GSMA Intelligence
Mobile for Development

ANALYSIS

Country overview: Peru

February 2014

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About

GSMA Intelligence supports the digital empowerment of people in emerging markets through its Mobile for Development resource. It is a central platform of data, analysis and insight used to inform investment and design decisions for mobile services. Our work is freely accessible through support from Omidyar Network and in partnership with The MasterCard Foundation at gsmaintelligence.com/m4d

Executive summary: the opportunity for the mobile industry

A growing mobile market, especially mobile data

As of 2013, 15.2 million Peruvians actively use 29.6 million SIM connections which represent around 50% of the population. Over the five years to 2013, the growth in unique mobile subscribers averaged around 7%. This is below the level of most major Latin American countries (except Mexico), implying that there remains significant headroom for further growth, with the 70-80% penetration of more advanced markets such as the US and Europe at least several years away on the current path (see Figure 1). For a nation of 30 million, with around 19 million of these between the ages of 14-65, this would equate to an addressable market of around 4 million people still to be connected.

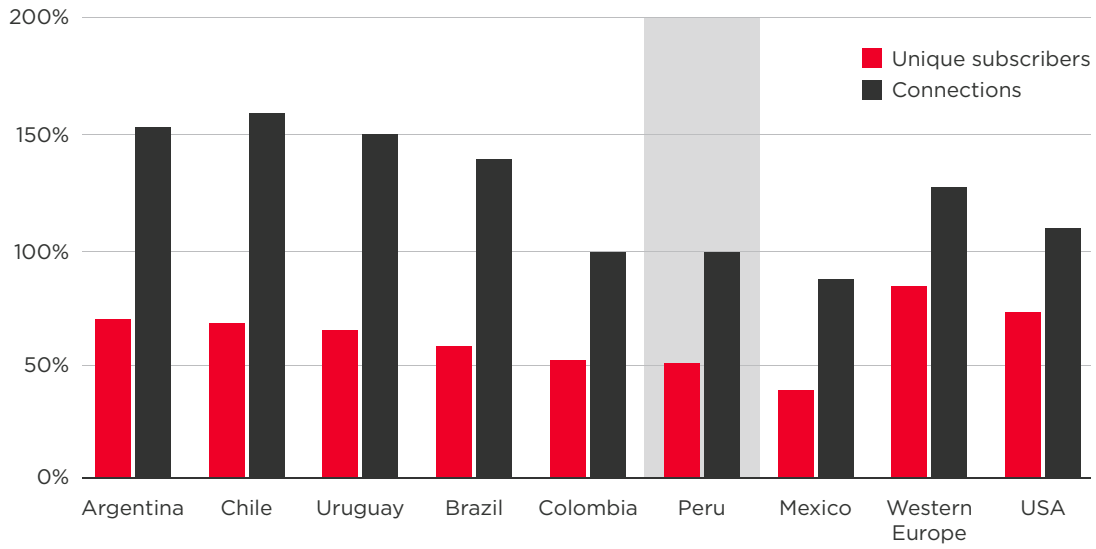

Figure 1: Mobile penetration, 2013
Source: GSMA Intelligence

The key story is on mobile data, both at the high and low end. At the high end, mobile broadband (defined as any handset or other cellular device accessing mobile data at a speed of 1.8 Mb/second or above) has increased from less than 1% to 25% of the mobile connections base in the three years to 2013. At the low end – for the 70% of the market that is prepaid and mid to low income – the use of the mobile internet is also rising, with this concentrated more on feature phones. This can be attributed to the still high price points of smartphones and the increasing range of services designed to optimise data usage on less advanced devices.

Networks are evolving to meet this traffic demand, with 3G devices now accessed by 26% of customers, and the country's first 4G service having been launched in January 2014 by Movistar. In addition, Nextel is planning to launch 4G services in March and Claro plans to launch 4G services later this year using the 1900 MHz band.

However, the investment in networks to support this democratisation of data requires a benign regulatory climate

While data use continues to rise and networks evolve to support this, there remain key regulatory headwinds.

Operators find themselves caught between inconsistencies of national-level spectrum licence requirements and local government planning restrictions. The Ministry of Transport and Communication (MTC) is a promoter of ICT in Peru; one of its key targets is to offer near universal internet access in the country through the expansion of telecom infrastructure. The regulator, Supervisory Agency for Private Investment in Telecommunications (OSIPTEL), has also established standards on quality and coverage level of service; as such, to meet these requirements, operators need to expand their network infrastructure. On the other hand, local municipalities have imposed restrictions on the deployment of base stations, which limits the ability of operators to expand. This is reflected in Peru's relatively low base station density compared to Latin American peers and to Europe (where Peru is three to four times lower).

