The Mobile Economy
Latin America 2014
The GSMA represents the interests of mobile operators worldwide. Spanning more than 220 countries, the GSMA unites nearly 800 of the world’s mobile operators with more than 230 companies in the broader mobile ecosystem, including handset makers, software companies, equipment providers and Internet companies, as well as organisations in industry sectors such as financial services, healthcare, media, transport and utilities. The GSMA also produces industry-leading events such as the Mobile World Congress and Mobile Asia Expo.

For more information, please visit the GSMA corporate website at www.gsma.com or Mobile World Live, the online portal for the mobile communications industry, at www.mobileworldlive.com

GSMA Latin America is the branch of the GSMA in the region. For more information in English, Spanish and Portuguese, please visit www.gsmala.com

This report is authored by GSMA Intelligence, the definitive source of global mobile operator data, analysis and forecasts; and a publisher of authoritative industry reports and research. Our data covers every operator group, network and MVNO in every country worldwide – from Afghanistan to Zimbabwe. It is the most accurate and complete set of industry metrics available, comprising tens of millions of individual data points, updated daily. GSMA Intelligence is relied on by leading operators, vendors, regulators, financial institutions and third-party industry players, to support strategic decision-making and long-term investment planning. The data is used as an industry reference point and is frequently cited by the media and by the industry itself. Our team of analysts and experts produce regular thought-leading research reports across a range of industry topics.

www.gsmaintelligence.com  /  info@gsmaintelligence.com
# CONTENTS

## EXECUTIVE SUMMARY

## THE MOBILE INDUSTRY IN LATIN AMERICA

1. Strong growth in subscribers and connections 8
2. A very diverse region 11
3. Shift to 3G and 4G now accelerating 13
4. The impact of competition on pricing 22
5. Revenue growth will continue to slow 26
6. Ongoing operator investments to support growth 27

## DELIVERING DIGITAL INCLUSION IN LATIN AMERICA

1. Network infrastructure and policy 31
2. Improving the affordability of mobile internet access 33
3. Consumer barriers: improving digital literacy and awareness 34
4. Improving the availability of local content 35

## THE SOCIAL AND ECONOMIC IMPACT OF MOBILE IN LATIN AMERICA

1. Mobile makes a major contribution to economic growth in the region 37
2. Mobile facilitating entrepreneurship and commerce in Latin America 42
3. M2M services are growing rapidly across the region 44
4. Delivering access to basic services across Latin America 49
5. eWaste 55
6. Delivering financial inclusion across Latin America 58

## MOBILE POLICY AND THE ROLE OF THE INDUSTRY

1. Spectrum: A key enabler to promote investment and foster innovation 63
2. Pressures on quality of service: The need to address its causes 69
3. Removing barriers for infrastructure deployment remains critical in Latin America 71
4. Reducing the taxation burden on mobile services in Latin America 73
5. The mobile industry and the internet in Latin America 75
6. Social responsibility: industry initiatives to protect the Latin American mobile user 78
Executive Summary

Whilst Latin America is in the midst of an ongoing slowdown in both unique subscriber and revenue growth rates, the region is now seeing an accelerating migration to higher speed networks and smartphone adoption. This is driving strong data traffic growth and incremental revenues for operators, which in turn will help fund the major investments required to further build out both 3G and 4G networks.

Mobile is already making an important contribution to economic growth, as well as addressing a range of social challenges, such as closing the digital divide and bringing financial inclusion to previously underserved populations. However, the rapid adoption of more advanced devices and higher speed network coverage means that mobile has the potential to play a much more significant role in the future. Realising the full transformative potential of mobile will require more collaboration between all mobile ecosystem players, as well as a more supportive and transparent regulatory regime that recognises the potential for a true partnership between the industry players and other stakeholders, including governments and regulators, across the region.

The Latin America mobile market is now the fourth-largest globally, with almost 326 million unique subscribers and 718 million connections\(^1\) as of September 2014. A little over half of the population in the region have now subscribed to a mobile service, a figure that is expected to reach almost 60% by 2020, broadly in line with the global average.

Latin America is now seeing an acceleration in the growth of data traffic, fuelled by the rapid technological shift to higher speed connections that is underway across the region. Whilst over two-thirds of the connections were 2G at the end of 2013, by 2020 almost 80% will be running on higher speed 3G and increasingly 4G networks.

The increasing proportion of higher speed connections largely reflects the accelerating rate of smartphone adoption, with Latin America seeing one of the highest growth rates over recent years, with 200 million handsets as of September 2014 (almost 30% of the total connection base). The region is forecast to have a total of 605 million smartphone connections in 2020, equivalent to almost 70% of the total connections base. Latin America will then have the second-highest installed base of smartphones in the world.

Data volumes and revenues are growing strongly, fuelled by the accelerating adoption of smartphones and mobile broadband services. Forecasts from Cisco suggest that data traffic in Latin America will grow at a compound annual growth rate (CAGR) of 66% out to 2018, well ahead of the growth forecast for more developed markets.

\(^1\) Includes cellular M2M connections
However, operators across the region also face a number of challenges. Whilst operator revenues grew at a healthy CAGR of over 7% over the period 2008-13, going forward this is expected to slow to a little over 2% out to 2020. The slowdown reflects a number of factors, including decelerating subscriber growth in the major markets. Regulatory intervention and competition are also important factors, with the region set to see a wave of mobile virtual network operator (MVNO) launches, especially in the major markets of Brazil and Mexico.

Profitability is also under pressure for many operators in Latin America as a result of competitive and regulatory factors, with margins in aggregate now the lowest of any developing region. This makes it more challenging for operators to fund investments at a time when there is ongoing pressure to improve networks to alleviate capacity constraints (and address quality of service issues) and launch higher-speed networks. Operator capital expenditure totalled over US$96 billion in the six years to 2013. Investment levels are likely to increase substantially over the coming years to accommodate data traffic growth, particularly as LTE deployments gather pace, with almost US$193 billion set to be invested over the seven-year period from 2014 to 2020. However, delivering these levels of investment will require sustainable business models for the operators.

The mobile ecosystem is a key source of economic growth and job creation in the region. In 2013, the mobile industry contributed 4.1% to the total gross domestic product (GDP) of Latin America. This figure captures the direct contribution of the mobile ecosystem, as well as indirect contributions in the form of increased business productivity and economic activity generated in the broader economy. The economic contribution of Latin America’s mobile industry is expected to continue to increase at a faster rate than the rest of the economy, reaching 4.5% of GDP by 2020.

In 2013, the mobile ecosystem directly provided employment to nearly one million people, with a further one million indirect jobs supported in the rest of the economy. The number of jobs directly supported within the industry will continue to experience material growth in the future, reaching close to 1.3 million people by 2020. The industry also makes a very large contribution to the funding of the public sector, totalling US$41 billion in 2013. There are also further payments in the form of licence and regulatory fees and spectrum auctions.

Mobile networks have already played an important role in bridging the digital divide and bringing internet access to previously unconnected populations across Latin America. As of September 2014, there were 216 million individuals using mobile devices to access the internet, equivalent to an overall penetration rate of around 35%. By 2020, this figure is forecast to be just under 50% of the population, indicating that an additional 105 million people will gain mobile internet access over the period for a total of 321 million subscribers.

Despite the progress to date, many people across the region still lack internet access. Mobile operators and the broader industry are making an important contribution to boosting digital inclusion. For example, innovative new tariff plans and lower priced handsets are increasing the affordability of mobile services. Governments across the region have recognised the importance of widening access to the internet and broadband connectivity in particular. There is though still more to be done by governments and regulators in addressing these goals. Regulations such as those around quality of service or electromagnetic field (EMF) regulations can hinder network deployments. In addition, ensuring the timely release of Digital Dividend spectrum is an important factor in enabling cost effective network coverage. The taxation of mobile services is also relatively high in a number of markets in the region and can add further to the affordability barrier.

The increasing uptake of smartphones and other advanced devices, as well as the improving higher speed network coverage, are allowing the development of a range of new innovative new products and services. The new services can benefit individuals, businesses and governments. There were 16 million cellular machine-to-machine (M2M) connections in Latin America as of September 2014, with growth expected at a CAGR of 25% for the period 2013-20. However, there is potentially a significant upside to these forecasts if a number of growth factors are successfully enabled by industry players and governments in the short to medium term.
Mobile financial services have seen less adoption in Latin America than other developing regions, though with around 60% of the population remaining unbanked, there is a clear opportunity to bring financial inclusion to the currently underserved. Considerable progress has been made in elaborating the necessary legal and regulatory frameworks with, for example, changes in several markets allowing non-banks to offer e-money services. This is translating into increasing interest and investment by the private sector, and a growing number of deployments, suggesting that mobile money services in Latin America are now at a turning point. There were 36 live deployments and a further 19 planned as of June 2014, with new business models and partnerships emerging.

Mobile can play a role in addressing some of the region’s social, economic and public services challenges, including high rates of urbanisation and an increasing working age population. There is a growing number of new mobile services and applications, many of them developed by small and medium sized enterprises. There are areas of opportunity for these companies to develop local content and applications that are tailored to local needs.

There is no doubt that the market and regulatory landscape is changing in Latin America. New telecom laws have been passed in Mexico, as well as the Internet Civil Rights Framework Law in Brazil, while new bills are currently under discussion in Argentina, Ecuador and Perú. All of these developments are likely to significantly transform mobile market conditions. Consolidation is also now a matter for discussion in Brazil, Mexico and Chile. Data-hungry consumers are putting pressure on networks and impacting their quality of service, while regulators are sometimes addressing these demands with a political rather than technical approach.

Regulatory intervention has increased across Latin America, creating questions about the future of the industry. The convergence of mobile with the IP world is also creating challenges for the sustainability of operators’ business models. With reduced margins, increased competition from adjacent industries and higher regulatory pressure, sustaining growth will very much depend on having the right regulatory environment. Having a transparent, predictable, consultative and well-aligned regulatory regime will be key for promoting the right incentives that would unleash future investments in mobile telecom networks and services.

A clear roadmap of spectrum allocation, as well as the removal of municipal obstacles for antenna deployment, will be key to satisfy the increasing demand of end users for mobile broadband. Despite these challenges, there are opportunities ahead for mobile operators to expand their businesses and to further increase their social and economic contribution. Latin American operators have demonstrated their commitment to the markets they operate in by sustaining investment and lately by implementing new joint consumer-centric initiatives under the GSMA’s ‘We Care’ campaign, which is focused on addressing social needs.
The region is forecast to have a total of **605 MILLION** smartphone connections in 2020, equivalent to almost 70% of the total connections base. Latin America will then have the second-highest installed base of smartphones in the world.
Unique subscribers and SIM connections

### UNIQUE MOBILE SUBSCRIBERS

<table>
<thead>
<tr>
<th>Year</th>
<th>Subscribers</th>
<th>Penetration Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>320M</td>
<td>52%</td>
</tr>
<tr>
<td>2020</td>
<td>390M</td>
<td>59%</td>
</tr>
</tbody>
</table>

### CONNECTIONS*

<table>
<thead>
<tr>
<th>Year</th>
<th>Connections</th>
<th>Penetration Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>694M</td>
<td>112%</td>
</tr>
<tr>
<td>2020</td>
<td>890M</td>
<td>134%</td>
</tr>
</tbody>
</table>

*Excluding M2M

Technology shift fuelling data traffic growth across Latin America

- 3G/4G connections to increase from a third of total in 2013 to almost 80% by 2020
- By 2020 there will be 605M smartphone connections, up from 154 million at the end of 2013
- Data traffic in Latin America to grow at a CAGR of 66% out to 2018

Slowing subscriber growth, regulation and competition impacting revenue outlook

- Operator revenues grew at a CAGR of over 7% 2008-13
- Revenues forecast to slow to a CAGR of just over 2% 2013-20
Mobile addressing the economic and social challenges across the region

Delivering digital inclusion to the still unconnected populations
Mobile internet subscriber penetration: 33% 2013, 48% 2020

Delivering financial inclusion to the still unbanked populations
36 live services and 19 planned as of June 2014

Delivering innovative new services
Number of M2M connections to grow at a CAGR of 25% per annum out to 2020

Mobile ecosystem contribution to GDP

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP (US$B)</th>
<th>GDP Growth (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>242</td>
<td>4.1%</td>
</tr>
<tr>
<td>2020</td>
<td>275</td>
<td>4.5%</td>
</tr>
</tbody>
</table>

Public funding ecosystem

<table>
<thead>
<tr>
<th>Year</th>
<th>Public Funding (US$B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>41</td>
</tr>
<tr>
<td>2020</td>
<td>53</td>
</tr>
</tbody>
</table>

Mobile ecosystem contribution to public funding in Latin America before regulatory fees

Employment

<table>
<thead>
<tr>
<th>Year</th>
<th>Jobs Directly Supported (M)</th>
<th>Indirect Jobs (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1</td>
<td>53</td>
</tr>
<tr>
<td>2020</td>
<td>1.3</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Plus an additional 1.2M indirect jobs supported in 2013
The mobile industry in Latin America

1.1 Strong growth in subscribers and connections

The Latin American mobile market has delivered strong growth in recent years in terms of both unique subscribers and connections (i.e. SIM cards). It is now the fourth-largest globally, with almost 326 million unique subscribers and 702 million connections\(^2\) by September 2014. The subscriber base grew at an average rate of 5.5% over the five years to 2013, and is forecast to grow at a little under 3% per year between 2013 and 2020. Growth in connections over the period to 2013 stood at around 8.8% per annum, and is forecast to slow to an average of just over 3.7% in the seven years to 2020.

Source: GSMA Intelligence

Unique subscribers growth rates by region

2. Note that this figure excludes the number of M2M connections, which are disclosed separately.
The growth rate of both subscribers and connections in Latin America has been slowing for a number of years. However, growth dropped more sharply in 2012 and 2013, after a brief recovery post the global financial crisis. Latin America is now in the mid-range of regional penetration rates and above the global average, in terms of both unique subscribers and connections. The unique subscriber penetration rate was 52% as of September 2014, and 112% for SIM connections.

Penetration rates by region
September 2014

Source: GSMA Intelligence
The high penetration rate of connections has been driven in large part by users’ acquisition of additional SIMs to take advantage of competitive price offers, resulting in an average of close to two active SIMs per user across the region. This ratio of active SIM connections to unique subscribers has increased steadily over recent years, from 1.8 SIMs per user at the end of 2010. This trend reflects both ongoing price competition in the mass market, as well as the increasing trend towards multi-device ownership in the higher income population segments.

Subscriber growth is projected to grow at a steady rate over the period out to 2020. Subscriber penetration will be close to 60% by 2020, although still well below the 70-80% level at which growth tends to stall in more mature markets. This highlights the potential for sustained growth beyond 2020, as well as the need for a supportive regulatory regime to help connect the still unconnected populations across the region. Rising penetration rates in the future will be driven by higher levels of consumer income and more affordable mobile services. Both ongoing price declines for basic mobile services as well as cheaper devices, including lower-specification smartphones, will be important factors in improving affordability.
1.2 A very diverse region

Latin America is very diverse in terms of economic and social development, and equally in terms of mobile penetration (both unique subscribers and connections). Connection penetration rates range from a low of 73% in Haiti to a high of 157% in Costa Rica. The overall region’s penetration rate stood at 112% as of September 2014, well ahead of the global average figure of 96%.

Subscriber penetration rates in the larger markets in Latin America range from a low of 37% in Mexico to a high of 77% in Costa Rica. There is no single driver of the variation in penetration rates with, for example, differences in GDP per capita playing only a limited role.

Source: GSMA Intelligence

Unique subscriber and connection penetration

(Selected markets, September 2014)
The Latin American mobile market is dominated by Brazil, with 114 million unique subscribers by September 2014, accounting for over a third of the region’s total base. Brazil currently ranks as the fifth-largest market globally in terms of subscribers, and is forecast to overtake Japan and become the fourth-largest by the end of 2015. The five largest countries in the region have over 230 million subscribers between them, equal to more than 70% of Latin America’s total.

Source: GSMA Intelligence

Five largest markets by unique subscribers

September 2014 (M)
1.3 Shift to 3G and 4G now accelerating

Latin America is now seeing an acceleration in the take-up of mobile broadband and the growth of data traffic. This has been fuelled by a rapid technological shift to higher speed connections that is underway across the region. At the end of 2012, 2G services still accounted for 78% of total connections, but by September 2014 this had fallen to 60%. Correspondingly, 3G connections rose from 22% at the end of 2012 to 39% by the third quarter of 2014. This is higher than the global average of 32% and higher than the developing market average of 27%.

By contrast, 4G is still in its relative infancy, although adoption is expected to gather pace as network launches take place across the region and ongoing deployments in most of the leading markets are completed. As of September 2014, only just over 1% of connections were 4G, broadly in line with the developing market average but compared to 35% in Northern America, the leading LTE market. However, the number of 4G connections is expected to grow at an average rate of 85% per annum in the seven years to 2020. It is also worth noting that 2G will still represent over a fifth of connections by this date.

