aka-aki**¹⁴⁶ in Germany, will entice consumers to use the mobile Internet. Users of **KPN**, **Telfort** and **T-Mobile** can choose to receive a free SMS every time someone makes a comment on their page on the Dutch social network Hyves¹⁴⁷. This message contains a link to the Internet site, where consumers can read the complete contents and have the option to answer.

b) Lack of specific content for mobile devices

Little content is currently being developed specifically for mobile Internet. Indeed, innovation in specific developments is limited by the low level of Internet access on mobile devices. This all means that little content is available, and it is also of poor quality as companies are not interested in investing in a channel with such low demand. This makes for a disappointing experience for users who connect, which in turn leads to reduction in use. It is a vicious circle.

Meanwhile, the closed **Internet portals** ("walled gardens") in which operators relate to content suppliers mean that the number of pages made specifically for mobile devices is very low. Furthermore, the strict control by operators over their content and their excessive share in the profits generated discourage developers and limit innovation.

In order to change this situation, the following objectives should be acted upon:¹⁴⁸

- **Improve the operators' portals:**
 - Internationalize the operators' portals to make them more attractive to content developers. For example, **Vodafone**¹⁴⁹ has increased the presence of its Vodafone Live! portal by means of agreements with **Mobilkom Austria**, **Proximus** in Belgium and **Elisa** in Finland.
 - Cooperation between operators to launch joint portals from where it is possible to browse to their own sites. A successful example is the French operator **Gallery** and Belgium's **Plaza**, which are cooperating to produce one.
- **Increase the content that makes users connect to the Internet.** The operators must encourage the use of applications or services in order to achieve this.

¹⁴⁰ Google: <http://www.google.com/>.

¹⁴¹ Jumtap: <http://www.jumtap.com/>.

¹⁴² KDDI: <http://www.kddi.com/english/index.html>.

¹⁴³ *Why Japanese Mobile Internet Is a Success. And What European Operators Should Do to Catch Up.* Niek van Veen, Michelle de Lussanet, Jonathan Browne and Lizet Menke. Forrester. March 2007.

¹⁴⁴ Bebo: <http://www.bebo.com/>.

¹⁴⁵ StayFriends: <http://www.stayfriends.de/>.

¹⁴⁶ Aka-aki: <http://www.aka-aki.com/>.

¹⁴⁷ Hyves: <http://www.hyves.nl/>.

¹⁴⁸ *Breaking The Mobile Internet's Low Adoption Spell.* Niek van Veen. Forrester. December 2006.

¹⁴⁹ Vodafone: http://www.vodafone.com/hub_page.html.

- **Make the model for the distribution of profits** between operators and content developers more flexible. Ideally, any supplier should be able to launch their content without the operators and obtain a high percentage of the profits obtained from the sale, which would clearly lead to their proliferation.
- **Develop specific websites** for connection from mobile handsets. The small screen size and the limited possibilities for interaction and data processing on mobile handsets require specific designs for websites:
 - Adapt not only the design of pages, but also their content and browsing.
 - Design pages that are useful and easy to handle so that users realize the value provided by this new connection channel. Pages that are difficult to find and use may hinder the user's interactions and discourage them from returning.
 - Renew the content on pages on a regular basis. In mature markets like Korea, updates are made several times a day.

An example is that used by some newspapers, such as *The New York Times*¹⁵⁰, which has developed an application that enables access from an iPhone to a high quality edition of the newspaper. The newspaper's website enables sections to be read both online and offline, provides simple browsing, includes photographs along with its articles and allows for the mobile website to be personalized, by selecting favorite news categories.

c) Low presence of traditional companies on mobile Internet

Meanwhile, the amount of **traditional companies** with a presence on mobile Internet is still very low. This is encouraging the use of other channels such as PC-based Internet, to the detriment of connections from handsets. It is important that **traditional companies** include this device among their channels of communication and sales to customers. Girlswalker's Tokyo Girls Collection, for example, combines live fashion events with the PC and a mobile website (see Chapter 6).

d) Technological barriers

In terms of access, the **networks** are often too slow, which lowers the quality of the connection for users, who end up using other, faster channels. For this reason, the operators and large network infrastructure manufacturers must work together to make faster networks that improve the user's experience in each connection. What is much more serious and difficult to resolve is the fact that some users do not even have access to the Internet (see Chapter 7).

As regards content, the **lack of standards** in the sector means a tough task for developers, as they have to adapt the material to the type of telephone and network, as well as the browser, which curbs innovation. For this reason, operators and developers must put pressure on the manufacturers to standardize their products. As we have seen above, this is happening as a result of projects being launched for upmarket devices in particular, which therefore contribute to the opening of the market.

¹⁵⁰ *The New York Times*:
<http://www.nytimes.com/services/mobile/iphone.html>.

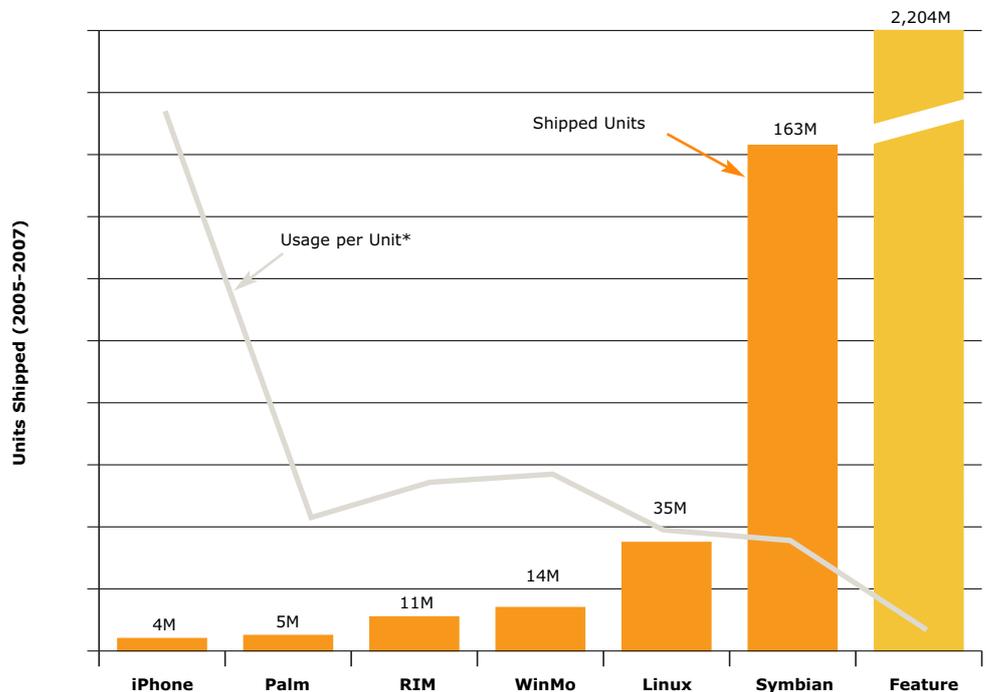
e) Lack of business models that promote innovation

It is still widely unknown as to where to focus business models based on the new mobile Internet services. Furthermore, the lack of demand for Internet-related applications offered by mobile handsets renders it difficult to achieve a return on investments. For example, the British operator **3**¹⁵¹ (a subsidiary of Hutchison), which is focusing on the Internet and data services, is having problems obtaining critical mass.

f) Devices must improve their usability and battery capacity

The arrival of the iPhone has shown that the usability of handsets is a very important factor in boosting users' connection to the Internet. Until it was launched, the manufacturers had not succeeded in designing a model that could increase mobile Internet traffic, which clearly reveals a need for **the manufacturers to improve the usability of their phones**. Once again, the **Apple** telephone is the leader in terms of Internet connections (see Figure 29).

¹⁵¹ 3: <http://www.three.co.uk/personal/index.omp>.



* Search queries per shipped unit.

Figure 29. Internet access by technology.
Source: Google.

The increase in **battery capacity** is also vital to increase consumer connection time.

g) High and unclear prices for consumers

The **rate plans** for Internet connections are in many cases not altogether transparent to users (as is the case, for example, with charging for bytes transferred), and on many occasions are even unknown. What is beyond doubt is that users do not want to increase their telephone bills and this is particularly true when the available content does not justify the expense.

In order to change this situation, Internet connection prices should **be made clear to users** (including the differences in price between the content of the operators' portal and external content). Offering flat-rate subscriptions clearly boosts demand when consumers "need" to connect to mobile Internet. However, they are not likely to be willing to pay a monthly fee for a service they have not even tried. For this reason, other launch strategy alternatives must be considered.

For example, **T-Mobile**¹⁵² has launched the "web'n'walk" service, which lets customers surf for less than a penny a kilobyte up to a maximum price of a pound a day, with any additional cost free of charge. Furthermore, there is no restriction on the websites that can be visited and users are not penalized for using the service several times a day. In the Spanish market, **Telefónica** has recently announced a cut of between 46% and 60% in its rates for mobile email access.

Of all these factors that could potentially boost Internet use on mobile devices, the FTF experts feel that flat-rate subscriptions will provide the service with the biggest boost (see Figure 30).

5.2.3. The future of mobile Internet

As mentioned above, the boom in mobile Internet browsing has been slow and some experts have described it as disappointing. Nevertheless, for it to finally happen, greater flexibility in the operators' models, technical improvements, the design of profitable commercial approaches, winning over the consumer, and cooperation between agents are all essential.

5.3. Increasing the scale of financial services

For consumers in developed countries, the opportunity to use their mobile phone to carry out financial transactions means the availability of an additional banking channel, which complements the network of branches and Internet banking. However, for people living in emerging countries, the opportunity of access to banks' financial services using their mobile devices promises to be a great revolution. This will be possible if the technological, commercial and social barriers presently hindering the opening of this market are removed, or at least mitigated.

¹⁵² Canal PDA.com. 5/05/2008. Article: "T-Mobile and Nokia collaborate on mobile services and personal social networks."

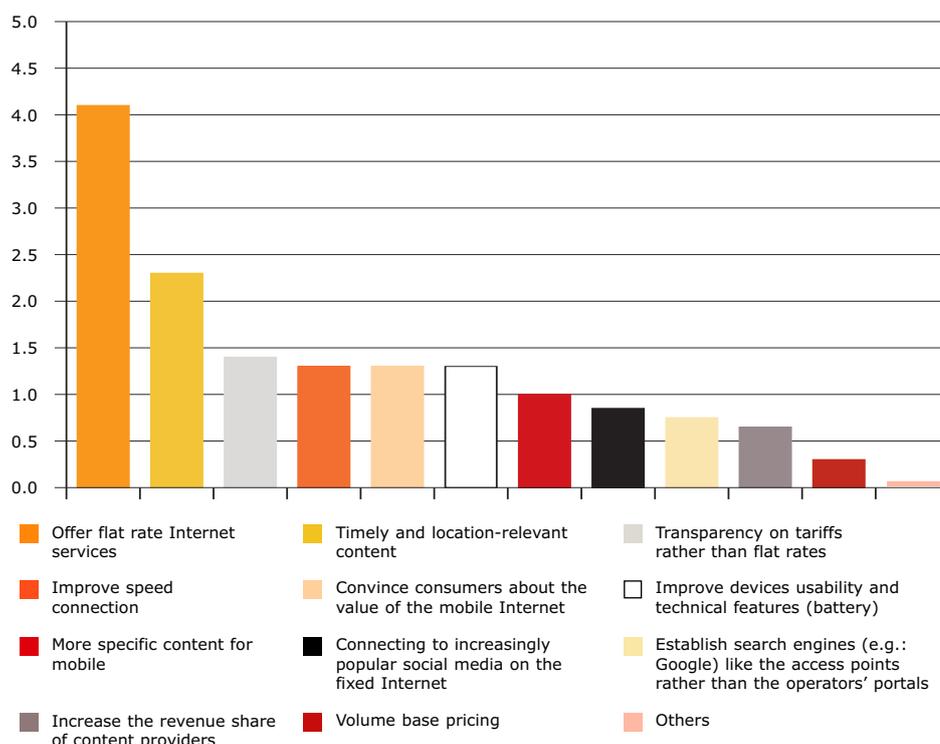


Figure 30. Factors promoting the use of Internet on mobile devices.
Source: drawn from the conclusions within the Future Trends Forum.

It is estimated that transactions using mobile devices will increase from 2.7 billion in 2007 to 37 billion in 2011, with most of this growth taking place in emerging countries, according to data from Juniper Research.¹⁵³ According to this study, China and the Far East will be the regions with the most users of this service, which will reach 250 million in 2011. Therefore m-banking speaks the language of the most disadvantaged, and is shaping up as a tool for improving their level of development (see Chapter 7).

Although the impact of m-banking is not so marked in developed countries, it is not insignificant, as it is contributing to increasing the range of services accessible from mobile handsets and therefore changing user habits. It is also encouraging improvements to the service offered by financial institutions to their customers, which is an extremely important factor in today's climate of economic uncertainty.

5.3.1. m-Banking in the United States and Europe

Although many European banks already offer mobile banking services by means of SMS or mobile Internet, and they are available to anybody with the right type

¹⁵³ Tendencias de las telecomunicaciones. 3/10/2008. Article: "Los jóvenes son los que más usan la banca móvil." http://www.tendencias21.net/Los-jovenes-son-los-que-mas-usan-la-banca-movil_a2224.html.

of phone, only 5% of Internet users access them. The operations performed are usually very simple, such as checking balances, SMS alerts, etc., and users in the **United States and Europe** are generally young men, with a technology background, an above-average income and users of Internet banking.

The low adoption rate for these services is essentially due to customers not seeing the value of connecting using their mobile device, not being willing to pay for these services, being unaware of their existence or being worried about their security.¹⁵⁴

The leading mobile operators in the United States, **AT&T**¹⁵⁵ and **Verizon**¹⁵⁶, have invested a lot of money in trying to convince their customers to use this new medium. They have launched programs in which consumers sign a **contract** with a **financial institution**¹⁵⁷ to link their **bank account** with a **mobile application**.

5.3.2. The range of m-banking services

The range of services that can be offered on mobile handsets is extensive:

- **Deposits, cash withdrawals or transfers;** these transactions can be covered with the development of some products available on mobile phones, such as the electronic wallet, mobile bank accounts, cash deposits, cash withdrawal, remittances and transfers between account holders. **Bankinter** has developed the **Bankinter Aggregation service**¹⁵⁸ which can be used to check balances and account activity, make transfers, and subscribe to, consult or cancel the floating of new stock. Likewise, the **Hal Cash**¹⁵⁹ service by **Bankinter** enables money to be sent from a mobile handset, to be withdrawn from an automatic cash machine, immediately, securely, at any time and anywhere in Spain and/or Ecuador.
- **Access to money loans** by means of consumer and interpersonal loans, microloans or revolving credits.
- **Invest and manage investments using mobile devices** (mobile trading). For example, **Bankinter**¹⁶⁰ offers its customers the Broker Multimodal service, which enables transactions to be carried out and stock price quotations to be given in real time, as well as alerts to be received on mobile handsets, and orders to be checked and cancelled.
- **Access to financial information** (balance sheets, transactions record, etc.). For example, the **Bank of America** mobile banking service¹⁶¹ enables mobile handsets to be used for making transactions, reading account statements, paying bills and even finding the nearest cash machines.
- **Make payments with a mobile phone or a card that is linked to the telephone account** (m-payment): Mobile wallet linked to the card, payment of bills, purchases, etc.

¹⁵⁴ *European Mobile Banking: An Inconvenient Truth. Most Large Banks Offer Mobile Banking But Few Consumers Use It.* Second document in the series "Mobile Financial Services". Benjamin Ensor, Alexander Hesse, Michelle de Lussanet, Niek van Veen and Lizet Menke. Forrester. October 2007.

¹⁵⁵ AT&T:
<http://www.att.com/gen/landing-pages?pid=3308>.

¹⁵⁶ Verizon:
<http://www22.verizon.com/>.

¹⁵⁷ America First Credit Union, Arvest Bank Group, BancorpSouth, FirstBank and Synovus.

¹⁵⁸ Bankinter:
<https://www.bankinter.com/www/es-es/cgi/ebk+smv+bkmovil+descrip>.

¹⁵⁹ Bankinter:
https://www.bankinter.com/www/es-es/cgi/ebk+smv+_transf_Acajeros_Desc.

¹⁶⁰ Bankinter:
<https://www.bankinter.com/www/es-es/cgi/ebk+smv+bng+operativavoz>.

¹⁶¹ Bank of America:
http://www.bankofamerica.com/onlin_ebanking/index.cfm?template=mobile_banking&statecheck=KS.

5.3.3. Payments using the mobile (m-payment)

One of the most attractive applications with the greatest potential for wireless services is **payment by mobile devices**, also known as **m-payment**, which is very closely linked to the concept of **m-commerce** (see Chapter 6).

The consultancy Arthur D. Little¹⁶² estimates that the profits from m-payment will increase from 3.2 billion dollars in 2003 to 37.1 billion dollars worldwide in 2008.

In Spain, payments using mobile handsets have grown at a slower rate than anticipated. A few years ago, the predictions for 2008 suggested that four million Spaniards would use this method on a regular basis; however, the figures for use fall far short of this estimate. If we analyze the figures from other countries, the situation is similar. According to a study by Arthur D. Little, Spain is the third-ranking European country in the implementation of this system, behind Austria and Norway (see Figure 31).

¹⁶² Making M-payments a Reality. Arthur D. Little. Vienna, 2004.

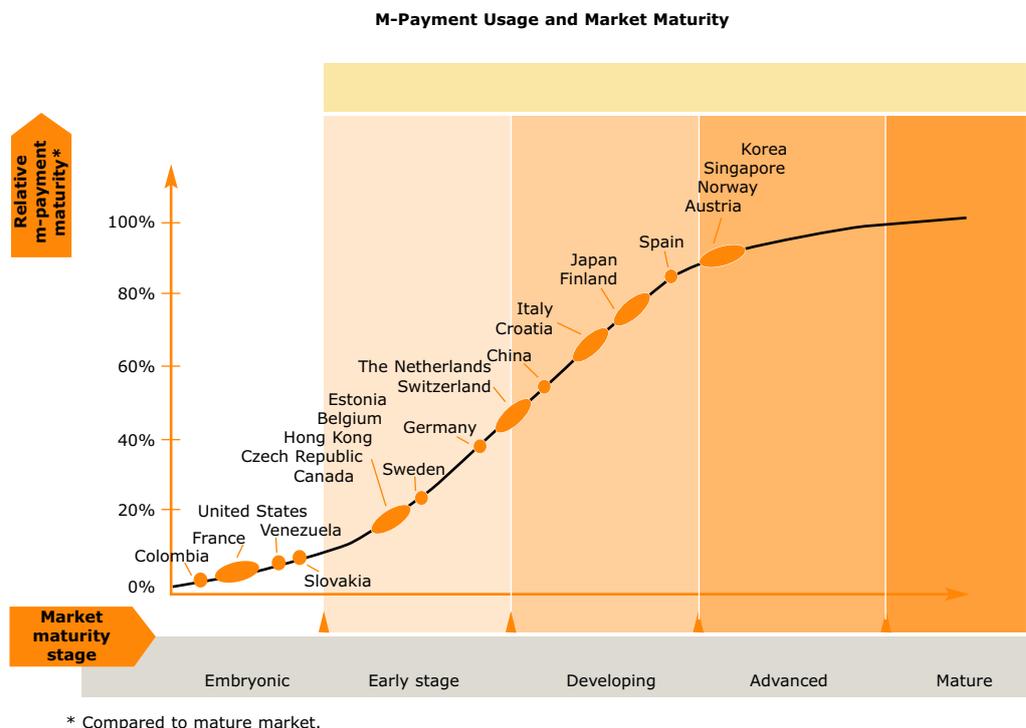


Figure 31. Implementation of m-payment.
Source: Arthur D. Little analysis.

However, until the real boom in payments with mobile handsets takes place, the companies have found a niche in settings that credit cards have yet to reach. This is true of "micropayments." Mobile devices can play a key role in situations where it is not possible to pay using a card, but only in cash, which is often lacking. To give an example, in Tarragona it is possible to purchase passes for the limited parking area, while public transportation users in Málaga can pay with an SMS.

There is still clearly a great deal of potential in technological terms for payment using mobile devices. Companies like **Philips**¹⁶³ and **Sony**¹⁶⁴ are looking at **NFC** (Near Field Communication) chips. Although this system is not new, its novelty lies in its implementation in mobile phones. It is based on radiofrequency data exchange, with no need for physical contact, although the maximum distances are five centimeters. This factor, combined with the need to enter a PIN code to validate the purchase, bolsters its security.

Some companies in the United States are carrying out tests to implement this payment system. For example, **Visa**¹⁶⁵ and **Wells Fargo**¹⁶⁶ measured the interest of consumers in San Francisco in using their mobile handsets to pay in shops that accepted Visa's payWave. Other pilot projects are being carried out in Europe, one of the most important of which was launched in November 2007 in France¹⁶⁷, Payez Mobile, which included 1,000 customers in 200 shops.

¹⁶³ Philips: <http://www.philips.es/>.

¹⁶⁴ Sony:
http://www.sony.es/PageView.do?site=odw_es_ES.

¹⁶⁵ Visa: <http://www.visa.es/>.

¹⁶⁶ Wells Fargo:
<https://www.wellsfargo.com/>.

¹⁶⁷ *NFC Technology Is Revitalizing Mobile Payments. But Mobile Contactless Payments Face Huge Adoption Hurdles*. First document in the "Contactless Payments" series. Benjamin Ensor, Alexander Hesse, Michelle de Lussanet and Lauriane Camus. April 2008.

¹⁶⁸ ABI Research. Article: "2011 NFC-Enabled Cellular Terminal Forecast Downgraded to 450 Million Units." <http://www.abiresearch.com/abiprdisplay.jsp?pressid=719>.

¹⁶⁹ NFC News. February 2008. Article: "Experience Near Field Communication in Action at GSM Mobile World Congress 2008 Luncheon." <http://www.nfcnews.com/2008/02/05/nfc-forum-at-gsm-world-congress>.

¹⁷⁰ Tendencias de las comunicaciones. October 2008. Article: "Los jóvenes son los que más usan la banca móvil." http://www.tendencias21.net/Los-jovenes-son-los-que-mas-usan-la-banca-movil_a2224.html.

However, forecasts suggest that in 2011 there will be 450 million mobile handsets adapted to NFC (Near Field Communication), a figure that will account for 30% of the mobile handsets sold that year (ABI Research)¹⁶⁸. Furthermore, one in three mobile handsets will be equipped with NFC within three to five years (Frost and Sullivan)¹⁶⁹. This means that transactions with an approximate value of 22 billion dollars will be generated in 2011 (Juniper Research)¹⁷⁰.

The barriers faced by this new payment system are the same as those affecting any other: security and the transaction cost remain the issues of greatest concern to the consumer. In short, the operators, banks and payment companies must cooperate to gradually reduce technological and product acceptance barriers, and to design profitable business models.

5.3.4. P2P (person-to-person) payments

A **P2P** (person-to-person) payment is a method of payment by which the user of one mobile phone sends money to another, so that the device acts as a means of performing the transaction. There are three types of mobile P2P payments: **mobile P2P bank transfers**, **mobile P2P top-up transfers** and **virtual mobile P2P transfers**. Many brands in central Europe have recently launched person-to-person payment systems using mobile handsets.

Although the forecasts are not particularly promising, the greatest potential for the use of this type of service could be in sending money to relatives abroad. Cash remittances sent to emerging countries are increasing every day. This is a

great opportunity for intercontinental P2P payment systems, as they are cheaper and simpler operations for emigrants than bank transfers. The GSM association of operators has identified this opportunity and has launched an initiative so that the operators themselves provide this service to their customers¹⁷¹.

5.3.5. The benefits of using a mobile phone for financial operations

Using mobile phones to carry out financial operations leads to benefits of various types. First, it can significantly improve the quality of life of **consumers** in developing countries who do not have access to financial services. Second, in developed countries, m-banking improves the quality of service that they receive from financial institutions. The key factors in winning over consumers are: ease of use, low cost of operations, 24/7 access and security.

From the point of view of the **financial institutions**, the benefits are obvious. While they are able to extend access to financial services to more (unbanked) consumers, they can also improve their relationship with their current customers, reduce their operating costs, free up resources for processes of greater value, provide immediate access to the institution's services (mobile banking), promote self-service and obtain greater control and security for the customer. In the uncertain times currently troubling the financial sector, m-banking may become an alternative that contributes to improving the situation.

The **operators** also have grounds for participating in m-banking, including some that are very sound: the opportunity to attract new customers, diversification of the type of profits (obtaining initial commissions and from transactions), the increase in the average revenue per user, achieving customer loyalty and obtaining profits from cross-selling, by offering content for mobile devices and changing the contract type to prepay.

Finally, **governments** have an ally in improving the economic situation of their countries in this type of use of the mobile phone. An excellent example of this use is in the Philippines, where most of the population does not have access to bank accounts and is obliged to use private moneylenders, which limits its capacity for growth. The Central Bank of the Philippines implemented a microfinancing regime using mobile handsets, cooperating with the operators and making sure that the financial institutions were regulated, which contributed to the country's economic revitalization¹⁷².

5.4. Your handset tells where you are

The FTF experts consider that location-based services on mobile handsets will be those that create the most business opportunities in the short term (see Figure 27). These services provide an estimate of the geographic location of a device, which is possible thanks to various technologies such as location-based services, time of arrival and GPS, which operates via satellite connection. Mobile handset users must give their consent to being located for these systems to work. Once

¹⁷¹ *Person-to-Person Payment Goes Mobile. But P2P Mobile Payment Is a Technology in Search of a Market.* Michelle de Lussanet, Lizet Menke and Benjamin Ensor. April 2007.

¹⁷² Trends in telecommunications. October 2008. Article: "Mobile banking will handle 8 billion dollars in 2012." http://www.tendencias21.net/La-banca-movil-movera-8-000-millones-de-dolares-en-2012_a1918.html.



that consent has been given, this functionality is activated by turning the telephone on.

According to ComScore¹⁷³, the leader in research in the digital world, the use of maps on mobile handsets increased by 8% among American users and 3% among Europeans between February and May 2008. The launch of the iPhone undoubtedly contributed to this upturn. Despite the fact that usage figures are low¹⁷⁴, according to a survey by Netsize from 2008, this trend will increase, as more than 74% of those surveyed said they considered location-based services on mobile devices to be essential.

These services will provide new opportunities for companies from all sectors as they will be able to benefit from:

- **Services that use navigation systems.** This is the case of the system launched by Google Maps, which shows the route on the map and accompanies it with a series of detailed directions. The map is interactive and shows the businesses in the area with their contact details, thereby becoming a fantastic marketing channel.
- **Services that include location of individuals.** This opens up a wide range of possibilities for businesses that provide services covering:
 - **The enormous potential of mobile social networks.** These will contribute a differential value compared to fixed social networks, as they will make it possible to locate friends. The companies that are able to take advantage of their enormous potential will obtain substantial profits, mainly thanks to advertising.
 - **The location of physically or mentally handicapped people.** These systems mean that it is possible to detect the fall of an elderly person or the disappearance of someone suffering from Alzheimer's disease.
 - **The location of emergency calls.** These systems enable the place from where the call was made to an emergency telephone number to be identified, and the units necessary to resolve the situation to be sent to that location. This is the case with the 112 emergency telephone line in the autonomous community of Madrid. In the first six months of 2008, the mobile location system was vital in the management of more than 8,000 incidents, and has proved itself to be particularly useful in rescues and traffic accidents on urban roads¹⁷⁵.
 - **The improvement of traditional services.** As the technology evolves, real-time locations will be possible. As a result, services such as taxis or pizza delivery will be quicker; even the delivery of a newspaper to a user's address can change, if the system detects that the user's location has changed.
- **Services based on location of machines.** The combination of communication (M2M) and location possibilities between machines will provide numerous opportunities. For example, this technology could be useful on toll roads, for lo-

¹⁷³ ComScore:
<http://www.comscore.com/>.

¹⁷⁴ *The Netsize Guide. Mobile 2.0, you are in control.* Netsize. Paris, February 2008.

¹⁷⁵ Europa Press. August 2008. Article: "Sistema de localización de móviles del 112 permitió localizar y resolver 8.000 emergencias."

cating the position of a vehicle, so that personnel costs are reduced, with the creation of "express lanes," which will enable costs in the public sector to be reduced.

- **Personalization of the range of products and services.** The combination of navigation and location systems will make it possible to identify consumer preferences, so that when the user enters a given zone, mechanisms providing advertisements based on the customer's profile will start operating. As a result, the customer will receive advertising for services of interest to him, which are near his current location. Bluetooth is becoming a key ally of vendors in push marketing.

However, one **drawback** in the expansion of these location services is the fact that users of handsets may see them as something that invades their privacy, and they are not always willing to be monitored by members of their community or to receive advertising messages.

5.4.1. The opening of the market and mobile location services

Operators are not indifferent to the potential for growth of these services and as a result, they are particularly interested in standardizing and promoting innovation in this field. Progress towards a greater opening of the market requires the existing barriers to be overcome and the fragmentation arising from the coexistence of three different location technologies to be dealt with. At present, as a consequence of this fragmentation, companies wanting to use this technology as a marketing channel must choose one of them and thereby limit the customers they can target (compatibility with the network or with the device).

As a result of this problem, the Open Mobile Alliance (OMA) has launched a standard for these services. The challenge lies in guaranteeing interoperability and, in an environment where there are many vendors, ensuring that they all use the same language. As part of their opening and standardization strategy, they have developed a test that enables the interoperability of a location system to be checked.

Once technological problems have been overcome, work must be done on the standards and procedures that are suitable for authorizing the distribution of information to other agents in the market, while safeguarding consumers' rights to privacy.

5.4.2. Successful cases in mobile location-based services

Telefónica Movistar has reached a framework agreement with **Google** that enables it to provide its mobile customers with access to the Google Maps for Mobile service (GMM) from its Emoción portal or by the pre-installation of the application¹⁷⁶ on its handsets.

¹⁷⁵ Europa Press: "Sistema de localización de móviles del 112 permitió localizar y resolver 8.000 emergencias", agosto de 2008.

¹⁷⁶ Ojo Buscador. July 2008. Article: "Telefónica añade Google Maps a sus móviles." <http://www.ojobuscador.com/2008/07/30/telefonica-anade-google-maps-a-sus-moviles/>.

¹⁷⁷ Noticiasdot.com: "TomTom y Vodafone desarrollan un servicio antiatacos", <http://www.noticiasdot.com/wp2/2007/06/27/tomtom-y-vodafone-desarrollan-un-servicio-antiatacos/>, junio de 2007.

The maker of the **TomTom** portable navigation system and the mobile operator **Vodafone** have launched a service in the United Kingdom that provides traffic information for the major highways. Basically, what the system does is check how many devices are in a given location and extrapolates the results to the number of drivers who may be in a traffic jam¹⁷⁷.

5.5. Your friends just got even closer: mobile social networks

The FTF experts consider that besides location-based services, mobile social networks will provide important opportunities for businesses (see Figure 27). The mobile handset is threatening to become our most personal, and at the same time, most social electronic device.

Its success seems certain, due to these devices adding a new dimension—location—to the already successful social networks on fixed-line Internet. This will enable users to receive information from the contacts in their social network that are physically near them. However, mobile social networks will not be a substitute for their fixed counterparts, but will instead complement and improve the user's experience.

A survey by Nielsen Mobile¹⁷⁸ (EU data Q1 2008, US data December 2007) rates the Spanish among the most assiduous users of mobile social networks in Europe. Even bearing this in mind, the figures for use are still very low.