In addition, there is a renewed level of uncertainty around licence conditions following the renewal experience of Telefónica (Movistar), a process that spanned around 18 months to completion in January 2013 (see GSMA report, Licence Renewal in Latin America). Finally, Mobile Termination Rate (MTR) cuts continue to negatively impact revenue growth. While MTR cuts have also been imposed across Europe over the last five years, the timing in Peru (and other Latin American markets) is arguably worse given that these countries remain firmly in expansion mode.

Interests are aligned in the end: mobile is a driver of positive socio-economic impact

The mobile industry has an economic and social impact on Peru's society as a whole. From an economic point of view, the mobile industry in Peru now contributes an estimated 3-4% of the country's GDP, a figure that is expected to increase over the period to 2020. It is evidenced through the performance of the mobile sector relative to the (already robust) growth of the wider economy over nearly a decade (see Figure 2).

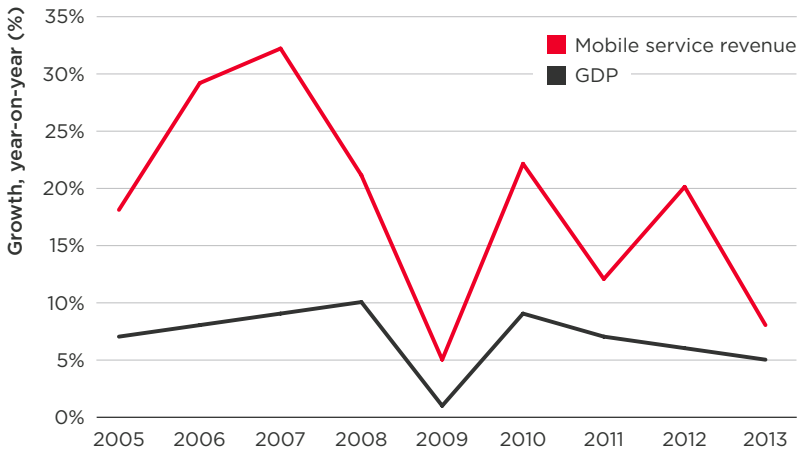

Figure 2: Mobile has outpaced the wider economy in Peru

Source: GSMA Intelligence, IMF

Translating this to a socio-economic level, Peru has in many ways improved through this period of healthy economic growth. Poverty rates (defined as the percentage of the population living below the national poverty line) have dropped significantly in the past few years (from 50% in 2006 to 26% in 2012), school enrolment has improved and adult literacy rates are around 90%. Life expectancy is over 70 years for both males and females, and according to the United Nations Development Program (UNDP) Peru is a country with an improving human development climate (from 2000 to 2012 the country increased five positions in the ranking of the Human Development Index).

However, there remain notable challenges where mobile can play a role in driving improvement. First, in Peru, 80% of the population is unbanked or underbanked. Peru has one of the most mature branchless banking channels in Latin America, but costs and a lack of liquid money remain barriers to take up of accounts at formal financial institutions. Second, while unemployment is actually low at a national level (3.6% compared to the average of 6.7% across Latin America[1]), it is higher within the youth segment (18-24), running at around 12%. Lastly, while literacy rates are relatively high, there is a business-oriented drive to learn English, for which core competency is not yet widespread. In each of these areas, mobile can enable access to key services currently out of reach for certain segments of the population. There is, therefore, a clear potential for the mobile industry to have a social impact on the society as a whole.

It is true that there remain gaps in access to services such as electricity, water and sanitation (particularly in rural areas), and increasing mobile access among women. Of course, all of these have both social and economic importance, and, in many cases, present opportunity for mobile-led improvement. However, it can also be said that there is nuance in the opportunity statement for the intersection of mobile and development in Peru and at a wider regional level, where it is now less a remedy to widespread lack of access to basic services and more a catalytic effect to economic development for fast growing markets.

In Peru, there are significant opportunities for mobile-led services across different sectors. To date, operators have been less involved than in other markets. However, we believe there is a clear opportunity for both operators and other private sector players to increase their offerings and drive innovation in this space, in order to create a positive social and economic impact.

[1] Source: World Bank, Peru figure 2012, Latin America figure 2011

The Peruvian mobile market

Metric[2]	2011	2012	2013	2014
Connections (million)	26.7	29.7	29.6	32.1
% active	94%	93%	93%	92%
% prepaid	79%	76%	70%	70%
SIMs/subscriber	1.81	1.85	1.82	1.87
Unique subscribers (million)	13.8	14.9	15.2	15.8
Penetration, connections	90%	99%	97%	104%
Penetration, subscribers	47%	50%	50%	51%
Growth, connections, year-on-year	14%	11%	0%	8%
Growth, subscribers, year-on-year	10%	8%	2%	4%
ARPU, by connection (US$)	$8.6	$9.0	-	-
ARPU, by subscriber (US$)	$16.1	$17.6	-	-
Recurring revenue (US$, million)	$2,543	$3,043	-	-
Growth, recurring revenue, year-on-year	12%	20%	-	-