Source: GSMA Intelligence

Total connections by technology generation (M)
There is also a wide variation in the pace of migration to 3G connections across Latin America. Amongst the major markets, Colombia has more than four-fifths of 2G connections, while Brazil has the highest proportion of 3G, at around half of the total. 3G penetration has surged in Brazil in recent years, with the number of connections rising by 57% in the year to June 2014, reaching a total of 133 million. This growth has been fuelled by the rapid roll-out of the country’s 3G networks, which reportedly provided 92% population coverage by July 2014, and by accelerated take-up of smartphones. As a result of these developments, over the course of 2013, Brazil overtook Venezuela which previously had the highest proportion of 3G connections.

Brazil also has the largest number of 4G connections in the region, with 4.6 million as at September 2014. At the end of August 2014, LTE services had been launched by 44 networks in 18 countries throughout the region. 4G networks have yet to go live in Argentina, although the spectrum auction was completed in October 2014. Operators will increasingly invest in 4G networks over the coming years as spectrum is increasingly made available to support these deployments.

# LTE in Latin America* & the Caribbean

<table>
<thead>
<tr>
<th>44 Networks / 18 Countries as of 29 Aug 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mexico</strong></td>
</tr>
<tr>
<td>Movistar</td>
</tr>
<tr>
<td>Nextel</td>
</tr>
<tr>
<td>Telcel</td>
</tr>
<tr>
<td>Avantel</td>
</tr>
<tr>
<td><strong>Colombia</strong></td>
</tr>
<tr>
<td>Claro</td>
</tr>
<tr>
<td>Movistar</td>
</tr>
<tr>
<td>Tigo - UNE</td>
</tr>
<tr>
<td><strong>Bolivia</strong></td>
</tr>
<tr>
<td>Claro</td>
</tr>
<tr>
<td>Nextel</td>
</tr>
<tr>
<td><strong>Brazil</strong></td>
</tr>
<tr>
<td>Oi</td>
</tr>
<tr>
<td>ON*</td>
</tr>
<tr>
<td>Sky Telecom*</td>
</tr>
<tr>
<td>TIM</td>
</tr>
<tr>
<td>VIVO</td>
</tr>
<tr>
<td><strong>Chile</strong></td>
</tr>
<tr>
<td>Claro</td>
</tr>
<tr>
<td>Entel</td>
</tr>
<tr>
<td>Movistar</td>
</tr>
<tr>
<td><strong>Ecuador</strong></td>
</tr>
<tr>
<td>CNT Mobile</td>
</tr>
<tr>
<td><strong>Paraguay</strong></td>
</tr>
<tr>
<td>Personal</td>
</tr>
<tr>
<td>VOX</td>
</tr>
<tr>
<td><strong>Peru</strong></td>
</tr>
<tr>
<td>Movistar</td>
</tr>
<tr>
<td>Claro</td>
</tr>
<tr>
<td><strong>Uruguay</strong></td>
</tr>
<tr>
<td>Antel</td>
</tr>
<tr>
<td>Claro</td>
</tr>
<tr>
<td><strong>Venezuela</strong></td>
</tr>
<tr>
<td>Digitel</td>
</tr>
<tr>
<td><strong>Antigua &amp; Barbuda</strong></td>
</tr>
<tr>
<td>Digicel*</td>
</tr>
<tr>
<td><strong>Aruba</strong></td>
</tr>
<tr>
<td>SETAR</td>
</tr>
<tr>
<td><strong>Bahamas</strong></td>
</tr>
<tr>
<td>BTC</td>
</tr>
<tr>
<td><strong>Cayman Islands</strong></td>
</tr>
<tr>
<td>C&amp;W Lime</td>
</tr>
<tr>
<td>Digicel*</td>
</tr>
<tr>
<td><strong>Costa Rica</strong></td>
</tr>
<tr>
<td>ICE/Kolbi</td>
</tr>
<tr>
<td>Claro</td>
</tr>
<tr>
<td>Movistar</td>
</tr>
<tr>
<td><strong>Dominican Republic</strong></td>
</tr>
<tr>
<td>Claro</td>
</tr>
<tr>
<td>Orange Dominicana</td>
</tr>
<tr>
<td>Tricom</td>
</tr>
<tr>
<td><strong>Puerto Rico</strong></td>
</tr>
<tr>
<td>AT&amp;T</td>
</tr>
<tr>
<td>Claro</td>
</tr>
<tr>
<td>Open Mobile</td>
</tr>
<tr>
<td>Sprint</td>
</tr>
<tr>
<td>T-Mobile</td>
</tr>
<tr>
<td><strong>Virgin Islands</strong></td>
</tr>
<tr>
<td>AT&amp;T</td>
</tr>
<tr>
<td>Sprint</td>
</tr>
</tbody>
</table>

* Indicates TDD networks
1.3.1 The internet is mainly mobile

Mobile networks and services are increasingly becoming the main method of accessing the internet across Latin America, with the number of mobile broadband connections surpassing the number of fixed broadband as early as 2011. As a result of the rapid growth experienced in the past two or three years, there are more mobile broadband connections than fixed broadband subscriptions in all of the leading markets in the region, and in some instances considerably more.

One of the reasons for this mobile dominance is the lack of fixed broadband infrastructure in many countries and particularly in rural areas. Another important reason is the historical absence of a large base of fixed-telephony connections that can be adapted to support broadband service delivery, as has been the case in many developed markets. Going forward, the dominant role of mobile networks is likely to increase, as it will not be cost-effective to deploy fibre access or other fixed broadband infrastructure into homes and businesses in more rural areas.
1.3.2 Rising smartphone adoption across the region

Between 2010 and 2013, Latin America recorded one of the highest growth in smartphone connections of any region, increasing at a CAGR of 77%. The smartphone connection base stood at 200 million at September 2014, representing almost 30% of total connections and putting the region in third position worldwide.

Growth rates are expected to slow over the period out to 2020, but with a forecast total of 605 million smartphone connections (approximately 70% of the total connections base), Latin America will have the second-highest installed base of smartphones in the world.

The dominant smartphone market in the region, as in many other areas of the region’s mobile industry, is Brazil, which had 89.5 million connections at September 2014. Brazil is the fifth-largest global smartphone market after China, the United States, India and Indonesia.
Operators across the region are reporting increasing smartphone sales. In the second quarter of 2014, TIM Brasil reported that smartphones accounted for 71% of total handset sales, compared with 57% in the same quarter of 2013. Personal in Argentina reported that smartphones were over 80% of total sales in the second quarter of 2014, with them accounting for 30% of the company’s total connection base.

Growth in the next few years will be fuelled by improved affordability of smartphones and associated 3G and 4G services. This reduction in costs will in large measure be achieved through the growing availability of lower-cost smartphones. These will include operator-branded devices, entry-level phones built on the Windows or Android OS, and those using alternative, reduced-spec OS optimised for lower-cost hardware. A leading innovator in this area is Mozilla, which presented a US$25 smartphone at the 2014 GSMA Mobile World Congress. Telefónica has started to roll out Mozilla Firefox OS-based devices across its Latin American subsidiaries, including the Alcatel One Touch Fire, launched in Chile in February 2014 and priced at 29,990 pesos (around US$52) and the ZTE Open II introduced in Panama in August 2014.

Along with falling device prices, the cost per megabyte of mobile data will also decrease as 3G and 4G networks deliver more extensive population coverage, and effects of enhanced supply, scale and competition take place. As smartphones are the main devices through which consumers in the region access the internet, there is a close connection between users’ take-up of mobile broadband services and the acquisition of their first smartphone. There is a mutually reinforcing volume effect as growing smartphone purchases drive data consumption, which then sparks the development of new content, apps and services, which in turn fuels the appetite for smartphones.

Growth in smartphone connections is not, however, expected to drive a migration from prepaid to contract plans. The share of prepaid connections is projected to remain high through 2020, at around 75% of the total. This means that smartphones will be taken up primarily as part of low-cost prepaid plans, including so-called ‘sachet’ data tariffs that allow users to consume data occasionally and on a pay-as-you-go basis. The dominance of prepaid across most of the region further emphasises the important role that lower-cost smartphones will play in driving take-up, given the absence of device subsidies in prepaid plans.

![Smartphone adoption rates (selected markets)](image-url)
1.3.3 Data traffic is surging

Data volumes and revenues are growing strongly across the region, fuelled by the changing device mix with increasing smartphone adoption and mobile broadband services. Data traffic in Latin America is forecast to grow at a compound annual rate of 66% out to 2018, well ahead of the growth forecast for more developed markets such as Europe and North America.

![Latin American mobile data traffic](source: Cisco VNI Mobile Forecast, 2014)

Operators across the region are reporting increasing data traffic growth. Vivo in Brazil reported an 86% year-on-year increase in data traffic in the second quarter of 2014, while Telefónica also saw strong growth in a number of its other operations in the region. This included annual growth rates of 83% in Chile and 66% in Peru.

The growth in data traffic is generating an increase in the proportion of revenues deriving from data versus voice services. The extent of this trend varies across the region, with operators also following differing strategies to monetise the growth in data volumes.

Claro in Chile recorded a 24% increase in data revenues in the second half of 2014, with it now representing over a third of total revenues. Claro’s combined operations in Argentina, Uruguay and Paraguay saw stronger data revenue growth of 39%, with it accounting for 46% of total revenues across the three assets.

The recent World Cup was a major catalyst for data traffic in Brazil, as well as for network investments that are continuing to benefit the country and help drive the ongoing technology shift and traffic growth. Operators in Brazil invested to increase both 3G and 4G coverage in the main stadiums during the World Cup. Data from Telebrasil highlighted that the operators cooperated to deploy 4,738 antennas at the event stadiums, with investments totalling R$226 million on shared infrastructure. In addition, Telebrasil estimated that the operators invested a further R$1.3 billion in infrastructure across the host cities, in both new antennas and fibre backbone capacity. Over the course of the tournament’s 64 matches, there were 4.5 million phone calls made and 48.5 million picture messages sent, corresponding to around 27TB of data.
1.3.4 Growing impact of online messaging in Latin America

Consumers across the region are increasingly using online messaging service (OMS) providers, reflecting both the increased adoption of smartphones and more ubiquitous mobile broadband networks. The popularity of these IP-based messaging services is already beginning to impact the operating performance of the operators.

For example, the decline in Movistar Mexico’s SMS revenues in recent quarters is in part a by-product of the popularity of these OMS providers, including WhatsApp. Whilst WhatsApp was one of the first providers to establish itself in the region, a number of other service providers are also now gaining scale. For example, it has been estimated that WhatsApp had been installed on 88% of active smartphones in Mexico by end-2013. Similarly, Viber had reportedly signed up 17 million users in Brazil by August 2014, making it the second-most popular online messaging platform in the country after WhatsApp.

Latin American operators have adopted a number of strategies to counter the threat posed by these OMS providers, as well as to capitalise on the opportunity they present:

1. Incorporating OMS providers into tariff plans: this includes Movistar Mexico’s contract and prepaid plans which offer unlimited WhatsApp usage. Other operators have introduced similar measures. For instance, in August 2014, Telcel in Mexico announced it would provide unlimited WhatsApp usage on prepaid top-ups of 100 pesos (around US$7.60) or more, as well as unlimited access to Facebook and Twitter in the case of top-ups of 200 pesos or more. In these cases operators are using the popularity of these services to create an incentive for users to subscribe to particular contract plans, or to stimulate and monetise increased data traffic.

2. Introducing their own social messaging services: another approach is for operators to launch their own social messaging apps to compete with the OMS providers head on. Both Telefónica and TIM (Brazil) have opted for this solution. Telefónica launched the ‘Tuenti’ service in Mexico in June 2013: a multi-platform website and app combining IM, VoIP and social networking features. At the time of the launch, the operator claimed Tuenti was the most popular social-networking service in Spain, with 15 million registered web users and six million mobile users. Telefónica Argentina launched ‘TU Go’ in early 2014, another messaging app that had seen some success for O2 in the UK. Similarly, in April 2014, TIM announced it would launch ‘Blah’: another subscription-free, carrier- and platform-independent social messaging platform, described as a cross between WhatsApp and Viber. However, as at September 2014, Blah was still in the beta testing phase.

There have been some limited attempts in the region to block access to OMS providers, although these have tended to be rejected by local regulators. Regardless of the regulatory considerations, blocking access to certain applications is unlikely to be a sustainable long-term strategy for operators.

Operators in some markets are also partnering with social media providers such as Facebook. Millicom in Paraguay announced in December of 2013 a ‘time limited’ offer giving its subscriber free access to Facebook, whilst Facebook has also made content available in the local Guarani language spoken by the majority of the country’s population.

---

4. Competitive Intelligence Unit (CIU), cited in http://subscriber.bnamericas.com/Subscriber/index.jsp?idEmail=44449480&doman=0&tipoContenido=detalles&pagina=content&idContenido=653302&tipoDocumento=1
5. http://subscriber.bnamericas.com/Subscriber/index.jsp?idEmail=44449480&doman=0&tipoContenido=detalles&pagina=content&idContenido=653080&tipoDocumento=1
Consumers across the region are increasingly using online messaging service providers, reflecting both the increased adoption of smartphones and more ubiquitous mobile broadband networks.
1.4 The impact of competition on pricing

Competition has intensified in recent years, with new players entering the market and new networks being launched. This has contributed to a downward pressure on pricing, with the average effective price per voice minute across the region as a whole falling from US$0.11 in the fourth quarter of 2008 to US$0.06 in the same period in 2013.

Against this backdrop of falling prices and increased competition, there has been a small but steady decline in average revenue per connection (ARPU) for the region as a whole. Reported ARPU figures are distorted by the high levels of multi-SIM ownership. Nevertheless, the total ARPU for Latin America for the second quarter of 2014 stood at US$10.7. This remains well ahead of the developing market average of US$6.8, although it is down from the average of US$11.7 recorded for the final quarter of 2012.

The ARPU figures for the region overall hide more varied trends at the country level. Brazil has seen some of the steepest declines in ARPU over the period, driven by competition and efforts to improve the accessibility of mobile services. In Mexico, sharp reductions in prices per minute have led to increased usage, but this has been insufficient to prevent an overall fall in ARPU.

Recent research by GSMA Intelligence highlighted the shortcoming of traditional ARPU metrics that look at revenue per connection, suggesting instead a focus on average revenue per subscriber (ARPS) as giving a better indication of ‘real’ levels of consumer spending. The ARPS in Latin America has increased over recent years, despite the declines in unit based pricing, highlighting the growing trend towards multiple device ownership.

Source: GSMA Intelligence

ARPS trends in Latin America
(Per month US$, annual average)

22.2 22.6 23.7 24.3 23.8
2009 2013

1.4.1 Increased regulatory intervention

Greater competition across the region has in part been a consequence of a number of regulatory measures. These include the reservation of frequency blocks for, or preferential treatment of, new entrants and state-owned operators in recent and upcoming spectrum-allocation processes, as well as the obligation to accept MVNOs on incumbent networks in several countries. At the time of writing, auctions of 3G and/or 4G spectrum were expected to be held in Argentina and Venezuela by the end of 2014, and new entrants were entitled to bid in both of these auctions.

Spectrum ‘set-asides’ for new entrants have not always proved to be a successful strategy. In 2012, having cancelled a 3G spectrum tender, the Argentinian government instead assigned the spectrum exclusively to the state-owned satellite operator ArSat. However, the government recently changed the approach and included the spectrum allocated to ArSat in a new auction. Similarly, in Colombia, state-owned fixed operator UNE was awarded 50MHz of LTE spectrum in 2010, three years ahead of any of its competitors. However, the company had limited impact on a market which was already dominated by three strong players. In August 2014, UNE merged with one of the existing operators, Tigo, to form a converged operator intended to possess sufficient scale to compete against its rivals.

State-owned CNT in Ecuador also has gained only limited market share, having been awarded 4G spectrum in the 700MHz and AWS bands in 2012, while its much larger competitors Claro and Móvil are still waiting for the opportunity to acquire spectrum. In Chile, the fixed operator VTR was awarded 30MHz of AWS spectrum in 2009, three years ahead of any of the country’s established operators. VTR Móvil struggled in the marketplace and finally decommissioned its mobile network in January 2014, and now provides mobile services on an MVNO basis over the Móvil network.

1.4.2 New regulator in Mexico takes action against América Móvil

In 2013, the Mexican government established a new telecoms and media regulator, IFT, with greater powers than its predecessor COFETEL to impose remedies for competitive imbalances in the market. In March 2014, IFT ruled that the América Móvil group (including mobile operator Telcel) was a ‘Preponderant Economic Agent’ (an excessively dominant player as a result of having more than 50% of the market share) in the country’s telecoms market, and imposed a series of measures designed to reduce América Móvil’s dominance. These measures included an obligation for the operator to provide access to its passive infrastructure on transparent terms, as well as the imposition of asymmetric mobile call termination rates (MTRs). This obliged Telcel to charge lower MTRs than its competitors can charge Telcel, and was followed in August 2014 by secondary legislation abolishing Telcel’s MTRs altogether.