	Percentage of mobile subscribers who access social networks over the mobile Internet	Number of mobile subscribers who access social networks per month, over their phone
United States	1.6%	4,079,000
United Kingdom	1.7%	812,000
Italy	0.6%	293,000
Spain	0.8%	291,000
France	0.6%	255,000
Germany	0.2%	141,000

Figure 32. Percentage of users of mobile social networks.
Source: Nielsen Mobile; EU data Q1 2008, US data December 2007.

¹⁷⁷ Noticiasdot.com, June 2007. Article: "TomTom and Vodafone develop an anti-traffic jam service." <http://www.noticiasdot.com/wp2/2007/06/27/tomtom-y-vodafone-desarrollan-un-servicio-antiataascos/>.

¹⁷⁸ "EU data Q1 2008, US data December 2007." Nielsen Mobile. December 2007. <http://www.nielsenmobile.com/html/press%20releases/SocialNetworking.html>.

5.5.1. Types of mobile social networks

In its study *Social Computing Goes Mobile*, Forrester identifies¹⁷⁹ five different types of mobile social networks, which range from the most popular that already

exist on the Internet and are being optimized for mobile devices (Facebook¹⁸⁰ and MySpace), to others that are developing exclusive capabilities for these devices (Veeker¹⁸¹) (see Figure 33).

	Description	Examples
Social networking	Sites where users create profiles for themselves and then connect to and interact with other users in their virtual community. User actions include communicating with real-life social contacts, connecting with friends of friends, and joining interest groups. Interactions may include media sharing, microblogging, social mapping, and tagging.	Facebook MocoSpace MySpace PadPaw Rabble Zingku (Google)
Media sharing	Sites where users create, view, organize, and/or share media files, such as photos, videos, music and games. The majority of these sites have desktop equivalents where users host and view their media. The mobile device is mostly used to capture and upload media to these sites. Services like Veeker focus on users exchanging media using multimedia messaging.	Flickr JuiceCaster LocaModa Mosh (Nokia) Veeker YouTube
Microblogs	Sites where users create and/or monitor short posts of content to communicate status and share thoughts, links, and media. Most sites allow users to contribute content using SMS messaging.	Jaiku (Google) Tumblr Twitter Zemble
Social mapping	Sites where users share their location and view the locations of friends, often with the help of a GPS feature. Updates and alerts may be tailored to the user's locations (e.g., they will receive alerts only when a friend is in their local area).	Buddy Beacon (Helio) Dodgeball (Google) Loopt (Sprint, Boost) MeetMoi StreetHive (Cingular)
Tagging	Sites or services that allow users to tag media or physical locations with metatags. Users can search content based on specific tags or have content delivered to them from their network.	Dgm8 LifeBlog (Nokia) Socialight Yellow Arrow project

Figure 33. Types of mobile social networks.
Source: Forrester Research, Inc.

From the business point of view in general, and the commercial perspective, in particular, this new wave of mobile networks promises to be extremely profitable. For example, when users define their tastes, businesses can identify their target market and send advertising when a potential customer is near the location of a shop, restaurant, etc.

Many businesses—consolidated companies and startups alike—are investing in mobile networks. One example is **Nokia's** acquisition of a social network that uses geolocation to connect people. However, the monetization of these investments is a question that has yet to be resolved, as we will see in Chapter 8.

¹⁷⁹ Mobile Social Computing Adds Trust to Marketing. Social Computing Goes Mobile. Jaap Favier. Forrester. January 2008.

¹⁸⁰ Facebook: www.facebook.com.

¹⁸¹ Veeker: <http://veeker.com/>.

5.5.2. Some companies operating in the mobile social networks area

In the United States, **Loopt** enables a personal location to be shared with friends and an alert signal to be sent when one of them is nearby.

Newcomers like **Aka-aki** host a social network that not only includes standard features of these communities such as writing blogs, but also offers services such as the geolocation of users.

In order to facilitate access, MySpace has launched MySpace Mobile, an integrated application that allows content to be personalized and photos to be immediately uploaded using the iPhone.

Jaiku¹⁸² is the name of a social network and a microblog based in Finland. It is a completely free service allowing all sorts of comments to be published, from the Internet or a Nokia S60 telephone. It is a similar page to Twitter, which provides continuous contact with friends and is also a way to meet new people. Due to its success after its launch, it was purchased by **Google** in 2007.

ShoZu¹⁸³ is a site that gives users the opportunity to connect from their mobile device in order to publish or edit multimedia content on their favorite social networks from a single site that supports the most important networks such as Facebook, Photobucket, Picasa, Flickr, YouTube, Blogger, LiveJournal, WordPress and Twitter.

GoLoco¹⁸⁴ is a social network that tells users when the members of the social network are going to a specific place. It thus promotes face-to-face meetings and even encourages journeys as a group, with the consequent reduction in transportation costs. For example, establishing a social network of a company's employees would provide information on their routes from their homes to the job site, making it possible to form groups and share travel costs.

Finally, Zipito¹⁸⁵ is a community that enables users to keep up to date with their friends' plans and join them if they want to. Access is offered via Internet or by mobile handset, and automatic responses to plan updates can be generated.

5.5.3. The opening of mobile social networks

Despite the mobile industry moving towards an opening, access to customers is still controlled by the operators and the manufacturers of devices. It is they who determine the features and the applications that handsets will include and the services than can be used. This forces the social networking companies to form alliances and reach agreements with them in order to ensure user awareness. This is true of Kyte¹⁸⁶, a mobile social network that has formed an alliance with **Telefónica**, **NTT DoCoMo Japan** and **Nokia**, in order to launch its mobile network onto the market.

However, the road to a gradual opening does not exclusively involve alliances. Instead, it is necessary to break down the existing technological barriers in or-

¹⁸² Jaiku: <http://www.jaiku.com/>.

¹⁸³ ShoZu: www.shozu.com.

¹⁸⁴ GoLoco:
<http://www.goloco.org/greetings/guest>.

¹⁸⁵ Zipito: Zipito.com.

¹⁸⁶ Kyte:
<http://www.kyte.tv/home/index.html>.

der to create systems that are compatible between all suppliers, devices, applications, operators and networks.

The Open Mobile Alliance (OMA)¹⁸⁷ lists the following **barriers** to opening:

- The existence of multiple networks and devices, as well as different locations, makes standardization and the interoperability of mobile social networks difficult.
- The convergence of fixed and mobile networks also hinders this opening. A social network must be accessible from anywhere and using any device, whether fixed or mobile, making it a unique global network.

The case of **Google**¹⁸⁸ is evidence of the desire for standardization in the market. Google launched an initiative with the aim of making it easier for developers to create applications, by establishing common standards for various social networks: Friendster, Hi5, LinkedIn, Ning, Plaxo, Viadeo and Oracle Friends and its own social network Orkut. This application gives access to the basic functions of a social network, such as information about users, their friends or social network, and their activities.

Once these barriers are overcome, the increased use of mobile networks as a consequence of the opening will have a positive impact on all participants in the sector:

- The **mobile operators** will benefit from the use and movement of data that all the communities generate and manage, even by means of establishing subscriptions with a monthly fee.
- **Companies in all sectors** will be able to sponsor special interest communities related to their brand or services, and identify market niches which guarantee the effectiveness of marketing campaigns.
- **Advertisers will be able to target a larger number of communities at a lower cost, and spending less time.** The definition of single parameters will enable campaigns to be launched in several communities with no need for adaptation. This will lead to savings in terms of finance and time, which can be invested in designing new campaigns.

5.5.4. How to design a successful mobile social network

In order to succeed in this sector, it is necessary to design the service by taking into account the objectives of users and to define the best technology that will help to reach them:

- **Consider the mobile social network strategy.** It is necessary to define what type of mobile network—a blog, wiki, social network, etc.— is the most suitable. Forrester¹⁸⁹ recommends a four-step method, known as POST, for defining a network strategy. POST stands for: people, objectives, strategy and technology.

¹⁸⁷ OMA:
<http://www.openmobilealliance.org/>.

¹⁸⁸ Google: www.google.com/.

¹⁸⁹ *Mobile Social Computing Adds Trust to Marketing. Social Computing Goes Mobile.* Jaap Favier. Forrester. January 2008.

- **Include geolocation as a feature that provides value for the user.**
- **Identify the value proposal for the customer that sets the mobile social network apart from those belonging to competitors.**
- **Design the application with the user in mind.** As the majority of users belong to generation Y, producing a design aimed at young people would be a good idea.
- **Link the mobile social network to others that already exist on the fixed Internet.** Success does not lie in limiting the network to a single channel, but in combining the Internet and the mobile, so that it is possible to generate a global network.
- **Be sparing with the information the user receives on the mobile.** Constantly sending updates, notifications and alerts to a mobile may put users off. This means that it is necessary to offer the option to configure and personalize the information they wish to receive.

5.6. Entertainment on the handset

The FTF experts analyzed the type of services that will be most successful in the short term, and concluded that the use of leisure services on mobile devices will be lower than those of information and control, or communication (see Figure 34).

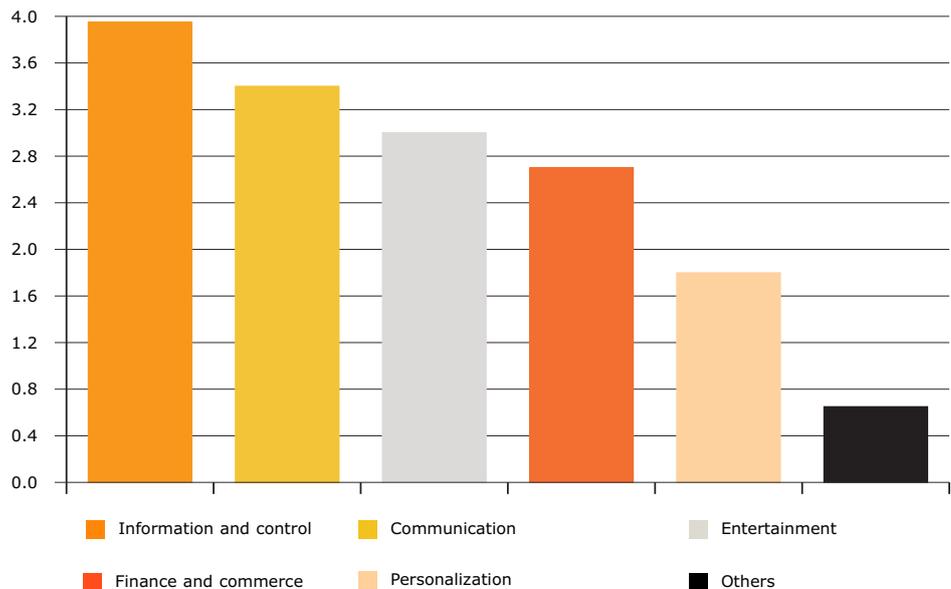


Figure 34. Types of applications that will be most successful in the short term.
Source: drawn from the conclusions within the Future Trends Forum.

We will now look at the current state and trends of the most in-demand services in the mobile leisure area.

5.6.1. Games and entertainment just a thumb tap away

Innovation is transforming the nature of games available on mobile devices. In the near future, games will be played not only with the telephone keyboard, but the latest developments will also include the use of the touchscreen, camera and microphone, mixing the real and the virtual worlds together. The latest devices will make the mobile into a control, like the Wii, with an accelerometer for racing cars or for recording movements. Games like Brain Genius¹⁹⁰, 3D Tilt-a-World¹⁹¹ and Foto Fighter include use of the camera to give them a new dimension.

Games on mobile devices, like other types of content, have so far been used by those that download them onto their devices. The number of downloads on mobile handsets increased by 17% between March 2007 and March 2008 (according to M:Metrics¹⁹²).

However, the nature of this usage is changing and consumers are demanding interrelational games that enable them to come into contact with other players all over the world and which require no additional payment. As devices start to include GPS systems, games will be able to involve hundreds of players located around the user, transforming the real world into a virtual world.

Although these figures seem to indicate an increase in the use of more complex or sophisticated games, the fact is that users' time is limited, which is why industries like **casual gaming** or those promoting well-known games are enjoying a great deal of success.

Market opening and mobile games

In the field of mobile games, the **objective of opening** the market is to guarantee that the highest number of games is available for the highest number of platforms and operators. To do so, it is necessary to guarantee that each platform, game and service meets a range of global standards.

With this in mind, the **OMA** (Open Mobile Alliance) has developed a series of standards, adapted to the characteristics of **portability** and **interoperability** and to the suppliers' certification procedures, which encourage the adoption of standards and guarantee an open environment for the development of games.

The desire of those in the market for its opening and standardization can be seen in initiatives such as the **Mobile Game Interoperability Forum (MGIF)**, a discussion forum created by **Ericsson, Motorola, Nokia** and **Siemens**, which is responsible for defining the interoperability specifications of games for mobile handsets.

¹⁹⁰ Brain Genius:
<http://www.glu.com/noram/pages/product.aspx?pr=Brain+Genius>.

¹⁹¹ 3D Tilt-a-World:
<http://www.tilt-a-world.com/>.

¹⁹² Fierce Development.
28/05/2008. Article: "Mobile gaming: turning enthusiasm into revenues."
<http://www.fiercedev.com/story/mobile-gaming-turning-enthusiasm-revenues/2008-05-28>.

The **operators** must promote affordable prices which make the new advanced and interactive games affordable for consumers. They must also promote land-line-mobile convergence in order to establish networks among users connected to their PC and among those connected to their mobile. The role of the **device manufacturers** is also crucial for handsets being able to support the necessary technology. **Telefónica** has launched the zeemote joystick, which turns the mobile handset into a pocket video console¹⁹³.

The benefits of the opening and standardization of these services for the various industry players will be:

- **Game developers** will immediately benefit from the increase in their customer base and savings on time and development costs, which will help drive innovation.
- **Content distributors** will be able to sell their content directly to users, without having to go through the operators. As progress is made in Internet connection via mobile devices, subscribers will use search engines to access games, which will encourage content distributors to directly target the end consumer instead of going through the operator's portals. An example is the case of **Gameloft**¹⁹⁴, which has created an iTunes-style application for discovering new games, watching demos, carrying out trials and downloading them onto the device. **Nokia** already has its own online platform for selling multimedia files.
- **Service providers** will have more opportunities for choice, as the games will work on any platform.
- The **manufacturers** will be able to include more and better games on their devices, which will increase their commercial appeal.
- **Consumers** will be the main beneficiaries, being able to choose from a wider range of games and more interactive content using any device, regardless of their operator.

Other successful cases in the games area

Digital Legends¹⁹⁵ has been committed to the mobile entertainment industry since 2001. Its team has developed a powerful and varied platform that has enabled it to create 3D video games for mobile devices, adapting both the technology and the processes of the PC and the console to the mobile.

Since 2005, **Nokia** has become a benchmark in the distribution of games thanks to its N-Gage platform which is noted for its high level of quality, its distribution alternatives and its range of casual games.

¹⁹³ Mundo Gamers. 29/09/2008. Article: "Telefónica lanza en exclusiva el nuevo Joystick Zeemote." <http://www.mundogamers.com/ngage/noticia/6847.html>.

¹⁹⁴ Gameloft: <http://www.gameloft.es/>.

¹⁹⁵ Digital Legends: <http://www.digital-legends.com/>.

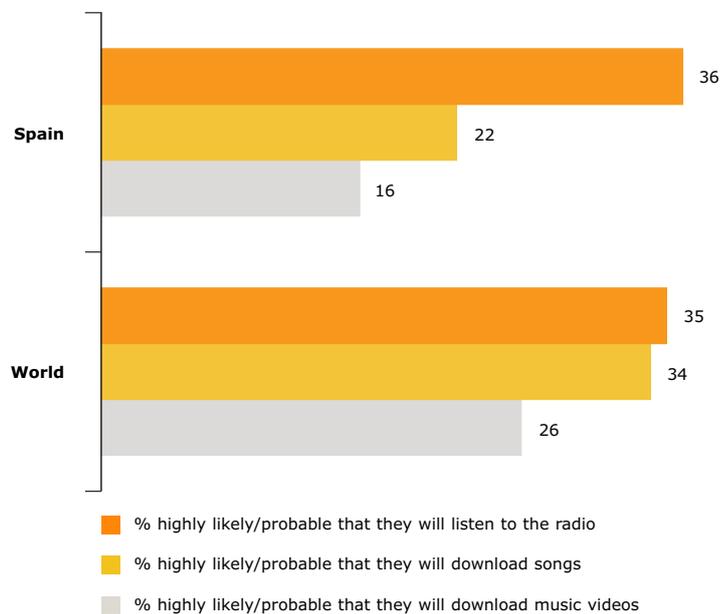
5.6.2. With your headphones on: music on mobile devices

Music is another form of mobile entertainment with a potential appeal. **Music content on mobile devices includes downloading ringtones and music, listening to the radio and watching videos.** The music industry for mobile devices is constantly evolving. Users' opportunities for choice are rapidly increasing, as are the amount of content suppliers and the attempts by companies from other sectors trying to promote and sell music on different platforms and to various consumers.

However, the market has still not experienced all the forecast growth, as there are technological and legal barriers. For this reason, it is necessary to develop adapted devices and establish systems guaranteeing the user's security and content rights.

At present, **live radio and downloading ringtones and songs** are the areas with the highest demand on mobile devices in terms of the number of users, according to the study conducted by TNS Global Technology Insight¹⁹⁶, which also sees the greatest potential for growth in music on mobile devices in FM radio.

¹⁹⁶ *Estudio España Consumo Móvil*. TNS Global Technology Insight. November 2006.



Based on: Non-users of these services.

Figure 35. The growth of radio on the mobile handset.
Source: TNS Global Technology Insight.



New projects are emerging in this area, such as **Visual Radio**, a service that allows users to listen to any station, as well as providing access to a visual and interactive channel, which offers more information and opportunities to participate and comment.

As regards the use of this type of content in Spain, a study conducted by the consulting firm M:Metrics¹⁹⁷ that analyses the use of mobile devices in the European Union and the United States, reveals the surprising figure that Spain in fact leads the way in terms of number of people who use their mobile phone as an MP3 player.

The main factor **limiting the use of music content is price**, though it is not the only factor. The devices are in many cases not suitable, need to include an MP3 player, have a long enough battery life and be compatible with downloading music.

The opening of the mobile music market

The Open Mobile Alliance (OMA)¹⁹⁸ defines a range of criteria that companies must comply with in order to improve the opening of the mobile musical content area. These criteria can be grouped as follows:

- **Security:** in order to encourage music downloads, it is necessary to have systems that ensure the confidentiality of the purchaser and the device, as well as guaranteeing the rights to the contents downloaded.
- **Rights:** it must be possible to establish rights for any type of musical content. There will therefore be content with no broadcasting limits, and other content that will be restricted to a period of time, amount of downloads or a monetary threshold.
- **Invoicing:** providers of these services must have systems that include different payment alternatives, prepayment or payment by purchase made, and which must in turn be compatible with a subscription by one user on several devices.
- **Compatibility:** content downloaded using mobile devices must be compatible for listening on mobile devices or using any other music player, and transferable by means of a Bluetooth connection, without losing the rights acquired as a result of the purchase.
- **Storage and backup:** in the event of handset loss, the suppliers must have a single system to allow all of the content to be restored, including downloaded music.
- **Content management by the user:** users must have the option to delete downloaded content, without losing the rights acquired, and be able to restore them at any other time.

¹⁹⁷ M:Metrics. Press Release. 15/01/2008. "M:Metrics Reports Growth In Mobile Music Adoption." <http://www.mmetrics.com/press/PressRelease.aspx?article=20080115-reportsgrowth>.

¹⁹⁸ OMA. *DRM Requirements*. Open Mobile Alliance. May 2003.

With these measures in place, **users** will have greater data protection security, will be able to organize the content they have paid for (even if they have lost the device), distribute it according to the rights obtained, and manage it. But that is not all: **content providers** will have a system that guarantees the rights of their content and will even be able to establish their own platforms. Meanwhile, **operators** will have a reliable billing system.

Successful cases in the mobile musical content market

NTT DoCoMo¹⁹⁹ and **Napster Mobile**²⁰⁰ have created a service with a monthly pricing structure that is compatible with PCs and wireless devices, which makes complete songs and ringtones available to users.

Musiwave²⁰¹ is a mobile music supplier that offers its content to more than thirty operators in 25 different countries. The company works with music producers, device manufacturers and mobile operators, which has enabled it to develop its business far beyond music distribution, and to focus on personalization, allowing users to create their own music channels.

Some companies currently offer their customers a whole range of entertainment services on their mobile devices. One of these organizations is **Berggi**²⁰², which provides access to downloading videos, images, music, etc., from mobile handsets. It also offers an email and instant-messaging application, which makes it possible for its customers to remain in constant contact, and an Internet search engine and people locator.

The well-known iPhone allows users to enjoy all the contents of their iPod, including music, audio books, audio and video podcasts, music videos, TV programs and films. The iPhone synchronizes its contents with the user's iTunes library on a PC or Mac computer, and can play any music or video content purchased via the online iTunes store.

5.6.3. Television wherever you are

The development of mobile devices and the leveling of standards have made it possible for television on mobile devices to spread to an increasing number of users. It reached the figure of 300,000 mobile TV subscribers in Spain in 2007, according to the annual report from the national Telecommunications Market Commission²⁰³. Despite this, the figures for mobile TV use remain low.

Telefónica and the main cable content supplier have signed an agreement so that films and football can be viewed on mobile devices, which will make Spain one of the first countries where this will be possible.

However, the FTF experts believe that this option is among the four services that will generate the least business opportunities in the medium term (see Figure 27).

¹⁹⁹ NTT DoCoMo:
<http://www.nttdocomo.com/>.

²⁰⁰ Napster Mobile:
<http://www.napster.com/napstermobile/>.

²⁰¹ Musiwave:
<http://www.musiwave.net/>.

²⁰² Berggi:
<http://corporate.berggi.com/web/index>.

²⁰³ "Annual Report 2007."
Telecommunications Market
Commission (CMT). June 2008.
http://www.cmt.es/cmt_ptl_ext/SelectOption.do.

The programs available on mobile TV have so far been selected by the TV channels from among the programs that they consider most interesting. However, according to the results of a survey by Netsize²⁰⁴ in 2008, users prefer more flexible models that allow them to manage the content. This service, instead of being a television schedule in the real sense, consists of downloading content or streaming videos of programs that have already been broadcast.

According to a study conducted by The Cocktail Analysis²⁰⁵, what consumers are most interested in seeing on mobile TV are news programs (see Figure 36).

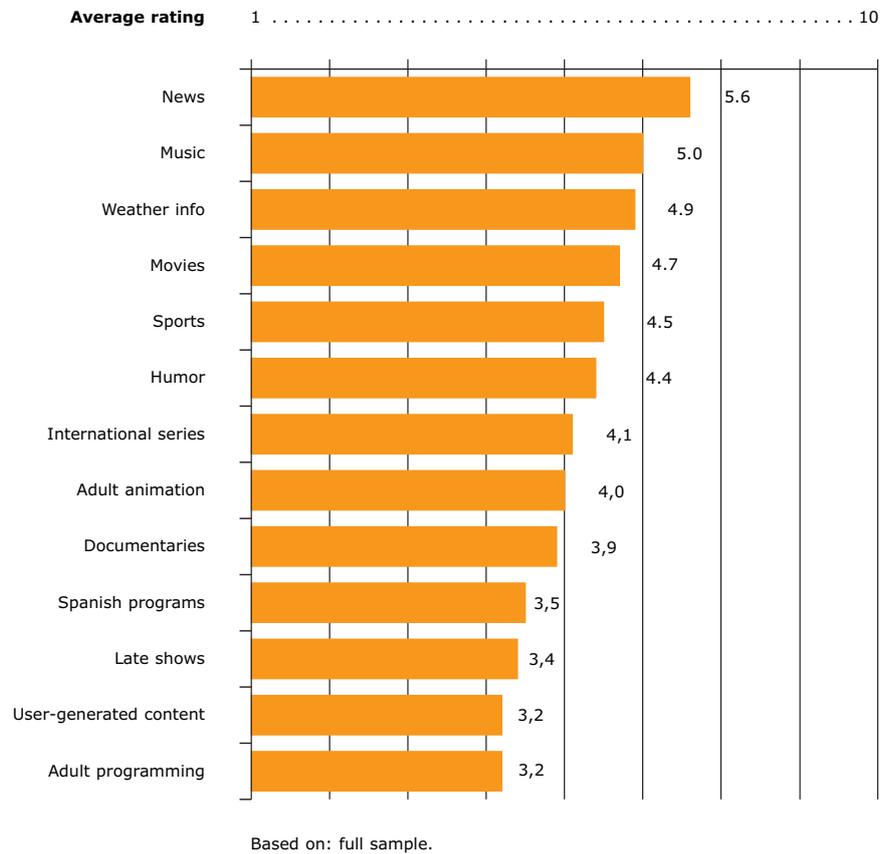


Figure 36. The most interesting content on mobile TV.
Source: The Cocktail Analysis.

²⁰⁴ *The Netsize Guide. Mobile 2.0, you are in control.* Netsize. Paris, February 2008.

²⁰⁵ *Televidente 2.0. Estudio de España sobre consumo de televisión en el móvil.* The Cocktail Analysis. March 2008.

According to the study, only 17% of those surveyed expressed an interest in watching television on their mobile phone when they were at home.

The study concludes that although the operators and content providers want to encourage mobile TV use, the main problem that they face is that users are not interested in it (less than 45% expressed interest).

Despite this, a gradual increase is anticipated internationally during the coming years (see figure 37)²⁰⁶.

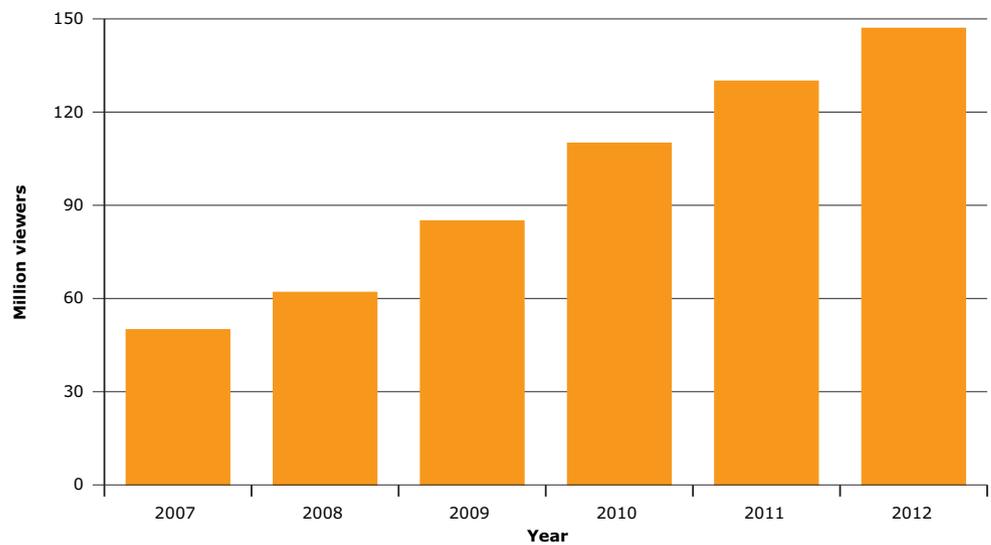


Figure 37. Anticipated increase in mobile TV viewers.
Source: Survey conducted by VAS Research.

In order to open up mobile TV services to the largest number of consumers, all the players in the mobile market must work together to mitigate the negative effects of:

- **Price established by the operators.** Current pricing models will be the main restriction on the use of television on mobile devices, due to users having the feeling of losing control over their expenditure and being unwilling to pay for something that is free at home. The operators must establish flat-rate subscriptions that give back the feeling of control to the consumer.
- **Technology standards.** There are currently nine types of technologies distributed all over the world. The challenge for the sector is to standardize them in order to facilitate visualization of content by all users, with the lowest adaptation cost. In November 2007, the European Union accepted the DVB-A standard for the broadcast of mobile TV, which came into effect in Spain in March 2008, although other technologies may be accepted by each member state. In other regions, such as in China, which has five standards, standardi-

²⁰⁶ *Mobile Television: The Emergence of a Personal-Mass Media Platform.* Sylvia Chan-Olmsted. Professor and Associate Dean for Research Department of Telecommunication College of Journalism and Communication. May 2008.

zation remains a slow process. This is delaying the spread of mobile TV. **NextWave**²⁰⁷ has developed integrated solutions for television using UMTS and WiMAX, which aim to cut costs for operators and improve profitability.

- **Regulation.** Although the television operators will simply require prior administrative authorizations, it will be necessary to distribute the frequencies on which television will be broadcast. Meanwhile, the fact that the service is new means that governments must consider a number of issues that guarantee consumer transparency and security: should mobile TV be regulated in the same way as traditional TV? How will the convergence between the wireless and television sectors be regulated?

Mobile videos

An analysis by the consulting firm Frost & Sullivan²⁰⁸ showed that mobile video services have enormous growth potential, which makes them applications that are certain to create alternative sources of revenue for the operators.

However, for this to happen, an astronomical investment is necessary to adapt the content to mobile format, which could lead to a decline in ARPU (average revenue per user). If operators want to increase the use of mobile video, they should offer more free content, as the limitations of these devices, such as size and duration of content, do not encourage the purchase of films.

An example of an entrepreneurial company in this area is **ComVu**²⁰⁹, which sells a video broadcasting service on the Internet (webcasting) from mobile devices (mobile webcasting). The Livecast software enables videos to be watched while they are downloading, i.e., without waiting, which can be done anywhere and at any time using a mobile device or PC. Livecast provides a simple and straightforward way of recording and sharing videos.

Successful cases in mobile TV

The iPhone, a success in the area of mobile TV use, is going to become an essential device in driving up the use of videos and television on mobile handsets. The factors behind the success of the popular telephone are its technical specifications (more internal memory than other handsets and low battery consumption), access to a wide range of TV and video content via iTunes, and its high-quality panoramic screen.

Hungama Mobile²¹⁰ has developed software that allows films produced in Bollywood to be viewed on a mobile device²¹¹, thanks to a decrease in quality, which allows the contents to be watched without taking up too much space on the device. This alliance will enable agreements to be established to distribute content directly onto the memory cards of device manufacturers. Films are also available on mobile portals such as the one of Hungama (Indianfm.com).

²⁰⁷ NextWave:
<http://www.nextwave.com/>.

²⁰⁸ IHS. 20/08/2008. Article:
"Frost: El Crecimiento de Servicios de Contenido Móvil Aumentará el Ingreso Promedio por Usuario de Operadores Móviles Latinoamericanos."
<http://mexico.ihs.com/news/2008/frost-movil-contenido-ingreso-usuario.htm>.

²⁰⁹ ComVu:
<http://www.comvu.com/>.

²¹⁰ Hungama Mobile:
<http://www.hungamamobile.com/>.

²¹¹ Bollywood:
<http://www.bollywoodworld.com/>.

The international association of mobile operators **GSMA**²¹², and the Company **Mofilm**²¹³, which specializes in distributing short videos and film content for mobile devices, presented a sample of short films at the Barcelona Mobile World Congress (MWC) which included new films from film festivals including Cannes and Sundance. More than 16,000 copies of five short films produced especially for congress visitors' telephones and mobile devices were distributed to those at the MWC, which they were able to download using Bluetooth, memory cards, an SMS service and touchscreens.