Table 1: Peru, key mobile metrics
Source: GSMA Intelligence

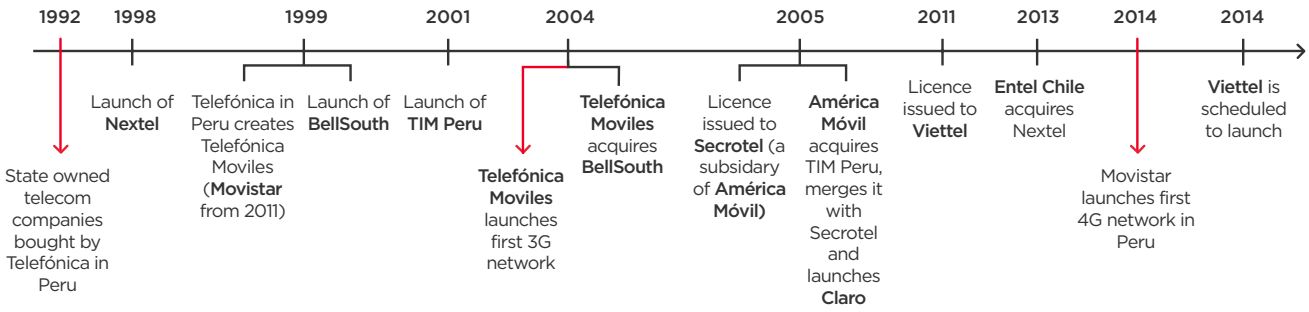

Figure 3: Mobile network operators launch timeline
Source: GSMA Intelligence

The future opportunity for operators will come from data

The steady increase in the mobile subscriber base has ensured healthy improvement in operator revenues in the past few quarters, with growth in service revenue now running at around 10% year-on-year as of Q2 2013 (see Figure 4). While voice remains the largest part of mobile revenue (at 79% for Movistar as of Q3 2013), mobile data is beginning to play a larger role. One of the main negative influences has come from the rolling impact of regulation, principally from Mobile Termination Rate (MTR) reductions announced in 2010 by the Peruvian regulator, OSIPTEL. A similar regulatory impact can be seen on the growth profiles of other Latin American countries (see Figure 5).

[2] All connections metrics include a one-off disconnection of 1.9 million inactive Claro connections as a result of a change in their reporting policies in Q2 2013