The full range of measures will make it increasingly difficult for Telcel to compete aggressively on price, particularly in the voice market. It was recently reported in the press that América Móvil was considering selling off part of its customer base and infrastructure to reduce its share of the Mexican telecoms market to under 50% in a bid to get the regulatory restrictions lifted.7

1.4.3 Latin America set for a new wave of MVNOs

A number of MVNOs have either entered the Mexican market or announced plans to do so during 2014, encouraged by the more pro-competitive regulatory environment. The first and largest was UK-based Virgin Mobile, which launched services in Mexico in June, operating over Telefónica’s network. According to press reports, Virgin aims to sign up one million prepaid subscribers by the end of its first year of operations in Mexico and to win a 3% market share within five years. The company is targeting the 18-35 year-old demographic and has introduced per-second call charging (resulting in lower-cost phone calls).

Mexico is the third market Virgin has entered in the region, following Chile in 2012 and Colombia in 2013. The company has reported high growth rates adding 100,000 new subscribers per month in Chile and Colombia by the time of the Mexico launch, according to the media. In Colombia, Virgin also introduced per-second billing along with unlimited access to the WhatsApp messaging app for contract plans offering 1GB of data per month or more, as part of its drive to target younger users.

The company has also stated it wishes to launch 4G services in Colombia, along with value-added services and links to the world of entertainment and music, including through event sponsorship.

Latin America as a whole is expected to experience a big wave of MVNO launches in the near future, including no fewer than 22 planned MVNOs that GSMA Intelligence has identified in Brazil, where only three have launched to date. While this is an encouraging development, the MVNOs that have already launched (including in Brazil) have found it hard to win market share from their well-established competitors.

Indeed, MVNOs face similar issues to the new entrant operators in the region, albeit that their start-up costs are lower given that they do not have to invest in their own network infrastructure. The more successful and enduring MVNOs are those that can also act as agents of service innovation and attract under-penetrated market segments, as Virgin Mobile is trying to do with its data bundles aimed at the youth market and its per-second billing tariff plans.

---

10. ‘The global MVNO landscape, 2012-14’ (GSMA Intelligence, June 2014), p. 17
1.4.4 Consolidation is underway

Another trend that has the potential to reshape the region’s competitive landscape is consolidation among the leading players. The Brazilian market has been a particular focus of speculation, with press reports indicating that several of the leading mobile operators in the country are all studying options to buy, sell or merge assets. The Brazilian Communications Minister was recently quoted as saying ‘the model in Brazil could be different in the future, and instead of having four operators we could have three, but we have to continue our oversight’.

Governments in the region may be reluctant to approve major consolidation deals if they lead to a reduction in the number of competitors in their countries, which runs counter to their strategy of promoting competition. This has helped encourage speculation as to whether US operators might be interested in acquiring stakes in Latin American carriers.

In May 2014, AT&T acquired the pay-TV provider DirecTV. The company has operations across Latin America, as well as possessing 2.5GHz spectrum assets in Colombia and Brazil, and being a prospective bidder for AWS and 2.5GHz spectrum in Venezuela in late 2014. However, as a condition of this acquisition, AT&T did have to agree to divest its 8% stake in América Móvil, with which DirecTV competes in the Latin American pay-TV market.

AT&T has recently announced the acquisition of Iusacell, the third largest mobile operator in Mexico, for US$2.5 billion. It remains to be seen whether the present wave of merger and acquisition activity will present further opportunities for United States players to invest in the region, which could see a further increase in competitive pressures in the targeted markets. Other operators that have been reported in the press as potentially for sale are Nextel (having sold its Chilean and Peruvian units but still holds Argentina, Brazil and Mexico), and Telecom Argentina (which has been in protracted discussions with investor group Fintech).
1.5 Revenue growth will continue to slow

Total mobile revenues in Latin America amounted to US$109 billion in 2013, up 4% year-on-year, making it the third-fastest growing region globally. As with subscriber growth, revenue growth has slowed sharply in recent years, with the average annual growth rate of 7% over the last five years well below the rates in the upper 20% per annum range attained in the previous five-year period.

Revenue growth is expected to slow still further in the period out to 2020. This slow-down is connected with the trends discussed earlier in this section including increasing competition; market maturity; falling prices; and growing regulatory intervention. Partly as a result of this slow-down in revenue growth, there has been a fall in industry profitability over recent years. It is noteworthy that margins on average in Latin America are well below the level for other developing markets. This makes it more challenging for operators to fund investments at a time when there is ongoing pressure to improve networks to address capacity constraints (and address quality of service issues) as well as to launch higher-speed networks (especially LTE) and, in several countries, to meet new regulatory obligations, such as around geographic coverage.
1.6 Ongoing operator investments to support growth

Operators in the region are continuing to invest heavily in their networks to improve coverage, capacity and quality of service. Total capital expenditure by operators over the last six years has totalled over US$96 billion. Investment levels are likely to increase further over the coming years as LTE deployments gather pace in the region, and as operators continue to improve coverage and capacity for existing 3G networks, with almost US$193 billion set to be invested over the seven-year period from 2014 to 2020.

Capital investments grew by an average of 8.7% in the five years to 2013, with a sharp recovery in investment levels after 2010, as the region emerged from the economic downturn. Between 2014 and 2020, the average annual growth in capital expenditure is expected to fall to 4.6%.

In this context, it is imperative to foster a favourable investment climate, with more predictability and transparency around regulatory obligations and restrictions, as well as more certainty around access to and cost of necessary spectrum resources in the medium and long term. It is also important to reduce the level of risk surrounding such large-scale investments and to allow operators a reasonable return. It is particularly important that governments and regulators avoid excessive taxation and penalties for failure to meet stringent coverage and quality-of-service targets. It is in the interests of all industry stakeholders — including those of the operators — to improve performance in these areas.
Delivering digital inclusion in Latin America

The increasing ubiquity of mobile networks and the uptake of more advanced devices has already had a profound impact on the way people live, and brought communications services to previously unconnected populations. In particular, mobile networks have helped facilitate access to the internet, which through providing new sources of information and access to a range of new services, can deliver broad and economic and social benefits.
Internet penetration rates across Latin America have grown rapidly in recent years. It is mainly mobile networks and services that are driving this growth, given the relative lack of fixed line infrastructure in the region. International Telecommunication Union (ITU) data indicated that fixed-line penetration in the region on average stands at less than 20% of the population. Even in those markets that have higher than average fixed line penetration, such as Brazil and Argentina, fixed line services tend only to be accessible to higher income groups. For example, research previously commissioned by the GSMA highlighted that 60% of households at the top of the pyramid have adopted fixed broadband in the region, but penetration at the bottom of the pyramid is just 8%1.

At the end of 2013, there were over 200 million individuals using mobile devices to access the internet, with around 60% already doing so over higher speed 3G or in some cases 4G networks. This was equivalent to an overall penetration rate of around 33%, slightly ahead of both the global average and a number of other developing regions across the world. By 2020, this figure is forecast to be just under 50% of the population. However, there remain large populations in the region who still do not have internet access, particularly in the poorer and smaller countries of Central America and the Caribbean. This is likely still to be the case by 2020, even with the significant growth in the mobile internet user base described above. There are also variations in terms of internet access across the region. There are a number of countries where under 20% of the population has internet access, either fixed or mobile, including Haiti, Nicaragua and Guatemala.

---

The digital divide refers to the gap between populations that have access to the internet and new technologies, and those that do not. Internet and technology access are two of the key variables in determining a country’s position in the human development index. The importance of addressing the digital divide has been recognised by governments across the region, with many countries having both national broadband plans and broader ICT strategies that aim to widen access to broadband connectivity.

Mobile will be the key technology to help connect these largely offline populations in the region, particularly in bridging the digital divide. Mobile broadband in particular has the potential to transform access to jobs and education in these countries. A number of studies have shown that broadband access is a key driver of both job creation and economic growth, both in Latin America and other parts of the world.

The GSMA launched its Digital Inclusion programme in April of 2014 in order to expand global connectivity and to address the barriers to mobile internet adoption. The programme will collaborate with mobile operators, governments, internet players and non-government organisations to address four key barriers to mobile internet access.

- **Network infrastructure and policy**: expanding rural network coverage of mobile internet by promoting regulatory and technical best practice
- **Affordability and taxation**: reducing the total cost of ownership of mobile internet
- **Consumer barriers**: increasing adoption and usage by addressing literacy and internet awareness barriers
- **Local content**: promoting locally relevant content to attract people to use the mobile internet
2.1 Network infrastructure and policy

Issues around network coverage in Latin America are generally less pressing than in other developing regions. 2G coverage is generally ubiquitous across the region, whilst considerable progress has also been made in building out 3G networks and the region is also now seeing increasing LTE coverage. However, there remain large populations in the region who still are not covered by higher speed networks, particularly in parts of Central America. Many of the still unconnected populations live in rural areas, where a lack of electricity infrastructure can also impact on efforts to extend network coverage.

2.1.1 Measures to improve network coverage: the industry players

One measure to help improve access in remote and inaccessible areas is the use of ‘green’ solutions to power base stations, such as solar, wind, water, biomass and fuel cells. Such alternatively powered cell sites can reduce the cost of using diesel, the most common power source in areas off the main electricity grid. Telefónica is the leading operator in this respect, having deployed around 100 solar-powered sites in Ecuador; 65 in Peru; and a combination of solar, wind and fuel cell technologies in a number of base stations in Venezuela and Chile.

Network sharing is another solution that can help reduce the cost of extending network coverage, particularly into remote or geographically challenging areas. Network sharing can also have a role to play in helping to increase capacity in urban areas, particularly where operators are looking to deploy small cell technology.

Historically network sharing has been more common in other parts of the globe. However, there is an increasing trend for operators across the region to adopt a variety of infrastructure models. There are voluntary network sharing deals between the leading operators in most of the major economies of the region, involving ‘passive’ infrastructure (such as physical sites, towers and power supplies). There are also third-party tower providers in several countries that lease sites and passive equipment to operators. In addition, there are a handful of deals involving sharing of ‘active’ infrastructure for the deployment of 4G-LTE services. This includes sharing radio access network (RAN) equipment, such as transmitters and control systems. These have been strongly incentivised by regulators, for example in order to meet demanding coverage build-out obligations in Brazil or as part of licence terms in Chile. The largest such deal is between Oi and TIM Brasil in Brazil, involving LTE infrastructure in the 2500MHz band covering 45 cities. It was reported in the press in October 2014 that the arrangement would be extended to a further 88 locations in 2015.
2.1.2 Measures to improve network coverage: governments and regulators

Whilst operators are starting to address the coverage challenge, there are measures that can also be taken by governments and regulators to help support the goal of improving mobile broadband coverage. These particularly relate to issues around spectrum management, network sharing and reducing local and municipal government red tape.

a) Spectrum management and release of the Digital Dividend spectrum bands
The timely release of spectrum to accelerate mobile broadband deployments, particularly the Digital Dividend spectrum (in the 700MHz range) and the AWS spectrum (1700/2100MHz), can play an important role in helping to facilitate network deployments. Lower frequency bands in particular have broadest geographical coverage and are therefore more cost-effective in providing service to more remote, rural areas. The spectrum management policies of countries in the region are therefore key in helping realise the potential of mobile broadband, particularly in the countries which to date have seen the lowest levels of mobile broadband uptake.

b) Regulators should facilitate further network sharing
The GSMA believes that regulators should facilitate further voluntary network sharing arrangements by operators, by, for instance, easing planning controls to encourage shared fibre transmission facilities, including preferential access along roads and other state property. Furthermore, in countries where this is not yet allowed, registered providers (including third party tower companies) should be permitted to construct and acquire passive infrastructure and then sell access to operators.

c) Reduction of local and municipal government red tape
A big problem across Latin America for the deployment of infrastructure has to do with municipal restrictions and red tape. These restrictions are often against international standards and not aligned with National Broadband Plans or Digital Agendas that seek to promote ICT inclusion. Unfounded health concerns or simply discretionary ability to manage permissions create many different negotiating terms for mobile operators and affect their ability to improve network coverage. Peru passed a bill in July 2014 that could be a good example by which national governments could shape municipal administrative requirements so as to be aligned with international standards and prevent barriers for investments in infrastructure12.

---

2.2 Improving the affordability of mobile internet access

Affordability can be a significant barrier to internet access. Latin America scores well compared to other developing regions in terms of the proportion of the populations living below the UN’s ‘poverty level’ of US$2 per day (only 13% of the population in 201113). However, this still leaves a relatively large number of people in absolute terms across the region for whom poverty is still an issue. Even for those well above the poverty line, affordability can still be a challenge for households looking to balance their budgets and to pay for a broad range of goods and services. In Latin America, households in the three lowest income deciles have average monthly household incomes below US$114. Even with the declining prices of mobile data plans and devices, higher speed connectivity therefore remains beyond the reach of many.

2.2.1 Measures to improve affordability: industry players

Falling device prices have played an important role in improving the affordability of mobile services, particularly for more advanced devices such as smartphones and tablets. However, smartphone penetration remains relatively low in many less developed countries in the region, constituting a major obstacle to accessing the internet and, in particular, more advanced services and applications. Smartphone adoption will be helped by ongoing declines in handset pricing. However, for the time being, such devices remain beyond the means of large portions of the population. A recent study by McKinsey showed that the average retail price of a smartphone in 2013 represented 5.8% of GDP per capita in Colombia (US$439), 4.5% in Brazil (US$521) and 2.6% (US$259) in Mexico, putting smartphones well beyond the reach of precisely those poorer sections of the population that have yet to go online14.

The efforts being made by OS developers, local device manufacturers and operators to bring more affordable smartphones on to the market were discussed earlier in the report. It is expected that the greater affordability of smartphones will make an important contribution to boosting penetration to almost 70% of active connections in the region by 2020, from 30% today. Nonetheless, much of the growth in smartphone penetration will come from the replacement of existing basic and feature phones, with mobile internet subscriber penetration set to reach just half the population by that date. This will leave a material proportion of the population still lacking internet access.

Operators have already played a role in improving the affordability of mobile services, particularly with regard to mobile data and internet access, and the challenge of making these services available to low income consumers on prepaid tariff plans15. For example, a range of flexible tariffs are now available from operators focusing on mobile data, including plans that allow users to access the internet for a limited period of time (e.g. one or more periods of 24 hours), set minimal download limits or alternatively allow access to particular web properties (such as Facebook or WhatsApp).

Research commissioned by the GSMA highlighted that mobile data prices had fallen significantly across the region. For example, service tariffs have dropped between 7.3% for dongles and 52% for smartphones in the last three years up to 201316. At the same time, daily mobile internet plans with low fixed prices are allowing people living in low income households to access the internet on a more regular basis.

---

14. ‘Offline and falling behind: Barriers to Internet penetration’ (McKinsey & Company, August 2014)
Taxation of mobile services remains relatively high in many emerging markets, including a number across Latin America. A recent study by the GSMA found that across a sample of 19 countries, US$3 out of every US$10 of mobile revenues was paid to the government in the form of taxes, regulatory fees or other charges. The report highlighted several highly taxed mobile countries in Latin America, including both Brazil and Colombia. These two countries have a mobile services tax burden of over 30% of revenues. These high levels of taxation add significantly to the cost of services for consumers, and so prove to be additional obstacles to the goal of delivering more affordable mobile services to currently underserved populations.

Populations that currently have limited mobile and internet access often also have low levels of literacy. Research published by the ITU in 2012 showed a positive correlation between digital literacy (encompassing both basic literacy in the traditional sense but also the skills needed to use and access technology) and levels of internet access. There are additional and related challenges for some population segments ranging from a lack of basic awareness of the existence of the internet to a lack of knowledge of how to use and access the internet.

There are a number of initiatives in the region aimed at improving digital literacy rates, including numerous government and non-government organisation programmes to deliver personal computers, and fixed or mobile connectivity, to schools – although, to date, many of these programmes are based around computers rather than mobile phones. With their graphical and tactile interfaces, smartphones (and mobile broadband) can play a vital role in bringing internet access, and a wide range of useful apps and services, to those with limited computer literacy or even minimal basic literacy. Smartphones therefore represent a highly cost-effective means to bridge the digital divide and bring the poorest portions of the region’s population online – as well as being more affordable and practical for users to run, as they do not require a permanent connection to an electricity supply.

Another crucial barrier to the uptake of mobile broadband is the absence of locally relevant content, i.e. content that is accessible, useful and relevant to the livelihoods, wants and needs of people in developing economies. The issues involved in improving local relevance include infrastructure challenges such as network coverage, content hosting availability and device compatibility, as well as more nuanced elements around payment limitations, language, cultural factors, and government or third party support. Consequently, addressing these barriers will necessitate a convergence of efforts from key players across the mobile ecosystem, from operators to handset manufacturers, and content developers to internet players.