5.7. Manage your travels on the go

Organizing a trip for business or pleasure can create many a headache, for both the end user and the company or travel agency hired to do it (purchasing tickets, reserving hotels, coordination of schedules, etc). This could be easier in the near future, as it will allow those making trips to download all the services directly onto their mobile handsets. In the future, this channel will enable **any transport-related procedure** to be dealt with:

- The **airlines** have developed services for mobile devices including: real-time air-traffic information, updated departure and arrival times, flight reservations, automatic check-in, boarding and payment. Some Spanish companies have already started to implement these services: **Spanair**²¹⁴ offers the electronic boarding card, which is sent to mobile handsets, and has installed machines for scanning and printing the code. **Iberia**²¹⁵ confirms the arrival and departure times of its flights by sending SMS. Meanwhile, mobile handsets used as personal flight organizers can also store boarding passes, information for checking on luggage and payment details; in short, air travel without any paper involved. In the future, it is anticipated that mobile devices will be used to store visas and biometric data for identifying passengers.
- Mobile tickets use bar codes that are sent to the handset and which turn the telephone into an **electronic ticket**, giving the user access to various means of transport (trains, ships, airplanes or buses), and to cinemas, gyms, spas, etc. The **EMT** (Málaga Transport Company)²¹⁶, in cooperation with **Telefónica Móviles** and **BBVA**, has pioneered the implementation of the mobile bus pass.
- Thanks to **location-based systems** (see section 4 of this chapter), businesses and families can locate their traveling employees or relatives at any time. Meanwhile, users can receive information about tourism and items of specific interest depending on their location. The Department of Tourism of the Canary Islands Government has launched the Cicerón project, which informs tourists about their holiday destinations via mobile phone. Users have access to information in four languages about 56 sites located in 23 towns on the islands. A similar project has been undertaken in Jerez. It involves a mobile-based guide system, which tourists can download using Bluetooth, to see the city's tourist attractions and hear commentaries about them²¹⁷.

²¹² GSMA (Mobile World Congress): <http://www.mobileworldcongress.com/>.

²¹³ Mofilm: <http://www.mofilm.com/>.

²¹⁴ Spanair: <http://www.spanair.com/web/es-es/spanair-mobi/>.

²¹⁵ Iberia: http://www.iberia.com/OneToOne/v3/program.do?prgOid=536886543&tabId=3&menuId=06050000000000&language=es&country=ES&market=ES&IS_ANONYMOUS=true.

²¹⁶ EMT (Málaga Transport Company): <http://www.emtmalaga.es/portal/pa/ge/portal/EMT/ServiBusMovil>.

²¹⁷ Diario de Jerez. 26/09/2008. Article: "Jerez, más turística gracias al móvil." <http://www.diariodejerez.es/article/jerez/238790/jerez/mas/turistica/gracias/movil.html>.

- **Use of mobile handsets as hotel keys or boarding passes:** it is possible to use mobile devices as hotel room keys using bar codes sent by MMS, which improves customer service.

²¹⁸ *What's Holding Back Mobile Services In US Travel?* Sarah Rotman Epps, Henry H. Harteveltd, Charles S. Golvin and Scott Wright. Forrester. December 2007.

²¹⁹ *Travel eBusiness Execs: Focus on Mobile Data Now. Mobile Data Creates a New Way to Distribute Travel and Engage Travelers.* Henry H. Harteveltd, Carrie A. Johnson, Charles S. Golvin, Niek van Veen, and Brian Tesch. Forrester. May 2007.

5.7.1. Figures and forecasts for use of travel services on mobile devices

In an environment like mobile data services, which is still taking shape, the development of travel services using these devices has yet to even scratch the surface of its potential. According to the study by Forrester²¹⁸ on Mobile Travel Services in the United States, in September 2007, only 8% of passengers had used a mobile phone for activities related to these services. According to Forrester²¹⁹, users are mainly interested in being able to check in for their flights (see Figure 38).

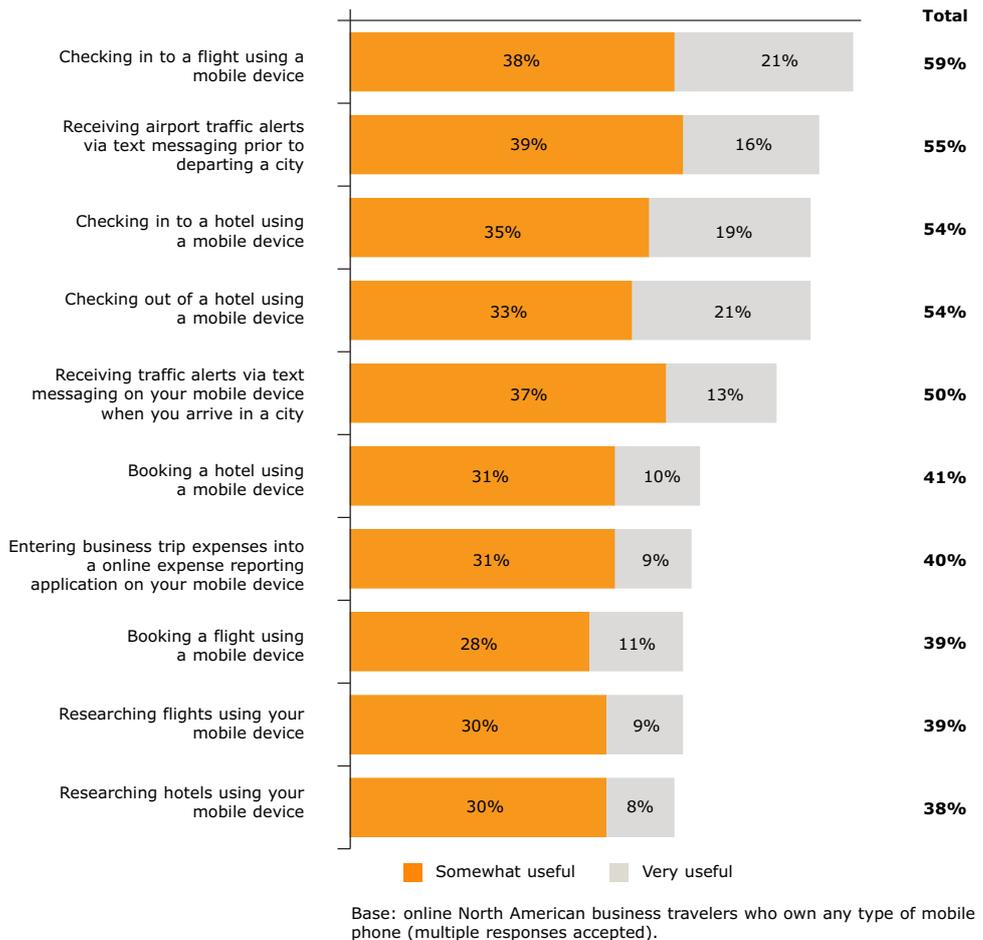


Figure 38. Most useful travel applications on mobile phones. Source: Forrester's NACTAS Q4 2006 Survey.

Barriers to the expansion of these services include users' reluctance to pay from their mobile phone, which is the case nearly 50% of the time, according to the survey conducted by North American Technographics²²⁰. 40% of those surveyed said that their handset screen is not big enough to see this information properly, and 30% said that access to the Internet from their device is slow. Another of the reasons mentioned for not using it is a lack of confidence in security when making payments or unfamiliarity with the mechanism being used.

The **launch of flat-rate subscriptions by the operators and improvement of the devices' usability and data transmission, which will be a result of the opening**, will therefore have a positive effect on the use of this type of services.

The **key factor** in the expansion of travel services for mobile devices is the development of applications and services that the user cannot access from a computer, such as check in/out for airplanes, hotel rooms, etc. It is also extremely important to understand that taking advantage of all these possibilities offered by mobile travel management does not involve optimizing the websites of airlines, hotel chains or travel agencies for mobile handsets, but instead developing "mobile sites" which enable users to carry out new procedures.

5.8. Warning: mobile devices may be seriously beneficial to your health

Mobile devices have always helped people stay in touch. However, their current function is more extensive, as they now play a role in healthcare. Today, devices provide solutions for long-distance monitoring of the progress of at-risk patients (in some cases of asthma, diabetes, heart problems, etc.) or elderly people.

The objective of **telemedicine** is to check on the state of patients once they have left hospital, so that they can live a normal life. The main beneficiaries of this technology will therefore be the elderly or those with chronic diseases.

It is operated by means of sensors that detect possible variations in established parameters (for example, a fall sensor for elderly people, measurement of heart rate, blood sugar levels, etc.), and activate an alarm that sends a signal to the hospital, in order to take the necessary preventive measures. Location-based systems are essential in this field, as they enable the patient's location to be pinpointed exactly, with no need for the patient to provide this information.

The spread of this type of services to a larger number of consumers will provide clear **benefits** for both patients and doctors, and for the healthcare system and the telecommunications sector. The opportunities increase exponentially when developing countries are taken into consideration (see Chapter 7).

Mobile technology will benefit **patients** by automatically sending emergency calls to the hospital and sending the documentation that enables them to be ad-

²²⁰ Forrester's North American Technographics® Consumer Benchmark Survey, 2007. Charles Gorvin. Forrester. October 2007.



mitted immediately, which will lead to enhanced monitoring of their illnesses. It will also allow for payments to be made for medical services using the handset or the Internet.

Healthcare personnel will have easier access to the stored information on the patient's health insurance and medical records thanks to mobile technology, which will also make communication between the patient and doctor possible in real time. It will also facilitate the adoption of new information systems for carrying out new medical studies.

5.8.1. The opening of the market and its impact on telemedicine

The objective in the telemedicine field is to achieve distribution of a single technology that is the same for all patients. To do this, it will be necessary to make systems that are easy to use and mobile, while providing the necessary functionality and the ability for two-way communication between patients and medical centers.

The Center for Cell Phone Applications in Healthcare (C-PAHC) division of **Medical Records**²²¹, has been developing this type of medical system for more than 25 years. They are trying to promote continuous care, supported by a system that contains the patients' records, and information on their health insurance. Another of their objectives is to achieve interoperability between mobile devices, so that they can connect to each other and improve communication between patients and medical centers. In addition, they want to provide patients with a tool that enables them to handle all the aspects related to their illness and to have a mobile documentation system.

However, in order to turn mobile devices into telemedicine devices, a number of conditions are necessary:

- There must be a universal platform that allows any type of mobile phone to be used, and cooperation among all the mobile operators in the geographical area.
- Guaranteeing information security.
- Usability of mobile devices.
- Software developers must design attractive solutions that benefit patients and doctors.

If all these conditions are met, the development of telemedicine is likely to increase significantly. Some forecasts suggest that more than ten million users may have access to basic applications by the end of 2009.

However, for all this to take shape, progress is needed in the development of **sensors** that can measure blood pressure, temperature and heart and respiratory rates, among others. It is also necessary to develop electronic media for data processing and guarantee access to telecommunications networks, using either standard Internet or wireless services.

²²¹ Medical Records:
[http://www.medrecinst.com/cell
phone.](http://www.medrecinst.com/cellphone)

5.8.2. Some telemedicine success stories

The **University of California** has developed an application for mobile devices that adds a microscope function and enables them to identify the parasite that causes malaria, send the information over the Internet and provide a diagnosis in real time.

Mobile operator **Verizon**²²² modified the 5200 model of **LG**'s mobile handset to provide a service that measures blood sugar levels. The Glucophone performs glycemia analysis and stores the results in a database on the phone as well as an online disease control center.

Nokia²²³ and **Roche Diagnostics**²²⁴ have developed an application for monitoring patients with diabetes using the mobile phones. It is a solution that combines the Internet and wireless services, using software that enables these patients to be connected with healthcare professionals at all times. This application is currently available in around 40 hospitals and more than 150 patients are participating.

Gentag²²⁵ has developed a technology for mobile handsets that uses radiofrequency waves and wireless technology to read the user's sensor information. The company has focused on the development of applications related to healthcare, so that users can use their telephone as a temperature gauge. For example, this enables parents to keep a remote check their child's temperature, or to use it as a sensor to check blood sugar levels, cardiac activity and the ultraviolet rays to which the user is exposed. **Gentag** is developing the technology that will be used in the future to make mobile handsets act as carbon monoxide sensors.

XVivo²²⁶ is an animation company that works in the health sector and anticipates a future in which mobile systems will be used by pharmaceutical companies to show how a medical prescription affects a patient's body. Furthermore, thanks to intelligent robots, it will be possible to detect wounded troops in the army, retrieve them wherever they are, analyze the seriousness of their condition, carry out a scan and compare it with another normal one from the same patient, in order to detect and cure wounds.

The **Xanit International Hospital**²²⁷ has implemented monitoring systems for its patients with pacemakers and defibrillators that can undergo an implant, which consists of a handset that gathers information from these devices at a set time and automatically sends it to the doctor. The doctor receives this data via email, fax or SMS on their mobile handset.

The **MobiHealth** project²²⁸ has developed the teletrauma system based on 3G technologies. Its functions include the possibility of treating pregnant women, thanks to several sensors that register parameters such as the heartbeats of mother and child, intrauterine activity, etc. All of this information is sent to the hospital, which makes remote monitoring possible.

²²² Verizon:
<http://www22.verizon.com/>.

²²³ Nokia: <http://www.nokia.es/>.

²²⁴ Roche Diagnostics:
<http://www.rochediagnostics.es/>.

²²⁵ Gentag:
<http://www.gentag.com/>.

²²⁶ XVivo: <http://www.xvivo.net/>.

²²⁷ Xanit:
http://www.xanit.net/detallenotas_prensa.php?idNotasPrensa=47.

²²⁸ MobiHealth:
<http://www.mobihealth.org/>.

5.9. Conclusions about the range of mobile services for consumers

The declining value of voice services is forcing the sector to focus on **data services**. Of all these, the FTF experts anticipate the greatest success for location-based services, which allow for the identification of users and personalization of the range of services, as well as mobile social networks, which add a new dimension to social relationships. There is a very wide range of existing data services, including m-banking, m-payment, interactive games, music, travel services, medical applications, etc. However, there is still a long way to go in terms of innovation and adaptation to customers' needs.

Indeed, these services are at a very early stage and have yet to take off as anticipated, due to reasons that are highly varied but present across the board, namely: the diversity of standards, the fragmentation of devices and their technical limitations, the reduced spectrum, the underdevelopment of applications and platforms, the shortage of affordable prices enabling users to monitor their expenditure, and the lack of confidence due to the insecurity of mobile networks. These are among the major challenges currently facing the sector.

How this situation evolves will depend to a large extent on the gradual opening of the market. On one hand, users do not perceive any added value in the new services offered by operators. As such, not only is there a need to clarify the value added, but also to offer new personalized services and location-based services and to develop specific content for this field. On the other hand, users are not being offered alluring prices that encourage the use of data services; in fact, they have no clear pricing systems that allow them to keep tabs on their expenditure. Finally, it is necessary to ensure mobile users' security and privacy, in order to win their trust and encourage the progress of services such as m-commerce and m-banking.

For emerging countries, this market opening is crucial as their mobile handsets promise to bridge the digital gap and include them in the Internet revolution. However, many of these countries do not even have access to networks or electricity, which means that the first step must be to create stations with renewable energies (wind power, solar power, etc.) that are able to boost development.

6

Chapter 6

Applications of mobile products and services in traditional businesses

6

Applications of mobile products and services in traditional businesses



The mobile world is moving inexorably towards an increased openness that will benefit all those who are able to adapt to this new landscape, and consumers in particular. As consumers with a high level of expenditure and use of applications, companies will find products and services that are more suitable for their needs.

In fact, they are expected to benefit from higher data transfer speeds, increased bandwidth and innovative business-oriented services provided by operators and third parties. Furthermore, forecasts say that improvements in wireless networks will finally lead to standardized and more reliable wireless access to a vast amount of business applications from mobile devices.

In specific terms, companies in all sectors will be able to enjoy **numerous advantages in their business processes**. The FTF experts believe that the opportunity to personalize the range of products and services thanks to wireless technology will have the greatest impact, followed by the mobility that it will give employees.

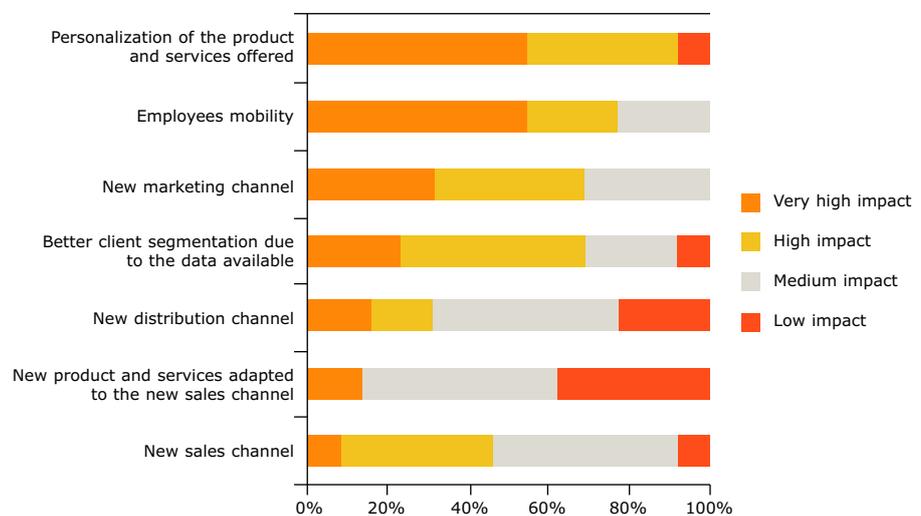


Figure 39. Impact of mobile technology on traditional companies. Source: drawn from the conclusions within the Future Trends Forum.

The opening of the market will create a virtuous circle of benefits for businesses. It will encourage innovation and the development of business services, which will increase the use of mobile solutions by companies, which will in turn boost innovation and the creation of new services. In the final analysis, this situation will increase the pressure being put on operators to open their networks and facilitate this process.

The FTF experts analyzed the barriers that are limiting the use of mobile solutions by businesses, and came to the conclusion that the main limitations are the failure to meet the expectations generated by the services, and concerns over security, usefulness and complexity of use.

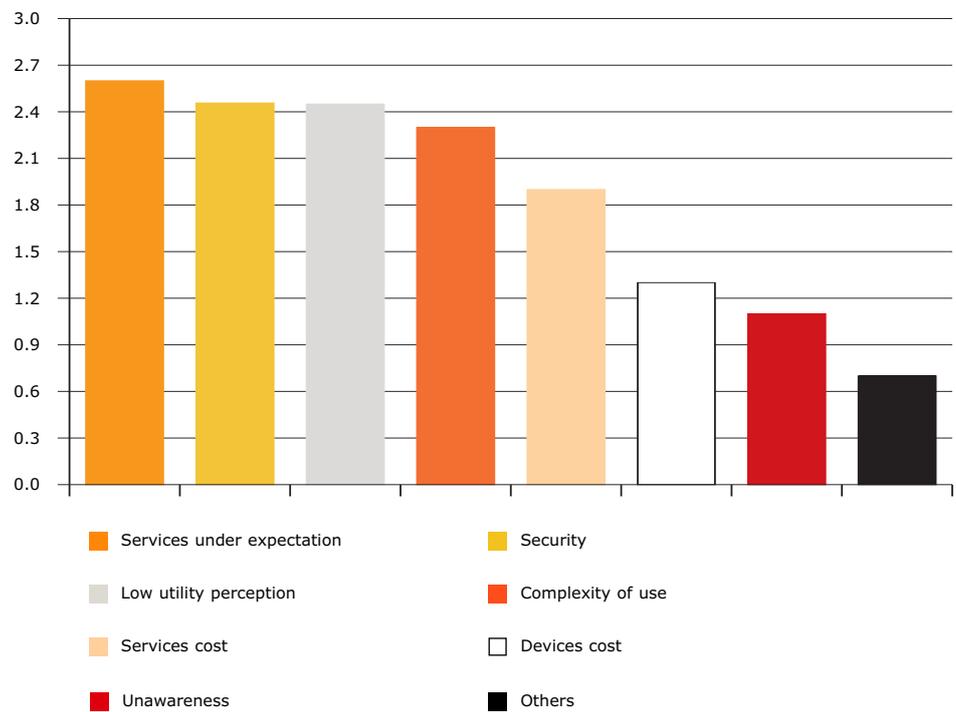


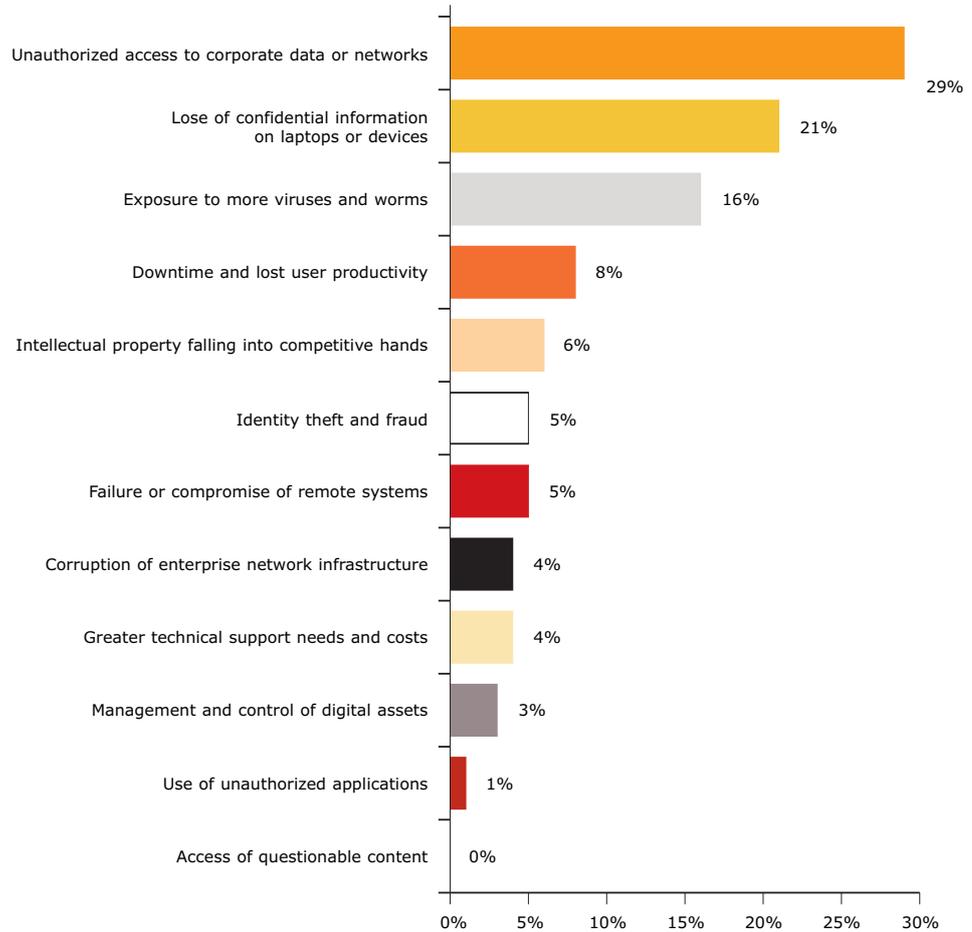
Figure 40. Barriers to the adoption of mobile solutions by businesses.
Source: drawn from the conclusions within the Future Trends Forum.

The market opening means that it is foreseeable that these barriers will come up, at least partially, and that use by businesses will increase.

6.1. Privacy and security of information—an essential factor

As the FTF experts pointed out, concern for privacy and information security is limiting the use of mobile solutions by businesses. According to the study conducted by Remote Revolution Studio²²⁹ (see Figure 41), managers feel that the greatest risk in the business area is unauthorized access to the company’s information or its networks, and the loss of confidential information stored on devices or possible exposure to viruses.

²²⁹ Uptime Issues, Implications & Imperatives in the Mobile Workforce. Remote Revolution Studio. December 2005.



Sample: 406 executives from companies in different sectors.

Figure 41. Risks of increased employee mobility and remote access to data. Source: Remote Revolution Studio.

Businesses are also affected by customers’ reluctance to make purchases using their mobile devices. According to a study conducted by Forrester²³⁰, their greatest concern is due to the possibility that their data may be distributed without their prior consent, followed by privacy and the loss of a mobile device containing sensitive information. Only 20% are unconcerned about security on mobile devices.

6.2. Nomadic employees need mobile companies

The FTF experts concluded that the mobility being offered by mobile solutions to corporate employees is one of the factors that will have the most impact on their

²³⁰ US Mobile Commerce 2007: Low Reception. Tamara Mendelsohn. Forrester. March 2007.

business (see Figure 39). More than 77% of them thought that employee mobility will have a high or very high impact on businesses.

According to Accenture²³¹, mobility in business can be defined as the capacity to “capture and deliver information at the point of activity.” This is particularly relevant in a world in which it is estimated that 40% of the workforce is mobile (according to a study by The Yankee Group²³²) and opens up significant opportunities for businesses that are able to provide a response to the needs of these groups. Furthermore, it is a trend that is on the increase, meaning that remote work—or telecommuting—will be increasingly common.

In this context, businesses must provide their employees with access to information from anywhere on the planet, thereby becoming not only mobile organizations, but also spaces for virtual collaboration. In this respect, the development of new applications and services that will be boosted by the opening of the mobile market will benefit all sectors of the economy.

Thanks to their ubiquity, mobile devices are the main means for extending a business beyond the office walls, by providing employees with access to applications and to the Internet from their handsets. An organization interested in providing mobility to its professionals should give them access to their email, their schedule, information about the company and the company’s systems, without compromising security.

This mobility in turn makes remote management of the company’s workforce possible, as well as quick and efficient distribution of information to its professionals.

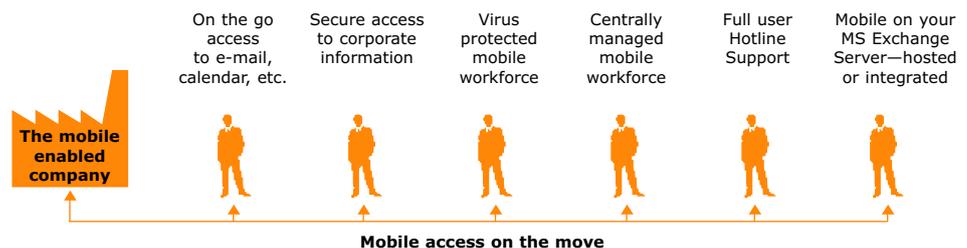


Figure 42. Mobility in the workforce.
Source: The Mobile Enabled Company (<http://www.themobileenabler.com/>).

²³¹ Accenture Mobile Technology Solutions: High-performance mobile solutions for the workforce on the move. Accenture. 2006.

²³² Yankee Group Survey Results Offer a Fresh Perspective on Enterprise Mobility Strategies. Yankee Group Research Inc. November 2007.

As regards the factors that will motivate businesses to adopt mobile solutions, the FTF experts consider that the main aspect will be the opportunity to give employees access to the company’s applications from their mobile devices (see Figure 43).

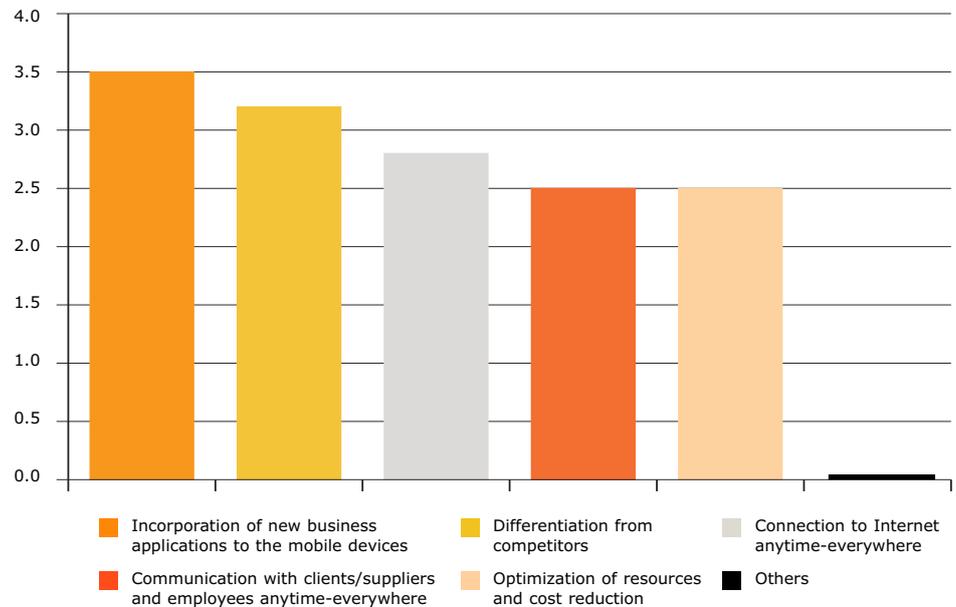


Figure 43. Factors motivating businesses to adopt mobile solutions.
Source: drawn from the conclusions within the Future Trends Forum.

Businesses are working towards supplying the people in their organization with the applications that are most useful to them. According to The Yankee Group²³³, the three main applications are grouped around project management tools (45%), content management tools and service automation tools (44% each).

Although email is an essential application for businesses, the study reveals their preference for investment in vertical applications that boost the productivity of each functional group. As a result, the use of Web 2.0 applications is spreading (see the VIII publication by the **Fundación de la Innovación Bankinter**), although it is difficult to integrate these applications into business infrastructures.

²³³ Yankee Group Research Inc.: *op. cit.*

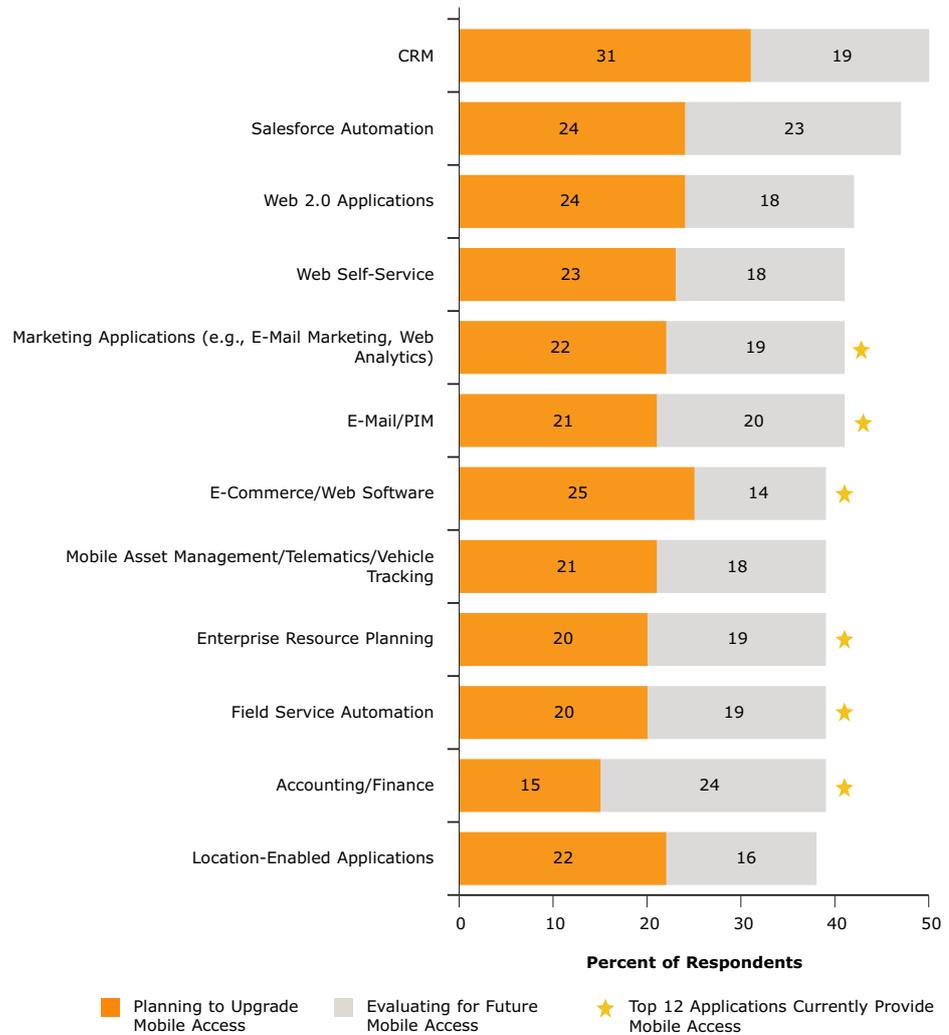


Figure 44. Applications to be given mobile access by companies in the near future. Source: Survey conducted by The Yankee Group.