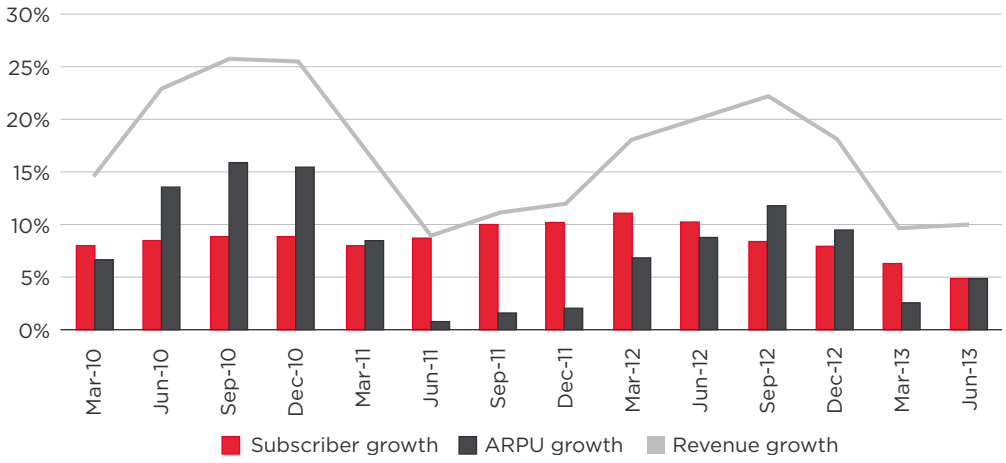

Figure 4: Drivers of mobile revenue growth
Source: GSMA Intelligence

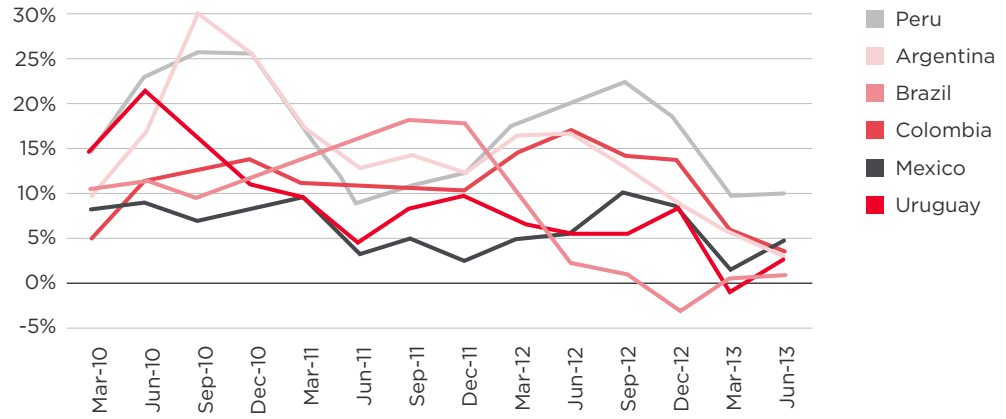

Figure 5: Mobile revenue growth (year-on-year), Latin America
Source: GSMA Intelligence

The opportunity for mobile data is multi-pronged. Increasingly Peruvians are accessing the internet through their phones; the number of mobile broadband connections has grown significantly in the past few years. At the end of 2013 mobile broadband connections accounted for 25% of total connections as compared to less than 5% two years ago (see Figure 6). However, smartphone penetration remains low; Movistar (Telefónica) reports that 10% of its customers own a smartphone (see Figure 7), lower than the regional average of around 20%. Nevertheless, Peruvians are frequent internet users; globally, Peru is among the top 10 countries for hours spent on social networks – on average Peruvian internet users spend 7.9 hours a month on networking sites like Twitter, LinkedIn and Facebook. Also the use of mobile messaging apps is increasing; in Latin America in 2013, LINE was the most frequently downloaded instant messaging app from Google Play. Operators are increasing their efforts to bring more mobile subscribers on the internet. Telefónica has launched affordable smartphones running on Mozilla's Firefox OS in 2013 and has recently partnered with LINE to increase the reach of its new smartphone OS.

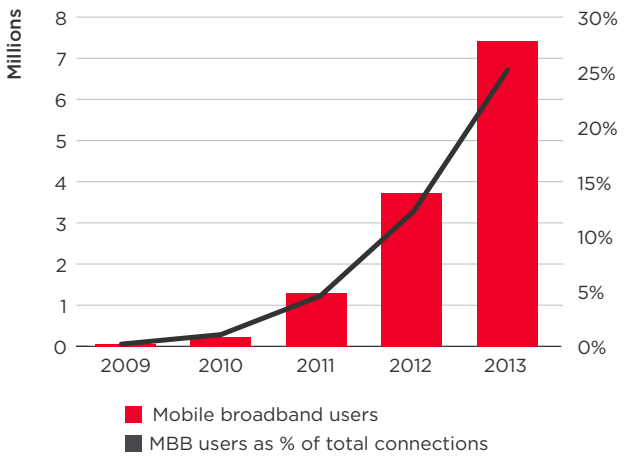

Figure 6: Mobile broadband connections in Peru
Source: GSMA Intelligence

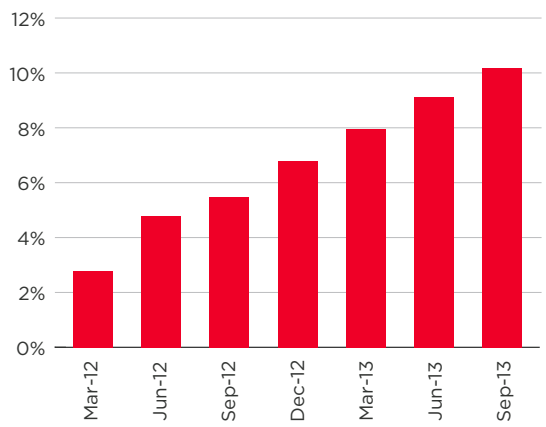

Figure 7: Smartphone penetration, Movistar
Source: GSMA Intelligence

Operator service revenue growth has increasingly been driven by data. Telefónica's data revenues as a share of total revenues have been steadily increasing (see Figure 8) – at the end of 2012 data accounted for 12% of Telefónica's revenue, compared to just 6% in 2009 (note that the impact of data on profits is less clear given the increased network capacity cost it carries). However, while Peru wants to compare itself with Europe (where the share of mobile broadband connections has increased to nearly 60% and share of data revenues to 25% in six years - see Figures 9 and 10) and is proceeding along a similar upward path, it still has a long way to go.