With respect to language in particular, Latin America is in a stronger position than many other developing regions in that the dominance of Spanish in most countries in Central and Southern America, and Portuguese in Brazil (along with English and French in the Caribbean). This creates a huge consumer and business market for content in local languages. However, there is still a relative paucity of locally created content, focused on the specific needs and interests of the economically and culturally diverse, urban and rural populations of the region, which represent a wealth of untapped opportunity for app developers and content providers. There are a range efforts that are being made to stimulate a local app economy and digital ecosystem, as discussed elsewhere in the report. There are also efforts to develop smartphone-based apps and content linked to public services or business needs. In addition, mobile represents the channel of choice for the delivery of basic information, content and services in areas such as health care to remote communities, education, smart energy, M2M applications, mobile money and agriculture.

At present, basic services in these areas are mostly provided via SMS, USSD (Unstructured Supplementary Service Data) and voice, which does not require an internet connection and are delivered over 2G networks. The higher prepaid connection base and the limited penetration of smartphones in some countries is also acting as a constraint to develop this opportunity further. In the shorter term, the challenge in Latin America is as much to drive up the share of the population that is able to access vital services such as these via affordable, basic mobile subscriptions as it is to increase mobile internet usage alone. Greater uptake of reliance on mobile communications to access services then creates a base upon which more feature-rich, locally relevant, real time-dependent, culturally appropriate and socially interactive apps and services that depend on good-quality mobile broadband networks can be developed. This in turn will allow the full social and economic benefits of increased Internet penetration to be delivered.

Ultimately, relevant local content gives people added impetus for mobile internet and value added services usage. This increases the digital empowerment of users on all rungs of the socio-economic ladder. For operators in particular, this would lead to an increase in subscriptions, customer loyalty, and revenue through data and value added services. Additionally, the availability of an increasing amount of relevant local content would unfurl a virtuous circle of opportunities for local small and medium sized enterprises. These businesses, which are often labour intensive, would be able to participate more actively in the mobile value chain by developing content, creating apps and stimulating innovation.
The social and economic impact of mobile in Latin America
3.1 Mobile makes a major contribution to economic growth in the region

The contribution of the sector to the economy of the region reached 4.1% of GDP in 2013. This overall impact includes a direct contribution from mobile network operators of US$56 billion in value added, as well as a contribution from directly related ecosystem industries. The mobile ecosystem generated value added of US$24 billion. The economic activity directly generated by both mobile operators and the ecosystem has a broader knock-on effect on the rest of the economy, inducing further economic activity valued at US$16 billion. Additionally, the use of mobile technologies also means a more efficient use of existing resources. The widespread use of mobile technology in businesses and by workers in the region significantly increases business productivity, generating an additional US$147 billion in value added in 2013, or 2.5% of GDP.

The direct economic contribution to GDP of the mobile ecosystem (mobile network operators and other related industries) is estimated by the value created by companies that operate in the sector. The value that is added to the region’s economy is equivalent to the payment of wages, tax contributions and business profits by the industry.\(^\text{18}\).

---

\(^{18}\) Value added by the sector can also be approximated as the difference between the value of sales made by the sector and the direct cost of making those sales.
Further to the direct economic impact, the revenues generated by the mobile industry in Latin America have a multiplier effect on the rest of the economy as a proportion of the wages, taxes or profits paid out by the industry are subsequently spent across other sectors. This effect means that other economic sectors also benefit from the value added generated by the mobile ecosystem. It is estimated that this effect resulted in the generation of additional economic activity in Latin America with a value of US$16 billion in 2013.

Finally, and in addition to the direct and indirect contribution to GDP by mobile network operators and the wider ecosystem, an estimated 2.5% can be attributed to the increased productivity brought about by the widespread use of mobile technology in other sectors of the economy. Mobile technology has already facilitated productivity improvements in the region for many workers and businesses, for example by playing an increasingly important role in improving the efficiency of transport and logistics in the region. The increase in productivity is estimated to have generated in 2013 an additional US$147 billion contribution to GDP. Productivity growth has the potential to increase further going forward as more efficient practices are adopted on the back of increasingly advanced services supported by mobile broadband technologies. Overall, in 2013 the mobile industry made a contribution to GDP of US$242 billion or 4.1% of the region’s total.

Source: GSMA Intelligence

Total (direct and indirect) contribution to GDP
(2013 US$ B)
In 2013, the mobile industry provided direct employment to approximately one million people in the region. Most of these jobs were provided by mobile network operators (320,000), distributors and retailers (285,000), and content providers (255,000). There were smaller but also material numbers of jobs in the areas of handset manufacturing and infrastructure provision.

Further to the employment that is sustained within the ecosystem, additional jobs were also indirectly supported in the rest of the economy as wages, public funding contributions and profits paid by the industry are re-spent elsewhere in the economy. It is estimated that over one million jobs were indirectly supported in this way, bringing the total impact of the mobile industry in Latin America to more than two million jobs in 2013.

Direct and indirect job contribution from the mobile ecosystem

<table>
<thead>
<tr>
<th>Source: GSMA Intelligence</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Operators</th>
<th>Handset</th>
<th>Distribution</th>
<th>Content</th>
<th>Direct</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>34,953</td>
<td>318,405</td>
<td>75,139</td>
<td>254,434</td>
<td>967,116</td>
<td>1,227,303</td>
<td>2,194,420</td>
<td></td>
</tr>
</tbody>
</table>
The mobile industry also makes a very important contribution to public funding in the region. In the first place, the mobile ecosystem makes a sizeable contribution through general taxation, which for most countries includes sales and corporation tax, as well as contributions made by people directly employed in the industry through income tax and social security contributions. It is estimated that the sector made a contribution to the public finances of governments of around US$41 billion in 2013.

Mobile network operators made further contributions to the public finances of government through fees for the licence of spectrum bands required for the deployment of mobile broadband services. In 2013, over US$1 billion was raised in the region through spectrum auctions. Auctions have continued in 2014, with Brazil’s 700MHz auction in September raising approximately US$2 billion for the government. Argentina’s recent 4G auction results indicate the government will raise US$2.3 billion.
Outlook to 2020

Going forward, the mobile industry will continue to increase both in absolute and relative terms its contribution to the Latin American economies. This will be brought about by increasing subscriber numbers and value added services generated by the ecosystem, as well as the growing use of mobile technologies by businesses and workers. This will enable a more efficient use of resources not only within the sector but throughout the whole economy.

By 2020, it is estimated that the mobile ecosystem will generate value added of US$275 billion, representing at that point 4.5% of the region’s projected GDP in 2020, up from its current contribution of 4.1%.

The predicted increase in GDP contribution over the period will also be accompanied by a strong growth in the number of people directly employed by the industry. The growth in the number of mobile broadband connections and the development of new content, services and products will result in the hiring of new employees by companies across the ecosystem. The number of people directly employed by the industry will reach 1.3 million by 2020, up from just under one million in 2013. At the same time, the public funding contribution of the mobile ecosystem (excluding spectrum and other regulatory fees) will reach US$53 billion by 2020, up from US$41 billion in 2013\(^9\).

\(^9\) Assuming that tax rates remain at current levels
3.2 Mobile facilitating entrepreneurship and commerce in Latin America

The increasing adoption of smartphones and the ongoing migration to mobile broadband services in Latin America is creating huge potential for new mobile apps and mobile-driven businesses. According to ComScore, the proportion of web pages accessed via smartphones or tablets in the leading Latin America economies approximately doubled in the year to May 2014, with Mexico (22.3%) and Chile (18.5%) recording the highest shares20.

The most popular apps in the region are free-to-download social-networking, messaging and entertainment services such as Facebook, WhatsApp and Google Play. There is also a growing volume of low-cost mobile games, with one survey estimating the value of the Latin American mobile gaming market at US$400 million in 2013.21 However, the market potential for mobile enterprise apps is largely unfulfilled, with a recent survey by the chipset manufacturer Qualcomm reporting that only 15% to 20% of Brazilian enterprises use mobile apps to address specific business needs, as opposed to generic communication and collaboration apps22.

The reasons for the region’s relatively low adoption of apps that offer sufficiently valuable content or business functionality that users are willing to pay for them are complex. One issue highlighted by a 2013 GSMA survey is privacy, with over 80% of mobile internet users in Brazil, Colombia and Mexico having concerns about sharing their personal data when accessing mobile apps. In addition, 48% of users with privacy concerns of this sort stated that they were prepared to limit their use of apps unless they feel their personal information is adequately safeguarded23.

Across the region, private and public actors in the mobile ecosystem have launched a range of new initiatives aimed at fostering the development of a vibrant, locally relevant app economy. One notable example is Telefónica’s incubator Wayra, which provides business-development, investment and technical support for online and technology startups in the region’s largest countries – although not limited to mobile-centric apps and services.24 Examples of businesses that have been assisted by Wayra include Ocapí (an intelligent online-advertising system allowing real-time modification and re-targeting of online ads based on knowledge of the user’s interests and present context); and Tryouts (a site setting people learning challenges and coding tasks structured like a gaming quest, and generating job offers based on users’ skills and achievements as demonstrated on the site).

While the apps incubated by Wayra are focused on the needs of businesses, employees and consumers, another operator-led initiative – from the Brazilian operators’ association Telebrasil – addresses the social and economic needs that can be met through digital innovation. The project ‘Innovative and Competitive Digital Brazil 2015-2022’, launched at a Telebrasil congress in September 2014, includes a 30-point plan under five broad axes.25 Two of these axes are as follows:

• ‘Services and Applications’: this includes recommendations about infrastructural and institutional change that is required to realise the full potential of ICT to deliver basic services (such as health care and education) and e-government in the country.

• ‘Innovation and Entrepreneurialism’: this urges the country’s authorities to increase the focus on R&D and innovation, on fostering a culture of innovation, and on creating infrastructure platforms (such as M2M technology, Big Data and cloud computing) that are needed to support innovative enterprise application development.

---

20. ‘Futuro Digital Chile 2014’ (ComScore, August 2014), p. 62
22. http://convergecom.com.br/oi/04/06/2014/mercado-de-m2m-promete-crescimento-acelerado-diz-estudo/?noticiario=O%26_a__akacaios1957f4a4___akcnt=6a0b79e8___akkey=10b2&utm_source=akna&utm_medium=email&utm_campaign=NEWSLETTER+DI+CORPORATIVO++D5%2F6%2F2014+17%3A48#vVuUsSuXa6x
23. ‘Mobile Privacy: Consumer research insights and considerations for policymakers’ (GSMA, February 2014)
24. www.wayra.org
Throughout the region, there are a number of centres emerging with a concentration of technology start-ups that government and international bodies are seeking to support through subsidies and incentives. For example, in Chile, a smart city project has been launched in the Gran Concepción conurbation, with support from the World Bank and the country’s Ministry of Transport and Telecommunications. In Brazil’s financial capital São Paulo, a dynamic start-up ecosystem has grown, which has received support from both equity funding and government programmes. The start-ups in the city are strongly focused on the social needs that should be served through technology innovation, which in turn will help realise the enormous growth potential.

As Yuri Gitahy, founder of the business accelerator Aceleradora states: “There is a deep economic change with the rise of the lower-income classes, which generates a massive consumer market that will evolve over the next 10 or 20 years. So it’s not about the ecosystem, it’s about the growing number of market opportunities.”

### 3.2.1 Mobile commerce: low uptake to date but huge potential

With mobile becoming the primary means of accessing the internet for a growing number of users, the opportunities for mobile commerce (m-commerce) are also considerable. Mobile terminals and billing platforms are also increasingly used as payment methods by populations across the region. A recent report showed that the share of e-commerce sales transacted over mobile devices in Brazil nearly doubled from 2.5% in early-2013 to 4.8% at the year end, and this strong growth trend is likely to continue.

While the share of e-commerce transactions completed over mobile devices and apps is still low, it is growing fast in the context of an overall ecommerce market that is also enjoying rapid expansion. According to one recent survey, Latin America is now the second-fastest growing e-commerce market worldwide after China, with the web sales of the region’s top 500 retailers increasing by 23% to $17.94 billion in 2013. In addition, the C2C and B2C e-commerce platform MercadoLibre, which operates across the region, reported that it expects m-commerce transactions will increasingly be carried out using mobile money accounts, mobile wallets and e-money via mobile devices. M-commerce, combined with mobile money services, offers the important benefits of convenience, and enhanced access to affordable goods and services, to Latin American consumers. Moreover, the mobile medium also taps into the Latin American consumer’s habits of carefully managing and budgeting expenses and bills, as mobile money services and apps provide an easy means to track all of the user’s spending and accounts.

The different legal and regulatory frameworks across the region, which often fail to take the specificities of web-based commerce into account, may take longer to harmonise. However, all of these factors are now being addressed by mobile ecosystem players and internet retailers alike. As described elsewhere in this report, smartphone penetration is expected to more than double out to 2020, and mobile broadband availability is expanding rapidly as 3G and 4G networks are deployed. In addition, e-commerce players are addressing the issue of local language and content. For example, eBay launched Spanish- and Portuguese-language apps for the first time in 2014, with content and offers tailored to the local markets; and Amazon – which launched an e-commerce site in Brazil in 2012 – started selling printed books in Portuguese during 2014. Mobile payment platforms are being integrated with commerce platforms and apps, so that m-commerce transactions will increasingly be carried out using mobile money accounts, mobile wallets and e-money via mobile devices. M-commerce, combined with mobile money services, offers the important benefits of convenience, and enhanced access to affordable goods and services, to Latin American consumers. Moreover, the mobile medium also taps into the Latin American consumer’s habits of carefully managing and budgeting expenses and bills, as mobile money services and apps provide an easy means to track all of the user’s spending and accounts.

The different legal and regulatory frameworks across the region, which often fail to take the specificities of web-based commerce into account, may take longer to harmonise. However, at an individual country level, progress is being made regarding the responsibilities of payment service providers, guarantees for mobile money users and interoperability of mobile money platforms (several of which are present across the region).

27. http://www.ft.com/cms/s/0/13a96db8-27a0-11e4-be5a-0144feabdc0.html?siteedition=uk&FEATURED=5DChwuAG8
3.3 M2M services are growing rapidly across the region

One area of mobile-driven innovation that is showing rapid growth across the region is the number of M2M connections and services. The Internet of Things (IoT) will offer a range of innovative new services to consumers whilst also helping to address some of the broader challenges in the region. The GSMA’s vision for the IoT is the ‘Connected Life’. The term ‘Connected Life’ refers to a world in which consumers and businesses use many different devices to experience compelling new services and ubiquitous internet access delivered via mobile networks. These devices include the next wave of smartphones, tablets and consumer electronics, as well as machines, vehicles, monitors and sensors equipped with M2M communications.

There were under 16 million cellular M2M connections in Latin America as at September 2014. Growth is expected to be strong over the next few years, at a CAGR of 25% out to 2020 and with the total reaching 66 million connections by that date.

Source: GSMA Intelligence

M2M connections in Latin America (M)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>4.9</td>
<td>8.1</td>
<td>10.9</td>
<td>13.7</td>
<td>17.0</td>
<td>21.9</td>
<td>27.9</td>
<td>35.3</td>
<td>44.0</td>
<td>54.3</td>
<td>66.2</td>
</tr>
</tbody>
</table>

31. The GSMA Intelligence M2M connections data used in this report refers exclusively to a SIM connection that enables mobile data transmission between machines. It does not count SIMs used in computing devices in consumer electronics such as smartphones, dongles, tablets, e-readers, routers and hotspots.
As at the second quarter of 2014, Brazil was the fourth-largest M2M market worldwide, with 9.1 million connections, representing around two thirds of the Latin American total and 5% of the global total. The country is projected to remain in fourth position by 2020, by which time the number of connections will have risen to 41.9 million. Across the region, M2M accounts for only around 2% of all connections; but this will rise to 7% by 2020.

There could be substantial upside to these forecasts if a number of growth factors are successfully enabled by both industry players and governments in the short to medium term, as highlighted in recent research by GSMA Intelligence32. The areas identified as possible growth stimulators that are of particular reference to Latin America include the following:

- Government policies to facilitate wider deployment of cellular M2M in key sectors such as utilities, smart cities, automotive and healthcare;
- The standardisation of technical solutions and components; and
- The development of new business models by operators, particularly those that move beyond the provision of simple connectivity.

Supportive regulatory frameworks can play an important role in stimulating the deployment and adoption of new M2M applications and services. One example of a progressive government policy is the tax break introduced in 2014 for M2M connections in Brazil. M2M connections normally generate a significantly lower ARPU than personal connections, so a reduction in the tax charges associated with M2M should play an important role in market development going forward.

Another M2M service with a significant regulatory driver is the stolen vehicle-tracking SIMRAV project (Sistema Integrado de Monitoramento e Registro Automático de Veículos) in Brazil, otherwise known as the CONTRAN 245/07 regulation. CONTRAN requires that all new vehicles be fitted with the capability to be tracked and remotely disabled in case of theft. The project has been postponed several times already, mainly because vehicle manufacturers do not want to add to production costs. In May 2014, DENATRAN, the Brazilian national transit department, announced that the project would be delayed by a further two years.