These applications provide professionals with access to their company’s systems anywhere and at any time, improving their efficiency and becoming a differential value compared to the competition. An example is the case of **Torres Import**²³⁴, which has developed an application for the mobile devices in its sales network that allows orders to be placed directly from the handsets and gives database access with information about customers, prices and offers, all of which is updated in real time. This makes it possible to look up and schedule customer visits using the handsets, as well as managing the expenses for each visit. This is also a differential value for the customers, as they can find out whether the product required is in stock and make the decision to purchase immediately.

²³⁴ Torres Import: <http://www.torresimport.com/>.

6.2.1. Benefits of mobility in the business field

The deployment of mobile solutions among a company's workforce requires a significant initial investment. However, it is relatively easy to obtain a return from it, thanks to these factors:

- **It improves the organization's efficiency due to a combination of the following:**
 - The loss of productivity caused by a lack of real-time connection to the company's applications from any location is minimized. Taking advantage of the times when the only communication channel is a mobile handset may lead to excellent time savings, as well as contributing to an increase in employees' productivity and efficiency (waiting in airports, taxi rides, waiting rooms, etc.).
 - It gives professionals greater flexibility, which has a positive effect on their motivation at work.
 - It improves cooperation between people in the organization, thanks to the mobile networks that are created.
- Mobile solutions make distance management of a company's workforce possible, with quick and efficient distribution of information.
- The **synchronization of mobile solutions** means that processes where information overlaps, which sometimes lead to errors, as well as manual reporting processes, can be eliminated. The latter are replaced by automatic reporting, and so on, all of which leads to a beneficial cost reduction for businesses.
- Companies with the highest mobility levels encourage greater customer focus and, thus improved service, which is a competitive differentiation factor.

6.2.2. Successful cases of workforce mobility

Comercial Herbu²³⁵ has made its sales network more flexible, using a mobility solution that is fully integrated with the company's ERP. This means that any update of customer details made using a mobile device is recorded on the ERP, and that orders sent from mobile devices are shown as being processed in the company's system. With this commitment to innovation, the company is at the forefront in its sector, provides a much more comprehensive service for its customers and ensures more efficient management of its work.

Meanwhile, **Adidas**²³⁶ has developed an application for BlackBerry devices that enables them to be integrated with the company's SAP applications. Sales representatives can use it to make instant checks on stock levels. This information is sent by an email with links to images of the product. Representatives can also check the status of orders, consult the customer's profile and create personalized catalogs.

²³⁵ Comercial Herbu:
<http://www.comercialherbu.es/>.

²³⁶ Adidas:
<http://www.adidas.com/>.

The benefits for **Adidas** are the capacity to close the sale immediately, increased productivity and customer satisfaction, and the expansion of wireless solutions throughout its global network.

6.3. m-Learning: a school in my pocket

When employees become nomads, what method can be used to train them?

The main training programs used to date have so far had a face-to-face or e-learning format. However, these methods do not have the flexibility of a mobile device. m-Learning is defined as any type of training that takes place by means of mobile devices with wireless connectivity—such as a PDA or smartphone—benefiting from the advantages of mobility and the ubiquity of handsets.

Because of the importance of this channel as a training method for professionals, the **MOBIlearn**²³⁷ project has been established. Its main objectives are to define valid training models, develop an architecture for m-learning and establish training strategies using mobile devices. The project involves 24 partners from Europe, Israel, the United States and Australia, and over 250 leading organizations from the telecommunications sector, such as the **Nokia Corporation**, **Telefónica I+D**, **Deutsche Telekom**, etc.

6.3.1. Towards new innovative training

As in the cases above, in order to open the m-learning market it is necessary to establish a series of common standards that guarantee dissemination on various platforms and devices, which in turn must be able to facilitate interaction and visualization of content.

The use of mobile devices for training purposes enables new innovative types of learning to take place:

- **Collaborative m-learning:** with the development of mobile social networks, common spaces for students can be created for sharing information and having access to a tutor.
- **Localized m-learning:** thanks to mobile location-based systems, it is possible to provide students with specific training depending on where they are. For example, if the user is staying in a hotel abroad, the system could provide specific vocabulary for that particular situation.
- **Game-based training:** users will be able to receive training and entertainment at the same time, individually or in a group, thanks to mobile social networks. Some examples of game-based training are **Com2Us** with its game **BusinessMan**²³⁸ and **Air Traffic Control** by **Lunagames**²³⁹.

²³⁷ MOBIlearn:
<http://www.mobilearn.org/>.

²³⁸ BusinessMan:
http://www.midlet-review.com/index?content=review/id=24&rel=j2me#supported_handssets.

²³⁹ Lunagames:
<http://www.lunagames.com/game.asp?game=atc>.

- **Virtual training:** with the new functions on devices—camera, audio, sensors, etc.—it is possible to design training programs that include conversations, text messages, video, photographs, etc.

6.3.2. Successful cases in m-learning

Accenture²⁴⁰ is developing m-learning training solutions for its customers that are adapted to the specific needs of each organization. These are based on small interactive capsules that are complemented by a management and monitoring program for the courses undertaken.

Telefónica Móviles España²⁴¹ has made an m-learning system available to its employees who do not have a computer at home or who do not work with a PC. This gives them access to training courses adapted for mobile devices. In order to manage these users' training, **Telefónica** has implemented the adapted Management System, which managers will be able to use to manage their teams' training needs, to plan activities, etc.

6.4. Marketing goes mobile

Over 60% of the FTF experts felt that the opportunity to use mobile devices as a new marketing channel will have a high or very high impact on traditional businesses (see Figure 39). Mobile devices are shaping up to be a new channel for forging a closer relationship with the user, which does not only increase the number of potential customers, but is also a direct and interactive channel, with a connection time of over 10 hours a day per person, penetration levels of over 90% and with the capacity to make secure payments.

Mobile marketing is in its infancy, and has a long way to go before it can offer new opportunities. According to a study conducted by the Online Publishing Association, 40% of brands have already used marketing on mobile devices and this figure will increase to 89% in 2008²⁴². However, in order to achieve this anticipated growth it is necessary to take into account several barriers that are restricting its development. On the supply side, it is necessary to standardize applications and devices, and to have increased cooperation between mobile operators and advertising companies. As regards demand, it is essential to be sparing with advertising messages so that they are not seen as a violation of privacy.

According to a study conducted by Accenture and the Mobile Marketing Association²⁴³, the most active sectors in Spain in the use of mobile marketing are the financial and telecommunications sectors, although an increasing number of sectors are developing mobile marketing plans, such as the services and food sectors (see Figure 45).

²⁴⁰ Accenture:
<http://www.accenture.com/>.

²⁴¹ Movistar:
<http://www.movistar.es/>.

²⁴² *The Netsize Guide. Mobile 2.0, you are in control.* Netsize. Paris, February 2008.

²⁴³ *I Estudio de inversión en marketing y publicidad móvil. El sector en cifras.* Accenture and MMA. Madrid, October 9, 2008 / Barcelona, October 10, 2008.

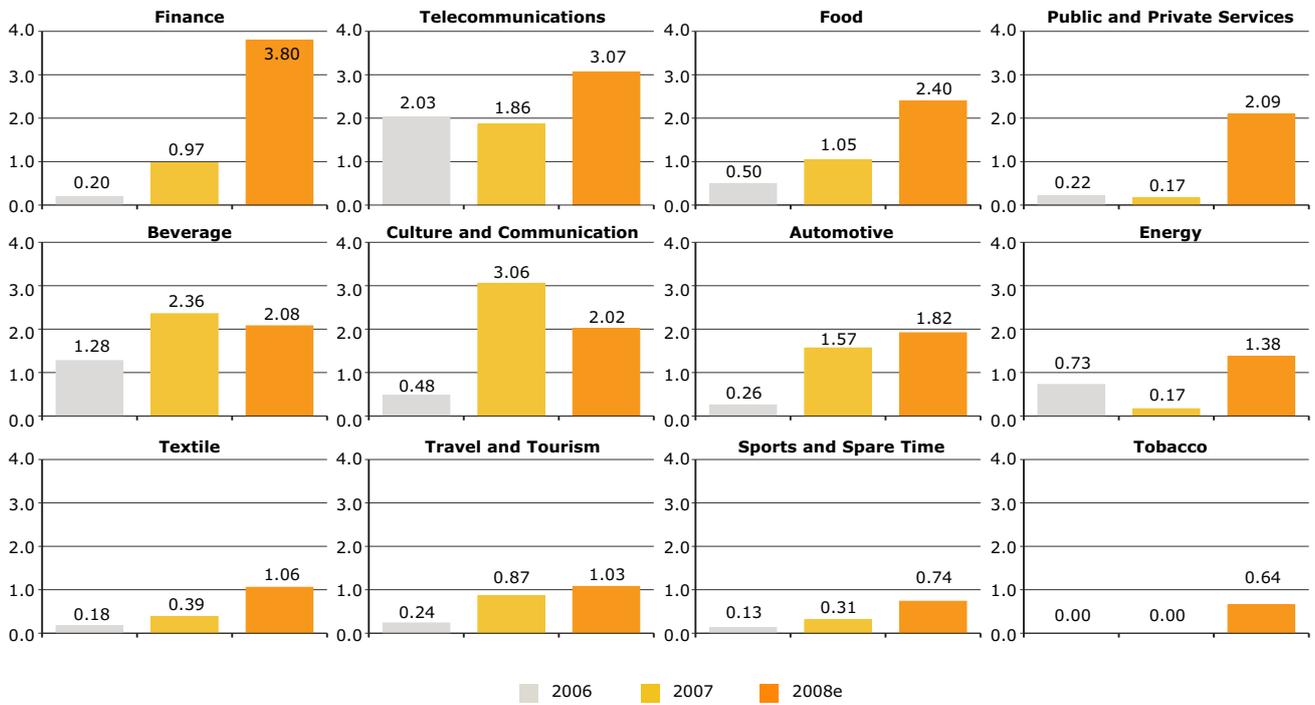


Figure 45. Main sectors investing in m-marketing in Spain: 2006-2008e (million euros).
Source: Accenture and Mobile Marketing Association.

The FTF experts consider that the main barrier to be overcome is users' concerns about the confidentiality of their data (see Figure 46).

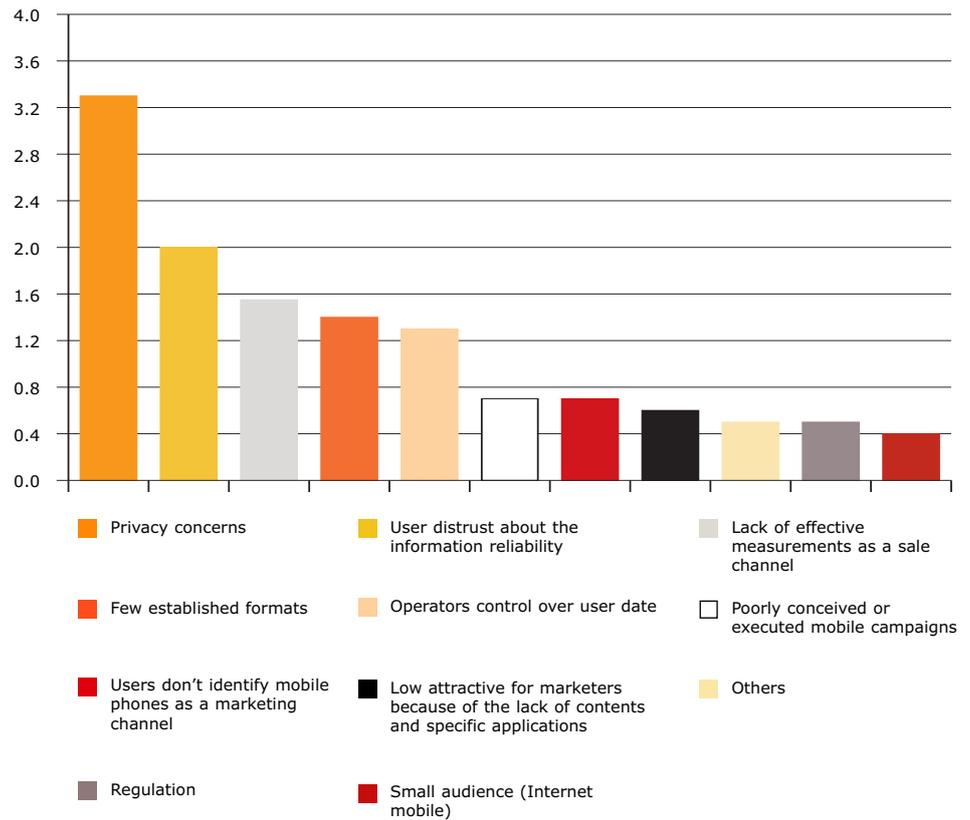


Figure 46. Barriers to the adoption of the mobile phone as a marketing channel. Source: drawn from the conclusions within the Future Trends Forum.

The opening of the market will contribute to these barriers gradually breaking down. Subscribers will use new data services that may include advertising, such as social networks, etc. This creates important opportunities for businesses in all sectors.

The interest in opening and standardization is reflected in initiatives like the Mobile Marketing Association (MMA)²⁴⁴, the main objective of which is to promote and support the development of mobile marketing internationally. These projects address the standardization of platforms and formats, the development of m-marketing strategies that are relevant and nonintrusive, on tools that appeal to consumers (such as **YouTube**²⁴⁵, etc.). Advertising companies are the main interested parties and are establishing policies that aim to promote the development of m-marketing as a means to reduce the costs of conception and implementation of campaigns.

²⁴⁴ MMA:
<http://www.mmaglobal.com/>.

²⁴⁵ YouTube:
<http://www.youtube.com/>.

6.4.1. Proximity marketing and the personalization of the offer

Proximity marketing is possible mainly thanks to devices that include Bluetooth technology, which enables a consumer's location to be identified and specific advertising to be sent about the services surrounding him or her at that particular moment. At the same time, the operators' data on the usage of their customers will enable them to target consumers with a personalized range of products and services based on their tastes and habits.

For the FTF experts, the opportunity to personalize the range of products and services will be the approach with the greatest impact on businesses in all sectors. Mobile operators have **extensive information** on their users: their profile, consumer habits, age, etc. This information is highly valuable when segmenting, identifying market niches and rolling out offers and promotions. Furthermore, thanks to the development of **m-commerce**, mobile operators will be able to identify what their customers purchase, when they purchase it, the form of payment they use, etc., with the end result being more available data.

Both proximity marketing and the opportunity to personalize an offer based on consumer habits are powerful weapons for attracting customers and gaining their loyalty. For example, a test undertaken by **El Corte Inglés**, which consisted of sending a promotional campaign for Calvin Klein fragrances to mobile devices belonging to the customers in their stores, achieved a download response of 28,000 customers in 18 stores²⁴⁶.

Companies like **MyStrands**²⁴⁷, which was created in 2003 and specializes in the development of technologies for improving the understanding of people's tastes and helping them to discover things they are unfamiliar with, is working on the personalization of supply. MyStrands has developed a social recommendation engine that can offer personalized recommendations for products and services in real time on computers, mobile handsets and other devices connected to the Internet.

Proximity marketing has numerous advantages for businesses:

- It is a **direct communication channel** with consumers.
- It involves **no cost** for the customer or the company.
- It allows **information to be segmented**. For example, it is possible to limit the radius of action or the type of information depending on where the consumer is.
- It is **nonintrusive marketing**, as mobile devices make it possible to "authorize" or accept access to information from the messages received beforehand.

Once again, cooperation between the mobile operators, consumer goods companies and advertising agencies is very important if these innovative advertising and personalization alternatives are to be successful. This will enable **specific campaigns and offers to be implemented for groups of users and make**

²⁴⁶ *El País*. Madrid 12/06/2007. Article: "Las grandes marcas comerciales se lanzan a la publicidad por el móvil." http://www.elpais.com/articulo/economia/grandes/marcas/comerciales/lanzan/publicidad/movil/elpepueco/20070612elpepieco_2/Tes?print=1.

²⁴⁷ MyStrands: <http://www.mystrands.com/>.

it possible for these campaigns to be launched in the right place and at the right time.

6.4.2. Best practices in m-marketing

Advertising on mobile devices is still a market in its infancy, and as such there are no successful experiences that can be used as foolproof plans. This is particularly true if regional differences such as restrictions due to legislation are taken into account. However, some practices that seem to work are the following:

- Including advertisements at the beginning of **mobile videos**, as they generate a less negative reaction than other types of advertising.
- **Using banners**, which must be simple and provide access to one of the brand's websites.
- **Using the mobile Internet as a means of marketing.** The mobile site must give consumers access to relevant information on the brand or the service it is offering. Businesses can advertise their products so that users have the option of copying logos and using them as a screensaver or distributing them among their social network.
- **Designing mobile campaigns that are integrated** in multichannel campaigns (television, press and Internet).
- **Maintaining simple and convincing campaigns.** It is advisable to minimize verbal and visual information, using clear calls on the mobile device inviting the consumer to complete the purchase instead.
- **Employing user location methods** to personalize the offer.
- **Using innovative technology** with advertising systems based on MMS and video on mobile devices.
- **Developing an improved purchasing system using mobile devices.**

6.4.3. Success stories in m-marketing

Etonenet²⁴⁸ is the leader in China's mobile marketing sector. The company focuses on managing the operational details of its customers' mobile marketing, including relations with operators, customers and publicists. The customers can thereby focus on the design of campaigns, and improve their results. An example of their work is the collaboration with **Shanghai General Motors**²⁴⁹. **Etonenet** carried out the first promotional campaign for their new car in China targeted at mobile devices. To do so, it selected the target market and designed an application for collecting users' response and expanding the customer base and their classification.

²⁴⁸ Etonenet:
<http://www.etonenet.com/en/aboutus.html>.

²⁴⁹ General Motors:
<http://www.gm.com/>.

²⁵⁰ FutureLink:
<http://www.futurelink.com/>.

FutureLink (Spain)²⁵⁰ has set up the first Bluetooth network in a shopping center. This network offers visitors to the center a chance to receive a comic on their handsets. The objective of this campaign is to provide a moment of entertainment for consumers and to build their loyalty. The comic's content varies each week, prompting visitors to keep returning in order to complete their collection. A total of 38,000 mobile devices were detected in a week, and 5,500 of them requested the comic.

Daem Interactive²⁵¹ has developed a marketing system based on image recognition technology that works on account of cameras being included on many handsets. The user takes a photo of an advertisement appearing in the press, on a billboard or in a catalog and the company sends information related to the photo to the handset. This system generates traffic for the operators, and is not an intrusive method for the customer, as it is the customer who has shown an interest in the product.

6.5. m-Commerce: on the hunt for consumers

Mobile devices are not only used as a channel for dissemination and advertising, but are in fact becoming a new distribution and sales channel. While the distribution of mobile content (ringtones, music, television, etc.) is evolving rapidly, the sale of other products through mobile devices is in its early stages. Slightly more than 40% of the experts felt that mobile devices will have a high or very high impact as a sales channel for businesses in all sectors (see Figure 39), which will be able to offer customers services such as product searches, purchases and payments using their mobile phones.

The future of mobile **searches** revolves around the use of location-based systems. Businesses will be able to offer their products to potential customers when they are within their radius of activity. For example, **GPSHopper**²⁵² uses its mobile application to help consumers to find products in local shopping centers and compare prices and promotions.

There are two types of products and services purchased directly through mobile phones: **purchases of products for mobile devices and purchases of general consumer products**. The former are relatively successful among consumers, while the latter are still in their early stages. The trend suggests increased cooperation between mobile operators and consumer brands in order to store users' information and speed up transactions. The usability of handsets is also vital for ensuring a good experience for the consumer. The company **Overstock.com**²⁵³ is one of the first to offer products and services by means of a mobile application.

Finally, security must be guaranteed on payments made using mobile devices. Reaching that milestone will require cooperation between mobile operators, handset manufacturers and financial services companies. Many manufacturers now include a chip in their handsets that stores financial information so that it can be used to make automatic payments.

²⁵¹ Daem Interactive:
<http://www.daeminteractive.com/eng/index.jsp>.

²⁵² GPSHopper.
<http://www.gpshopper.com/>.

²⁵³ Overstock.com:
<http://www.overstock.com/>.

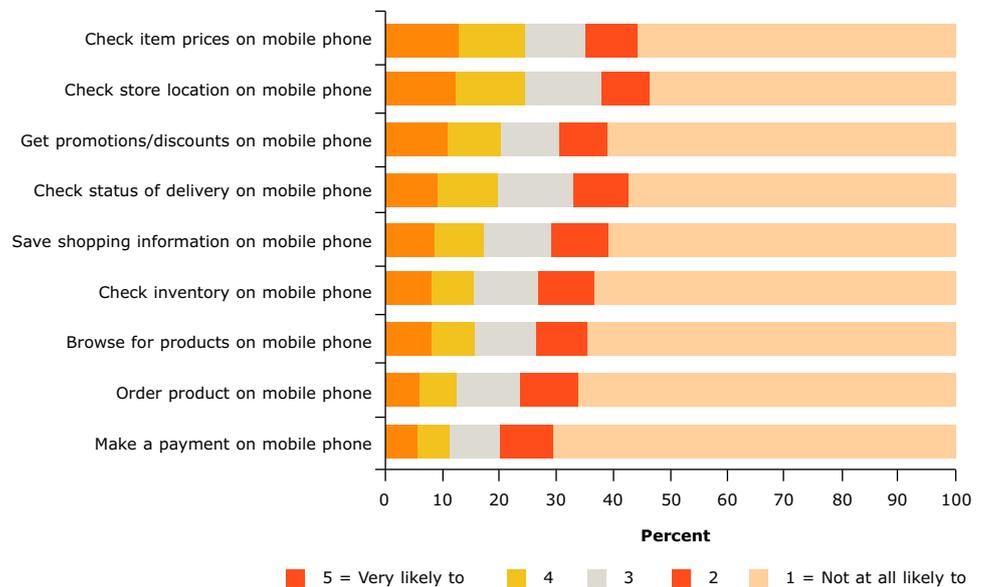
But that is not all: m-commerce will also be used as a means of communication between suppliers and purchasers in order to speed up the purchasing process. The company **Alibaba**²⁵⁴ has developed Trade Manager, a solution that aims to provide communication between both parties using an instant-messaging tool that is free to download and allows voice and video conferences between members.

Due to the meager penetration level of m-commerce, there are no statistical data on the use of mobile devices as a channel for purchasing consumer goods. That is why Gartner²⁵⁵, in its survey *M-Commerce Retail Consumer Shopping Preferences*, has attempted to identify the probability of use of nine purchasing activities on American consumers' mobile devices. The conclusions drawn from the survey were as follows:

- Consumers are more willing to search for products on their mobile devices than to purchase them using that same channel.
- The two most successful m-commerce activities will be price-checking on products and business searches.
- Another activity that has the support of m-commerce users is that of receiving promotions on their mobile devices.

²⁵⁴ Alibaba:
<http://www.alibaba.com/>.

²⁵⁵ *M-Commerce Retail Consumer Shopping Preferences*. Gartner. 7 February 2008.



Note: Based on 1,081 responses.

Figure 47. Likelihood of U.S. consumers to use phone for m-commerce activities.
Source: Gartner.

6.5.1. Recipes for success for the mobile device as a sales channel

The current situation in m-commerce is discouraging, as very few purchases are made with mobile devices, except those involving content downloads. Consequently, few businesses are paying attention to this new channel, and thus it has yet to take off. If the opening of the market leads to increased use of data services, as expected, traditional businesses will invest in this new type of virtual trade, which will open the door to a vast portfolio of potential customers.

Some of the recommendations on how to achieve success in this sector, according to Gartner²⁵⁶, are as follows:

- Work must focus on **developing the m-commerce activities that are most likely to be used**, such as business searches, price comparisons, promotional correspondence, etc.
- The adaptation of the e-commerce site to mobile devices may seem a quick and easy solution for starting in the m-commerce world. However, despite these two channels obviously having certain aspects in common, businesses must establish different strategies for each one. This makes the **development of a specific website** for mobile sales an advisable endeavor.
- Attention should be paid to **emerging markets**, where Internet access mainly takes place via mobile devices (for example, in rural areas in China), which makes them a business opportunity.
- **There must be differentiation among products providing multichannel capabilities.** An example of this is the development of applications that allow customers to go to the store to pick up orders they made using their mobile device.

Some m-commerce success stories

TextBuyIt is the name that **Amazon**²⁵⁷, the well-known online store, has given to its new mobile sales platform. This purchasing option is available to registered users, who can access information on products and purchase them through a simple process.

Kelkoo Mobile²⁵⁸ gives users access to a wide variety of products and services from mobile devices, including price comparisons. This service is based on an adapted interface that includes product images and an easy-to-use format.

6.6. The vast potential of machine-to-machine (M2M) communication in the business world

Another mobile technology application in the traditional business field is M2M (machine-to-machine) communications. Mobile operators see machines as new

²⁵⁶ Gartner: *op. cit.*

²⁵⁷ Amazon:
<http://www.amazon.com/>.

²⁵⁸ Kelkoo Mobile:
<http://m.kelkoo.es/>.

“customers” that will help overcome the saturation of lines that has occurred in developed countries. M2M communications will be a very interesting source of profits for operators who, with the right strategy, will be able to create revenue and attract new customers with minimal cost and effort. In fact, according to figures from the CMT, cards associated with machines registered 220,842 new lines in the first six months of 2008, bringing the total to 1.3 million lines. This is 43.2% more than in June last year²⁵⁹.

Internationally, the number of M2M lines reached 37.5 million in 2007 and will rise to 186 million in 2012²⁶⁰, of which 20 million will be generated in the North American market.

But how do M2M communications work? M2M is a technology that enables machines to communicate with each other by adapting and configuring the mobile network according to the needs of this type of service, and even provides the platforms needed for it to be operated.

One specific example of this technology is machine-to-mobile communications, which consists of using a mobile handset to communicate, check on or monitor the other machine by operating its SIM card. The handset can receive information by a simple SMS or through more complex interfaces.



Figure 48. Machine-to-mobile communications operation.
Source: Accenture, *Machine to Mobile Proposition*.

The machine-to-mobile communication system is based on a series of sensors inside the machine that, upon registering a variation in the standard values (such as a change in temperature, or a pipe’s water pressure, etc.), transmit a signal that gets stored in the control center or in the companies’ management systems, sending an alert to the mobile handset. However, in order for the message to be sent the machine must first establish a remote connection with the server. Generally speaking, the machine must be equipped with a SIM card, which provides access to the mobile network for establishing the connection. These components involve costs that must be taken into account. One possible solution is to create a community of machines that are connected to each other via Bluetooth and for these to send the information using the same system to a master machine on which a SIM card is installed.

²⁵⁹ 2007 Annual report. Spain’s Telecommunications Market Commission (CMT). June 2008. http://www.cmt.es/cmt_ptl_ext/SelectOption.do.

²⁶⁰ Silicom.com. 6/05/2008. Article: “Mobile M2M connections on the up.” <http://networks.silicom.com/mobile/0,39024665,39213366,00.htm>.

One example of a machine that has been adapted for M2M operations is **Amazon's** Kindle, which uses its card to connect to high-speed wireless networks for downloading books, newspapers, magazines or blogs onto the device²⁶¹.

In the near future, it is anticipated that M2M communications will be as common as data communications are today, mainly as a result of the development of applications that do not require extensive technical knowledge of mobile networks for use by businesses.

The future of mobile communications between machines is difficult to forecast. Today, there are 6 billion human beings on the planet, of which 1.3 billion are mobile phone users. The number of operational machines worldwide is estimated to be 50 billion and at present only five million are equipped with mobile communication capabilities. In view of the fabulous business opportunities that wireless technologies have created between people, the outlook for the future of this new type of application in mobile communications is impossible to guess at this point in time.

One important aspect of these devices is that they are enabling large manufacturing companies to diversify their business and enter the after-sales services sector. For example, **Pirelli**²⁶² has developed K-Pressure tires, which include pressure-gauging sensors that send notifications to a mobile device.

The main problem with M2M and the reason why this market is not flourishing as it should is its fragmentation (technology, customer diversity, etc.). All of the players in the market must work towards a standardization of this business area in order to take full advantage of its potential. To facilitate the implementation of M2M services, **invoicing models** should be adapted to the type of applications they are targeting. In specific terms, it would be interesting to have SIM cards for M2M with only the necessary data services enabled, as well as being linked to a specific contract and invoicing arrangement.

Operators have a key role in the expansion of M2M communications. Thus it is necessary to establish rate plans and service packages that entice customers, and to market specific SIM cards that offer only M2M-related services.

6.6.1. Uses of machine-to-machine communications

According to Accenture²⁶³, M2M offers traditional businesses a range of possibilities, not only in the form of new services for their customers, but also new possibilities for managing their internal processes. Telemetry is a communication technique that allows **remote control and management** of usage gauges, sites or remote equipment and events (opening and closing of doors or valves), all by means of mobile devices.

In this respect, Accenture identifies four types of M2M telematic services: road transport, security, services and maintenance, and home automation.

²⁶¹ *El Mundo*. 20/22/2007.
Article: "Amazon presenta su 'iPod' para libros."
<http://www.elmundo.es/navegante/2007/11/19/tecnologia/1195488648.html>.

²⁶² Pirelli:
<http://www.sv.pirelli.com/web/car-suv-van/technology-revolution/k-pressure/default.page>.

²⁶³ *Machine to Machine (M2M) over cellular network. Accenture strategy and proposition for CLIENT*. Accenture. February 2005.

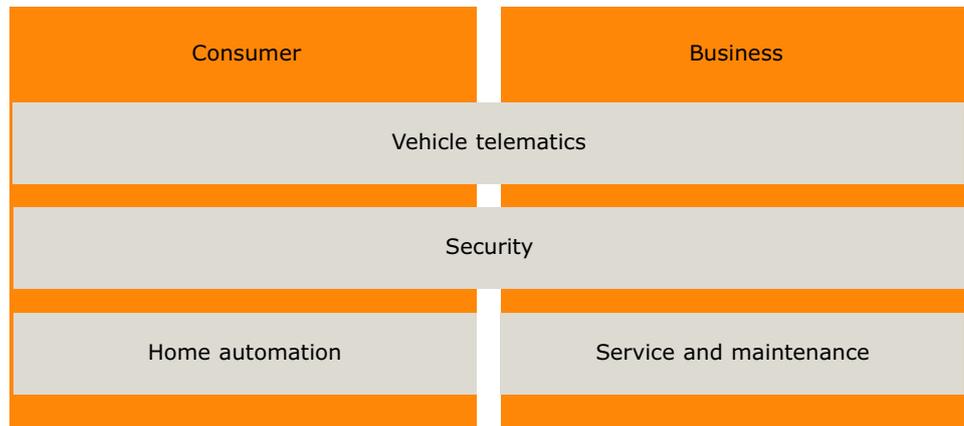


Figure 49. M2M Applications.
Source: Accenture, M2M Proposition.

M2M communications in the business field

The uses that businesses can make of M2M communications are varied, and can help enhance an organization's business processes, services and internal operations.

Applying M2M communications to the **telematic systems in automobiles** can improve their efficiency:

- **Fleet management:** although fleet management is already possible thanks to GPS, M2M communications provide a more efficient alternative for some applications, as they take place on the mobile network. Among other features, they enable the transfer route information and warnings, record the loss of vehicles and reduce periods of inactivity for haulers.
- **Traffic control and supervision:** there are many devices in this sector (information panels, traffic lights, vehicle capacity meters, meteorological sensor, etc.) that can use M2M services to establish communication with traffic control centers.
- **Logistics:** M2M services provide information on the specific location and the process status of transported goods. For example, they make it possible to send information on the temperature and humidity of the goods.