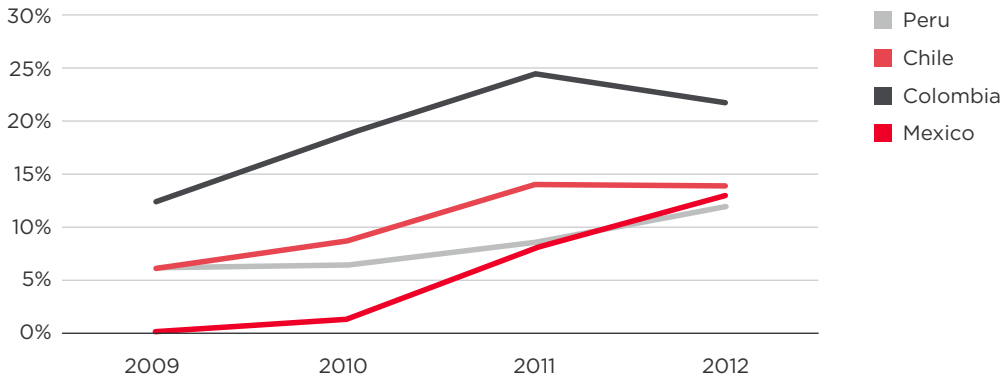

Figure 8: Data (excluding SMS) share of recurring revenues, Telefónica Latin America
Source: GSMA Intelligence

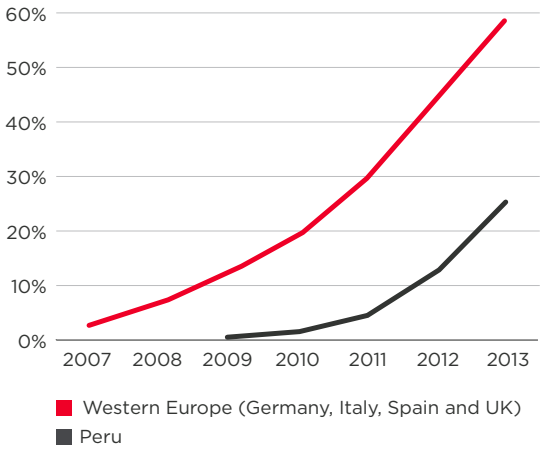

Figure 9: Share of mobile broadband connections
Source: GSMA Intelligence

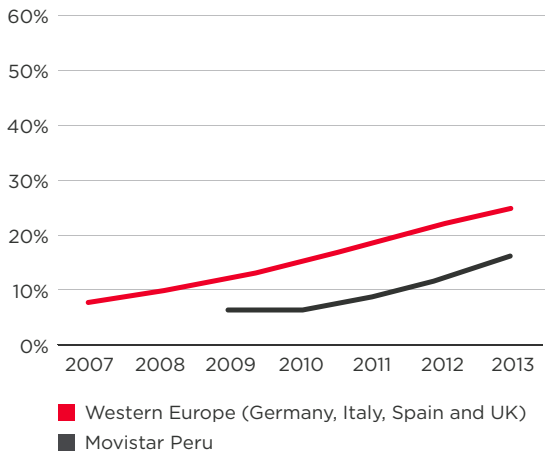

Figure 10: Data (excluding SMS) share of recurring revenue
Source: GSMA Intelligence

(Note: 2013 data up to Q3 2013)

Competitive dynamics – different approaches for Claro and Movistar

We show below a landscape of the competitive environment – in Peru, it is clear there are different approaches adopted by all three existing operators, with Claro and Movistar most notable.

Movistar is the largest operator in Peru, with more than half the market share, closely followed by Claro and lastly by Nextel (see Figure 11). A fourth operator, Viettel, acquired a mobile licence in 2011 and is expected to launch services this year. The three operators target different customers. Nextel's customers are high income, mainly living in Lima and on contract, thus its ARPU is higher compared to the other two operators, although this gap has been closing. Movistar and Claro have a lower proportion of their base on contract, although Claro's customer base is more similar to Nextel's (more focused in Lima and among higher income groups). Movistar has a greater market share in other cities and in rural areas (see Figures 12-15).

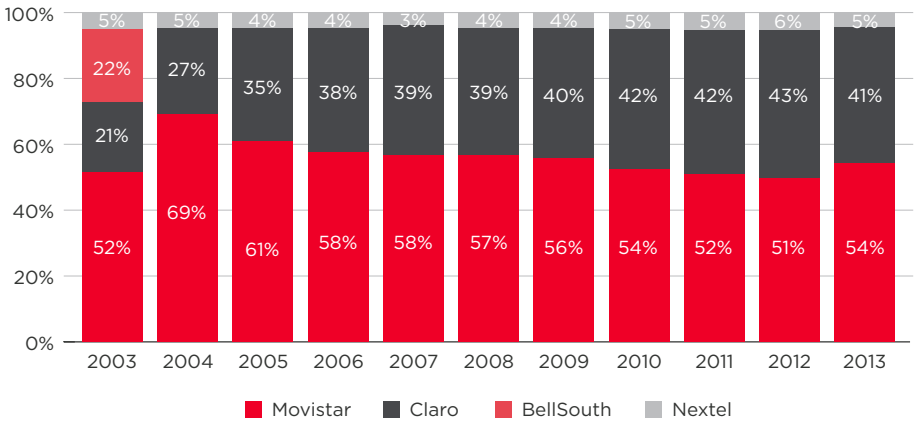

Figure 11: Operator connections market share evolution
Source: GSMA Intelligence

(Note: Telefónica acquires BellSouth in 2004. Before 2005 Claro is TIM Peru)