The first of these two examples in particular illustrates the importance of gaining buy-in and co-operation from all the public and private stakeholders right from the planning stage of any new public-interest M2M deployment. This allows the elaboration of business models and technical specifications, which in terms means that the cost-benefit for all of the actors can be clearly understood.

3.3.1 Automotive leading the way in Latin America

Despite the difficulties encountered by the CONTRAN regulation, Brazil is nonetheless leading the way in terms of automotive M2M deployments, with around 3.5 million connections, compared with 8.8 million across the region at end-2013, according to Machina Research. The majority of deployments to date are in the areas of vehicle and fleet tracking, and vehicle security, with the need to improve the efficiency of logistics networks being an important consideration in the region. These segments are expected to grow strongly out to 2020. Other applications will also see rapid growth, including more premium services such as pay-as-you-drive insurance and in-car infotainment services.

In September 2014, BMW launched its ConnectedDrive concept in the Brazilian market, in the shape of its i3 electric car. This model comes equipped with a built-in SIM card providing connectivity to the BMW cloud via a smartphone interface. Using this connection, a number of services are delivered, such as: emergency calls (and soon, break-down calls); vehicle-performance information; satellite navigation; and route planning and distance calculation to minimise battery or fuel consumption, and determine whether the driver will need to charge up or re-fuel to reach their destination. A smartphone app also enables the driver to control other vehicle functions internally (without connecting to the cloud), such as air conditioning, assisted driving and the rear-view camera.

33. Machina Research’s M2M numbers employ a broader definition than GSMA Intelligence’s M2M projections, which are limited to cellular network connections.
3.3.2 Smart grids and smart cities

Latin America has four out of the 15 largest urban conglomerates in the world: Mexico City (ranked 3rd), São Paulo (6th), Buenos Aires (12th) and Rio de Janeiro (14th). All four of these are already classified as ‘megacities’, with populations in excess of 10 million. The region is expected to have 585 million urban citizens by 2030, and by 2050, over 90% of the population in the region is forecast to be living in urban areas.34

In the developing world, the primary challenge for cities is typically over-congestion (both urban density and traffic volume) caused by the unprecedented rapidity of urbanisation in the past 10-20 years.

A recent survey by the Inter-American Development Bank highlighted how these challenges impacted individuals in Mexico City, São Paulo and Buenos Aires. It found that, for example, over 28 million people in these three cities alone commuted for over 90 minutes every day, while lower income households tended to be more exposed to electricity blackouts and voltage fluctuations than higher income households.

Smart city services and applications can help to move urban growth onto a more environmentally sustainable footing, as well as reduce the impact of issues such as congestion and pollution. In addition, smart grid and smart metering systems offer the prospect of reducing the waste, costs and pollution of inefficient energy use and energy fraud, thereby improving the reliability of utility services in the region’s cities, and allowing the benefits of modern power and water supply to be extended to poorer, rural areas.

In Chile, ‘Smartcity Santiago’ was launched in early 2013 by electricity-distribution company Chiloelectra. This is a prototype urban environment incorporating a range of technologies, including: smart metering.smart grid technologies; renewable power generation; energy-efficient homes incorporating smart home automation; electric vehicles; and automated security systems. The goal is to demonstrate to local government and the city’s residents the benefits that these new technologies can provide. There have been a number of other smart city initiatives in Santiago, most notably a system for variable, automated toll charging on some of the city’s most congested highways, which uses short-range, non-cellular wireless ‘tags’ to handle communications between registered vehicles and the system.

There has also been a number of smart city initiatives in São Paulo. Three of these have involved connectivity supplied by the local Telefónica mobile subsidiary Vivo: a system for tracking the city’s waste-collection fleet; a real-time flood warning and prevention system; and a traffic-management system for the city’s public bus service. The latter service enables PC or smartphone users to track buses on their proposed routes, and to access estimated pick-up and arrival times for their journeys.

---

The initial focus of the Connected Living programme is to address key barriers and challenges that are prohibiting the development and growth of M2M/IoT connections and services across the world. This will be achieved by industry collaboration and appropriate regulation, as well as by developing key enablers to support the growth of the M2M market and new services and applications.

The GSMA works with its ecosystem partners to establish guidelines for how machines should communicate via the mobile network in the most intelligent and efficient way. The goal is to define future network requirements and capabilities that are required to allow operators to support IoT devices and services.

The GSMA’s vision is to unite all industry stakeholders behind a single, common embedded SIM specification to help accelerate the growth in M2M connections. The GSMA recently announced an agreed specification for a machine (embedded) SIM that addresses remote provisioning requirements. The embedded SIM specification project has the support of a number of the world’s leading mobile operators.

The GSMA is working on a range of business enablers that aim to create a sustainable regulatory and policy environment that enables operators to deliver the consumer and business benefits of the IoT.

The GSMA is also working to identify and develop enablers that will support future network capabilities such as in the areas of end-to-end security, non-GSM device authentication and billing and charging.

The GSMA also engages with partners across the broader ecosystem to help drive adoption and facilitate the development of new services in markets including automotive, health, utilities and transportation. In the automotive field, the GSMA automotive special interest group allows automakers and operators to share information and enable industry cooperation, with the goal of resolving barriers to connected car deployments and to speed the adoption of telematics and infotainment services.
There are a number of common challenges facing developing economies across the world, and a number of these apply in Latin America. High levels of population growth can bring challenges in ensuring access to basic infrastructure and services such as electricity, education, healthcare and banking. In contrast, the rapid growth in urban areas is creating increasing challenges in relation to congestion and the efficient provision of public services.

There is a clear potential for the mobile ecosystem to make a meaningful contribution to addressing these challenges. Mobile networks and services have the potential to help to facilitate access to basic services in areas such as health care, education and agriculture. The number of deployments in Latin America in these areas has increased steadily over recent years. However, the number of services in the region still trails behind other developing regions such as Sub-Saharan Africa, and there is clearly the potential for mobile to make a greater contribution to the region’s social challenges in the future.

**Mobile-enabled products and services in Latin America**

![Graph showing the number of deployments (cumulative) for Health, Learning, Money, and Others from Pre 2009 to 2013.](source: M4D Impact tracker, GSMA Intelligence)
A recent survey by the GSMA has shown that mobile operators in the region do want to do more to enable ‘social innovation’ services in these basic areas\(^{35}\). Operators have a clear perception of the social needs of the markets where they operate, and these needs in turn are identified as presenting opportunities for new service launches. Operators regard education and health care as among the greatest challenges in the region, but also as presenting some of the strongest opportunities for new service launches. However, a key finding of the survey was that operators feel constrained from doing more in these areas by a lack of proven business models.

Policymakers and regulators have a critical role to play in creating the right regulatory frameworks, the funding streams, and the engagement of relevant professionals and institutions necessary for these new business models to be elaborated and the full potential for social innovation services to be realised. Co-ordination between public and private stakeholders has often been deficient in Latin America, whereas some of the region’s governments have imposed an onerous tax burden on operators to raise funds for public sector-led social projects, thereby running the risk of stifling innovation by starving operators of development and investment funding.

The GSMA is working with regulators, governments, operators, investors and other stakeholders to provide policymakers with precisely this sort of hard data to inform their decisions and contribute to more constructive collaboration with operators. For instance, in June 2014, the GSMA announced it was working with the InterAmerican Development Bank (IDB) on the development of the Centre for Advanced Studies in Broadband Development (CEABAD), based in Managua, Nicaragua. The Centre aims to provide in-depth training to government officials from the region’s Spanish-speaking countries on the socio-economic benefits of mobile broadband\(^{36}\).

Operators themselves are attempting to stimulate a constructive dialogue with policymakers and to lay out their vision of the steps that need to be undertaken to fulfil the potential for mobile communications to support basic services. The Brazilian operators’ federation Telebrasil’s plan for an ‘Innovative and Competitive Digital Brazil 2015 to 2022’ was discussed earlier in this report. Under the heading ‘Basic services and strategic sectors’, Telebrasil lists a number of sectors where it believes telecoms can make an important contribution. In addition to education, health care and ‘agro-industry’ – discussed later in this section – these include: energy; sanitation, environmental management and urban mobility; social welfare; and public security. The plan also envisages the creation of an ‘Institutional Council for Communications Policy’, which will bring leading players in the communications, media, culture and education sectors together with representatives from ministries across government to co-ordinate policy formation.

\(^{35}\) http:/ /www.gsma.com/latinamerica/opportunities-for-social-innovation-services-in-latin-america-the-caribbean

3.4.1 mHealth

There are a range of different health challenges facing populations and their governments in countries across Latin America. The emergence of a prosperous middle class across the region has led to growing problems around non-communicable and ‘lifestyle’ diseases. The latter include diabetes and heart disease, with the former now amongst the top five causes of mortality in the region, whilst rates of child obesity have also increased sharply.

In more developing countries in the region, such as a number of those in Central America, the challenges revolve around increasing access to basic healthcare and disseminating information that can save lives. Even in some of the more developed economies in the region, there are issues around providing healthcare in more rural and remote regions.

There are a number of successful mHealth projects and commercial services throughout the region. However, the extent of the deployments to date is relatively limited and far from meeting the scale of the social challenges across the region. Progress is being made to drive policy formation so as to create the regulatory, institutional and financial frameworks that will allow operators to innovate services and establish business models in this field. The Telebrasil plan discussed previously in the report lays out four action points that need to be addressed by Brazilian policymakers in order for the potential of mHealth services to be realised more fully:

- More effective scheduling of online medical examinations and consultations
- Creation of centralised data platforms, and open access for developers to make use of private applications and services
- Interconnection of transplantation centres
- Telemedicine as a tool of preventive health care, diagnosis and access to medical specialists.

Examples of good practice in mHealth are becoming more widespread across the region, and we highlight a number of examples below:

In Brazil, the mPERS solution (mobile Personal Emergency Response System) is providing remote, mobile monitoring of patients with heart conditions and high blood pressure. The system comprises a wearable hub that collects data from sensors such as blood pressure monitors, pulse oximeters and electrocardiograms, and transmits it to remote servers for health monitoring and emergency response. The user’s location is tracked via GPS or by means of wireless-signal triangulation when indoors. Other features include reminders to take medication, and integration with home-automation systems to automatically trigger an emergency response if the user becomes non-responsive.

In Chile and Peru, the MiDoctor (My Doctor) system has been deployed to provide automated monitoring of chronically ill patients via voice calls, SMS and a web-based medical record. The patient receives SMS alerts to make sure that they attend their medical appointments or, if they are not able to attend, that the clinic is notified and can re-use the appointment for another patient. The system is also able to alert physicians of any risk factors, and ensure patients are followed up if they are failing to adhere to their treatment and monitoring programme.
3.4.2 mEducation

Many countries in Latin America face a range of challenges in providing education to their youthful and growing populations. The key issues include high drop-out rates, especially in secondary education; high rates of illiteracy; limited access to education; low educational quality; and insufficient teacher training programmes. These problems are especially pronounced in low income urban and rural populations. Increasing the quality of education and broadening access to schooling and skills based learning is therefore a key policy area for governments.

Mobile-enabled services have the potential to address many of these challenges and make education more widely available. The scale of the challenge and of the opportunities in the field of education are similar to those in health care, and a joined-up approach on the part of policymakers, the mobile industry and the education sector is just as essential.

The Telebrasil plan for digital innovation and competitiveness, discussed above, sets out five action points for the sector that address some of the main challenges:

- Developing new teaching methods incorporating ICT, promoting an increase in both the efficiency and quality of teaching;
- Improving teachers’ skills in ICT as a basic teaching tool, enabling the propagation of active learning programmes for pupils and stimulating the creation of new educational content;
- Deploying infrastructure and connectivity for educational projects, by building out broadband infrastructure to all schools (for instance, via a Public-Private Partnership model), enabling schools to install ICT equipment and Internet access adequate to their needs;
- Increasing the range of educational content available and spreading the benefits of knowledge across society through the creation and management of content aligned with the school curriculum, and the development of distance learning platforms; and
- Creating a programme of digital literacy, thereby enabling the rapid inclusion of the most vulnerable and excluded sections of the population.
The Telebrasil plan also recognises that mEducation objectives cannot be successfully realised merely through the provision of better broadband connectivity and access to ICT equipment, essential though these are. It is equally important to improve the ICT literacy and skills of both teachers and the most deprived sections of society, who represent one of the main target groups and potential beneficiaries from mEducation programmes. Similarly, access to ICT equipment and the internet must be used to provide a stimulus for the development of higher-quality, and more relevant, educational content, along with better teaching and learning methods.

These ideas are supported by the findings of a study of the socio-economic effects of broadband connectivity in Latin America published in July 2014 by DIRSI, a regional ICT policy research network. This includes a study of the effects on educational achievement (as measured by standard test results) of programmes designed to equip schools with computers and broadband connectivity, in Brazil, Chile and Peru. The investigation found there was relatively little improvement in performance and even some negative effects in cases where deficient teacher training allowed broadband availability to divert attention from the school curriculum. The more positive effects were seen where broadband was used to provide more engaging teaching methods. Examples of this include the use of news stories to teach grammar and maths, or where the availability of broadband motivated older students to continue attending and improved the learning environment by helping to reduce discipline problems in class. There were some indirect positive effects, including for example the digital inclusion of disadvantaged pupils. However, for broadband to really improve educational performance, there is a requirement for better teacher training and methods, as well as more relevant and engaging educational content.

Some of the more promising mEducation initiatives in the region seek to exploit mobile as a tool to improve the quality of teaching, learning and content:

Puentes Educativos (Educational Bridges) is a programme in Chile focused on training teachers to use ICT more effectively to improve the teaching and learning process, and outcomes for 5th and 6th graders in schools in economically vulnerable areas, particularly in maths, science and English. Schools are equipped with Nokia C7 smartphones, and the scheme is sponsored, among others, by Nokia, the educational publisher Pearson and Telefónica.

Guia do Estudante (Student Guide) is a service from Telefónica’s Brazilian subsidiary Vivo which provides daily test questions to school students via MMS. Students respond and receive their test results via SMS. The tests involve content developed especially for the service by educational publisher Abril and are available in a range of curriculum subjects.

37. The Internet and Poverty: Opening the Black Box (DIRSI, July 2014)
The social and economic impact of mobile in Latin America
One consequence of the mobile industry’s expansion across the region is a growing problem of eWaste. According to UN estimates, the volume of eWaste generated in Latin America is set to increase from 4,226 kilotons in 2012 to 4,968 kilotons in 2015. By 2014, the region will be responsible for 8.6% of the global production of eWaste.38

The mobile industry is of course not the only source of ‘waste electrical and electronic equipment’ (WEEE), as it is also known, which also includes computer and TV equipment, and general electrical devices, for instance. However, as the average lifecycle of a mobile phone is between three and five years, and given the rapid rate at which basic and feature phones are now being replaced by smartphones across the region, the mobile industry is a major contributor to this issue.

Efforts to make progress in this area have been impeded by rigid regulatory regimes, which often make operators solely responsible for the waste generated by mobile devices. This is in contrast to regulatory regimes in other regions that incorporate the principle of extended producer responsibility, whereby the manufacturer is responsible for the entire lifecycle of the product, especially post-consumption.

In addition, Latin America lacks much of the infrastructure needed to manage the WEEE it generates, meaning that hazardous materials such as mobile phone batteries need to be shipped abroad to be processed. This both results in considerable extra costs and in a lost economic opportunity from recovering the large volume of precious materials, including silver and gold, contained in electronic devices.

The GSMA is working with operators, governments, regulators and the broader mobile ecosystem to promote a more comprehensive and transparent regulatory regime, and a more eco-efficient production and recycling chain, for eWaste in the region.

---

38. See ‘eWaste in Latin America: The contribution of mobile operators in reducing electronic waste’ (GSMA, May 2014)
Electronic waste growth in Latin America

KT = 1Kiloton = 1,000 Tons

Source: UNU

WEEE in Latin America, selected countries

2015

- El Salvador
- Argentina
- Panama
- Mexico
- Brazil
- Ecuador
- Uruguay
- Chile

Kilotons

In 2015, Latin America will produce

8.6% of the global WEEE

Source: MIT/StEP Initiative

From 2012 to 2015

Latin America WEEE will increase

17.5%

3-5 years

is the average lifespan of a smartphone

Source: MIT/StEP Initiative
What’s in a smartphone

- 45% plastic
- 10% ceramic
- 20% copper
- 20% gold, aluminum, and other metals
- 5% non-metals

Source: TIM Recarregue o Planeta

A ton of gold ore contains 5g of gold, whereas a ton of mobile phones contains 400g of gold.

Results of the recycling process

**Batteries**
Composition: cobalt / nickel, copper

- Batteries, magnets, stainless steel, metal oxides, ink pigment, and salts.

**Components**
Composition: gold / palladium, copper

- Jewelry, musical instruments, electronic equipment

**Plastic**
Composition: plastic

- Traffic cones, chairs, tyres, pet food containers and other everyday objects.