Security systems can also be more efficient thanks to M2M communications:

- **Access control:** M2M services can automate the control of access to buildings, areas, parking spaces, hotels, toll roads, etc., by becoming a channel for communication with control centers.

- **User identification:** it is possible to identify users through the use of the M2M media provided by the mobile network.

Finally, M2M communications will allow for improved **business services and maintenance:**

- **Vending machines:** product vending machines have a number of characteristics that make them suitable for remote control. Product and coin replacement can be optimized by real-time data on the current level of stock. It is also possible to monitor the machine's cash intake, as well as any technical problems that may arise. **Siemens** has developed an M2M module for vending-machine companies that enables them to count their current stocks, keep tabs on security and maintenance, and distance-manage the machine.
- **Industrial manufacturing processes:** a large number of machines and robots exist in these processes, generally being controlled by automatons. Remote reprogramming of these machines would be useful, whether directly or through their automatons.
- **Meter reading:** distribution companies have staff that go to each meter to read it and input the appropriate data in their systems. Incorporating M2M services in meter reading would make the reading process quicker and more convenient, while also providing a value-added service to customers for the simple fact that they provide information in real time.
- **Environment:** M2M services enable a mobile communication network to be set up for transferring all of the data from environmental monitoring stations (i.e., weather, pollution, noise, etc.), and water-level gauges in dams and reservoirs.

The benefits of M2M communications for consumers

On the demand side, M2M communications will benefit customers, who will be able to enjoy services with increased added value.

Telematic systems in cars will simplify maintenance and improve aspects such as assistance while on the road:

- **Automobiles:** telematic systems based on M2M services allow businesses to perform a remote diagnosis without needing to take the vehicle to a repair shop, thus improving after-sales services. Additionally, manufacturers can set up alarms that send warning signals whenever there is a fault in any vehicle. For example, the Spanish company **Tekel** has very small wireless modules on the market that can be used in vehicles, allowing their route to be monitored in real time, as well as their location in the event of theft. This device is so effective that the stolen vehicle can actually be immobilized by sending a message.



- **Accident notifications:** M2M services can detect accidents and dispatch emergency systems.

Improvements in **security and medicine** thanks to M2M will also lead to major advantages for consumers:

- **Medicine:** in the field of home care, M2M services enable information gathered by various medical devices to be transferred without requiring it to be sent to hospitals manually. Emergency vehicles can also use these services to be connected with hospitals.
- **Alerts:** insurance companies can offer their customers alert services for theft, fire, etc., and it is also possible to send notifications to the user or emergency services. **Siemens**²⁶⁴ and **Securitas**²⁶⁵ have popularized an alarm service based on wireless technology using a device that sends a message to both the central office of the security company and the user's handset when it detects the presence of intruders in the home. The advantage of this system is that criminals cannot cut the telephone cables that are used for other conventional alarm solutions.
- **Safety systems for the sick and elderly:** thanks to sensors using M2M technologies, it is possible to detect a fall or changes in predefined parameters and to send an alarm signal to emergency services. **Alcatel**²⁶⁶, **Sony Ericsson** and other companies specializing in applications, such as **MPO**²⁶⁷, are marketing devices for elderly people, children and the sick that give an alert and location signal at the push of a button.
- M2M systems also enable **remote management of machines, the environment and even people**. For instance, farmers can use meteorological stations to keep up to date with weather conditions and improve their harvests. The systems can also be used for public security, as with criminal surveillance systems.

Finally, home automation services give consumers increased control. Businesses can offer their new customers **remote controls for household uses**, such as kitchen management, heating control, etc. **Fagor**²⁶⁸ has developed the Maior-Domo system, which controls electrical household goods from a mobile handset.

6.7. Trends in business mobility

The FTF experts performed an analysis to see which sectors would potentially be most impacted by mobile solutions, with their conclusion being media and entertainment, followed by software and the Internet, and consumer goods (see Figure 50).

²⁶⁴ Siemens: <http://w1.siemens.com/entry/es/es/>.

²⁶⁵ Securitas: <http://www.securitas.com/es/es/>.

²⁶⁶ Alcatel: <http://www.alcatel-mobilephones.com/sp/>.

²⁶⁷ MPO: <http://www.mpo.es/>.

²⁶⁸ Fagor: http://www.fagor.com/domotica/_bin/cast/que_es.php.

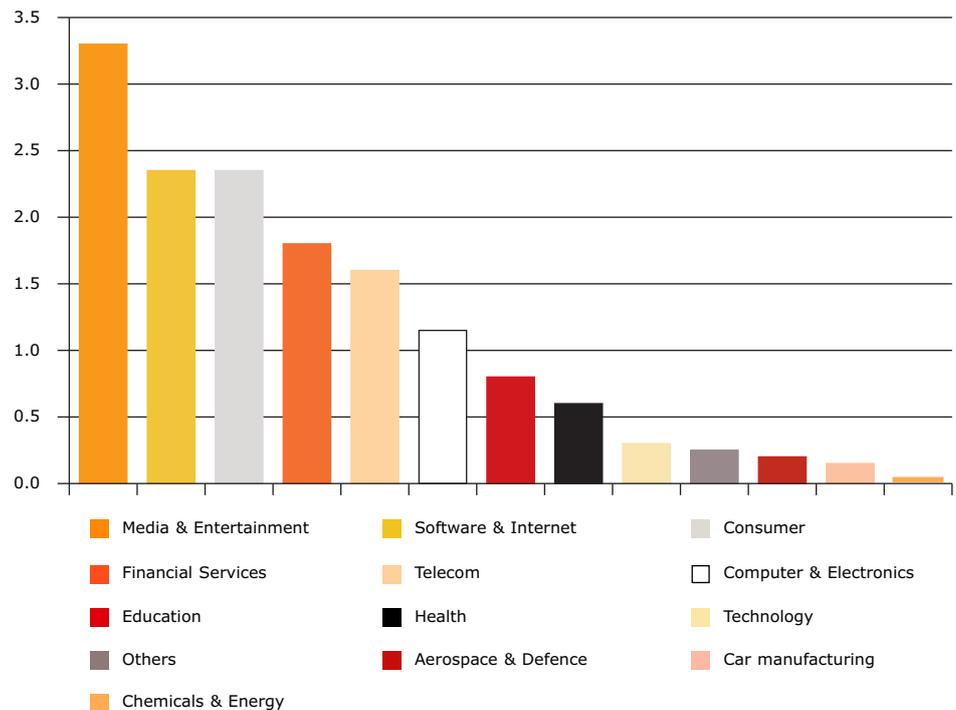


Figure 50. Sectors where wireless technology will have the most impact.
Source: drawn from the conclusions within the Future Trends Forum.

As seen in the analysis above, the mobile landscape in 2008 and ensuing years will be characterized by a general opening. Other trends in the business mobility field will include:

- **A focus on increased security for devices.** According to Current Analysis²⁶⁹, a security incident may take place in 2008 related to the use of smartphones, leading to heightened security for mobile devices. Faced with such a situation, not only will managers expect their network operators to take measures, but this will also encourage the appearance of a market for security device software such as SSL, VPN, IPSec, etc. This focus on security will constitute a differentiating factor between operators and their competition, and the mass entry into the sector by major companies such as **Accenture**, **EDS** and **IBM**, who will be looking to offer their own mobile security and management services. For example, **Maverick Mobile**²⁷⁰ unveiled a program that is not installed on the SIM card, but on the telephones themselves, meaning that a device can be tracked and send out an alarm signal if stolen. This program enables a list of contacts to be recovered, and provides any number that is called after the theft and a copy of the SMS sent, which will be payable by the person sending them.

²⁶⁹ CIO España. 15/02/2008.
Article: "Siete predicciones sobre el futuro de la movilidad empresarial."
Research by Osterman Research and Current Analysis.
http://www.idg.es/cio/Siete_predicciones_sobre_el_futuro_de_la_movilidad_empresarial/art188372-.htm.

²⁷⁰ Google News. 1/10/2008.
Article: "Tecnología para rastrear teléfonos móviles perdidos o robados."
http://afp.google.com/article/ALeqM5i0spUVM1eo0t41Clc_bozo8RnpGw.

- **Towards technology convergence.** There are currently various radiofrequency technologies coexisting in very different stages of evolution. Hence, a global standardization of technology will be necessary. For workers, this will mean being able to use services everywhere without having to carry multiple devices with them, each using a different RF technology.
- **A collision between wireless worlds (local and remote area).** At present, 28% of businesses use remote networks as a medium for their information service; however, there needs to be an evolution towards a system that allows a mix between remote and local networks. According to Current Analysis²⁷¹, an increasing number of device manufacturers are including dual functions in their new handsets, which enables mobile and wireless local area network (WLAN) communications on the same device. There are also increasingly more operators that support this dual technology.
- **More mobile devices being provided in businesses.** According to Osterman Research, the percentage of the United States workforce that uses mobile devices is at an all-time high and will continue to rise in 2008, doubling over the next three years. These devices must include functionality that guarantees access to companies' applications and allow advertising to be received on the user's handset: Bluetooth, Internet access, application download capacity, suitable screen for viewing content, etc. The touchscreen is one of the most convenient features for a user. Some examples include the **Apple** iPhone and its Safari browser, the HTC Touch, and the new handsets from **LG** and **RIM**.
- **Cooperation between mobile operators.** Operators have a broad customer base with information on their consumer habits. These data are extremely valuable to businesses, which could segment their target market and launch campaigns aimed at potential customers. The trend shows increased cooperation between mobile operators, advertising agencies and businesses, so that they not only share information but also responses to advertising campaigns, which can then be used to feed into and expand database.

6.8. Conclusions about the range of mobile products and services for companies

The opening of the mobile market will contribute to broadening the range of mobile products and services for businesses. This new range will have a significant impact on their business models. It will allow them to personalize their range of products and services, while increasing the mobility of their employees and capitalizing on a new marketing channel.

The opportunity to use wireless technology to personalize the range of available products and services based on the consumer habits and tastes, constitutes an important means of enhancing customer service. At the same time, greater employee mobility will allow for improvements in human resources management, help increase their efficiency, and enable businesses to stand out from the competition.

²⁷¹ CIO España: *op. cit.*

At the same time, many peoples' hopes are based on mobile devices being used as a new **marketing channel** for businesses. This would enable them to reach a broader customer base, with more efficient segmentation and the opportunity to locate them at any time. With that new scenario, businesses will be able to adapt their range of products and services to users tastes and habits, and even to their location. However, efforts must be made so that these practices are not perceived as invasive or a breach of privacy.

The use of the mobile device as a sales channel (m-commerce), is practically nonexistent at this point. Improving the user's experience when making a purchase and shoring up security issues will be vital in the effort to reverse this situation.

Finally, M2M promises major opportunities in the medium and long term, along with the development of many applications for companies in areas such as security, road transport and surveillance. It will also lead to improvements in internal processes, such as management of machinery, vehicle fleets, etc.

Mobile solutions will therefore not only help companies improve their internal processes, but will also diversify their range of products and their customer service.



Chapter 7

The human side of mobile technology

7

The human side of mobile technology



There is no doubt that mobile technologies offer significant economic and social benefits that in many ways contribute to the sustainable development of nations. Perhaps the most important contribution has to do with the improvement of economic development, quality of life and social capital.

Of particular relevance is the economic and social impact of wireless services in emerging countries, where the largest number of mobile handsets will be marketed in the coming years. They will not only be the first mobile phones for many of these countries' inhabitants, but also their first connection to the Internet and other basic offerings, such as financial services. This reinforces the idea that mobile technologies will help reduce the "digital divide," an idea backed by research, which reaffirms the important role of wireless services in the development of lower socioeconomic levels. In this regard, "**mobilarity**," or solidarity through the mobile phone, is helping NGOs manage and coordinate some of their projects aimed at assisting disadvantaged communities.

At the same time, we must not underestimate the social impact that mobile technology can have by improving the service offered by governments to their citizens (**m-government**) or the role it plays in the social and labor integration, participation and development of people with certain types of **disabilities**.

7.1. Mobile phone use in emerging countries

Despite the fact that in developed countries the mobile penetration rate exceeds 100%, in emerging countries it sits below 20%. With these figures, it is not surprising that manufacturers and operators have their eyes set on the latter. The spread of this technology will clearly and even quantifiably contribute to the development level of these countries. Economist Leonard Waverman of London Business School has estimated that every 10% increase in mobile handset numbers leads to a 0.5% growth in GDP.

According to Pyramid Research²⁷², the global mobile market will add the next billion subscriptions in 2009. Of these, roughly 85% will live in emerging countries and 71% will come from parts of the world with urbanization levels below 50%.

Mobile phones offer important advantages to these new users compared to other devices such as computers: they are cheaper, require a lower skill level and may be shared with other people in the community.

²⁷² *The Next Billion: How Emerging Markets Are Shaping the Mobile Industry*. Pyramid Research. October 2007.

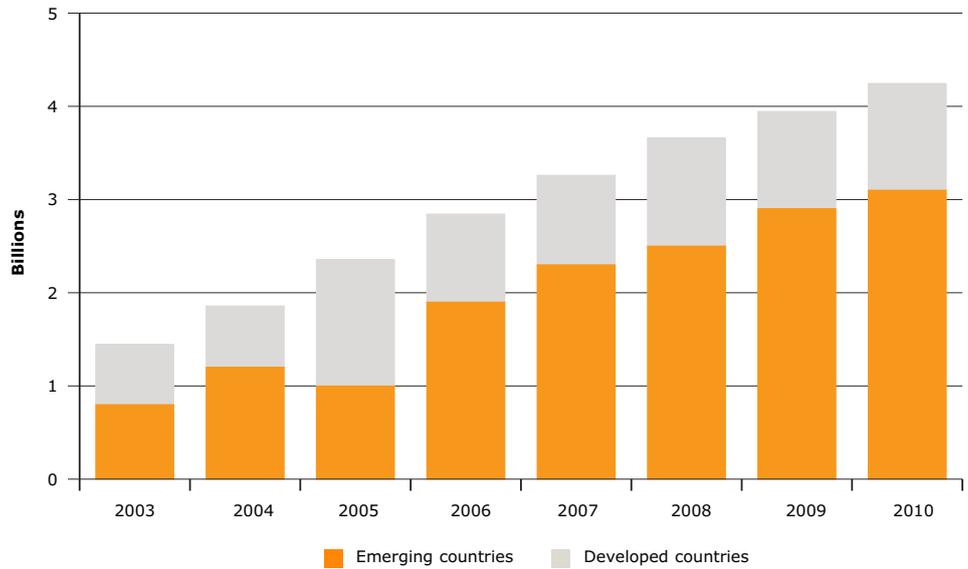


Figure 51. Global mobile subscriptions (2003-2010).
Source: Pyramid Research.

The use of mobile phones by these new subscribers will differ greatly from that in developed countries. At least initially, they will use their phones to support activities that generate income rather than as a tool for communication (see Figure 52). Personal use will grow as income levels rise.

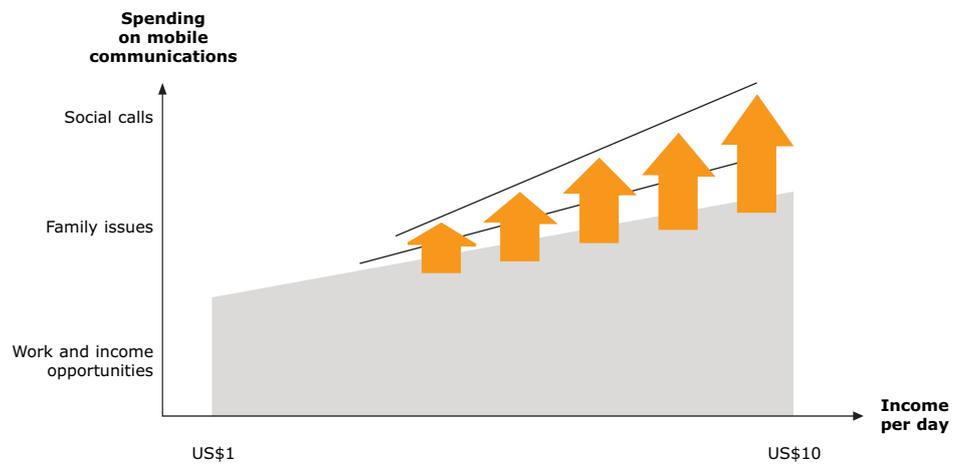


Figure 52. Spending on mobile communications in the emerging countries.
Source: Ericsson.

However, the use of mobile devices in emerging countries presents a major obstacle: **the cost of handsets and services**, which poses a formidable challenge for mobile manufacturers and operators, forcing them to rethink management costs.

The top manufacturers (**Nokia, Motorola and Samsung**) are in fact working on low-cost models to meet the basic needs of users in emerging countries. But these handsets must also enable access to more sophisticated services, such as Internet connection. If emerging countries are to participate in the advances driven by the growth of the mobile market, handsets must be made available at affordable prices and offer access to these services.

Operators are developing low-cost networks with the goal of reducing access prices. They have also introduced prepaid services to provide an entry for users who would otherwise be unable to pay a monthly bill. In Africa, they account for almost 90% of the total mobile services market.

Another stumbling block appears when it comes to **charging mobile phones** in places where power supplies can be unreliable, far away or simply nonexistent. In this context, governments should promote the use of alternative energy generators and manufacturers can develop solar chargers for their models. For instance, in early 2007 **Sony Ericsson** and **Ericsson** developed a solar charger that can be used anywhere in the world. To calculate the size of the device, which is capable of charging at least thirty batteries a day, all year round, they factored in the solar conditions in Africa and India.

If the aforementioned obstacles are overcome, mobile phones may become the gateway for these users to access the Internet and other services, thus improving their living standards and promoting development. The possibility of accessing and purchasing goods and services or conducting bank transactions will undoubtedly have a very positive impact on their lives.

7.1.1. Creating opportunities

Mobile technology opens the door to starting up new businesses that help boost per capita income in these countries. The first idea that comes to mind is that people with a low income in emerging countries are not willing to devote part of their money to mobile services and technologies to the detriment of their budget for food, education and other basic services. However, experience shows that they do not see the mobile phone as a mere means of contact, but rather as a more efficient way of working, staying in touch with family members who are often far away, accessing health services, and so on.

This situation represents an opportunity for companies that are able to innovate and offer services through mobile handsets tailored to these people's needs. Meanwhile, traditional businesses can transform their usual activities into more productive ones, while small companies can access global markets, thus con-

tributing to the establishment of fair prices for consumers. Therefore, access to new products, wider selection and increased purchasing power will improve quality of life, encourage development and exert a positive impact on society as a whole.

The most successful mobile services in emerging countries will be linked to traffic information, job postings, health services, weather forecasts, entertainment and email services²⁷³.

7.1.2. Access to goods and services

In emerging countries, mobile technologies are playing an important role as promoters of economic activity, allowing access to information on the price of goods (raw materials, finished products and tools). Moreover, since these countries have very poor land transport infrastructures, the use of mobile devices for communication replaces travel and allows trade agreements to be negotiated faster and more easily. All this, coupled with the ease of payment offered by mobile handsets, promotes development and makes a positive impact on the level of economic activity in these countries.

A clear illustration of this can be found in Kenya, where the **Vodafone** Safaricom service reports crop prices by SMS, thus ensuring a fair price for consumers. Similarly, Indian fishermen use mobile handsets to negotiate prices, resulting in an 8% increase in their incomes and a 4% drop in prices due to the decline of abusive behavior.

7.1.3. m-Banking in emerging countries

For consumers in developed countries, the use of mobile handsets to conduct financial operations provides another banking channel that complements the network of branches and Internet banking. For millions, perhaps billions, of people worldwide with low incomes, mobile phones can become more than a means of communication. Those without bank accounts will be able to access financial services and benefit from them, as will their families, community and, ultimately, the entire country.

Emerging countries are leading innovation in the field of mobile banking. A key aspect of the increasing success of this phenomenon is the growing level of mobile penetration in all socioeconomic groups and geographical areas in these countries, where financial services have proved to be too expensive, inaccessible and poorly adapted, leading m-banking to quickly gain ground. In these countries, mobile handsets will play a critical role in attracting consumers to basic banking services such as holding an account, with the hope that they will subsequently request other, more sophisticated services.

The number of mobile transactions is expected to rise from 2.7 billion in 2007 to 37 billion by 2011, and most of the growth will occur in emerging countries, ac-

²⁷³ *Business Models Enhancing the Diffusion of Mobile Internet in Emerging Markets*. Lappeenranta University of Technology. School of Business Professor Veli-Matti Virolainen. February 2008.

According to data from Juniper Research²⁷⁴, China and the Far East will be the regions with the largest number of users, reaching 250 million by 2011.

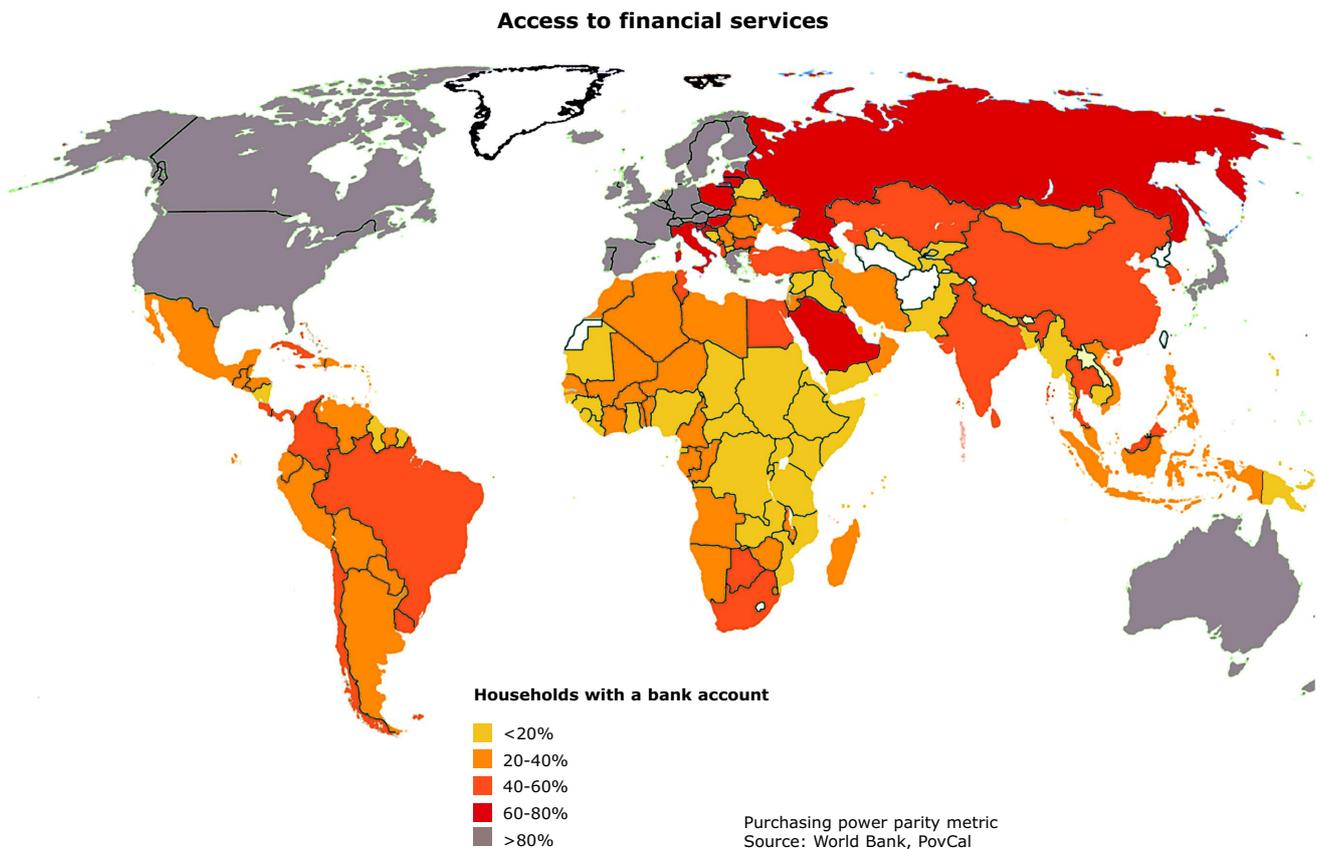


Figure 53. World map of the population's access to financial services.
Source: Nokia/Siemens.

Boosting the circulation of money is vital to ensure economic development in emerging countries, where many people who live in rural areas rely on money sent to them by their families in the city or abroad. The problem arises when this money is sent from hundreds or even thousands of miles away. In this context, mobile phones allow money to be sent and received quickly, thus avoiding long lines at post offices.

However, this dream will only be possible if financial regulators collaborate with telecommunications companies, financial institutions, operators and manufacturers. A good example is the **central bank of the Philippines**, which is actively participating in the adoption of technology platforms to foster m-banking in the country

²⁷⁴ Tendencias de las telecomunicaciones. 3/10/2008. Article: "Los jóvenes son los que más usan la banca móvil." http://www.tendencias21.net/Los-jovenes-son-los-que-mas-usan-la-banca-movil_a2224.html.

and works closely with operators and financial institutions. Meanwhile, **Vodafone** has established a service in Kenya that allows users to transfer money to their relatives, employees and suppliers, thereby avoiding transport costs and time.

7.2. Mobile technology at the service of citizens (m-government)

Ibrahim Kushchu (director of the UK Mobile Government Consortium) defines m-government as the strategy, implementation and use of all types of technologies, services and applications for mobile devices with a view to achieving benefits for citizens, businesses and government agencies. This circumstance has not gone unnoticed in the public administration sphere, which is promoting initiatives that encourage the use of mobile phones to improve public service and reduce costs. Among other uses, they aim to make it easier for citizens to carry out administrative procedures, access various types of information and set up a direct communication channel with the government.

Countries like Singapore, which holds the top spot in the ranking prepared by Accenture²⁷⁵ of countries with the best service and proactive communication with citizens, are committed to offering a multichannel service, giving both the public and businesses access to around 150 Government services using their mobile devices, which are becoming an increasingly important channel for disseminating information. The Government also aims to ensure that 300 services will be available via mobile phone by the end of 2008. The main services are currently based on SMS; for instance, the Supreme Court uses this system to remind the public of the date and time they are to appear in court.

In Italy, the **Centro Nazionale per l'Informatica nella Pubblica Amministrazione (CNIPA)** has rolled out a mobile service project whereby citizens can contact the Administration via SMS, MMS, voice, Wi-Fi and Bluetooth connections. Research is still underway for the project to include new technologies such as biometric data, voice over IP, and digital television services.

Despite its enormous potential, the future of m-government depends largely on parallel technological developments, such as **mobile electronic signatures**. This will allow users to give legal validity to documents accessed from their mobile phones without having to travel. In Spain, this service is only offered by **Vodafone** and, according to Law 59/2003 of December 19 on electronic signatures, "it enables the signer to be identified and detects any subsequent change in the signed data, which is uniquely linked to the signatory."

7.2.1. What services can the State offer to its citizens via mobile phones?

m-Government is based on advanced e-government services offering mobility, clarity and contact between citizens and the government agencies. The most important services developed along these lines are: m-communication, m-services, m-democracy and m-administration.

²⁷⁵ *Government Executive Series. Leadership in Customer Service: Delivering on the Promise.* Accenture. 2007.

The mobile phone as a communication channel between government and citizens (m-communication)

The use of the mobile phone as a channel of communication between governments and citizens considerably improves information flows in both directions. There are many initiatives in the field of communication **from government to citizens (G2C)**:

- **Information on urban mobility:** Some city councils send traffic information to citizens' mobile phones to reduce congestion. For example, the Catalan Traffic Service (**Servei Català de Trànsit**) offers real-time traffic information for expressways and selected roads via SMS. Other examples in the field of urban mobility include a service offered by the **City of Madrid** that provides a method of locating towed vehicles via SMS.
- **Public information service:** Governments send automatic alerts and news to citizens' mobile handsets with information on tax payments and renewal notices for driver's licenses, passports and ID cards, among others. For example, thanks to the Municipal SMS Information Service of the **City of Las Palmas de Gran Canaria**, people can receive updated information on taxes, culture, sports, youth or news on their mobile phone. New Zealand's state electricity company also uses SMS to report power cuts and their causes. Lastly, Singapore residents can choose which alerts they wish to receive, ranging from parliament news to driver's license renewals.
- **Information on tourism, culture and leisure:** The public administration institutions can offer information via mobile phone of tourist sites in the area, as well as future cultural and sporting events. For example, the **City of Salamanca** for the past few years has been offering an SMS messaging service that regularly informs its registered users about the city's cultural activities. The **City of Barcelona** also has a mobile Internet connection service featuring the city's cultural calendar and a directory of cultural institutions.
- **Health information:** Governments can use mobile devices to report health emergencies to the public. For example, in the summer of 2008 the Spanish **Ministry of Health and Consumer Affairs** launched a heat protection campaign²⁷⁶ in which people received information on their mobile phones that included weather forecasts and risk levels for their province. Also worthy of note is the program run by the **City of Avilés** that sends an SMS to registered citizens when ever there is an urgent need for blood donations. Across the globe, in Hong Kong the government started a program to send information via SMS on SARS (Severe Acute Respiratory Syndrome) in order to dispel rumors.

Meanwhile, the most common **citizen-to-government (C2G)** service allows users to submit queries or complaints using SMS or MMS. This service is already available in the Philippines and China, where it is even possible to send questions to congress representatives.

²⁷⁶ "Campañas 2008 – Combatir el calor está en tus manos", <http://www.msc.es/campannas/campanas08/campanaCalor08.htm>.

Payments to the Administration made easier with mobile handsets (m-services)

This concept involves the option for citizens to make transfers or payments to the Administration (m-transactions and m-payments). For example, public transport in Rome can be paid for via SMS, which requires an electronic wallet to be linked to a credit card or prepaid phone card. Norway, meanwhile, has established an SMS-based tax refund system.

A new way of exercising the right to vote via mobile phone (m-democracy)

This system essentially refers to the possibility of voting via mobile phone. Although it appears to be a tool with great potential to increase citizen participation, it still presents significant barriers, such as the distrust of citizens regarding data protection and voting-system efficiency, or the difficulties it poses for older people, who are more reluctant and find it more difficult to use mobile phones.

In the local elections of May 2002 in Liverpool and Sheffield (UK), voters could choose to exercise their right to vote using a mobile device via SMS, thanks to a PIN code that guaranteed voting privacy and security.

Improving public administration's internal processes (m-administration)

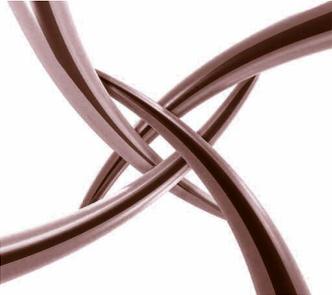
This aspect aims to improve the system of internal public sector operations by using mobile devices for officials to contact one another, for instance. This is what the **City of Sanlúcar de Barrameda** has done by equipping its municipal police with mobile devices that allow agents to stay in touch using **Vodafone** "Push to Talk" technology²⁷⁷.