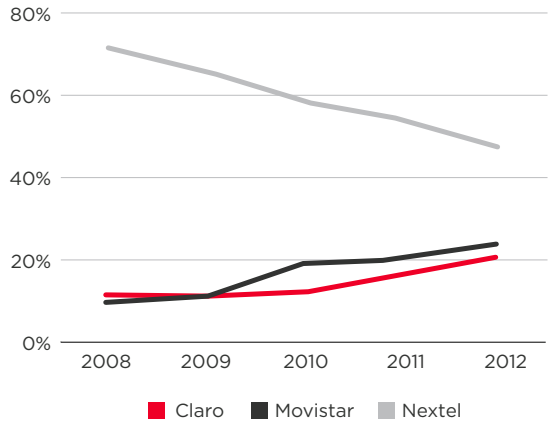

Figure 12: % connections, contract
Source: GSMA Intelligence

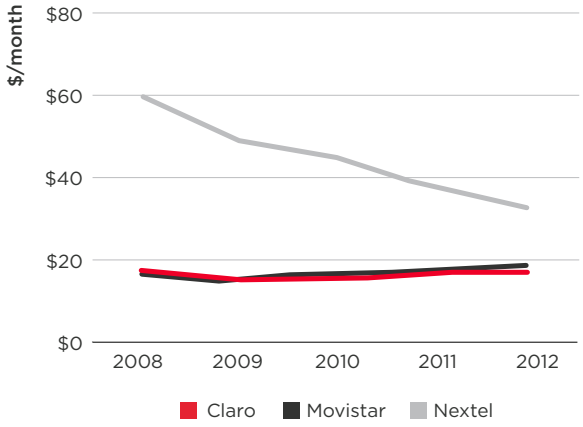

Figure 13: ARPU, by connections
Source: GSMA Intelligence

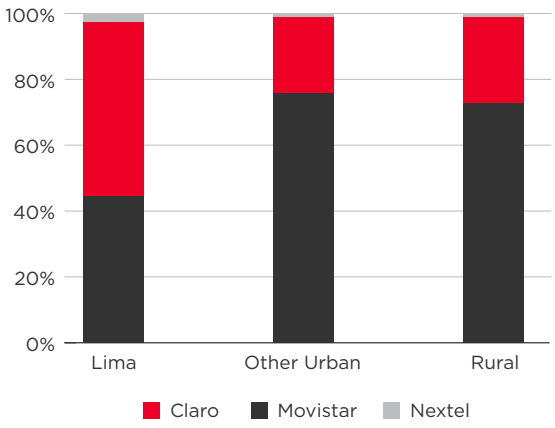

Figure 14: Operator share by geographic region
Source: OSIPTEL

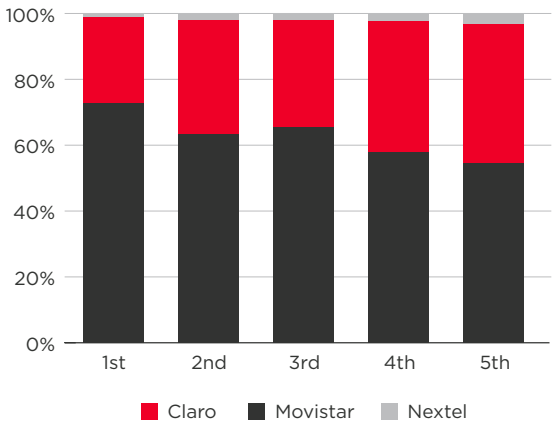

Figure 15: Operator share by income level quintile (ascending income)
Source: OSIPTEL

Mismatch between regulatory requirements and local conditions

As demand for mobile services is growing fast, operators need to scale up their infrastructure to mitigate for increases in network traffic and related costs. However, operators find themselves caught between regulatory requirements at a national level and infrastructure barriers imposed by local municipalities. The Peruvian regulator, OSIPTEL, has imposed strict regulations on quality of service. To offer services with levels of coverage and quality required by the regulator, further network infrastructure deployment is necessary. However, local municipalities have imposed restrictions on the deployment of base stations, making it difficult for operators to invest in network expansion to meet coverage and quality of service criteria. This is reflected in the base station density per head of population in Peru, which is one of the lowest compared not only to other Latin American countries but also to Asia, Europe and the US (see Figure 16).