Latin America mobile operators willingly develop:

- Reverse logistics schemes
- Awareness campaigns
- Recycling programs
- Standards adoption

El Salvador
Argentina
Panama
Mexico
Brazil
Ecuador
Uruguay
Chile

Source: UNU
3.6 Delivering financial inclusion across Latin America

Roughly 60% of adults in Latin America remain unbanked, ranging from 86% in Nicaragua and El Salvador, to 44% in Brazil\(^\text{39}\). This equates to around 170 million people who are still denied access to basic financial services. The formal financial services sector has, in many countries, failed to serve lower income segments, largely because the economics and demographics of ‘bricks and mortar’ banking do not work for most private players in the region. This is particularly true of the populations in rural areas, as traditional banking infrastructure is often restricted to urban centres.

With increasing levels of mobile penetration and an existing retail infrastructure, mobile money services provide a clear opportunity to expand financial access. Greater financial inclusion would not only yield economic benefits for the region, but also enhance the social welfare of millions of Latin Americans currently unbanked or under-banked.

While there are a growing number of mobile money deployments in Latin America today, the rate of adoption has tended to lag behind that seen in other emerging markets such as Africa and parts of Asia. The GSMA’s 2013 State of the Industry report indicates that as of December 2013, Latin America was home to just 13% of the world’s live mobile money deployments, but more encouragingly had almost 20% of the planned deployments.

---

As at June 2014, there were 36 live mobile money deployments across the region, compared with 27 one year earlier. In addition, there were 19 planned deployments at June 2014.

While Latin America has seen some successful mobile money deployments, the full potential of mobile money remains untapped in part due to regulatory barriers in a number of countries. However, progress has been made over the last year or more in elaborating the regulatory and legal frameworks to be applied to mobile money services in countries across the region, and this is enabling a variety of business models and commercial partnerships to be developed, and new services launched. Consumer concerns over security are also likely to be allayed as the legal responsibilities and liabilities of players in the mobile money ecosystem are clarified.

Three broad regulatory, legal and commercial approaches to mobile money are emerging:

- Mobile as a channel for traditional financial services, for banked consumers. Countries with traditional financial regulatory frameworks, allowing banks to use the mobile network as one of the channels for their already financially included population. In these countries, like Argentina and Venezuela, mobile financial services are provided directly by banks using mainly advanced apps for smartphones.

- Mobile Money for the Unbanked (MMU) through existing banking or remittance laws. Countries with financial inclusion regulation and provisions (such as flexible identity verification requirements and the use of alternative distribution channels like mobile, the internet and agents) but without a specific non-bank financial licence that allows new players to enter the market. This is the situation of Guatemala, Chile and, until recently, Colombia, for example. In these countries, the mobile money deployments are usually either bank-led or joint ventures between banks and mobile operators, but always using the bank licence. In some countries, like Guatemala, mobile operators offer mobile over-the-counter, person-to-person funds transfer under non-financial licences (usually a domestic remittance licence).

- The creation of new legal entities for a dedicated payments company or e-money issuer. Countries like Mexico, Colombia, Peru, Bolivia, Uruguay, Paraguay and Brazil have recently adopted modifications to their legal frameworks in order to allow the entry of new non-bank (light financial) institutions to the financial transaction market, including, in some instances, the ability to issue e-money. The level of requirements for these institutions varies among these countries. The minimum required capital for these financial licences is normally under US$1 million, except in Colombia (US$3 million) and Mexico (US$14 million).
Increasing regulatory clarity has contributed to a growing wave of e-money service launches throughout the region in 2013 and 2014. After the mobile payments bill was published in Brazil in May 2013, for instance, three mobile money schemes involving mobile operators were launched:

- ‘Zuum’ – a partnership between Vivo (Telefónica) and MasterCard;
- ‘Oi Carteira’; and
- ‘Meu Dinheiro Claro’ – developed by Claro in partnership with Banco Bradesco.

In Mexico, the new non-bank entities, called ‘niche banks’, are required to be fully integrated with the existing financial infrastructure (such as payment cards and ATMs) and are subject to the full suite of banking regulation and law. Transfer, a joint venture between América Móvil subsidiary Telcel and the Banamex/Citibank and Inbursa banks, operates under the banks’ existing licences. Transfer offers deposits (for example at correspondence bank outlets), cardless withdrawals from ATMs, person-to-person transfers, prepaid top-ups and an optional companion card. As at September 2013, there were reportedly 2.17 million active mobile banking accounts of this type in Mexico, representing around 2.5% of the adult population.

The fourth national mobile operator, TIM Brasil, has also publicly announced plans to launch a mobile wallet in partnership with the government-owned bank Caixa Econômica Federal and MasterCard. New mobile money services are also expected to launch in Peru in the near future, with the mobile operators as active participants in the ecosystem. An initiative by the Peruvian Bankers’ Association (ASBANC) to offer a shared e-money platform captured headlines in 2014, and a pilot is expected to be launched in the first half of 2015.

40. Regulatory Approaches to Mobile Financial Services in Latin America (Alliance for Financial Inclusion, August 2014)
In Colombia, the government recently passed legislation to approve e-money issuers, and further regulation is expected to implement the financial inclusion law. In the interim, both Claro and Móvistar are offering mobile money services and do so effectively as a channel for banks or credit card companies in a similar way to Mexico. The Colombian bank Bancolombia acquired an MVNO (‘Ahorro a la Mano’) to offer mobile financial services independently of the country’s mobile operators.

One successful operator-led mobile money service is Millicom’s ‘Tigo Money’, which is active in five Latin American markets where Millicom operates networks under the Tigo brand (Bolivia, El Salvador, Guatemala, Honduras and Paraguay). The service can be used for remittances, person-to-person transfers, cash withdrawals, payments and prepaid top-ups. Any mobile phone user can access the service, which functions via SMS. In Bolivia, it was reported in October 2014 that Tigo Money is responsible for money flows of nearly US$4 million per month, and has around 700,000 customers41.

Other countries are likely to adopt regulations enabling mobile money specific licences in the near future. Such is the case of El Salvador: a Financial Inclusion bill has been drafted and presented to Congress. This will bring legal stability to the mobile money services already deployed, promoting its expansion. Among the major economies, Brazil, Colombia and Mexico have adopted financial inclusion strategies; and Uruguay is also preparing a Financial Inclusion Act.

One major challenge for MMU services in the region going forward is to make the different national payment and e-money platforms – of banks and non-banks – interoperable, as this will greatly enhance the market reach and hence take-up of vital services such as international remittances, funds transfers, and m-payment. The way to achieve more interoperability will become clearer as the regulatory frameworks are established in each country, and as the most effective business models and players emerge. An important lesson from other markets where mobile money is growing is that the precondition for developing a successful regulatory framework is to establish an open dialogue and consultative process between policymakers, regulators and the private sector. Many regulators will agree that by establishing open channels of communication with mobile money providers, they can design regulation that embodies a financial inclusion objective whilst also providing effective oversight of the mobile money sector.

Considerable progress has now been made in the region towards creating policy frameworks and business models that allow both bank and non-bank mobile money providers, including mobile network operators, into the market. Anecdotal evidence, commercial lessons and international regulatory principles all defend opening the market to providers with different value propositions. Equally, evolving mobile money regulation and legislation in the region are incorporating internationally established principles and compliance systems for safeguarding customer money, and enhancing efforts to combat money laundering and the financing of terrorism (AML/CFT).

The market is growing in confidence and in scale. In one industry survey in 2014, 62% of those polled expected mobile payment to become a mass-market service in the region within two to five years42. It is hard to overstate the social and economic benefits for the region as a whole that could be brought about by the vastly expanded levels of financial inclusion that would be enabled by a mobile-money mass market. This has the potential to get the whole economy of the region going again, by providing access to formal financial services for disadvantaged and marginalised sections of society for the first time, and thereby creating new opportunities for commerce, investment and job creation.

This will also have a knock-on effect in terms of digital inclusion, as the socio-economic benefits of mobile money will provide a major incentive to subscribe to a mobile service (along with the actual means to do so) for the many millions in the region for whom the cost of mobile communications – and broadband in particular – has hitherto represented a barrier. And at the same time, the value that mobile money provides for mobile users will help strengthen subscriber loyalty. Mobile money should therefore be an important win-win, for financial inclusion and mobile adoption alike.

42. ‘Enfoque Latinoamericano: Cuál es el próximo paso para los pagos móviles?’, Survey of attendees of the Congreso Latino Americano de Pagos Móviles (Open Mobile Media, 2014)
There is no doubt that the market and regulatory landscape is changing in Latin America. New telecom laws have been passed in Mexico, as well as the Internet Civil Rights Framework Law in Brazil, while new bills are currently under discussion in Argentina, Ecuador and Perú. All of these developments are likely to significantly transform mobile market conditions. Consolidation is also now a matter for discussion in Brazil, Mexico and Chile. Data-hungry consumers are putting pressure on networks and impacting their quality of service, while regulators are sometimes addressing these demands with a political rather than technical approach.

Regulatory intervention has increased across Latin America creating questions about the future of the industry. The convergence of mobile with the IP world is also creating challenges for the sustainability of the operators’ business model. With reduced margins, increased competition from adjacent industries and higher regulatory pressure, sustaining growth will very much depend on having the right regulatory environment. Having a transparent, predictable, consultative and well-aligned regulatory regime will be key for promoting the right incentives that would unleash future investments in mobile telecom networks and services.
A clear roadmap for spectrum allocation as well as the removal of municipal obstacles for antenna deployment will be key to satisfying the increasing demand from end users for mobile broadband. Despite these challenges, there are opportunities ahead for mobile operators to expand their businesses and to further increase their social and economic contribution. A key factor in delivering this potential, and further extending the reach new services and solutions such as M2M services, mobile money, mobile commerce, will be reducing current levels of taxation. The Brazilian case of reduced M2M taxes can be a good example for other countries to follow. Latin American operators have demonstrated their commitment to the local market in which they operate by sustaining high levels of investment and more recently by implementing new joint consumer-centric initiatives under the GSMA’s We Care campaign focused in addressing social needs.

4.1 Spectrum: A key enabler to promote investment and foster innovation

Spectrum assigned for mobile services in Latin America have reached almost 300MHz on average during 2014, an increase of around 25% compared to 2012. This increase is as a result of the licensing of the so-called ‘4G spectrum bands’ (AWS 1700-2100MHz, 2.6GHz and 700MHz) in the whole region. This means that on average 25% of the spectrum currently in the hands of the regional mobile operators has been allocated for 4G. However some countries have not specifically allocated 4G spectrum as yet.

Among the countries with a higher proportion of 4G spectrum as a share of the total spectrum allocated, Argentina, Colombia, Chile and Ecuador stand out with over 40% of the total assigned spectrum in the 4G spectrum bands. Bolivia, Honduras, Mexico, Peru and Brazil are next with over 20%. Countries with less than 15% include Paraguay, Dominican Republic, Uruguay and Costa Rica. Finally, the countries yet to award 4G spectrum include Venezuela (that has an auction scheduled for end-2014), Guatemala and El Salvador. It is worth mentioning there are some operators that decided to launch LTE services in 1900MHz band, such as in Costa Rica, Paraguay and Venezuela. There were 47 LTE networks in 19 Latin American countries as of October 2014.

4.1.1 AWS consolidated as the main band for 4G services

Governments across the region have understood that spectrum is a key factor to sustaining and promoting investment in infrastructure and ICT services, while at the same time fostering innovation and bridging the digital divide. Over the course of 2014, spectrum licencing has mainly focused on the 4G bands discussed previously. Some countries also made movements towards licencing the 2.6GHz band.

In May 2014, the GSMA launched a study that estimated the economic benefit of licensing the AWS band for mobile would equate to an additional US$53 billion in Latin American countries where it has not been entirely licensed yet, resulting from the increased uptake of mobile broadband this would enable. The countries in question include Argentina, Ecuador, El Salvador, Guatemala, Nicaragua, Panama and Paraguay: several of the countries with the lowest overall Internet penetration rates in the region.

During the first half of 2014, Bolivia and the Dominican Republic assigned part of the AWS band to mobile operators. By the end of 2014, it is expected to see AWS spectrum licensed in Argentina, Venezuela and Ecuador, which will ensure AWS position as ‘the 4G band’ in the region, with 15 countries using the band to deliver fast and reliable mobile broadband services.

In addition to its economic impact, the aforementioned study highlights that licensing this band is important in other key aspects:

- **Innovation**, as it fosters LTE deployments in the region. LTE is the preferred technology in almost all the countries where this band is being used.

- **Network deployment**, as it facilitates relatively quick 4G deployment due to the fact that LTE ecosystem in this band is robust for devices and networks.

- **Quality of service**, as the band will help to move heavy users out from the traditional 2G and 3G bands and accommodate them in the new 4G network. By consequence, this move will also benefit 2G and 3G users.

- **New applications ecosystem**, as many governments are promoting local entrepreneurs, and the deployment of LTE services enables a whole new applications ecosystem in many areas such as mHealth, mGovernment, mAutomotive and Smart Cities, among others.

- **New marketing strategies**, as this band could help operators drive their commercial strategies to offer innovative plans to specific niches, including the bottom of the pyramid.

- **Regional harmonisation of the best mix of capacity and coverage bands**, AWS as a capacity band, together with 700MHz as a coverage band, could be the perfect combination for universalising 4G deployments in the region as 850/1900MHz bands did with 2G and 3G services.

The report also highlights that in spite of the governmental efforts to introduce new competitors when licensing this band, there is no direct relationship between new entrants and competition. That being the case, incumbent operators should always be allowed to compete for new spectrum. In reality, secondary spectrum markets could help much more than reserving spectrum for new entrants.

The AWS assignment process, as in any other band, needs to be carefully planned, and consulted with the industry so as to maximise its benefits and minimise its risks. On average it takes at least one year from the decision by the government to license the band and its assignment, and then another year to see 4G deployments in the country. This shows the importance to regulators of developing spectrum roadmaps when planning their spectrum strategy.

### Source: Convergencia Research

#### Direct and indirect economic benefits of licensing AWS band in 2014 (US$ M)

<table>
<thead>
<tr>
<th>Country</th>
<th>Direct benefits</th>
<th>Indirect benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paraguay</td>
<td>US$646</td>
<td>US$33</td>
</tr>
<tr>
<td>Panama</td>
<td>US$1,727</td>
<td>US$1,815</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>US$1,305</td>
<td>US$1,017</td>
</tr>
<tr>
<td>Guatemala</td>
<td>US$2,810</td>
<td>US$3,152</td>
</tr>
<tr>
<td>El Salvador</td>
<td>US$1,495</td>
<td>US$1,716</td>
</tr>
<tr>
<td>Ecuador</td>
<td>US$5,882</td>
<td>US$6,294</td>
</tr>
<tr>
<td>Argentina</td>
<td>US$9,913</td>
<td>US$14,569</td>
</tr>
</tbody>
</table>

**Direct benefits**: US$29.5 Billion  
**Indirect benefits**: US$23.3 Billion
Starting with auctions in Chile in February and ending up with Brazil in September and Argentina in October, a number of Latin American governments have made the first moves towards seeing the 700MHz band (Digital Dividend) being used to deliver high-speed mobile broadband services to their populations. Incumbents in Chile, Panama, Jamaica, Brazil and Argentina were all able to participate in the licensing processes. In addition, most Latin American countries have confirmed their decision to adopt the APT band plan.

The Chilean government has been an early mover when it decided to licence 60MHz (out of the 90MHz available) of the Digital Dividend band to mobile services through a beauty contest model. Subsequently, Panama assigned 40MHz to two operators as part of its license renewal process and Jamaica then concluded a long awaited auction of 24MHz. In September of this year, Brazil concluded the biggest 700MHz auction in the region, assigning 60MHz on a national basis to three national incumbents and the rest divided in regions.

Total bids for the 700MHz auction in Brazil were US$2.39 billion (BRL5.8 billion), excluding an extra cost of US$1.47 billion (BRL3.6 billion) to be paid by the operators for the clearing of the band. Claro, TIM and Vivo acquired one lot of 2x10MHz each, while one lot remained unsold. Oi did not participate. Finally, Argentina auctioned the whole 90MHz of the Digital Dividend band together with the 90MHz in the AWS band in October also collecting US$2.3 billion.

This trend indicates that the 700MHz band will be licensed in the remaining Latin American countries between 2015 and 2016, thus consolidating its role as the key band for universalising internet services in the region. In a majority of countries, there is no need to wait for the analogue TV switch over, which expected to happen only after 2018, for allocating digital dividend spectrum.