Other m-government services

Governments can also use mobile technologies to help disadvantaged groups or improve the environment:

- **Assistance to disadvantaged groups:** Government can use the mobile network to provide assistance to the elderly or disabled. Norway, for example, uses mobile services to contact workers who specialize in care for the elderly and to provide updated information on people who need home care. Another example can be found in A Coruña (Spain), where people with reduced mobility requiring a ramp to access buses can find out the arrival times of adapted vehicles by SMS.
- **Monitoring of wild animals:** Mobile technology can also be used to control the lives of wild animals. A pilot project launched by Save the Elephants in Kenya

²⁷⁷ 3GSpain. May 2006. Article: "El Ayuntamiento De Sanlúcar De Barrameda Dota de Movilidad a la Policía Municipal." <http://www.3gspain.org/foros/showthread.php?t=3481>.



uses GPS tracking to monitor the movements of elephants. Mobile communication systems identify these animals, indicating their location via text messages.

Challenges for m-government

Although m-government presents numerous benefits for both governments and citizens, a number of **obstacles** must be overcome for these benefits to materialize:

- The **cost** of new government applications.
- The **age of users**. As many older people do not have handsets or do not know how they work, governments should implement policies to encourage use among this group.
- **Data security and privacy** constitute the main obstacles hindering mass adoption of these services, and systems need to be implemented to guarantee them.
- Users will experience **information overload**. Since this could become another obstacle, it will be necessary to discern between valuable and dispensable information.

7.3. Channeling aid via mobile phones

In addition to the above, the mobile phone is a powerful tool for helping others. Mobile devices are becoming a very important element to address the needs of victims of **natural disasters and violent conflicts**. SMS is used to coordinate evacuation efforts, report the need for blood donations and warn citizens of impending storms, volcanic eruptions, and even missile attacks.

One example can be found in Malaysia, where a tsunami warning system has been designed that will be linked to screening centers in India, Indonesia and Thailand. The Malaysian government's intention is to use SMS technology to alert the public of the possible arrival of new tsunamis, which includes contacting population groups who are unlikely to hear radio warnings, such as tourists or people who are on beaches at the time.

However, governments are not the only ones putting such initiatives into motion; citizens use person-to-person communication to warn of dangers or risks they may be exposed to. One example was the use of mobile phones during the 9/11 terrorist attacks on the World Trade Center. According to the National Institute of Standards and Technology (NIST), 16% of the survivors of each tower had made phone calls before deciding to evacuate the building. The majority of survivors studied by NIST stated that they began evacuating after receiving outside information on their mobile phones.

It is also worth noting the vital role played by mobile communications during the Lebanon conflict in July-August 2006. The use of wireless voice services increased by almost 40% in the period immediately following the outbreak of hos-

ilities. Not only was it the primary means of communication after the bombing of roads and bridges, but it also enabled the transfer of vital information on evacuations and enabled people to escape bombings, find food and fuel, and be reunited with family members.

Likewise, mobile devices have become an easy and effective means of raising money for charity. This new movement, known as **Mobilarity** ("solidarity through the mobile phone"), uses SMS and MMS as a new means of help and mobilization, making it an innovative channel through which NGOs will offer a wide variety of aid programs in the near future. Under this system, humanitarian organizations were able to raise eight million euros for victims of the tsunami in Southeast Asia in 2004.

Leading Spanish NGOs, the wireless carrier **Vodafone Spain** and the mobile services company **mmChannel** have signed an agreement to launch a joint program for aid and mobilization services via mobile phones. Amnesty International, Action Aid, the Spanish Red Cross, Entreculturas, Greenpeace, Manos Unidas, Plan España and Save the Children are the eight NGOs supporting the program, which may be extended at any time to other organizations wishing to incorporate new mobile technologies in their struggle for solidarity.

With regard to the use of mobile technology in NGO management, a study by the Vodafone Group Foundation titled *Wireless Technology for Social Change: Trends in NGO Mobile Use* cites a number of examples of how mobile technology is being used in various fields.

- Health, such as controlling the identification and treatment of people living with HIV in South Africa.
- Humanitarian assistance, including supporting the logistics of food distribution to Iraqi refugees in Syria in 2007, where an SMS was sent to affected families indicating distribution areas.
- Environmental conservation, such as monitoring urban air quality in Ghana through the use of sensor-equipped mobile phones.

Mobile phones will be a good ally for **disabled groups** to meet their needs. According to the study *El uso del móvil entre la población con discapacidad* conducted by Telefónica and the University of Deusto, 90% of disabled people use mobile phones: 43% have them for the security they provide and 28% because they facilitate communication.

The usage rate for adapted mobile handsets varies depending on the type of disability. Thus, the blind or visually impaired use mobile phones the most (96.64%), followed by those with hearing disabilities (95.07%), the physically disabled (94%) and people with intellectual disabilities (74.44%).

People with visual or physical disabilities use mobile phones for making calls as well as writing and receiving messages, while those with hearing disabilities can

communicate easily via text messages, and those with intellectual disabilities use them primarily for making calls.

Among the improvements that can be made, the study underlines the need to have simple, intuitive handsets, increase the availability of accessories that facilitate the use of mobile handsets for specific disabilities, and provide advice and training on the possibilities that wireless services offer for improved communication. Nevertheless, technology advances for everyone and helps cut down the obstacles that disabled people come up against. Handsets are already available that allow people with hearing problems to communicate over the phone using a system that turns voice into text, as well as induction loops that prevent interference with hearing aids.

In this regard, **Telefónica Móviles España** has drawn up the first telecommunications sector catalog on *Mobile Services for Social Integration*, which features around 30 services and applications that use mobile devices to help improve the social welfare and communications of people with special needs.

7.4. Conclusions about the impact of mobile technologies in the social sphere

Mobile phones offer an important means to improve society in terms of citizen services and development aid to emerging countries. It is important to bear in mind that of the next billion subscribers, 85% will reside in developing regions, which is a considerable market for all players in the mobile market. These players should ensure accessibility to the Internet over mobile phones, as it not only represents a means to increase profits, but also enables citizens of the third world to access products and services, boosting access to financial services and bringing new business opportunities, which improves people's standard of living.

m-Government measures will serve to promote interaction between citizens and government, allowing the former to access information and immediate alerts, make tax payments, receive assistance and even exercise their right to vote. Meanwhile, the government will have a unique means of improving its service to citizens as well as its internal processes.

Lastly, mobile technology also presents itself as a useful tool in disaster management, in the implementation of NGO projects and as an integrator of people with certain types of disabilities.

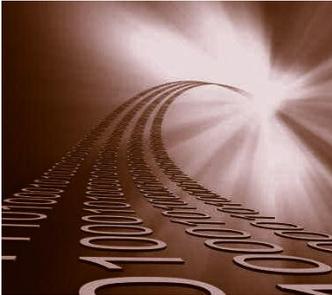


Chapter 8

**New ways of doing
business in the
telecommunications
sector**

8

New ways of doing business in the telecommunications sector



It seems clear that opening up the mobile market will change its dynamics, but how will it affect the business models of telecommunications companies? And what about businesses in other sectors that use mobile solutions? And, most importantly, will innovative business models emerge and justify the development of new products and services?

FTF experts were in agreement in pointing out that the impact and innovation in business models of companies operating in the new mobile market are an essential and often forgotten aspect. What seems clear is that the opening of the mobile market will have an impact on the business models of companies and that their ability to adapt to this new landscape will have a major bearing on their future.

On one hand, traditional companies in the telecommunications sector are witnessing how their usual sources of revenue do not generate the expected profits, and they feel the threat posed by the entry of new competitors as well as a loss of control. On the other hand, companies in other sectors see the market opening as a new opportunity that is often difficult to translate into a solvent business plan. Lastly, it is difficult to envision how the possibility of using mobile devices as a channel of distribution, marketing and sales, as well as the “mobilization” of employees (see Chapter 6), will affect their business models.

The business models that emerged with the Internet have demonstrated their ability to generate huge profits. **Google**²⁷⁸, **Wikipedia**²⁷⁹, **YouTube**²⁸⁰, **Blogger**²⁸¹ and **Facebook**²⁸² have millions of people who are not employees producing material that is distributed over the Internet for them. The great merit of these companies has been their ability to attract tens or even hundreds of millions of users. This has no doubt been highly valued by communication and advertising companies, which has led them to invest in this channel.

Now is the time to devise innovative business models in the mobile market. As technological barriers are overcome, market expansion lies in the ability to innovate in this area. Opening up the market and having more people use mobile services will create the necessary conditions to encourage investment and innovation in business models. When this takes place, and as users in emerging countries are incorporated, companies must take on the challenge of understanding and meeting the needs of global consumers, with all that this implies.

Companies outlining new business models face the major challenge of changing the idea that remains in the minds of many people regarding free mobile networks and services. A problem arises due to the fact that many small firms believe that “open” networks are the same as “free” networks, and persuade them to pay for their use poses an initial challenge for operators. Another problem is that many consumers believe that all wireless phone services should be free, in the image and likeness of those offered on the Internet.

²⁷⁸ Google: <http://www.google.es/>.

²⁷⁹ Wikipedia: <http://www.wikipedia.org/>.

²⁸⁰ YouTube: <http://www.youtube.com/>.

²⁸¹ Blogger: <https://www.blogger.com/start?hl=es>.

²⁸² Facebook: <http://www.facebook.com/>.

The point is that free services would entail an increase in advertising-based business models, but a large number of users are required in order for this to work, as occurs with online services. The problem is that innovative wireless phone services (mobile Internet, mobile social networks, etc.) are not in great demand, so ad-based models are not appealing *a priori*. According to FTF experts, offering free access to the network is not a viable option from an economic point of view. They believe it is reasonable for certain contents to be free (sponsored, “reverse-charged” or paid for by third parties), but they should have underlying business models that ensure a return on investments, particularly if we take into account that the high investments required by mobile networks pose an obstacle for operators when it comes to doing business. These factors make it very difficult at present to imagine a context in which consumers receive mobile services free of charge. The question is how to charge for mobile services that can be accessed for free over the Internet. The answer is to convince users of the value offered by mobile handsets compared to alternative channels, configuring a range of products and services tailored to their idiosyncrasies.

What seems clear is that rehashing the current models in the new open landscape is not going to work. Certain companies such as **Nokia**²⁸³, **Google**²⁸⁴, **Opera**²⁸⁵ and **Apple**²⁸⁶ are leading the change with their business models. Meanwhile, enterprising businesses (startups) in the mobile market should base their range of products and services on solid business models if they are to survive. The bankruptcies of companies like **OmniSky**, **Metricom** and **MobileStar** are proof that making money in the mobile market is no easy task²⁸⁷.

8.1. New strategies for operators and MVNOs

In the past, the mobile market was characterized by high growth rates based on voice services that offered substantial profits to operators. Now, however, they face the following problems²⁸⁸:

- **Saturation in mature markets.** The high penetration rates in developed countries (for example, Italy, the UK and Germany with 83%, 79% and 78%, respectively) are indicative of the maturity of the market.
- **Stagnation in revenue per user.** The average revenue per user of major operators has stagnated (see Figure 54). Voice services that used to offer operators high growth rates have now become mass consumer goods with a zero growth rate.
- **Low use of data services.** Operators have tried with little success to offset the stagnation through increased sales of data services such as mobile Internet. The profits derived from these services represent roughly 8% of the total (excluding 15% generated by SMS).
- **Intensifying competition.** The opening of the market leads to more competition and, thus, to a pressure on prices. A new category of competitors, such

²⁸³ Nokia: <http://www.nokia.com/>.

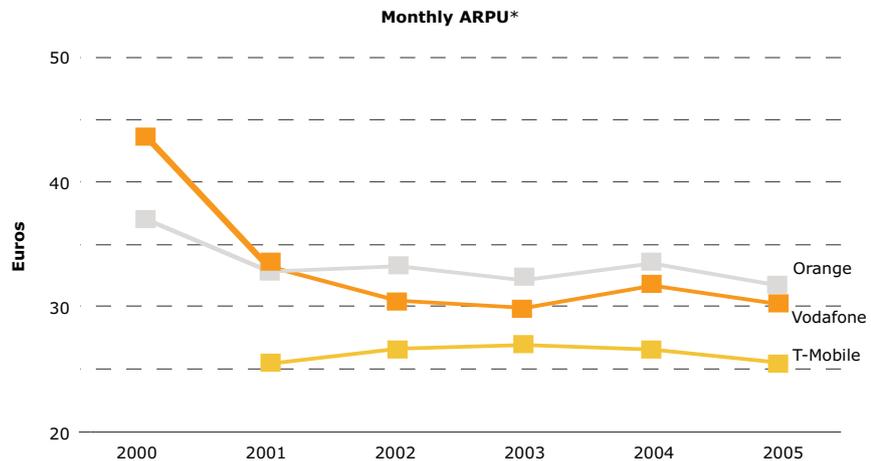
²⁸⁴ Google: <http://www.google.es/>.

²⁸⁵ Opera: <http://www.opera.com/>.

²⁸⁶ Apple:
<http://www.apple.com/es/>.

²⁸⁷ Ebs. Article: “Business and Revenue Model. The Economics of Mobile Revenue Models.”
http://www.ebstrategy.com/mobile/articles/m_rev_models_eco.htm.

²⁸⁸ *Fixing Mobile Operators’ Retail Distribution. Understanding The Battle Between Mobile Operators And Retail Channels.* Jenny Lau, David Metcalfe, Niek van Veen, Lizet Menke and Andrea Carini. Forrester. June 2006.



* Average of operations across France, Germany, Italy and the UK.

Figure 54. ARPU of major European operators.
Source: Forrester Research, Inc.

as **Skype**²⁸⁹, **Google** and **Joost**²⁹⁰, is examining how to offer free voice and video over the Internet using mobile handsets.

In an attempt to improve their financial situation, operators are more receptive to **opening their networks and, thus, to boosting data services**. A few years ago, mobile TV appeared to be the main source of innovation, but the lack of standards and business models in this field has led them to relax their models as a means to improve their financial prospects.

Operators realize that increasing the use of data services opens the door to new methods of generating revenues. Voice services limit profits to revenue per minute of use or flat rates, while a boom in data services would enable new product package offers. That is why operators are reaching agreements with Internet companies—such as **T-Mobile**²⁹¹ with **Google** (web'n'walk) and **Hutchison**—they are aware of how much weight these companies pull in terms of data traffic. They have also signed numerous agreements to offer instant messaging and, more recently, **Vodafone**²⁹² and **SFR**²⁹³ have given access from their sites to a wide range of services²⁹⁴.

8.1.1. The challenge for operators

Operators are faced with the difficult task of combating the decline in profits, while being forced to upgrade their networks (GPRS, UMTS, etc.). If they want to sell more data services, they must first build strong networks that allow developers to design new applications that enable them to bill data traffic according to the user's identity, location and transactions.

²⁸⁹ Skype: <http://www.skype.com/intl/es/>.

²⁹⁰ Joost: <http://www.joost.com/>.

²⁹¹ T-Mobile: <http://www.t-mobile.com/>.

²⁹² Vodafone: <http://www.vodafone.es/particulares/>.

²⁹³ SFR: <http://www.sfr.fr/>.

²⁹⁴ *Mobile 2008. Market & Trends. Facts & Figures*. Enter, Idate, IT Deusto. 2008.

It is even more important to change the way they look at customers and realize that in the new multipolar world they will have to face two types of markets with completely different dynamics: the developed and emerging markets. While in mature markets demand for new subscriptions is lower, users request services with a higher level of quality and sophistication for which they are willing to pay a higher price. By contrast, in emerging markets, even when the number of potential users is greater, the price barrier means that the profit per user will be lower. In the near future, the success of businesses will be based on achieving the right balance when addressing both markets.

Another good option is to learn from past experiences. According to the consulting company EBS²⁹⁵, mobile operators face the challenge of devising business models that do not repeat the mistakes of the Internet. While the Web was a huge success in terms of user numbers, it was a tremendous financial fiasco for carriers such as **Sprint**²⁹⁶ or **AT&T**²⁹⁷, which were unable to effectively monetize the IP traffic generated by their customers. Therefore, mobile operators are under strong pressure to devise plans that enable them to share with their partners the profits deriving from the use of their networks.

To summarize, new business models should incorporate the following changes:

- **Contemplate the dichotomy between the needs of consumers in developed and emerging markets.** Customer segmentation is a vital aspect in this regard.
- **Accept the change in their relationships with customers.** At present, they are mainly in charge of providing voice services, however diversifying services complicates the relationship with users.
- **Pursue diversification of their services, agreements with new partners and new profit sharing schemes.**
- **Take into account the increased competition with the proliferation of MVNOs and new entrants.**
- **Take part in sections of the value chain that have not yet been explored.**

In addition to changing their business models, they should change their range of products and services, focusing on creating value for their customers by designing a diverse and attractive portfolio of products, as well as high-quality customer support services.

Many operators realize this and are beginning to change their business models, range of products and marketing strategies²⁹⁸.

²⁹⁵ Ebs: *op. cit.*

²⁹⁶ Sprint: <http://www.sprint.com/>.

²⁹⁷ AT&T: <http://www.att.com/>.

²⁹⁸ Enter, Idate, IT Deusto: *op. cit.*

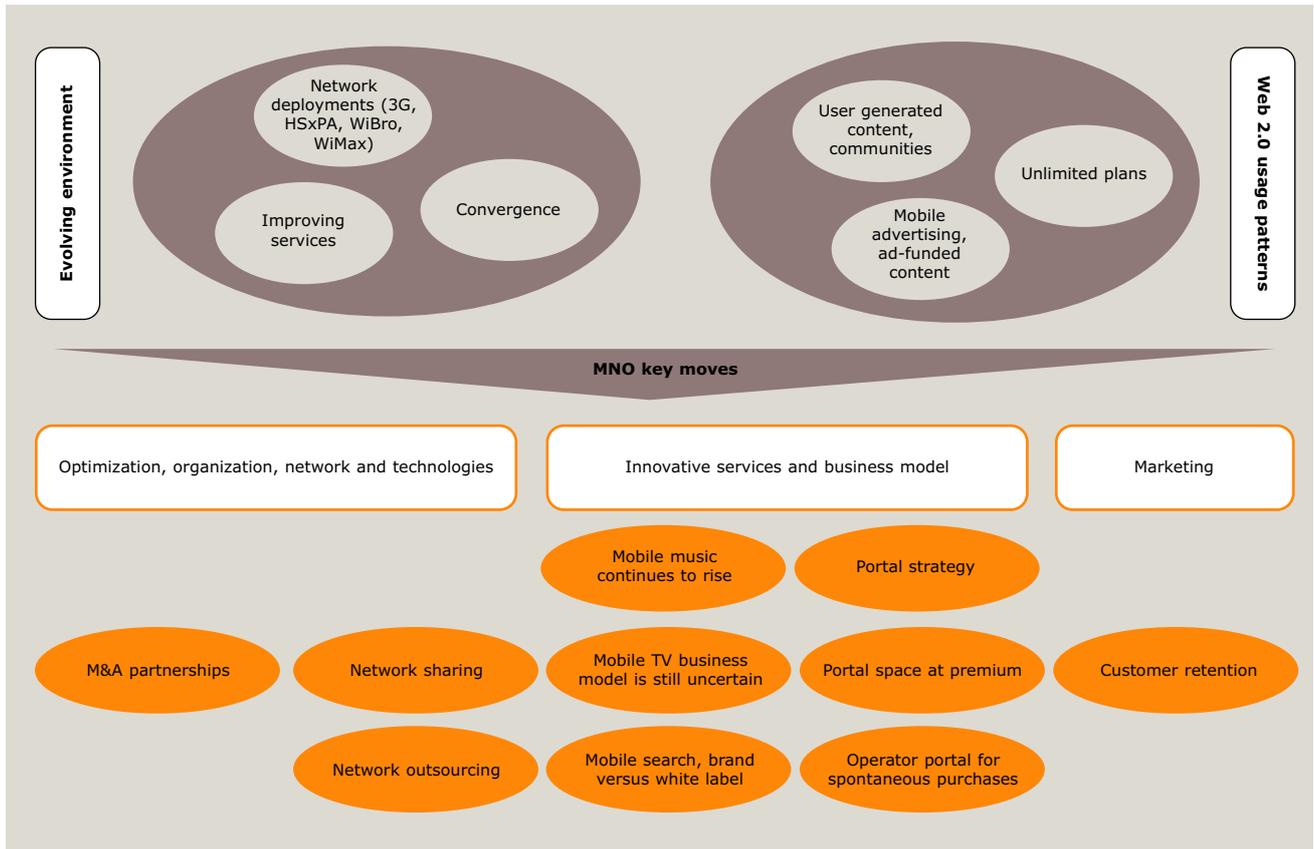


Figure 55. MNO potential strategies in an evolving web-based environment.
Source: Enter-Idate.

The FTF panel of experts predicted which would be the most common business models over the next five years for operators, MVNOs and other companies that provide access. Their conclusion was that it will be those who base their profits on flat rates that give access to a package of services. The experts also envisage the success of models offering Internet connections from mobile phones with access to certain premium content or unlimited downloads (see Figure 56).

8.1.2. Customer segmentation

In the new landscape, more open to free competition, understanding customers' needs will be crucial for retaining them. Operators obtain valuable data on their subscribers' usage from mobile phones that can be segmented according to the length and time of day that calls are made, the profit generated, and so on. The more subscribers use data services, such as mobile Internet, m-commerce or m-banking, the more valuable this information will be for everyone involved in the market.

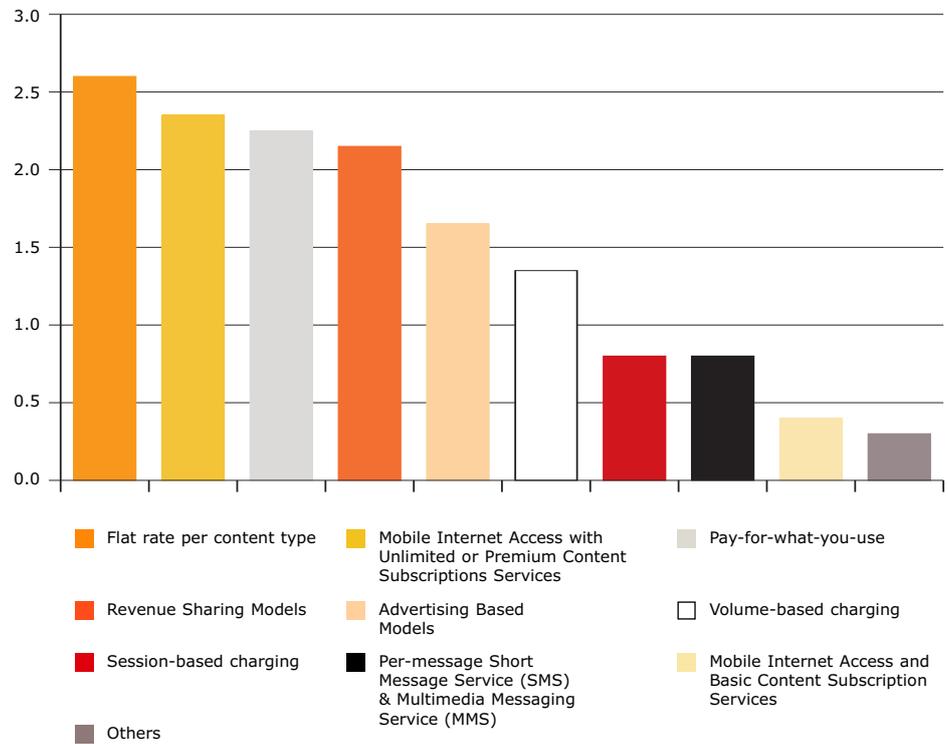


Figure 56. Most frequent business models of the next five years for operators, MVNOs and other access providers.

Source: drawn from the conclusions within the Future Trends Forum.

Note: see glossary for description of the different business models.

This segmentation should be the basis on which carriers establish their business strategy. In this regard, the consulting firm CSMG²⁹⁹ predicts that operators will be more willing to establish agreements aimed at targeting consumers with a high level of spending. These customers will benefit from a more open strategy by operators, in the form of: flat rates, advanced phones (such as the iPhone) and a wide variety of applications and content, as well as access to alternative purchasing channels that are not directly controlled by operators. Similarly, companies—as customers of this heavy-use segment—may have a wider choice of services, devices and support options.

It is also important that the segmentation take into account the new multipolar reality of the market. Products and services are no longer targeted at a limited number of consumer profiles; instead, there will be “microexperiences” of different consumers that are more difficult to classify anywhere in the world.

²⁹⁹ *On the Edge: Devices at the center of change in wireless.* CSMG. Spring 2008.

8.1.3. Flat rates to stimulate demand

As seen above, the FTF experts feel that operators should offer flat rates if they want to increase their average revenue per user. According to Forrester³⁰⁰, this type of subscription would have a beneficial circular effect at all levels of the value chain:

Flat-rate data tariffs kick-start an upward cycle

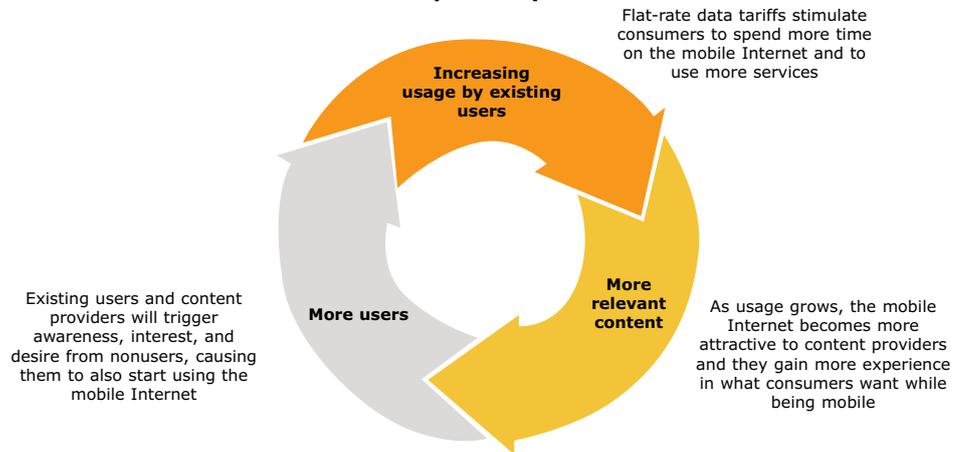


Figure 57. Circular effect of flat rates.
Source: Forrester Research, Inc.

1. **Increased usage among existing subscribers.** Consumers look for simple, predictable and cheap rates that enable them to control spending. Flat rates respond to these three premises, and have thus contributed to a rise in Internet connections: when prices fell 35% in Western Europe between 2004 and 2006, usage increased by 135%. In the mobile market, something similar occurred with voice services. In Japan, where the use of mobile Internet has greatly increased, 80% of **KDDI**³⁰¹ customers signed up for their flat rate, which forced **NTT DoCoMo**³⁰² to also offer this kind of pricing.
2. **More quality content.** Today the vast majority of Internet sites do not specifically develop for mobile platforms. This becomes a vicious circle: brands do not want to invest millions of euros in developing a specific website if there are not enough users, while advertising companies want to see proof of the efficiency of this medium for their campaigns. Only 32% of mobile Internet users go online at least once a week. As the number of users frequently accessing the Internet from their mobile handsets rises, all of the major companies will want to have a presence on this channel. The involvement of names like **Google**, **YouTube** or **MySpace**³⁰³ will surely attract other companies in the industry.

³⁰⁰ *Mobile Internet Pricing Strategies Mature*. Niek van Veen. Forrester. July 2007.

³⁰¹ KDDI:
<http://www.kddi.com/english/index.html>.

³⁰² NTT DoCoMo:
<http://www.nttdocomo.com/>.

³⁰³ MySpace:
<http://www.myspace.com/>.

3. **Growing user base.** Existing users and content providers will increase potential users' interest, knowledge and desire for data services. Operators can accelerate the process by offering mobile access to services that are already popular on the Internet, as **Vodafone** did with **MySpace**. In the Netherlands, **KPN**³⁰⁴ has done something similar by cooperating with the popular social network **Hyves**³⁰⁵.

Several operators have decided to offer flat rates to their customers. For example, **Telefónica**³⁰⁶ has launched an offer that consists of four flat rates for mobile Internet allowing online access from mobile phones, computers and PDAs, with unlimited data traffic³⁰⁷. The connection speed is reduced if a download limit is exceeded, although no additional charge is applied. Meanwhile, **Vodafone** offers its customers Internet browsing using mobile devices for twelve euros a month. This fee gives access to the service without time or connection limits.

Nevertheless, offering flat rates is not enough for data services to really take off. A clear example can be found in the U.S., which for years has led the way with its range of flat rates for mobile phones, ranging from 15 to 40 dollars a month (some operators even allowed mobile phones to be used as modems). Nevertheless, this has not brought about a significant increase in the use of data services.

Offering flat rates certainly stimulates the demand when consumers are convinced of the value of data services, but they are less likely to be willing to pay a monthly fee for a service they have not even tried or that they do not find attractive or adapted to their needs. This suggests that, at this stage, it makes more sense to clarify user fees and offer flat rates when they are convinced of the value of these services.

It is also important to consider that traffic increases exponentially in the absence of additional costs to consumers. This is currently becoming a problem for Internet service providers (such as the **BBC iPlayer** in the UK), which will become even more acute in mobile networks, as their access has an inherent limitation.

It therefore appears that flat rates are a necessary condition for the success of data services but not sufficient. They must be accompanied by adequate network management and attractive services for which users are willing to pay a fee.

8.1.4. The rise of service packages

Another strategy that operators can use to increase usage is to offer their customers service packages. Many consumers are demanding these kinds of deals, a wide range of which are currently available, covering three core services (triple play): fixed voice, Internet access and TV.

³⁰⁴ KPN: <http://www.kpn.com/>.

³⁰⁵ Hyves: <http://www.hyves.nl/>.

³⁰⁶ Telefónica: <http://www.telefonica.es/>.

³⁰⁷ Noticiasdot.com. 13/06/2008. Article: "Telefónica estrena tarifas planas 'reales' de Internet móvil para ordenadores, móviles y PDAs."

Despite the fact that Spain trails most of Europe in broadband lines and Internet use, it ranks at the top for households with two or more telecommunications services contracted in packages³⁰⁸. With 29% of households having signed up for such services, it ranks fourth on the continent, right behind Denmark, Estonia and the Netherlands, and well above the EU average, according to Eurobarometer data presented in the report *Sociedad de la Información 2007* by Telefónica. This gap is widening, especially in terms of the rate of growth, which rose 40% in one year, consolidating this leadership.

Quadruple packages

It seems logical for telecommunications companies to boost their triple bids (fixed voice, Internet and TV) by adding mobile services ("quadruple play"). Cable TV providers, satellite TV companies and mobile operators could also compete by offering these services. To do so, they may choose to acquire other companies, establish joint agreements or expand their own operations to offer this service directly. The decision will depend on market position, their ability to expand their product range and their financial situation³⁰⁹.

³⁰⁸ *Cinco Días*. 07/01/2008. Article: "España, a la cabeza de Europa en venta de paquetes de 'telecos'." http://www.cincodias.com/articulo/empresas/Espana-cabeza-Europa-venta-paquetes-telecos/20080107cdscdiemp_3/cdsemp/.

³⁰⁹ *From Triple-play to Quadruple-play. Strategies, Business Models, and Best Practices*. Pyramid Research. 2007.

Provider	Landline voice	Mobile voice	Landline broadband	TV, video	Degree of difficulty in filling portfolio gaps and offering bundles
Cable providers	Incremental build	Partner (MVNO) or acquire	Incremental build	X	Low—primarily network upgrades
Satellite TV providers	Partner or acquire	Partner (MVNO) or acquire	Partner (MVNO) or acquire	X	High—primarily acquisitions, partnerships
Mobile network operators	Build or acquire	X	Partner or acquire	Partner or acquire	Moderate to high—partnerships acquisitions needed
Telcos	X	Partner (MVNO) or acquire	Incremental build	Build or partner	Low to moderate—primarily, though in the most difficult segment, video

Figure 58. Service providers' strategic options for filling gaps and offering quad-play packages. Source: Pyramid Research.