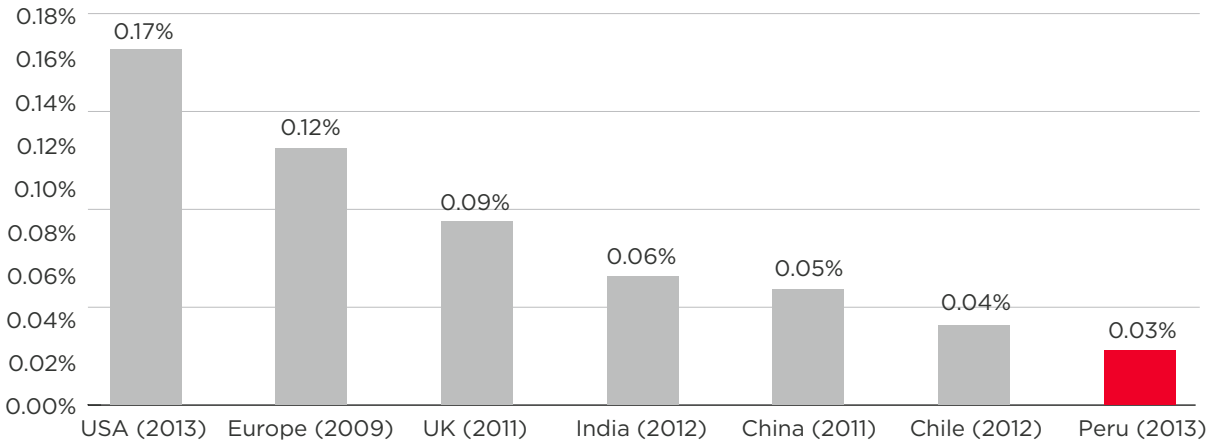

Figure 16: Base station density per population

Source: OSIPTEL

Furthermore, network coverage is mainly concentrated in the coastal area or around main cities, in line with population centres. The central government is trying to address this issue. The Ministry of Transportation and Communications (MTC) aims to improve telecom infrastructure in the country and is also keen to bring high speed internet by deploying a nationwide fibre optic backbone. The government has recently sent a bill to the congress to encourage private investments in the country, as current infrastructure is not sufficient to meet the demand for mobile services. However, unless central and local government can be more joined up on this issue, it will be difficult for significant change to happen in the short term.

In addition, there is a renewed sense of uncertainty on the process of renewing licences. Telefónica in Peru finally completed its licence renewal in January 2013, even though some of its licences expired around 18 months earlier in May and June 2011. The operator initially negotiated the terms of renewal with the then government, but following national elections it then had to repeat the negotiation process with the incoming new administration. The new licence is valid for a period of 18 years, but has brought a range of new conditions. Foremost among these is an expansion of coverage into rural areas and to provide free internet access in some rural schools. While these are of course positive in the context of socio-economic development, with the operator committed to an additional $1.2 billion in investment, clarity is needed in the renewal process to provide a firmer basis for long-term network investment (see GSMA report, Licence Renewal in Latin America).

Feature: In conversation with Julio C Bustamante
Legal and regulatory affairs, Chief, AFIN

What is AFIN and what kind relationship do you have to the mobile operators in Peru?
"AFIN stands for Association for the Promotion of National Infrastructure (Asociación para el Fomento de la Infraestructura Nacional). We bring together the largest mobile operators in Peru, which are Nextel, Telefónica and América Móvil. We are a private organisation that acts by consensus and so when we express an opinion on any subject; it is something that all our members have agreed upon".

How are regulations affecting ICT infrastructure deployment?
"The big issue right now for us is growing both investments and services. In many districts of Peru, we have restrictions or limitations on the installation of base stations, while regulators are also requiring high levels of coverage and quality. With these existing restrictions preventing the installation of more base stations, the operators won't be able to attain the targets and the standards that the regulator (OSIPTEL) is implementing right now.

We do believe that some projects of the regulators are very ambitious. The operators want to improve coverage and improve the quality of services, in order to bring customers more services at better prices. However, with the restrictions imposed upon us by local governments it will not be possible. In addition, in the short term we will have to start deploying LTE/ 4G services and with the number of base stations right now nationwide it will be almost impossible, despite the fact that people want these services. People in Peru want to use the same technologies as in Europe or in the US, but with these restrictions the operators won't be able to implement them. It is therefore something that AFIN is trying to address".

Can you give us an example of how operators are affected?
"Nationwide, we have 7,521 base stations. We have around 30 million people right now in Peru and we have at least 0.017 base stations per sq. km and 0.026 base stations per person. The operators are ready to invest to increase this. They are prepared to expand their infrastructure every month of this year and next year. We need at least $700million just to double this number. To install 21,000 base stations we need at least $1billion, and that is the number that the Ministry of Transportation and Communications in Peru is looking for.