Source: GSMA Latin America

### 4G spectrum gaining traction

(Total MHz licensed to mobile operators by country as of December 2014)

<table>
<thead>
<tr>
<th>Country</th>
<th>2G/3G</th>
<th>4G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>634</td>
<td>2G/3G</td>
</tr>
<tr>
<td>Chile</td>
<td>450</td>
<td>415</td>
</tr>
<tr>
<td>Colombia</td>
<td>454</td>
<td>350</td>
</tr>
<tr>
<td>Argentina</td>
<td>225</td>
<td>215</td>
</tr>
<tr>
<td>Venezuela</td>
<td>170</td>
<td>240</td>
</tr>
<tr>
<td>Uruguay</td>
<td>215</td>
<td>202</td>
</tr>
<tr>
<td>Peru</td>
<td>282</td>
<td>235</td>
</tr>
<tr>
<td>Dom. Republic</td>
<td>260</td>
<td>238</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>210</td>
<td>220</td>
</tr>
<tr>
<td>Paraguay</td>
<td>250</td>
<td>254</td>
</tr>
<tr>
<td>Bolivia</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>210</td>
<td>210</td>
</tr>
<tr>
<td>Honduras</td>
<td>150</td>
<td>204</td>
</tr>
<tr>
<td>Mexico</td>
<td>210</td>
<td>100</td>
</tr>
<tr>
<td>Guatemala</td>
<td>204</td>
<td>170</td>
</tr>
<tr>
<td>El Salvador</td>
<td>204</td>
<td>170</td>
</tr>
<tr>
<td>Ecuador</td>
<td>204</td>
<td>170</td>
</tr>
</tbody>
</table>

Mobile policy and the role of the industry 65
4.1.3 Spectrum licensing conditions should be carefully drafted so as to avoid hindering investment

Although governments and regulators are making good progress in terms of licensing spectrum to mobile services in the Latin America, there is a wide concern on the conditions being imposed in these processes. Governments are setting very high reserve prices, challenging coverage conditions and short timeframes to deploy services. Some countries are even including the handing in of tablets, smartphones and laptops as part of their obligations for acquiring spectrum. To ensure a successful licensing process, governments need to consider that trying to maximise revenue and increasing the burden of the conditions imposed produces a negative impact in the investment capabilities of the market.

The GSMA recently commissioned Ovum to analyse the licensing obligations being imposed across the region and to assess how each condition could impact on a range of factors. These include for example consumer service prices, the narrowing of the digital gap, and investments incentives. Some preliminary conclusions of this report indicate:

- High spectrum prices can represent a negative net present value for the companies interested in participating, resulting in a failure to attract bidders.

- A 10% increase in rural coverage obligations can impact up to 25% of project’s value for operators, due to high capital expenditure investments.

- Each additional year in the license term increases the value of the project by up to 25%.

- Allowing RAN sharing can increase the value of the project by up to 30%.

It is key that governments and regulators understand and take into account the industry and investors’ perspective when licensing spectrum in order to fully achieve the benefits of using this scarce resource in favour of users, especially of those who are still not enjoying the benefits of internet services.
4.1.4 Network competition is preferred above single wholesale networks

Policymakers in a number of countries have been considering establishing a single wholesale network (SWN) instead of relying on competing mobile networks to deliver 4G mobile broadband services, but there are currently no nationwide initiatives in action. However, the GSMA believes that moving away from traditional mobile network competition models towards SWNs can stifle innovation, restrict investment and take-up of mobile broadband services and ultimately be against consumer interests.

A recent report commissioned by the GSMA examined whether SWNs could meet a government’s objective for improved coverage and explores more effective ways to achieve the same goal. The report found that in countries with competing networks, 3G covered 36% more population. In addition, overall coverage increased three times faster than in those served by a single network.44

The Mexican Telecom reform passed during 2013 aims to implement an SWN in the 700MHz band. The SWN is intended to solve the problems around inadequate or slow coverage in rural areas and to promote better incentives for the private sector to compete and invest. The introduction of the SWN could be useful to gain technical efficiencies in the provision of capacity to several competing MVNOs. However, the fundamental question is whether this approach is preferable over a process to tender the 700MHz spectrum among competing mobile operators with conditions that can incentivise the achievement of SWN coverage targets. The GSMA’s report indicates that traditional network competition would offer better long-term benefits, including in areas such as network coverage and the deployment of new services.

4.1.5 Future spectrum opportunities for Latin America

At the World Radiocommunication Conference in November 2015 (WRC-15), administrations from around the world will agree on changes to international spectrum allocations and associated regulatory provisions. The outcome will be the single most important factor determining the future availability of affordable, ubiquitous, high-speed mobile broadband services. The decisions made at WRC-15 will also have a direct impact on the wealth, well-being and future prospects of all countries and their citizens.

The tremendous growth in mobile data means that, on average, an additional 600–800MHz of spectrum should be made available for International Mobile Telecommunications (IMT) at WRC-15 so it is ready for potential use by 2020. This will allow national administrations to continue to support existing services while giving them the flexibility to make new mobile spectrum available, when needed, to avoid a degraded consumer experience.

The GSMA proposes four frequency ranges within which the 600–800MHz could be satisfied most suitably:

- **Sub-700MHz UHF (470-694/8MHz)** can deliver high quality, wide area coverage for mobile broadband services including in rural areas and deep inside buildings.

- **L-Band (1350-1518MHz)** is capable of delivering additional capacity and coverage over relatively large areas, including inside buildings. Since the band remains largely unused, it is ideal for a wider mobile allocation.

- **2.7-2.9GHz** would provide important extra mobile capacity, and deployments would be cost-effective because existing cell sites could be used. Research shows that the band is under-utilised, and, as such, a portion of it can be used to allow the operation of mobile services.

- **C-Band (3.4-4.2GHz)** provides, due to its size, a unique opportunity to deliver very fast mobile broadband services in small hotspots where mobile networks are under pressure from rapidly growing data usage. As of now, it is largely being used for satellite services, but recent technological developments mean alternative satellite spectrum is able to deliver improved performance and better value services.

WRC-15 represents a vital opportunity to ensure Latin American countries safeguard the future of their mobile broadband. Without allocating sufficient spectrum for mobile, the socioeconomic benefits of the mobile revolution will be compromised as networks struggle to cope with rising data volumes. Allocating a small amount of spectrum for mobile can already have significant impact. For instance, allowing mobile to use part of the 470-698MHz band from 2015 would give consumers better services and lower prices and contribute almost US$50 billion to Latin America’s GDP by 2020.
The growth of new services delivered by a new generation of technologies with higher network speeds has also led to increased sensitivity from users and regulators alike around issues of quality of service (QoS). This in turn has led to an increasing trend in the region to review, update and increase the regulatory burden on operators with respect to QoS issues. On many occasions this has translated into obligations due to factors that are not always in the control of mobile operators.

There has been no general consensus as to which mechanism should be used to regulate or control the QoS for mobile communications services. In recent years, Latin American regulators have been imposing minimum quality thresholds that are often tied to sanctions and fines. The GSMA Latin America surveyed sanctions levels across 15 countries and found that only in a third of them (Brazil, Mexico, Costa Rica, Bolivia and Panama) were the sanctions tied to operator revenues. In the case of Panama and Costa Rica, this can reach up to 1% of revenues. In the case of Bolivia, sanctions can reach up to 4.2%, with a cap of US$7.5 million. In Mexico, sanctions as percentage of revenues can be as high as 10%, with no cap.

For the operators, QoS is always a priority, as it is a fundamental part of their commercial approach and is also a key element in business decision-making. Competing service providers define and understand quality as a differentiating attribute in the mobile market. Therefore, operators make constant efforts towards improving the quality and/or adapt it to their business strategy, regardless of the regulatory requirements.

In spite of that, there is a rising trend towards the regulation of QoS in the region. This trend often establishes the mobile industry as mainly responsible for the current levels of service quality in a way that frequently exceeds the technical capabilities of the network. Some examples include requirements for zero per cent of dropped calls, the obligation to only offer unlimited data plans and others. Some countries, such as Colombia, have imposed compensation mechanisms for dropped calls. However, these requirements and mechanisms have consistently failed to define clear and transparent criteria for the identification of the reason of the underperforming service, thus putting all responsibility on the mobile operators.

There is a widespread view that quality should be measured from the perspective of the user. This too can be a problematic approach, as there are several instances of the user experience beyond the control of the operator (e.g. accessibility in remote areas, downloading apps and using other forms of content). Consequently, it is important that there be a difference between transparency of QoS to support the decision-making of users, on one hand, and what effectively needs to be monitored in the performance of the operators, on the other. In many cases, however, the implementation of the tools for measuring quality seem to ignore essential aspects of the service (such as resource sharing or when the reason failure is beyond the operator), and, alternatively, focus more on getting immediate approval by the end-user and the community.

A reasonable alternative to the existing regulatory trend should first consider how competition works in the market, the level of maturity of market mechanisms such as transparency as well as the strength of general consumer’s rights for claims and compensation. However, only by attacking the causes that affect coverage and throughput, will regulators really be addressing the problem and creating the right incentives for improvement. Without sufficient spectrum bandwidth and with the current restrictions on the deployment of antennas at the municipal level, sanctions will hardly be effective in reducing QoS issues, but will instead act as an additional burden on the industry.
4.2.1 Signal jammers

The use of signal blockers or inhibitors, also known as jammers, has recently spread across Latin America. In many cases their use has been promoted by governments to address issues around access to mobile phones in prisons. The inhibition and/or interference caused by these devices affect citizens, public safety and the quality of services. Not only do jammers limit network coverage, they also degrade service delivery, generate harmful interference to additional services that use radio communications, increase public health concerns, constrain access to primary support services, and can even be used to commit crimes by blocking security services.

Blocking mobile signals has not been effective in addressing the main problem authorities wanted to solve, which is either preventing wireless devices from illegally ending up in the hands of criminals or inmates, or preventing services from being used in inappropriate locations. There are many technological and non-technological alternatives that could meet these objectives without affecting users’ rights.

The GSMA recommends that any use of inhibitors should be exceptional, as a last resort, and is undertaken in coordination with operators throughout its life cycle (from installation to deactivation). This should minimise the interference experienced by legitimate cell phone users. Concurrently, to safeguard the public interest and to prevent any potential QoS issues, regulatory authorities should ban the use of inhibitors by private entities and their commercialisation. The regulations and different regional rules regarding the use of these devices should take into account their effect on normal service delivery processes and quality control. Finally, the regulator in each country should assess the conformity of inhibitors, manage and keep track of the number of approved, installed and operating inhibitors in sensitive areas, and establish sanctions for individuals who use and/or market them without permission from the relevant authorities.
4.3 Removing barriers for infrastructure deployment remains critical in Latin America

For infrastructure deployment and antenna siting, mobile network operators and tower companies need to obtain local approvals from municipalities for each antenna or tower site. The absence of a clear national policy can lead to each municipality adopting its own policy and procedures that are sometimes in conflict with the technical requirements of deploying mobile networks.

The governments of Latin America should adopt national policies that support mobile network antenna deployments and that are based on the recommendations of the World Health Organization (WHO) in order to protect the public with clear criteria for assessment of site compliance with safety limits. National governments can support municipalities with a policy that:

(i) Specifies clear information, consultation and visual integration requirements;
(ii) Provides for mandatory decision period for site applications; and
(iii) Allows for simplified procedures for small antennas, low power sites and modifications.

There should be consistent procedures throughout the country rather than differing antenna permit norms for each municipality. Policies should state mandatory decision periods for site applications. By way of example, in the United States the timeframes for decisions are 90 days for co-location on an existing site and 150 days for a new site. At the same time, both national and local governments should grant access to government buildings and land to locate antennas.

Mobile networks continuously evolve to support the needs of customers and this often means modifications to existing sites, such as changes to antenna directions or antenna type. In many European countries, these minor modifications are largely exempt from authorisation procedures. A further aspect of network evolution is the growth of small cell infrastructure to provide high-capacity or improved coverage in localised and in-building areas. These systems operate at similar powers to Wi-Fi access points with small antennas that are mounted on ceilings or streetlights. Similarly, such installations should also have simplified procedures to allow for rapid deployment.

Smart policies will reduce public concern, reduce delays and reduce the costs of rollout leading to improved mobile services for citizens of the region.
4.3.1 Removing municipal barriers: Latin American examples

New law in Peru to strengthen the expansion of telecom infrastructure

The case of Peru is symbolic of many countries in Latin America when it comes to antenna deployment. At the end of 2013, there were about 8,000 antennas in the country, and the Ministry of Communications estimated that 14,000 more antennas would be needed by 2017 to improve coverage and capacity. Local authorities were not granting the antenna permits and this was impacting the quality of mobile services. After identifying this barrier, the government in Peru has acted to improve the situation. In June 2014, the National Congress approved a bill that recognises the importance of mobile network infrastructure and establishes a special regime for ten years across the country for the expansion of telecommunications services, particularly in rural and under-served areas. Notably, the law provides for automatic approval by municipalities of antenna siting applications that satisfy the provisions of the act and requires that fees shall correspond with the actual administrative costs. The act also requires the tower operator to develop their projects with minimal aesthetic and environmental impact on the landscape.

Cutting antenna red tape in Argentina

In August 2014, the Ministries of Communications and Municipal Affairs of Argentina signed an agreement aimed at streamlining the deployment of mobile phone network infrastructure and improving coverage in the country. The framework agreement provides guidelines for local government to follow when installing new mobile phone towers. It covers all aspects of the installation of mobile phone towers including the technical specifications as well the health, safety and environmental considerations. Over the last 10 years mobile phone connections in Argentina have increased from 4.5 million to 45 million. With mobile use growing rapidly in Argentina, the agreement is seen as essential in order to meet the increased demand for mobile phone coverage. Although in the year prior to the agreement 94% more antennas were installed than previous years, still more antennas are needed. In launching the agreement Municipal Affairs Secretary Lamothe said ‘This is a new tool that will improve coverage for all Argentines. It will help local governments respond to the tremendous growth in demand for mobile telecommunications.’

---

45. Law No 3139 approved on 11 June 2014.
4.4 Reducing the taxation burden on mobile services in Latin America

Taxation is yet another fundamental policy issue for the mobile industry. While the telecommunications sector is known for generating a positive impact on both economic and social development, a high tax burden can effectively reduce the socioeconomic benefits brought about by the sector. Three considerations help explain why.

First, affordability is still a significant barrier to further adoption of mobile, especially in developing markets. Taxes and fees levied on consumer access to mobile, however common, often mean a substantial increase in the cost for the end-users, which in turn might create a barrier of access to low-income consumers. Second, a high tax structure can change the incentives of the industry to invest, or, in some cases, can even reduce the ability of the industry to raise capital to finance it. In addition, it is important to harmonise taxation across the economy and even within the industry. Not only has the burden on the telecommunications sector risen more than the average for the economy in many countries, but also the existence of high levels of mobile-specific taxes and fees often creates distortions in the market. One example of the latter is the fact that many of these mobile-specific taxes would not apply to competing services such as Voice over Internet Protocol (VoIP).

The rising tax burden on telecommunications creates an affordability barrier to accessing the mobile internet and can also hamper the investing environment. In contrast to the rising tax burden, the cost of both mobile devices and data plans, which can effectively work as a consumer barrier, has fallen sharply over recent years. In Latin America, the average price of an entry-level smartphone data plan fell from US$17.68 in 2010 to US$8.33 in 2013, representing a decline of 52% in just three years.

It should be noted that reducing the tax burden can encourage the positive spill over of the sector on the economy. A more balanced taxation structure can stimulate the growth of the sector, thus supporting vital economic activities and advancing social objectives such as digital inclusion. In the words of the former ITU Secretary-General:

“It is encouraging to see a growing number of tax administrators recognize that ICT services are different from other services, because of their capacity to stimulate economic growth and social development... Governments that have committed to following best-practice ICT regulation are now reducing or even eliminating some sector-specific taxes — ITU would like to see all governments follow their lead.”

46. Barriers to Expanding Internet Access, McKinsey and Company, July 2014
4.4.1 Tax reduction on M2M connections in Brazil

As previously mentioned, taxation can be used as a policy instrument to encourage key sectors of the economy – such as mobile – to create positive externalities in the wider economy. Although telecommunications is already a well-established industry, many of the mobile technologies and business models are still nascent. This frequently means that such services are very price sensitive as they first emerge. For the sector to continue generating new products and services – ranging from health care to education and finance – a smart taxation policy should favour innovation by providing tax breaks for these new technologies and business models.

One noteworthy case where that took place is the sizeable reduction on mobile-specific taxes for M2M connections in Brazil, in effect since September 2014. M2M is a new market with the potential to generate major positive externalities for the economy, and it can be encouraged to grow by governments through low taxation policies. Before the tax break, Brazilian mobile operators believed the combination of high levels of taxation and the low ARPU of M2M connections was hindering the development of a market that otherwise had huge potential for growth.

In Brazil there are two taxes levied on mobile SIM cards under the Telecommunications Inspection Fund ( Fistel ), one on activation, and the other on connection. The first is the Installation Inspection Tax ( TFI ), a one-off tax applied to all new connections. Before the tax cut, a TFI charge of BRL28.63 ( US$11.56 ) was charged on all new SIMs, including M2M ones, but following the reduction this fell almost 80% to BRL5.68 ( US$2.29 ). The second tax is the Operation Inspection Fee ( TFF ), which is applied on an annual basis to all active SIM cards. This has now been reduced by over 80%, from a yearly fee of BRL8.94 ( US$3.61 ) to an annual rate of BRL1.89 ( US$0.76 ).