In Europe, quadruple plays have been met with modest acceptance. In the case of Spain, only 5% of customers who sign up for service packages go for the quadruple play. One of the factors slowing their expansion is the slow progress of the integration of companies' fixed-voice and wireless departments. The lack of unified business objectives and common strategic vision is holding back such offers.

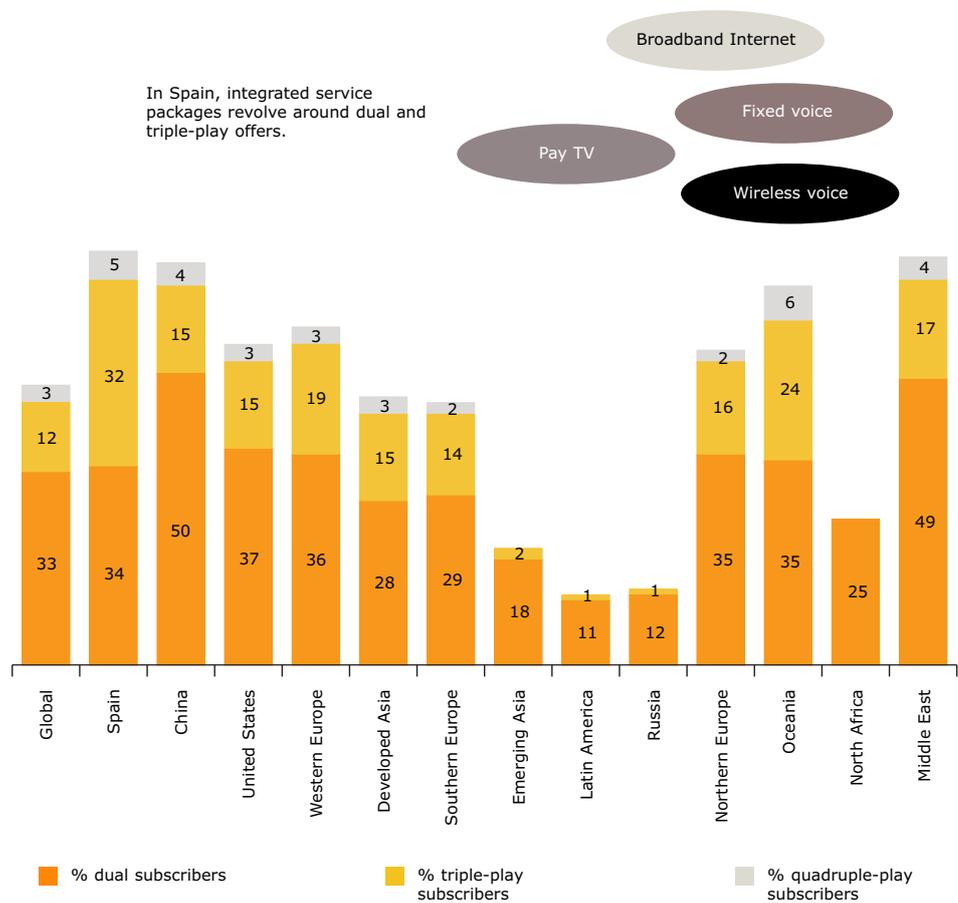


Figure 59. Global use of dual, triple and quadruple offers.
Source: *Estudio España Consumo Móvil*. TNS Global Technology Insight. November 2006.

Nonetheless, there are some examples of this type of offer in Europe:

- In 2006, **Virgin Media**³¹⁰ launched a quadruple play in the UK for 40 pounds a month that offered 2 Mbps Internet connection, calls to national fixed-lines, a TV channel package, 300 minutes of wireless calling and 300 SMS³¹¹.

³¹⁰ Virgin Media: <http://www.virginmedia.com/>.

³¹¹ Pyramid Research: *op. cit.*

- The French operator **SFR** launched its own quadruple play in April, 2007: for 29.90 euros, it offered Internet access up to 20 Mbps, fixed-voice calling, a package of 36 TV channels and outgoing wireless calling, albeit with numerous restrictions (limited geographical range, etc.)³¹².
- In February, **Jazztel**³¹³ signed a contract with **Orange**³¹⁴ to offer complete virtual wireless voice services in Spain by consolidating quadruple-play services in a single bill.

The reason for the modest supply of these packages lies in the concern on behalf of operators and service providers about their profitability. First, insofar as they entail discounts for customers, the profits are lower, with a high sales cost (from 50 to 419 euros). At the same time, they can lead to “war” between competing offers, being a defensive weapon in the short term but with questionable profitability in the medium term. Therefore, it seems to make more sense for the operators, taking advantage of the opening up of the mobile market, to focus on expanding their range of offers with innovative services that offer customers value and that generate higher profits.

8.1.5. Advertising in business models

Traditionally, operators’ business has been mainly based on managing traffic on their networks (for example, selling minutes and data access to their customers). However, with companies like **Google** entering the market, the old business models are being threatened by ad-based models that include free network access.

The idea of offering telephone services for free in exchange for accepting ads is not new³¹⁵. In 1997, the company **Gratistelefon** tried its luck in this area, offering users free national fixed-line service in exchange for listening to a 10-second ad at the start of each call (one minute later another ad came on, then another after two minutes). The Norwegian operator **Telenor**³¹⁶ offered a similar service, but neither of the two had much success. Currently, **Orange France**³¹⁷ and **Vodafone UK** are trying out similar models for wireless voice services in which customers receive games and other free downloads sponsored by ads. Meanwhile, **Virgin Mobile** has managed to get 330,000 customers to sign up for its Sugar Mama plan, which features free, ad-sponsored calls.

Despite all the buzz about this kind of business model, it’s enough to examine the current data and forecasts on profits in order to get an idea of the viability of models funded entirely by advertisements. The forecasts show that telecommunications companies will get less than 2.5% of their revenue from advertising.

³¹² *Triple play and service bundling: strategies in the European market.* John Delaney and Marta Munoz Mendez-Villamil. Ovum. June 2007.

³¹³ Jazztel:
<http://www.jazztel.com/>.

³¹⁴ Orange: <http://www.orange.es/>.

³¹⁵ *The Prospects For Ad-Funded Mobile Services. Why Ad-Sponsored Mobile Voice And SMS Won't Disrupt the Market.* Niek van Veen, Michelle de Lussanet and Lauriane Camus. Forrester. November 2007.

³¹⁶ Telenor:
<http://www.telenor.com/>.

³¹⁷ Orange France:
<http://www.orange.fr/>.

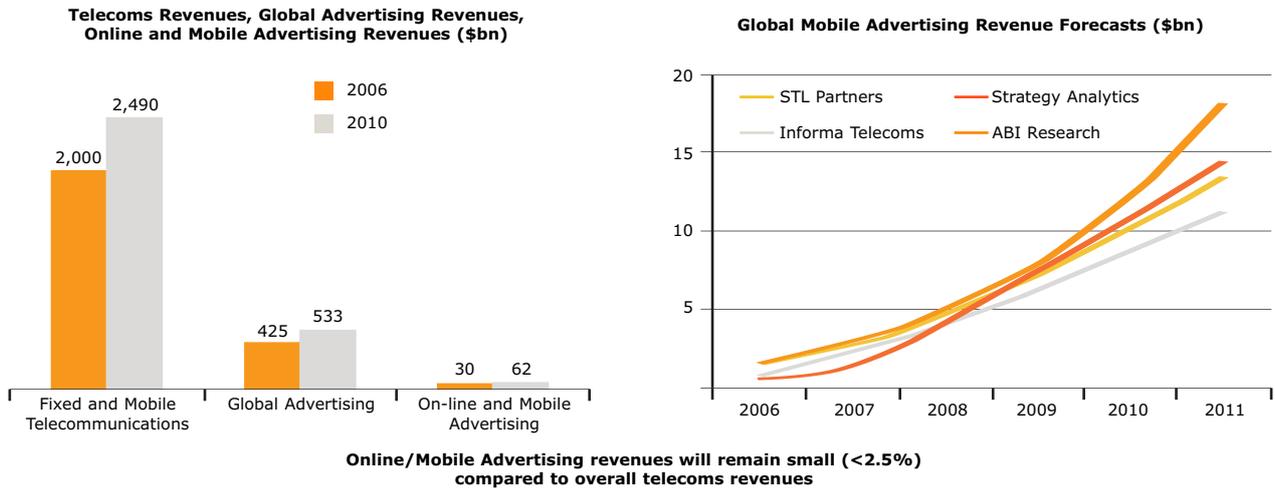


Figure 60. Predicted revenues from advertising.

Source: Mobile Marketing and Advertising, World Market 2005-2011: ABI Research, 2006. Global Mobile Advertising Market Forecasts, 2006-2011: Telco 2.0, March 2007. Global Mobile Advertising Summary 2007-2011: Strategy Analytics, Wireless Media Strategies (WMS) Strategic Advisory Service, May 2007. Global Mobile Advertising Revenue 2006-2011: Informa Telecoms, 2006.

The FTF experts examined the viability of funding the new services being launched in the mobile market with advertisement revenues and most discarded this option.

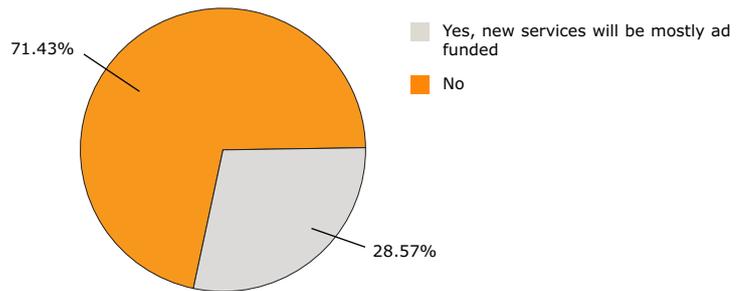


Figure 61. Will new services be ad funded?

Source: drawn from the conclusions within the Future Trends Forum.

In the opinion of the FTF experts, these models may work for some services and players (e.g., **Google**), but they cannot be applied to all new services. They believe that the sort of advertising most likely to succeed will meet the following standards: it must be nonintrusive, offer the customer value, take location into account and be requested by the user. Searches done using mobile devices are an excellent means of achieving this.

Nonetheless, some companies have tried their luck in this terrain³¹⁸. In September 2007, the virtual mobile operator **Blyk**³¹⁹ started operating with an entirely ad-funded business model. **Blyk** operates through the **Orange** network in the UK. Its target market is limited to potential customers between the ages of 16 and 24, who must either be invited by another user or sign up at one of the parties the company organizes. Before signing up for **Blyk**'s services, customers must complete a **detailed questionnaire** about their preferences. **Blyk** offers a SIM card (not a subsidized handset) with 43 call minutes and 217 SMS messages a month for free in return for up to six MMS ads a day. Users save about 350 euros a year. For **advertisers**, **Blyk** offers a high degree of segmentation of the attractive demographic group of young people with strong brand loyalty.

Its model for generating profits is simple, charging 0.07 pounds sterling per SMS ad sent, and 0.22 pounds per MMS. It also creates revenue through calls to other operators that support its "network." Its future business model foresees the possibility of introducing technology that would enable users to buy goods and services directly from their handsets, sharing the revenue with advertisers.

With this strategy, the company had 30,000 customers as of March 2008. The consulting firm **Strategy Analytics** estimates that its ARPU was about 30 dollars per month, or 50% more than the average for prepaid users of the other virtual operators in the UK. So far **Blyk** has done 900 commercial campaigns in the UK for brands like **Coca-Cola**³²⁰, **STA Travel**³²¹, **Penguin**³²², **Buena Vista**³²³ and **L'Oréal**³²⁴, with an average response rate of 29%. This percentage is astoundingly high, given that traditional advertising by mail, Internet or email rarely surpasses 1%. **Blyk** has succeeded in getting consumers to see this advertising as an attractive offer of products and services tailored to the consumer's needs, instead of an invasion of their privacy. **Blyk** just entered the Spanish market in conjunction with **Orange** and will be expanding to Germany and Belgium in the first half of 2009.

8.1.6. Operators share profits from content

The trend in the telecommunications world is to attract new customers by offering enticing applications and services, instead of the mere network access. This new approach to an "application-centric" world jeopardizes the underpinnings of traditional business model used by network operators, which should be modified.

The content business is substantially different from that of the network access, due to its multiplicity, fragmentation, and the variety of players who compete fiercely. Nevertheless, operators have no other choice but to bet on the content area if they want to compensate for the declining revenues generated by voice and messaging services.

With this underlying threat, operators should abandon their walled gardens approach in favor of open models that promote innovation in the content area and increase the revenues generated by them.

³¹⁸ *The Netsize Guide. Mobile 2.0, you are in control.* Netsize. Paris, February 2008.

³¹⁹ Blyk: <http://www.blyk.com/>.

³²⁰ Coca-Cola: <http://www.cocacola.es/>.

³²¹ STA Travel: <http://www.statravel.com/>.

³²² Penguin: <http://www.penguin.com/>.

³²³ Buena Vista: <http://studio.go.com/>.

³²⁴ L'Oréal: <http://www.loreal.es/>.

According to a study by Pyramid Research³²⁵, operators will start adopting open (or federated) models for content distribution, albeit slowly. The majority have worked until now with **walled gardens**, in which content and applications are accessible only through their portals, while outside access to content is restricted (e.g., Vodafone Live!). This model gives operators an iron grip for controlling quality, profits, customers, etc. Its drawbacks, which have already been addressed throughout this study, essentially entail a hindrance for innovation and a risk in terms of the satisfaction of users, who demand an increasingly greater variety of services.

According to Pyramid Research, operators' future lies in their adoption of **federated models**. With these models, operators open up their networks and offer both proprietary and third-party content. This model will promote the development of innovative content by other companies, as well as innovation from users of the open-source community.

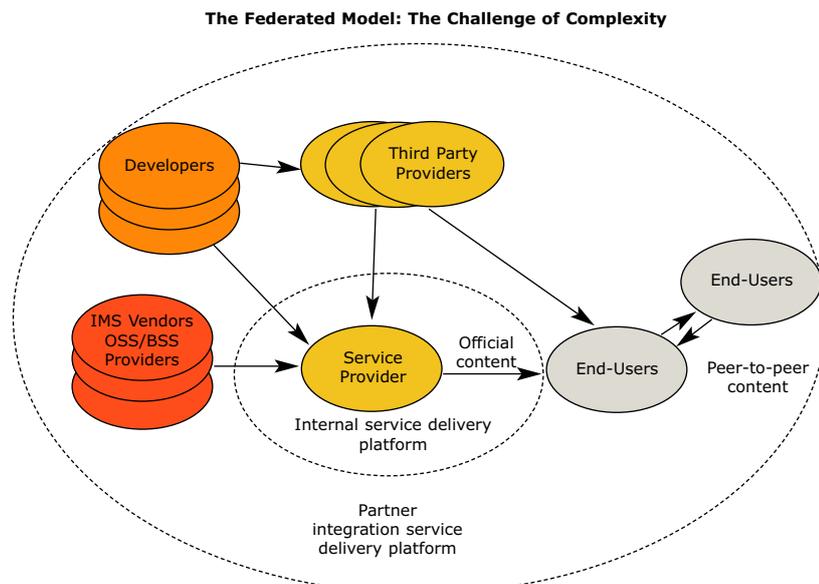


Figure 62. Structure of the federated model.
Source: Pyramid Research.

By this arrangement, operators share profits generated by the use of applications and services developed by third parties. Ideally, these models should not take on "standard" conditions for all content providers. That way, operators should offer better conditions to companies with a brand that has market recognition, such as **Disney**³²⁶ or **Pepsi**³²⁷, which are capable of bringing greater value to the alliance.

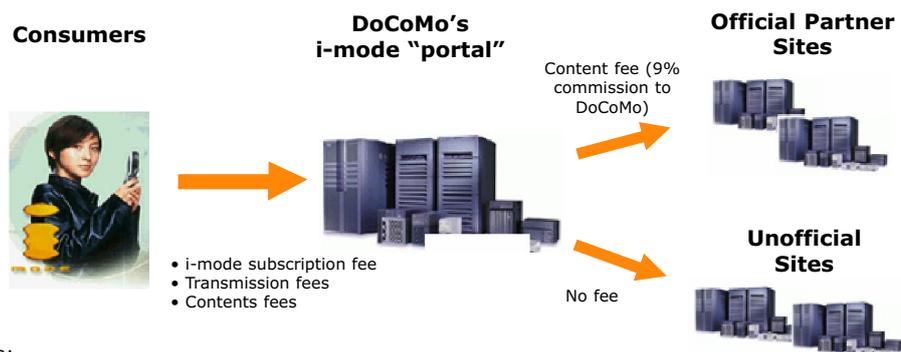
³²⁵ *Walled Gardens and Open Models: IMS Business Models for an Applications-centric World*. Pyramid Research. 2006.

³²⁶ Disney: <http://www.disney.es/>.

³²⁷ Pepsi: <http://www.pepsi.com/>.

One example of this type of business model can be found in **NTT DoCoMo's** i-mode, in which 91% of the profits generated by applications goes to developers.

This alliance has brought substantial profits to the operator, which attests to the validity of these models.



Note:

- Content charge: transaction or subscription based
- Transmission charge: based on data transmitted, not time
- Commission paid for the link on DoCoMo's i-mode menu and micro-billing

Figure 63. The i-mode business model

On the flip side, the agreements in Europe that are most generous to developers offer no more than 50% of the profits.

The rate plans for content vary considerably from region to region:

- Monthly subscriptions are highly popular in Japan (e.g., i-mode).
- In Europe, North America and South Korea, the pay-per-download model is more common.
- In the United States, the intermediate solution of **pay-per-play** is also popular. Users can access content without downloading and are charged time-based fees. This type of billing is starting to be used in Europe.

To summarize, with regard to the mobile content area, the trend is toward a flexibilization of the walled garden models currently used by operators as well as the proliferation of agreements with content developers. Those agreements establish the foundation for profit sharing and are seen as a way to foster innovation and boost operators' revenues for data services.

8.2. The business models adopted by content providers

As seen previously, the content market will be the breeding ground for establishing new agreements (operators/providers). According to the FTF experts, over the next five years most content providers will adopt business models based on strategies that promote profit sharing. Though to a lesser extent, they will also adopt models based on charging users a fee (either content-based or a flat rate).

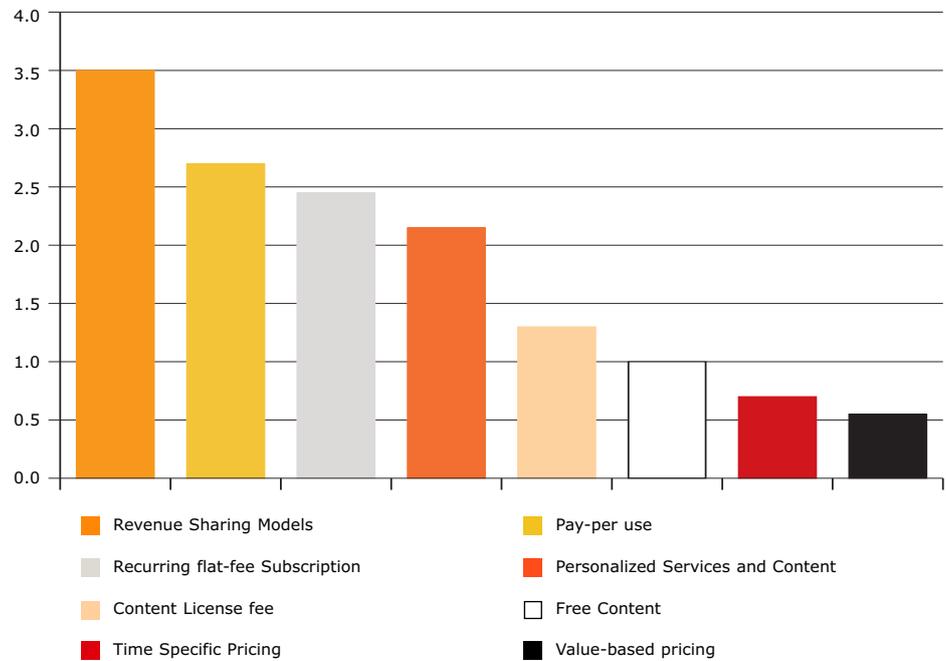


Figure 64. Business models used by content providers in the next five years.

Source: drawn from the conclusions within the Future Trends Forum.

Note: see glossary for description of the different business models.

Currently, the terms governing profit sharing vary according to geographic region. Content providers in Europe often reach deals with operators to the tune of about 50%, while in the United States operators and developers agree to a 30%/70% split, both in sharp contrast to Japan, where operators take in 9% versus the 91% received by content developers. Obviously, the higher the profits seen by developers as a result of these agreements, the greater the stimulus in terms of the content being produced, with consumers ultimately benefiting.

8.3. The monetization of mobile social networks

The experts consider mobile social networks to be among the services offering the greatest opportunities for companies. Nevertheless, as seen with another type of mobile-specific content, one of the outstanding issues for social networks is price. Despite many mobile operators offer flat-rate subscriptions, the number of people signing up for these is relatively minor. Thus, a large amount of customers pay expensive bills—which are often difficult to decipher—as a result of signing onto the mobile social networks.

Mobile social networks represent one of the most successful services, given that they account for much of the traffic on the mobile Internet. In specific terms, the figure equates to 40% worldwide, according to the study *State of the Mobile*

*Web*³²⁸, conducted by the developer of the mobile browser Opera Mini. And in some markets, such as the United States, South Africa and Indonesia, the percentage climbs above 60%. According to forecasts, global revenues generated by mobile social networks will go from the 572 million dollars reported in 2007 to over 5.7 billion dollars in 2012.

In addition to encouraging traffic, mobile social networks offer other advantages to operators and their partners. Since they are based on user-generated content (UGC), they have low production costs and provide rather attractive services, something that helps reduce customer churn.

Agreements between wireless carriers and the top social networks of the online world **are nothing new**. In the United States, **AT&T**³²⁹, **Sprint**³³⁰, **Verizon**³³¹ and **Virgin Mobile**³³² have associations with **Facebook**. In Europe, **Vodafone** followed suit with **MySpace** as did **Orange** with **Bebo**. One of the agreements consists of revenue sharing with operators on the traffic generated by these major exponents of social networks³³³.

No one wants to stop riding this wave, which promises high profits despite the remaining doubts as to how that will be achieved. As seen with other services, advertising is beginning to look like a valid option for users to lower their phone bills and for companies to generate revenues. Nevertheless, this model has not been adequately deployed in the mobile market, given that operators thus far have focused more on including the cost of the data traffic to the content price.

Some companies, such as **Jumbuck Entertainment**³³⁴ (Chat Del Mundo), have started to integrate ads in their social networks. Meanwhile, **Itsmys.com**³³⁵ launched the first mobile social network with advertising and **MySpace** presented an ad-funded, mobile version of its site.

While most of the experts on this topic believe that mobile social networks will be financed primarily by advertising, others say that the addition of new location-based services will give viability to new rate plans. The social network known as **The Grid**³³⁶ is a good example.

In addition to the lack of clearly defined business models for making mobile social networks profitable, there is another factor that could put the brakes on these services in the medium term: 3G networks are not designed to support two-way data traffic. While downloads do not present problems, uploading is still a rather slow process.

Some experts on the matter are starting to wonder whether the networks are prepared to handle a massive increase in the number of users accessing data applications such as social networks. Although operators are trying to build up usage on services like these, the fact is that the more it grows, the slower and more unsatisfactory the user experience will be. If that happens, users may end up going away.

³²⁸ Movilsur. 2/08/2008. Article: "Redes sociales móviles: una red".

³²⁹ AT&T: <http://www.att.com/>.

³³⁰ Sprint: <http://www.sprint.com/>.

³³¹ Verizon: <http://www.verizon.com/>.

³³² Virgin Mobile: <http://www.virginmobile.com/vm/home.do>.

³³³ Tendencias de las telecomunicaciones. 7/12/2007. Article: "Las redes sociales móviles empiezan a generar negocio." http://www.tendencias21.net/Las-redes-sociales-moviles-empiezan-a-generar-negocio_a1953.html.

³³⁴ Jumbuck Entertainment: <http://www.jumbuck.com/>.

³³⁵ Itsmys.com: <http://www.itsmy.com/>.

³³⁶ The Grid: <http://www.thegrid.co.za/>.

So, then, how can the popularity of mobile social networks network be built up without overcrowding the Web? In one fell swoop, 4G technology will come wipe away all of these concerns and customers will be able to upload and download at the same speed. For now, operators will have to take a careful look at whether or not they are sufficiently prepared to support a growing number of subscribers to these new services.

8.4. Emerging profits in location-based services

Location-based services are another area for which the FTF experts have better forecasts. According to Gartner Group³³⁷, users of mobile location-based services will go from 43,000 in 2008 to 298 million in 2011 in Western Europe, North America, Asia-Pacific and Japan. Although browsing is currently the primary use for these systems, service providers and mobile operators ought to start capitalizing on other applications (mobile social networks, etc.) in order to increase their market share. With this expanded range of services and increased competition, prices could foreseeably come down, which could translate into a higher number of new users.

	2006	2007	2008	2009	2010	2011
Western Europe	5.5	262.0	3,587.1	12,119.4	29,510.6	55,266.3
North America	2,035.3	4,855.1	14,733.7	27,152.8	48,696.7	71,456.6
Asia/Pacific	1,625.9	5,436.9	15,410.8	36,051.2	68,115.9	117,153.5
Japan	3,320.9	5,523.2	9,428.9	20,000.8	35,553.6	54,084.5
Total	6,987.6	16,077.2	43,160.4	95,324.2	181,876.8	297,960.9

Figure 65. Subscriber forecast for location-based services: 2006-2011 (thousands).
Source: Gartner (January 2008).

³³⁷ *Dataquest Insight: Location-Based Services. Subscriber and Revenue Forecast, 2006-2011.* Gartner. January 2008.

Wireless Developer Network.
Article: "It's the (LBS) applications, stupid!"
http://www.wirelessdevnet.com/features/williams_lbs01/.

Although the infrastructures for location-based services are already available, the decision has not been made as to how to achieve profitability on mobile location-based services. These services cover practically all aspects related to human mobility: navigation, health, security, valuable promotions, entertainment, travel assistance, workforce management, etc. (see Figure 66³³⁸).

End User	Business
Health: location of medical alerts.	Security: security of employees, control of security area.
Family security: family monitoring, tracking children after school as well as young people, pets, searches in special areas (shopping centers, public events, zoos, etc.).	Business processes: management of sale force, fleets, searches at the office.
Entertainment: games (paintball, hide-and-peek, etc.), searches for people (singles, friends, etc.), site guides.	Vertical industries: medical searches, at shopping centers, for vehicles, etc.
Viral communities: searches for social networks, special-interest communities (sports, events, concerts).	Education: searches for colleagues, events, getting around campus.
Telemetry: navigation assistance, alerts for lost items.	Telemetry: alerts for inspection and safety of machinery.
Driving: navigation assistance, traffic alerts, roadside assistance.	Driving: navigation assistance, traffic alerts, roadside assistance.
Yellow pages: location of cash machines, restaurants, venues, shops, etc.	Yellow pages: location of cash machines, restaurants, venues, shops, etc.

Figure 66. Applications for location-based services.
Source: Wireless Developer Network.

Each of these services could be aimed at a specific audience: parents, singles, young people, students, online communities, executives, etc. Consequently, it seems reasonable to create a business model aimed at satisfying the true motivations and needs of each group of users. That would be the only option they would be willing to pay for, whether that be based on a set monthly fee, usage or other possible rate plans.

Therefore, the business model ought to be founded on set **functionality packages** (according to the applications of location-based systems). For instance, there could be security packages, for locating family members or pets, or packages for students, who could locate their friends and find out where events and courses are taking place on the university campus. In other words, using a strategy designed around market niches could be a feasible option for companies.

That would allow for a differentiation of the strategies used by traditional companies and operators:

- **Operators** should identify the applications that boost the ARPU of an important base of customers, as well as attracting new subscribers, increase data traffic, allow for expansion into new geographic regions, reduce customer churn, etc.

- **Traditional companies** should focus on applications that: allow them to promote sales for their key business products, translate into new sources of revenue, cut operating costs (i.e., reducing incoming call-center activity and the number of sales representatives per account), improve customer satisfaction, etc. In any case, there are a number of questions that should be asked before a company launches its mobile location-based services, such as:
 - **How can we differentiate ourselves from the competition to attract customers?** Should our services be based on vouchers, discounts on prices or product packages?
 - **What financial incentives will we offer our users?** Should we offer just one incentive per product or several per product package? Companies must also remember that there should be differentiation between what they offer to new, recurring and loyal customers. The incentive strategy should be structured according to each particular case.
 - Moreover, location-based services can be used for **keeping up demand** for products and services at off-peak hours. Therefore, companies ought to ask themselves what type of strategies and offers they should use to entice customers to those time slots.

In any event, companies must consider the applications offered by location-based services and develop according to that the strategy that better suits their business.

Meanwhile, service providers still have **other issues** to address, namely: Will the infrastructure cost prove to be excessive in relation to the profits that could be generated by increased product demand? Will the infrastructure be prepared to handle the influx of customers?

8.5. Business models focusing on mobile devices

We are constantly seeing the appearance of new business models focusing on handsets. Meanwhile, the key player investing on mobile devices also continues to expand: content owners, service providers, application developers, etc. The opening of networks and handsets is obviously an important factor, but there are others to keep in mind as well. The maturity of the market and the rise of data services is bringing increased strategic value to handsets.

As observed by the consulting firm CSMG, the waning control of operators is giving rise to new opportunities for other companies. Figure 67 shows the emerging business models focusing on handsets. These models are unimaginable in a closed market.

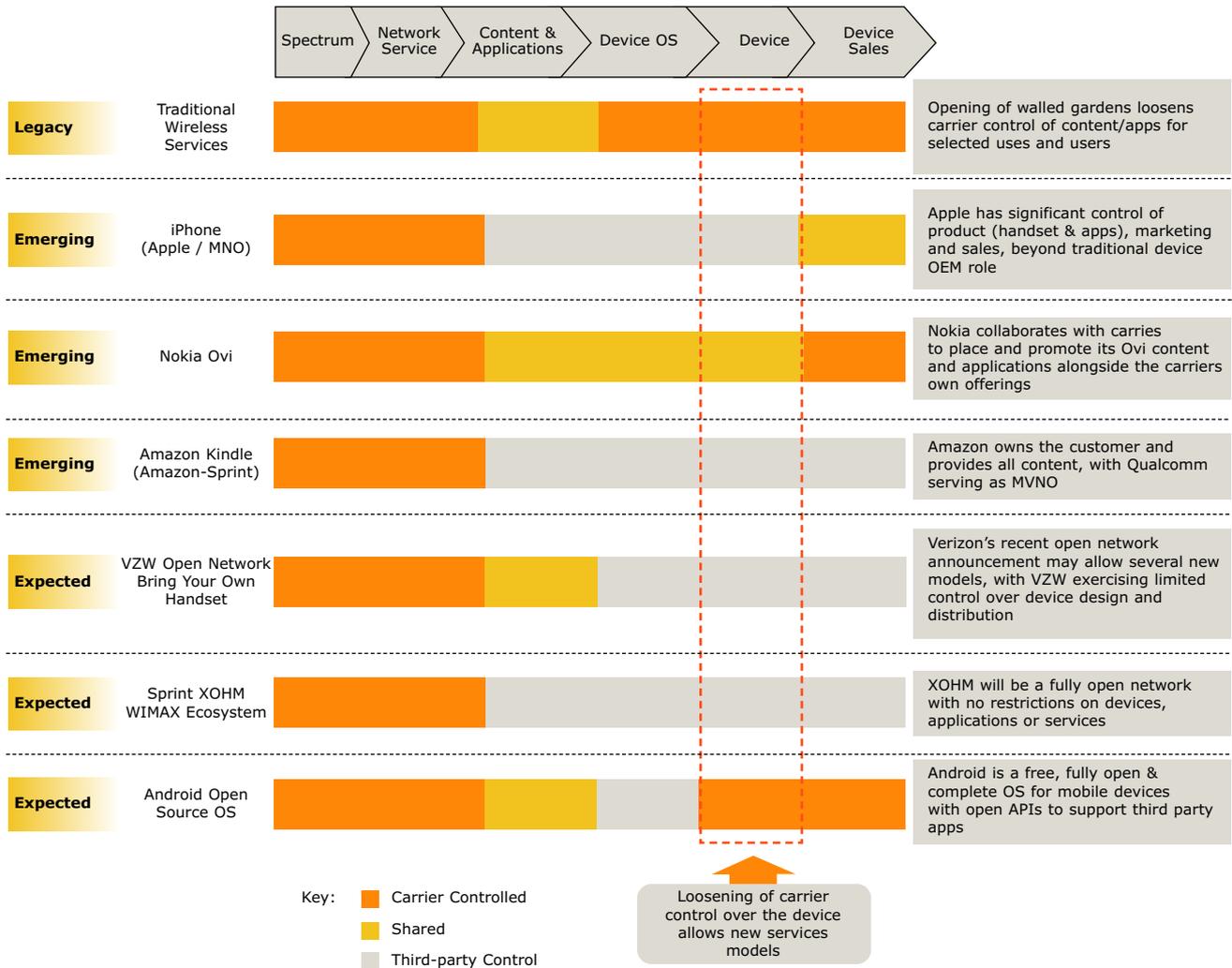


Figure 67. Emerging handset-focused business models. Source: CSMG.