Following the tax reduction, the Brazilian M2M market, the fourth largest worldwide, is expected to grow from the current level of 9.6 million connections to 42 million by 2020.
Many governments in Latin America have already recognised the transformational impact of connecting their population, and are setting ambitious goals for coverage and investment in connectivity. Almost all Latin American governments have launched ‘national broadband plans’ or ‘digital agendas’ looking to align different strategies to promote broadband access.

The mobile industry has been supportive of these initiatives by providing expert advice for strategising as well as actually helping to achieve/deliver the goals set up in those plans. Whether through providing public school connectivity, supporting ‘one laptop per child’ type of programmes, or providing backbone to small local Internet Service Providers, etc. mobile operators have been a key collaborative partner to the authorities for connecting the unconnected. These are just some examples of how mobile operators are supporting national ICT development strategies.

The GSMA is also aligned and supportive of bringing together all the efforts and wills to connect an additional one billion people to the mobile internet by 2020. While internet adoption increases in Latin America, the rise of new policy issues requires a renewed and open dialogue between the internet ecosystem stakeholders in order to define the principles and policies that should govern the internet, address the concerns over the neutrality of content traffic, and the privacy of user data.

4.5.1 Internet governance

The GSMA is committed to a multistakeholder vision of internet governance that balances the needs of all stakeholders, including governments, where relevant stakeholders develop solutions through bottom-up mechanisms appropriate to the specific issue discussed. Through identifying and activating appropriate stakeholders, the mobile industry believes that internet governance discussions can best ensure the preservation and continued growth of an open internet that is safe, secure, stable and interoperable. No governance body should be seen as competing with another or duplicating processes. Strengthening and coordinating existing multistakeholder mechanisms will promote efficiency and innovation at the core and edges of the network infrastructure, and will allow the internet to grow in pace with global demand.

The issue of internet governance has also been a hot topic in Latin America. In May 2014, Brazil’s Congress passed the Civil Framework for the Internet (also known as Marco Civil da Internet). The law aims to establish key principles and rights for Internet users, including freedom of expression, human rights, and the principle of net neutrality. The latter will be defined through by-laws in the future.

The law was signed during the opening of the NetMundial, the Global Multistakeholder Meeting on the Future of Internet Governance, which brought together governments, companies and civil society representatives from all over Latin America and the world. The NetMundial Multistakeholder Statement, issued at the end of the conference, was a positive step in defining internet governance principles, such as its multistakeholder, open, participative, and consensus-driven characteristics.

As the debate on internet governance evolves, the GSMA will remain supportive of the decentralised development of the internet marked by commercial flexibility, transparency, choice and competition that foster business model diversity. Latin America will remain at the centre of this debate in 2015, as Brazil will host the 2015 Internet Governance Forum in November.
4.5.2 Net neutrality

Chile is the country that took the lead on regulating net neutrality in 2010. Most recently, in May 2014, the regulator ordered mobile ISPs to stop offering sponsored data plans, finding that they are in violation of net neutrality rules. This is probably the most restrictive interpretation of this issue. However, legislation in other countries in the region appears to specifically allow the use of sponsored data arrangements. For instance, Colombia explicitly authorises the offer of data packages to users that would enable access to specific content/applications only, according to market needs.

It is important to maintain an open internet, but to ensure that it remains open and functional, operators need the flexibility to differentiate between different types of traffic. However, within the context of a single traffic type, operators should not discriminate in favour of any one content provider. That is to say that regulation that affects network operators’ handling of mobile traffic is not only not required, but can be counterproductive. Consumers should have the ability to choose between competing service providers on the basis of being able to compare performance differences in a transparent way.

The growth of mobile, particularly the IoT, brings opportunities for operators to provide connectivity and value-added services to a diverse range of customers and applications. The potential extent of IoT connected services and their varied characteristics is so great that enhancements to existing traditional person-to-person service levels and business models may be required to meet their needs. Some mobile connected services may be very demanding (e.g. cash-in-transit vehicle security systems incorporating video transfer and urgent alarm capability), while others may be very tolerant (e.g. periodic reporting of utility meter reading). If restrictive net neutrality legislation was imposed, this could significantly hinder the operators’ ability to perform traffic management.

A restrictive net neutrality regulation could also become an obstacle to digital inclusion. The introduction of capped offers, both in temporary terms (days of access) and monthly volumes (MB per month), allow economically vulnerable users to regulate their consumption of and access to the technology, however limited it may be.

In considering the issue of net neutrality, regulators should recognise the differences between fixed and mobile networks, including technology differences and the impact of radio frequency characteristics.
4.5.3 Privacy and data protection

Despite the enormous benefits of the growth of mobile and digital inclusion experienced in Latin America in recent years, users are increasingly aware of threats to their privacy. In reality, the protection and privacy of customer communications is at the forefront of operators’ concerns, and the mobile industry is committed to maintaining the integrity of its communications services.

The GSMA and its members are continuing to address privacy issues related to all consumers’ use of mobile technology, identifying mobile-friendly ways to help users make informed decisions about their information and privacy, and ensuring user privacy is respected and protected by those designing and building mobile apps. The GSMA has even published a series of documents and research on mobile privacy in Brazil, Mexico and Colombia in 2013⁴⁸, with the goal of understanding users’ perspective on issues like transparency, choice and how to exercise control over the use of their personal information.

Within privacy concerns over mobile, one issue that has been gaining traction is that of privacy in the context of the IoT. In reality, a number of IoT services (particularly in the industrial space), will not impact on consumer privacy and, because of that, should not be subject to data protection regulation. However, a number of consumer and other IoT services may indeed be designed to collect, create or share data that does impact on the privacy or security of individuals. Those services will likely be subject to applicable national rules to protect personal data and privacy. It is important, however, to prevent an overregulation of mobile originally intended for people from being applied to the billions of connected ‘things’, as it could hinder the development of innovative services and business models.

---

⁴⁸ April 2015: “GSMA reveals fears over mobile privacy are holding back the growth of mobile apps in Latin America”: http://www.gsma.com/latinamerica/gsma-fears-mobile-privacy-growth-mobile-apps-latin-america
4.6
Social responsibility: industry initiatives to protect the Latin American mobile user

4.6.1 Mobile device theft in Latin America

Mobile phone theft is a crime that has grown strongly in the region in recent years. In Colombia, for example, it is estimated that about one million devices – or 2,700 per day – were stolen in 2013. However, only a few of them are reported. In the case of Argentina, the number of stolen devices is even higher, amounting to 6,500 victims per day – 35% of which were children or adolescents. The issue of stolen terminals is also significant in Ecuador and Brazil, both of whom have daily theft levels of 1,400 and 2,500 devices respectively. As many of these crimes are followed or preceded by other serious crimes, including murder, the issue has generated considerable media coverage. This in turn has led to a greater focus on the issue from national authorities.

Whilst combating the theft of mobile devices should be a shared responsibility, the most effective way of tackling this problem involves including each party involved – users, operators, regulators and manufacturers – in a coordinated manner. In this context, the GSMA is already proposing courses of action and guidelines to bring all key stakeholders together in four key areas.

THE 4 KEY PILLARS TO ADDRESS HANDSET THEFT

- **Operators**: Connecting to GSMA IMEI blacklist database
- **Users**: Reporting when a handset has been stolen
- **Government**: Sanctioning IMEI adulteration
- **Vendors**: Make more secure handsets
Firstly, Latin American mobile operators agreed in June 2012 to collaborate and to share information regarding stolen devices across the region. This means that a handset stolen in one network is not activated in another\(^49\). Presently, 48 regional operators from 17 countries are uploading and downloading information daily on stolen mobile devices through the worldwide GSMA International Mobile Station Equipment (IMEI) database. The Identity IMEI is a unique number sequence that is embedded to each manufactured device, and can be accessed on a device by pressing the code *#06#.

Secondly, mobile users play an important role in preventing handset theft, as they should always report stolen devices. This allows the blocking solution offered by the operators to work, preventing stolen handsets from being re-activated on another network. The inability to activate a stolen device would then act as a deterrent to potential thieves.

Thirdly, governments should ensure the existence and enforcement of sanctions on the adulteration or tampering with the IMEI of mobile devices. IMEI codes are altered so that terminals can be activated again on the networks of cellular companies, even when the terminal has been reported stolen.

To further empower governments and users, the GSMA also provides the Device Check tool, a free solution, accessible through the web or an API, which allows regulators and law enforcement and border control agencies to verify the validity of any given IMEI by running it against the GSMA’s IMEI database. By using this tool, inexistent, lost or stolen IMEIs would be easily identifiable, and appropriate measures could be taken accordingly.

Finally, it is also important to collaborate with handset manufacturers to promote developments that make IMEIs harder to adulterate. Protecting the equipment identification code is a crucial responsibility that requires the attention of handset manufacturers. As the cost and complexity of adulteration increase, the attractiveness of stealing devices decreases.

4.6.2 Industry-wide effort to protect young people using mobile services

Mobile devices and services enhance young people’s lives in Latin America and across the world. Without discounting the importance of promoting the safe and responsible use of mobile content and services, this perspective needs to be embraced, encouraged and better understood by all stakeholders. This will help ensure young people can benefit from the many opportunities offered by mobile, including skills for employment; access to enhanced formal and informal education and learning; information and services to aid in health and well-being; improved social engagement; and opportunities to be creative.

The GSMA is committed to leading the debate on how to protect young people online and it encourages all of its members in Latin America to take proactive action in this area. The GSMA is focused on the development of considered regulatory and self-regulatory approaches to enable safe environments for children using mobile services and is engaging in constructive dialogue with governments, child experts, NGOs, academics, parents and educators.

The GSMA encourages its member operators to adopt a self-regulatory approach to protecting children who use mobile phones by, for example, limiting their access to age-sensitive content and educating children on how to behave safely and responsibly online.

Several ISPs and network operators (both fixed and mobile) across the region are now working with law enforcement agencies or hotline organisations to implement Notice and Take Down processes, or to block access to websites known to contain child sexual abuse content. The key Latin American examples are TeProtejo in Colombia and SaferNet in Brazil.

---

A growing number of commercial organisations are taking steps to help combat online child sexual abuse content, both through company-specific initiatives as well as through co-ordinated industry approaches. It is increasingly a matter of good corporate responsibility for companies to engage with the debate and look for ways to contribute to the fight.

In Latin America, the GSMA is collaborating with the United Nations Children’s Fund (UNICEF) to promote industry guidelines to safeguard children online in the region. The GSMA is promoting the Guidelines for Industry on Child Online Protection within the Latin American mobile industry and has agreed, through the signing of a Memorandum of Understanding, to work closely with UNICEF to identify ways in which mobile operators can promote children’s rights and responsible digital citizenship.

The Guidelines for Industry on Child Online Protection were developed by UNICEF, the ITU, the GSMA and others to address substantial advances in technology and were undertaken in consultation with members of civil society, business, academia, governments, international organisations and young people. Designed to be relevant for a broad range of companies that develop, provide or make use of communications networks and Internet technologies in the delivery of their products and services, the guidelines establish a foundation for a safer and more secure use of internet-based services by Latin American children, now and in the future.

The new guidelines cover five key areas:

- Integrating the consideration of children’s rights into all relevant corporate policies and management processes;
- Developing standardised operational processes to handle child sexual abuse material;
- Creating a safer and age-appropriate online environment;
- Educating children, parents and teachers about children’s safety online; and
- Promoting digital technology as a way to increase civic engagement.

The GSMA fully supports the rollout by member operators of processes designed to discourage the production of child sexual abuse content by inhibiting distribution and hindering access. This includes the development of robust NTD processes and reporting mechanisms for illegal content, as well as proactive investments in the creation of national hotlines and the implementation of block-lists.
Operators acting together to the benefit of their users: the “We Care Campaign”

With the objective of further promoting the consumer protection agenda in Latin America, the GSMA started working in 2014 with the regional mobile operators to develop concrete actions that would help to provide mobile users with a better and safer mobile experience. This series of initiatives have been gathered together under the ‘We Care’ campaign.

The goal of ‘We Care’ is to promote active and voluntary collaborations between the mobile operator community in each Latin American country, joining efforts with local authorities to enable all citizens to enjoy the enormous benefits of mobile in a protected and trusted environment. At the same time, the campaign is helping governments to achieve their social objectives through the ubiquitous mobile technology.

The GSMA’s We Care campaign was first launched in February 2014 at Mobile World Congress (MWC) in Barcelona. During MWC, the Brazilian Communications Minister, Paulo Bernardo and the General Director of the GSMA, Anne Bouverot, announced a collaboration between Brazilian mobile operators to implement a number of initiatives to address problems such as SMS spam, handset theft and child protection. Since then, Algar Telecom, Claro, Nextel, Oi, Sercomtel, TIM Brasil and Vivo have been taking important steps to implement GSMA’s Spam Reporting Service as well to connect to the GSMA IMEI Database to block stolen handsets. At the same time, they are also promoting children’s rights by supporting the work of SaferNet Brazil – the national hotline to report child sexual abuse content - and Disque 100 (Dial 100), a freephone helpline operating under the auspices of the National Department for Human Rights.

In August 2014, ‘We Care’ was expanded to Nicaragua, with the support of the country’s mobile operators, Claro and Movistar, and the Nicaraguan Institute for Post and Telecommunications (TELCOR). Nicaraguan operators committed to joint efforts to reduce handset theft by connecting to the GSMA IMEI Database. Moreover, they committed to support the work of the Ministry of Family, Youth and Children through the promotion of the 133 child helpline.

In October 2014, the GSMA launched ‘We Care’ El Salvador by engaging local operators Claro, Digicel, Telefónica and Tigo, as well as national authorities, including the Attorney General’s Office, the Ministry of Education, the Ministry of Health, the Ministry of Interior and Territorial Development and the National Council for Childhood and Adolescence, in a multifaceted customer protection initiative that focuses on three key areas: handset theft, child protection and disaster response.

Also in October, ‘We Care’ was launched in Costa Rica, where national mobile operators Claro, ICE and Telefónica announced their commitment to support and promote the 1147 child helpline run by with the National Board for Children (Patronato Nacional de la Infancia, PANI). Operators will offer free calls to the helpline and will raise awareness of the initiative through promotion on their customer service, company websites, SMS, social networks channels and local events.

The GSMA will continue to promote ‘We Care’ initiatives across the region with ideas and projects tailored to the concrete reality of each Latin American country. This is a unique example of self-regulation of mobile operators that are willing to set aside competition to provide answers to social matters. It also entails tight collaboration between industry, regulators and policy makers so as to agree on the best possible actions by which mobile services can be used to protect citizens as well as further promoting the socio-economic benefits that mobile services generate in everyday life.
4.6.3.1 Some examples of We Care initiatives

Controlling SMS spam
To protect customers from unsolicited messages and identify spammers, most operators in the region launched the GSMA’s Spam Reporting Service where users can forward texts to SPAM (7726). The messages are then aggregated, analysed and incorporated into spam ‘fingerprints’ by the system. These fingerprints give operators important details about origination, size, intent and growth pattern of the spam messages. The service allows mobile operators to isolate attacks on their network and help prevent the attack spreading to another network, thus curbing the spread of spam in the operator’s country.

Reducing handset theft
Alarming statistics have prompted mobile operators to extend their current national collaboration and work with their international counterparts to further reduce opportunities to illegally export and reconnect stolen devices around the world. This will be achieved by sharing the device’s unique identification code on the GSMA’s IMEI centralised database and blocking its future use. This wider international partnership will help reduce the rate of theft and control illegal trafficking, as stolen mobile phones will be rendered useless. It also entails the implementation of the IMEI Device Check tool that can empower citizens to avoid buying a stolen device.

Child protection
The GSMA is committed to leading the debate on how to protect young people online and it encourages all of its members in Latin America to take proactive action in this area. The objective is to drive Industry-wide Initiatives designed to protect young people using mobile services and work with national organisations like helplines and hotlines.

e-Waste
Electronic waste — also known as e-waste or waste electrical and electronic equipment (WEEE) — can be hazardous for the environment if the materials present are not managed appropriately. In response to these issues, many Latin American mobile network operators are currently carrying out a wide range of campaigns and projects to improve WEEE management, most of them voluntarily.

Disaster response
As the role of mobile in disaster preparedness and response grows, and people’s dependence on it increases, the industry must learn how to best meet these demands. The first 72 hours after a disaster are critical. Robust mobile networks that support communication are essential in this period. Many operators are already providing leadership on this vital issue, and have demonstrated their commitment to their customers and their communities by engaging in disaster relief activities.

Mobile privacy
In considering the privacy challenges in the mobile sector, the GSMA has been working with its members and engaging with representatives from across the mobile ecosystem including device manufacturers, operating system vendors, application developers, and social networking and internet companies. This work is coordinated through the GSMA Mobile Privacy Initiative. A core objective of the Mobile Privacy Initiative, which operators can support, is to help establish universal guidelines and approaches that address consumer concerns and foster confidence and trust for mobile users.