With respect to manufacturers' business models, the pressure to lower prices on their handsets will force them in the short term to reinvent themselves as online service providers. **Nokia** with its Ovi, **Sony Ericsson** with PlayNow and **Apple** with iTunes are previews of what lies ahead.

8.5.1. iPhone brings about changes in business models

With the iPhone, **Apple** unleashed a new business model that is changing the rules of the game for mobile network operators. With it, operators must agree to revenue sharing, long-term market exclusivity, and the use of the **Apple's** popular iTunes site.

The iPhone has managed to alert operators to the threats posed by manufacturers and content-provider sites in the short term. Moreover, the business model³³⁹ by which iPhone profits are shared gives **Apple** a significant portion of the voice and data revenues, while the device itself also constitutes a primary source of revenue for future services. Operators, meanwhile, are playing a supporting role in stimulating the use of wireless data among their subscribers, in addition to having done little to promote innovation in mobile advertising.

With the success of the iPhone in the United States causing people to change wireless service providers, power has been shifted from carriers to handset manufacturers, who can now demonstrate their capacity for creating higher demand, as well as increasing competition between carriers.

It is expected that the new business model ushered in by the iPhone will be the first of many to appear on the horizon. In this context, mobile operators will have to find an effective way to deal with these threats.

8.5.2. The highly anticipated handset from Google

The anxiously awaited opening-up of mobile operating systems has recently materialized in a number of handsets. **Google** has launched the Android platform³⁴⁰, a set of open-source software that four industry manufacturers—**Samsung**³⁴¹, **HTC**³⁴², **LG Electronics**³⁴³ and **Motorola**³⁴⁴—have included on newly released phones.

The operating system provides access to all of **Google's** services—Web search, Google Maps, Gmail, etc.—on any handset with an Internet connection, without needing to be in front of a computer. Most importantly, its use of open-source software allows programmers to develop applications, and thus fosters innovation in the sector.

As it is well known, **Google's** business model generates most of its revenues (which could reach 16 billion dollars this year) from the ads that it displays alongside its Web search results. Offering its services on handsets will allow the company to reach more subscribers and drive revenues up even further.

Analysts at Oppenheimer & Co.³⁴⁵ cited in the American press have estimated that the search-engine company could see an annual turnaround of 4.8 billion dollars from its mobile business just two or three years after the launch of its new platform.

8.6. The impact of the opening of the mobile market on the business models of traditional companies from all sectors

The panel of FTF experts examined the impact that the opening of the mobile market and the ensuing progression in the range of mobile solutions available will have on the business models of traditional companies. The majority reached

³³⁹ *Why Apple's Business Model Works and Why Media and CE Companies Need to Pay Attention.* Van L. Baker and Mike McGuire. Gartner. January 2008.

³⁴⁰ Google. "Android – An Open Handset Alliance Project." <http://code.google.com/android/>.

³⁴¹ Samsung: <http://www.samsung.com/es/>.

³⁴² HTC: <http://www.htc.com/es/>.

³⁴³ LG Electronics: <http://es.lge.com/>.

³⁴⁴ Motorola: <http://www.motorola.es/>.

³⁴⁵ Oppenheimer & Co.: <http://www.opco.com/>.

the conclusion that this will impact business models to a greater (43%) or lesser extent (14%).

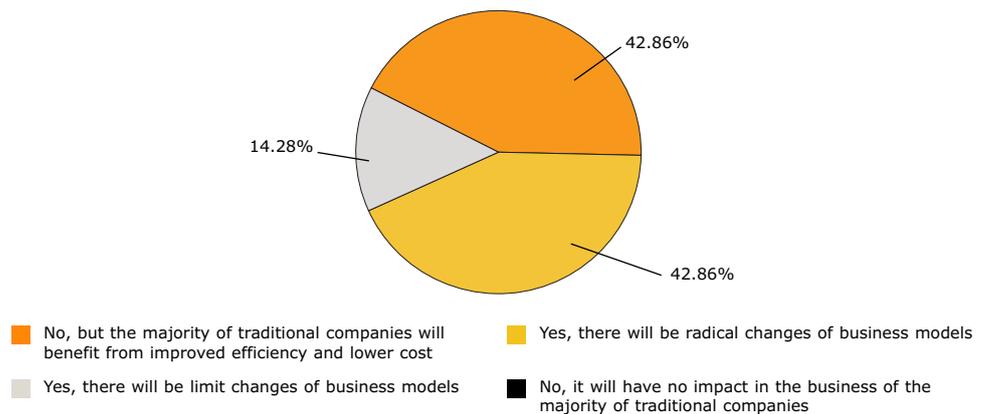


Figure 68. The impact of the opening of the mobile market on the business models of traditional companies from all sectors.
Source: drawn from the conclusions within the Future Trends Forum.

Companies from all sectors will benefit from increased mobility as well as new sales, marketing, and product-distribution channels, etc. (see Chapter 6). For some of these companies, the new options will entail a change in their business models, while for others it will simply help cut costs and improve efficiency.

8.7. Conclusions about changing business models in the new landscape

As seen throughout this study, the opening of the mobile networks will have an impact on companies' business models, and will reach not only those involved with the mobile market, but those outside the sector as well. One undeniable fact is that innovation is essential for creating new business models that can justify investments made by the sector's companies as well as stimulate the market.

With regard to access, operators are facing a situation in which voice revenues have stagnated and data usage numbers are still extremely low, just as competition is intensifying. The situation is forcing them to transform their existing walled garden approaches in order to adapt to this new landscape. Flat rates, service packages and capitalizing on advertising are emerging as alternatives for them to attract a greater number of customers and boost their revenues.

As far as content distribution is concerned, one key area will involve the structuring of profit-sharing arrangements between operators and providers in the interests of increasing both the quality and quantity of services that are appealing

to a larger number of users. Advertising should be seen as a way to complement their profits, although it will be quite difficult to achieve total profitability for the new services.

With regard to mobile devices, we can affirm their increased importance in the market, which is giving rise to new business models designed specifically for them. These models help take some of the control away from operators, as in the case of the iPhone or the new **Google** phones.

Meanwhile, the impact on the business models of traditional companies will be greater or lesser depending on their use of mobile solutions.

Finally, mobile social networks and location-based services promise significant opportunities for companies that can find ways to properly capitalize on them. Nevertheless, in light of the current situation it is not yet clear how they will generate profits. With regard to mobile social networks, some companies are starting to integrate advertising, but doubts remain as to whether that will be sufficient. The inclusion of location-based services as a new dimension in social relations could bring about other means of generating profits. With respect to mobile location-based services, the question is how this technology will attract customers and what is the best way to do that without it being perceived by consumers as invasive.

9

Chapter 9

Final summary

9

Final summary



Forecasts indicate that by the end of 2008, there will be four billion subscriptions worldwide and a 61% penetration rate. Nevertheless, behind that figure lie two markets with clearly distinct dynamics: mature markets in developed countries and emerging markets. With respect to the former, although there is less demand for new subscriptions, users require services with greater quality and sophistication and are willing to pay more in exchange for that. On the flip side, with emerging markets, despite having a greater number of potential users (i.e., those currently without a device), the price barrier translates into lower revenue per user. The success of companies in the near future hinges on a proper balance being struck between the two markets.

Therefore, in mature markets operators face the challenge of improving the user experience in terms of services and content, as well as the devices themselves, in order to compensate for the stagnation of ARPU and meager amount of new subscriptions. To take on this new challenge, operators are starting to ease up on their walled gardens approach and cooperate with other players in the market. Their cooperation is key for standardizing a market that is characterized by fragmentation in its dynamics and its technology. That flexibilization or opening of models will lead operators to an irremediable loss of control over certain aspects that has prevailed up to now, particularly those related to services offered by mobile handsets: access to devices and operating systems, along with the creation of content and new applications. Nevertheless, if they are able to adapt to this new situation, they will end up seeing higher revenues.

The main beneficiaries of the opening of the market will be the end consumers, who will gain access to any service from any provider on any device—and in a simplified manner. As for businesses, content developers, service providers and manufacturers alike will be able to freely offer their products or services to all consumers. This new ecosystem will attract companies not only from the telecommunications industry, but from other sectors as well. Nevertheless, there is still a long way to go before the opening of the market becomes a reality.

Mis notas

As for devices, it is important to keep in mind that a mere 10% of the population owns a smartphone or wireless handset capable of accessing advanced services like the mobile Internet. Which handset models will open the market to the other 90%? Another issue emerging as vital in order for consumers to utilize data services is the usability of handsets, which acquire greater relative importance as a result.

In that regard, if focus is placed on improving the disappointing figures on the current use of data services, then innovation on services and designing new billing schemes that allow consumers to control their spending, become essential for attracting them. Innovation should be oriented toward offering customers services with high added value, such as personalized deals, based on their preferences location-based services or mobile social networks.

That new range of innovative products and services will also benefit **traditional companies** from all sectors, since they will see increased mobility for their employees, will be able to personalize their offer of products and services based on the consumer preferences or location, and will have access to new marketing, sales and distribution channels. The use of M2M technology will also enable companies to optimize their internal processes (e.g., management of fleets and machinery, etc.), as well as improving and diversifying their range of services. This will all have a greater or lesser impact on their business models depending on the use they give to the mobile solutions.

Nevertheless, in order for there to be companies interested in developing this new range of products and services, innovation has to flourish in the business models area allowing companies to achieve a return on their investments. Advertising may be an option for earning revenues, but it is not the goose that laid the golden egg.

The situation is different in **emerging countries**, which will see substantial growth in 2009. Out of the next billion subscribers, 85% will come from developing regions, which represents a major opportunity for both device makers and operators, who will be forced to adapt their products and services in order to provide access to handsets and satisfy the fundamental needs of this new group of users.

In those countries, handheld devices will offer the primary access to the Internet and, as such, will become a catalyst for improving quality of life for the population: it will provide access to information about products and services for both raw materials and finished products, as well as financial services, and will represent a unique opportunity for entrepreneurs starting new businesses related to wireless or other services.

As a closing thought, it should be pointed out that while the opening of the market appears to be necessary, it is not sufficient to bring about the anticipated "mobile revolution," a scenario in which mobile handsets go from being a mere means of communication for consumers to a "remote control for their lives." Likewise, cooperation will be needed among all of the key market players in order to alleviate other initial problems.

Appendices

Glossary

A

Accelerometer: an accelerometer is a type of sensor for measuring the reaction of an object subjected to a force, by evaluating the direction and variation of its acceleration. In other words, a device that is capable of converting certain movements into electric signals that can be interpreted or ignored by the system.

Advertising-based model: business model consisting of operators offering free calls or services in exchange for advertisements, and advertising companies receiving revenues.

ARPU: average revenue per user. The amount of revenue per user obtained by a services company in a specific time period. Calculated by dividing total revenues by the company's total number of active customers. It can be applied to any services company, but is particularly utilized in the telecommunications industry, primarily in wireless voice services, since it helps in the valuation of the company by factoring in not only its total number of users, but also the quality of those users, meaning whether or not they bring money into the company, and to what extent.

Augmented reality: set of devices that add virtual data to the existing real-world information. This is its main difference from virtual reality, since it does not replace physical reality but rather superimposes computer-generated images onto the real-world view. Augmented reality devices normally consist of a head-mounted display with integrated GPS for accurately locating the user's position. Also includes inertial and optical tracking systems capable of measuring such characteristics as acceleration, orientation and tilt angle. The system includes virtual images that are displayed to the user mixed together with reality.

B

Banner: advertising format used on the Internet that consists of incorporating a piece of advertising into a Web page, nearly always for the purpose of generating traffic for the advertiser's website, which pays for the ads to be placed.

Basic phone: wireless device built exclusively around voice services, with a market price of up to 100 dollars. With basic functions, its primary targets are emerging markets and novice users. These phones are normally used with prepaid services. Examples of these handsets include the Nokia models 1110, 2300, 2600, 2650 and 3310, and Sony Ericsson's J100 and K200 devices.

Blog: periodically updated website that compiles chronologically ordered entries or articles by one or more authors, starting with the most recent one. The authors are always free to publish whatever they choose.

Bluetooth: communications technology that enables users to transfer data wirelessly at distances of up to 10 meters. Allows for the creation of personal networks between handhelds, computers, printers and other wireless devices. Its numerous applications include synchronization of contact information between handhelds and computer address books, enabling of hands-free devices for making phone calls from cars, and utilization as wireless modems for connecting laptops to the Internet.

Broadband: transmission of data whereby several pieces of information are sent simultaneously, for the purpose of increasing the effective bit rate. Broadband frequencies can transmit a greater volume of data at higher speeds than narrowband frequencies.

Browser: Web browser. Application that allows users to retrieve and view documents from Web servers around the world via Internet. Currently, all browsers are capable of displaying or running graphics, video sequences, sound, animation and a range of programs, as well as text and hyperlinks or links. The basic functionality of a Web browser involves viewing pages with text, with the possible inclusion of multimedia elements.

C

Casual games: very basic, simple games providing entertainment without requiring users to develop extraordinary skills (i.e., puzzles, card games, etc.).

Chrome: new Web browser from Google whose main features are: a single browser window with different

tabs, dynamic tabs, application shortcuts, crash control, incognito mode, safe browsing and instant bookmarks.

Convergence: integration of diverse functionalities (music, email, telephone, Internet, GPS, programs, etc.) in a single device.

D

Data services: there are two existing types of services in the mobile environment: voice services, which consist of sound communication through radio waves; and data services, which process information in a format that is apt for use in a computer (i.e., SMS, email, video, etc.).

Digital divide: expression referring to the socioeconomic gap between communities with Internet access and those without, although such inequalities can also refer to the range of new information and communications technologies (ICT), including computers, mobile handsets, broadband and other devices. This term also refers to the differences existing between groups according to their ability to efficiently utilize ICT, due to the varying levels of literacy and technological preparedness. It is also occasionally used to indicate the differences between those groups that have access to quality digital content and those that do not. The opposite term is digital inclusion.

Digital dividend: new frequencies that could be used for wireless telecommunications networks, arising from the spectrum that would theoretically be released following the switchover from analog to digital television.

E

Early adopters: people who anticipate market trends and, due to the influence they have on their respective social circles, both virtual (Internet) and real, determine the widespread adoption of those trends.

Enhanced phones: wireless handsets whose advanced functions go beyond the basics. They are based on voice services with improved features such as cameras, MP3 players, video, Java and synchronization of calendar and contact data. These devices can offer data services, such as multimedia messages and Web searches (i.e., Sony Ericsson S700, Motorola V600 and Nokia 6230).

F

Flat rate per content type: business model used by operators based on earning revenues from flat rates, with no consideration for usage limits, akin to the "all you can eat" approach.

Flat rate subscription: business model used by content providers based on a flat rate, with unlimited use and no restrictions on hours, weeks or months.

G

Gigabyte: the term gigabyte is used to quantify memory or disk capacity. A gigabyte is equal to 1 billion bytes (10⁹ bytes) although it is also commonly expressed as 1024³, or 2³⁰ bytes, when using the binary system instead of the decimal system.

GPS: Global Positioning System. Satellite navigation system that enables users to determine the location of an object, person, vehicle or ship, anywhere in the world and with an accuracy varying from a few centimeters to a few meters. The system is built on a network of 27 satellites in orbit. When seeking a position, the receiver automatically locates at least three satellites, from which it receives signals and in turn calculates the distance from the satellite.

I

I-mode: set of technologies and protocols designed to be able to navigate through minisites designed specifically for handheld devices such as mobile phones or PDAs. Displays Web pages by using a language that is highly similar to regular HTML, but adapted for mobile phones. The language, which was created in 1999 by and for Japanese telephone companies, included support for images and color displays. It has been successful in Spain with Telefónica and elsewhere in Europe through other carriers. The technology competes with WAP and other types of navigation technologies developed for mobile devices.

Interface: a graphic user interface is a technological component that allows people to interact with computer systems, through the use and representation of visual language.

Interoperability: property referring to the use of an application in different architectures in a way that allows for data exchange.

ISP: abbreviation for Internet Service Provider. Companies offering Internet access to users or networks as well as the maintenance needed to ensure proper functioning. They also provide related services, such as Web hosting and domain registration, among others.

K

Killer application: any program that brings added value to a wide variety of technologies. By doing so, the killer app ends up boosting sales for the platform that supports it. Portable devices are integrating more and more new functionalities, including photo and video cameras, video calling, text messaging, music and video players, Bluetooth and Wi-Fi connections, etc. Killer applications must be capable of picking users' interest in acquiring the latest model of a particular device and getting them to sign up for these new services, and thus drive up the use of mobile networks. SMS text messages are a good example of a killer application in mobile handsets.

L

LiMo Foundation: telecommunications industry consortium dedicated to creating the first open, hardware-independent, Linux-based operating system for mobile devices. Its backing comes from such corporations as: Motorola, Panasonic, NEC, NTT DoCoMo, Samsung, Vodafone, Verizon and Mozilla (<http://www.limofoundation.org/>).

Linux: a Unix-like operating system that constitutes an alternative to that of Microsoft. It is one of the most prominent examples of free software and open-source development, since the code can be freely modified and used by anyone. Linux is primarily used in servers but is also installed in a wide variety of computer hardware.

Location-based positioning via cellular networks: in order to work properly, wireless voice networks automatically identify a device's location by means of radio waves that connect with the telephone antennas. The antenna's reception radius is what is known as a cell.

The cell, in combination with maps of the area, provides the user's location information. The result returned is a short message, voice or graphic message that indicates the user's approximate current position.

Low-cost: business model consisting of cutting costs in order to offer more attractive prices to the end consumers.

M

Maslow's hierarchy of needs: often depicted as a pyramid with five levels: the first four can be grouped as deficiency needs (physiological needs, safety, love/belonging and esteem); the top level is referred to as "being needs" or self-actualization. The basic idea of the pyramid is that the higher needs receive our attention only after the lower needs are met. Growth forces result in an upward movement in the hierarchy, whereas regressive forces push prepotent needs down.

Memory card: device for storing information used by cameras, laptops, music players, consoles, phones and other electronic appliances. A wide variety exists, including: PCMCIA card, MiniCard, SIM card, Memory Stick, etc.

Mobile Network Operator (MNO): telephone company that provides services for wireless phone subscribers, having a proprietary radio network and issuing its own SIM cards. The increased competition between operators resulting from the opening of the market will have an impact on and network capabilities prices. At present, this segment is not very open, given that it is highly regulated: all operators are required to have a license. In Spain, the mobile operators with their own network are: Movistar, Orange, Vodafone and Yoigo (part of its network being virtual and the other, proprietary).

Mobile Virtual Network Operator (MVNO): company that provides wireless voice services but has not been granted a radio spectrum license and thus lacks its own radio network. It can offer services, but must rely on the coverage of one or more proprietary companies (a mobile network operator or MNO), with whom it must sign a lease agreement. They can independently issue their own SIM cards and bill for their products.

The appearance of such companies—Bankinter being one example—is clear evidence of this market being opened up.

Mobile operating systems: system software, meaning a set of mobile programs designed to offer efficient management of resources. It starts working when the handset is turned on and manages the machine's hardware from the most basic levels, while also allowing for user interaction.

Mobile P2P top-up transfers: system for transferring money between people with a functionality similar to that of PayPal. By way of their mobile phone, users are asked to open an account associated with a bank account. With these accounts, users have the option to transfer money.

MP3: audio file compression system offering guaranteed sound quality. The term is also used to refer to the devices that play MP3 files.

MVNE: Mobile Virtual Network Enabler. Emerging category consisting of an "enabler" that acts as an intermediary between a network operator (which manages the network) and the virtual operator (which handles the relationship with the customers and the brand). Examples of companies in this category include Transatel, which offers turnkey services in a number of countries, and Bertelsmann, which has announced plans for the launch in Germany of several brands under the same operational umbrella.

M2M: M2M (machine-to-machine) is a generic concept that denotes data exchange between two remote machines.

N

Nanotechnology: technology present in materials and structures whose size is measured in nanometers—equivalent to one billionth of a meter—with applications in physics, chemistry and biology.

NFC: initialism for Near Field Communication. Short-range wireless technology ISO standardized in 2003, its use has already been extended to such products as car

keys, ID cards and electronic ticketing. The main difference with regard to other wireless technologies is that its range is so short that the interacting devices must make momentary contact. While that requirement may appear to be a limitation, it is in fact the key. It represents a contrast to the functionality of RFID and Bluetooth, which are based on the detection of nearby devices. Reaching out to bring an NFC device in contact with a sensor is in itself a clear affirmation of our intention to authenticate our identity, pay for the items in our shopping cart, or simply transfer a contact.

O

OHA: Open Handset Alliance. Group of more than 30 device makers and mobile technology companies who have come together to accelerate mobile innovation and offer consumers a richer, less expensive experience. One product of this alliance is Android, the first fully open and free mobile platform.

OMA: Open Mobile Alliance. Forum of approximately 200 companies around the world (including operators, device makers, developers and service providers) aimed at ensuring interoperability among all those involved in market. As such, the OMA is working on the development of a range of common standards for devices, service providers, operators, networks and geographic locations, so as to ensure an open mobile market.

OMTP: Open Mobile Terminal Platform. Formed by 35 companies from the industry, including operators, device and chip makers, content and software providers, and operating system developers. Its mission consists of getting companies to take hardware-level precautions for the security of mobile handsets. The result of this will be the creation of a secure platform for services such as mobile payment and mobile TV. These measures will help conserve the device's identity and protect the user data in case it is lost or stolen.

Open-source community: Term used to describe software that is distributed and developed freely by a community of users, whose collaboration brings them considerable individual returns while fostering innovation in the market. Projects of this variety have produced some outstanding results on the Internet.

P

Pay-for-what-you-use: business model used by operators based on creating revenues according to the services used by the subscribers.

Pay-per-use: business model used by content providers whereby revenues are generated each time a customer uses the service.

PDA (Personal Digital Assistant): pocket-sized computer originally designed as an electronic organizer (calendar, contact list, notepad and reminders) with a handwriting recognition. These devices now offer the functionality of a home computer for activities such as watching videos, creating documents, playing games, email, Web browsing, listening to music, etc.

Per-message charging (SMS & MMS): business model used by operators for creating revenues based on the per-unit price of short text messages or blocks of messages.

Personalized services and content: revenue model used by content providers whereby rates are set according to the personalization of content.

Phishing: IT term referring to a type of crime committed through the use of social engineering. Characterized by the fraudulent attempt to obtain confidential information, such as a password or details about credit cards or other bank account information. The perpetrator, known as a phisher, masquerades as a trustworthy person or entity in a seemingly official electronic communication, generally in the form of an email or instant messaging, or even phone calls.

Portability: characteristic of being able to use a piece of software on multiple platforms without requiring significant modifications.

Premium messages: SMS sent from wireless handsets to solicit a variety of services or content.

P2P mobile bank transfers: transfers between bank accounts held by two different people (person-to-person), done via wireless handset.

P2P payments: form of payment between people (person-to-person) in which mobile phones are the primary means of sending money from a mobile subscriber to another person.

P2P virtual mobile transfers: transferring money to someone to credit their prepaid card. For example, Caixa M3vil and MoneyText offer this type of transaction to users living in different countries.

Q

Quadruple play: term used to refer to the creation of packages consisting of services and audiovisual content, including voice, wired and wireless broadband, and television.

R

Radio spectrum: also known as the "airwaves" or "white space" spectrum. Subset of electromagnetic radiation waves whose frequency has traditionally been set between 9 KHz and 3,000 GHz, fundamentally designed for television and radio broadcasts over the free terrestrial space, for both digital and analog broadcasting. The radio spectrum is considered a scarce public resource, and thus has its own regulation in place.

Rate based on connection speed: business model used by content providers based on the user's connection speed.

Rate based on content licensing: business model used by commercial companies that own databases and which earn revenues by granting limited licenses for distributing their content to organizations and portals.

Revenue-sharing model: business model whereby mobile operators receive part of the profits from content providers in exchange for the provision of access to the mobile network.

RFID (Radio Frequency Identification): system for storing and remotely retrieving data using devices known as RFID tags or transponders. The basic purpose of RFID technology is to transmit an object's identity (much like a unique serial number) through radio waves. An RFID tag is a small device, similar to a stick-

er, which can be adhered or embedded into a product, or under the skin of an animal or a person. Its antennas enable the device to receive and respond to RF requests sent from an RFID transmitter/receiver. One of the advantages of using radiofrequency instead of other alternatives, such as infrared technology, is that it does not require a direct line of view between the transmitter and receiver.

Ringtone: sound made by a wireless device to indicate an incoming call or message.

S

Service providers: companies that can distribute the services of operators or MVNOs, or provide their own branded services. In some cases they can set their own rates and issue SIM cards, as in the case of Mobilcom and MTV. Increased competition will have an impact on both their sales figures and the distribution of their services.

Session-based charging: business model used by operators for creating revenues on a per-minute or per-session basis.

SIM cards: acronym for Subscriber Identity Module. Removable smart cards used in handsets that securely store the service-subscriber key used to identify a subscriber on the network, making it possible to switch a phone number from one device to another by simply swapping out the card.

Smartphones: mobile handsets that are capable of running applications, include an operating system, have the capacity to send data and/or email as well as storing information and connecting to the Internet. These characteristics make smartphones far more useful, particularly in business environments, where the use of these devices is significantly increasing the mobility of employees. The secret to their success lies in their combination of communication technology and computing.

Software: set of programs, instructions and rules for executing certain tasks on a computer.

Startup: term referring to business ventures that are new but have major growth potential. These are gener-

ally created by firms or entrepreneurs who build up companies that have a positive influence on the development of their countries and the companies themselves, by promoting practices associated with innovation, technology development, quality employment, better distribution of wealth, etc.

Streaming: technology that allows users to view or listen to files directly through a website without needing to download them beforehand. It could be described as "click to receive." In more complex terms, one could say that it refers to an on-demand strategy for distributing multimedia content over the Internet.

Subscriber: someone who signs up for wireless service.

Subscription with access to mobile Internet and basic content: business model used by operators based on earning revenues from services offered by their portal, with limits placed on kilobytes received.

Subscription with access to mobile Internet and unlimited premium content: business model used by operators based on earning revenues from advanced services offered by their portal, with no kilobyte limits.

Symbian Foundation: foundation headed by Nokia that involves suppliers, manufacturers and developers such as: Vodafone, T-Mobile, AT&T, LG, Motorola, Samsung, Fujitsu and Sony Ericsson. Dedicated to developing all of the programming tools necessary for designing operating systems for mobile phones. These applications will be provided royalty-free to both companies, the ones that develop applications and the handset manufacturers themselves (<http://www.symbianfoundation.org/>).

T

Telemedicine: providing medical services remotely, mainly through the use of information and communication technologies.

Time of Arrival method: Time of Arrival (TOA) is the time it takes a radio signal to travel from a transmitter to a remote receiver. Thanks to the relationship between the speed of light and the operator frequency, it is possible to measure the distance between the transmitter and receiver, and thus the location of the transmitter.

Time-specific pricing: business model used by content providers consisting of setting specific prices for certain content during a limited period of time.

Triple play: provisioning of services combined with audiovisual content (voice, broadband and TV). Entails the marketing of voice telephone services together with broadband access, and adding audiovisual services (TV channels and pay-per-view).

U

UGC: stands for user-generated content. Allows users to create Web content.

UMTS / 3G: initialism for Universal Mobile Telecommunications System. One of the technologies utilized by third-generation handheld devices. While initially conceived for use in wireless handsets, the UMTS network is capable of supporting other devices as well. Its three major characteristics are: multimedia capabilities; high-speed access to the Internet, which additionally allows for the transmission of audio and video in real time; and voice transmission, whose quality rivals that of fixed lines. It offers an extremely wide range of services.

Usability: the term usability has two possible definitions according to ISO (International Organization for Standardization):

1. "The capability of the software product to be understood, learned, used and attractive to the user, when used under specified conditions." This definition emphasizes the product's internal and external attributes, which contribute to its functionality and efficiency. Usability depends not only on the product, but in fact the user as well.
2. "The effectiveness, efficiency and satisfaction with which specified users can achieve specified goals in particular environments." This definition focuses on the concept of quality of use, meaning how the user carries out specific tasks effectively in particular settings.

USB: initialism for Universal Serial Bus. Port used for connecting peripheral devices to a computer, such as mice, keyboards, scanners, digital cameras, wireless

handsets, media players, printers, external hard drives, sound cards, data acquisition systems and network components. It has become the standard method for connecting multimedia devices such as scanners and digital cameras. For printers, this port has become so popular that it has relegated parallel ports to the background, thanks to the simplicity it provides when adding more than one printer to a personal computer.

V

Volume-based charging: business model used by operators based on creating revenues according to the amount of kilobytes received.

W

Walled garden: refers to the wireless environment in which operators control users' access to Web content or services generally through their own portal, limiting browsing to specific areas or material. In the case of "semi-walled gardens", while access to other areas is not limited, it is made more difficult.

WAP: acronym for Wireless Application Protocol. Open international standard for applications using wireless communications (e.g., access to Internet services from a handheld device). Specification for an application environment and set of communication protocols designed to standardize the way wireless devices access email, newsgroups and other platforms.

Wi-Fi: system for sending data on computer networks using radio waves instead of cables.

Widgets: small computer applications or programs, generally in the form of small files or folders that are run by a widget engine. Their main purpose is to offer easy access to frequently used features and provide visual information. But beyond that, widgets can do virtually anything imaginable and interact with services and information distributed on the Internet; they can be on-screen clocks, notes, calculators, calendars, organizers, games, windows with local weather information, etc.

Wiki: website whose pages can be edited by multiple volunteers through their browsers. Users can create, modify or delete the same text being shared. Wiki texts

or pages have unique titles. If the title of a wiki page appears anywhere on the wiki, then it becomes a link to another location on the same page.

Wireless: wireless communication that functions without a physical media connection. This is made possible

by the modulation of electromagnetic waves, which are sent through the air without physically connecting the two ends of the transmission. Consequently, physical devices are only present in the signal transmitters and receivers, such as with antennas, laptops, PDAs, wireless handsets, etc.

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