OSIPTEL has a good staff of professional people, who have been doing a good job for more than 15 years. However, the lack of understanding between OSIPTEL, local governments and the Ministry of Transportations and Communications is hard for us to understand. Consequently, it will be very difficult to implement all these services with these restrictions".

What is the role of the government in promoting ICT/mobile as driver for economic development?

"One of the targets of the national government is to bring high speed internet to almost every part of Peru, not just in the principal cities. They are very concerned with connectivity, so they are trying to improve the regulations to allow operators to install fibre optic and other infrastructure that they need. The government is trying to have a national backbone, and is not focused only on fixed internet connections, but also on Wi-Fi and mobile internet services. In addition, the government has social programs for e-education and e-health. They are looking to bring Peru in the digital era.

We are comfortable with what the government is doing because they are not planning to create their own telecommunication company. Instead they are trying to improve the infrastructure so that market operators can offer better products and services.

Sadly, there is a different vision in the local governments, and because of the autonomy they have in Peru, they can restrict this. The national government knows they need connectivity but they have had problems with the local authorities, and they don't have the legal tools to overcome this. Right now, the Ministry is working on some regulations to bring a solution to this problem, but it won't be something that will be solved in the short term".

Moble as a driver of positive social and economic impact

Socio-economic contribution of mobile

The need for increased levels of infrastructure investment and spectrum allocation is not only necessary to improve quality of service and increase traffic and the subscriber base for operators, but has an economic and social impact on the wider society. Mobile is a key driver of the economy in Peru, contributing an estimated 3-4% of the country's GDP in 2013 (a figure that we expect to rise over the next several years), as well as providing a significant number of direct and indirect jobs and contributing to public funding.

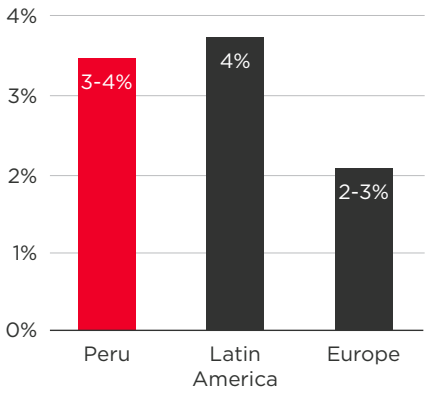

Figure 17: Mobile industry contribution to GDP
Source: GSMA Intelligence, BCG analysis

(Note: the figure includes the direct (MNO, related industries) and indirect (productivity increase, effect on the general economy given the use of mobile) contribution of the mobile industry.)

Traditionally, Mobile for Development (M4D) refers to the use of mobile to deliver life enhancing services to underserved populations in emerging markets. Examples include mobile money which aims to deliver affordable financial services to unbanked customers; mobile health which has an objective to improve health outcomes in emerging markets and mobile for employment, which increases work opportunities for underserved youth.

Overall, the number of M4D services tracked by the GSMA Intelligence products and services tracker in Peru has been increasing; however, compared to regions such as Sub Saharan Africa and Asia, mobile for development as a gap-based model is not big and it is not understood in the same way. In addition, operators are not big players in the M4D space; most of the products and services launched in Peru, and in other countries in Latin America, are not led by operators. In Peru, a variety of different organisation types are involved, mainly research institutions and NGOs, but also significant numbers of other for-profit organisations such as content providers, software or healthcare firms.

Therefore, there is a clear potential in Peru for the mobile industry to generate a greater socio-economic impact through mobile-enabled services. Mobile can go beyond being a tool for communication and a source of employment and government revenue. It has significant opportunities across a range of sectors, most notably financial services, youth unemployment, competency of English, utilities and access among women in rural areas, and business efficiency.

Feature: In conversation with Gustavo Leal Villagomez
Head of Value Added Services, Claro Peru

How do you see the growth of the mobile internet over the next two to three years?
"The mobile internet will be growing in all the customer segments; it has become one of the most important services not only in Peru but in all Latin America. It is increasingly more common for users to access the internet for the first time on their mobile; we expect mobile internet usage to grow near to 70% per year".

Please describe the main consumer segments you focus on in value added services and which services are most popular.
"We have 2 main segments, prepaid customers that represent 75% of the market and post-paid which account for 25% of the market. The prepaid segment is more prominent according to volumes, however, in terms of ARPU, the post-paid becomes a better segment for us to focus on, and so our products are mostly developed for post-paid customers. Our most popular services are entertainment subscriptions, music, games, ring tones, and Ideas Idiomas – a service developed for users to learn English".

What is Claro's strategy in targeting mid to low income, or otherwise underserved consumer segments?
"Mid to low income segments are usually represented by prepaid users, so we develop services that can engage these users, for example entertainment subscriptions are very important in Peru, as, outside Lima, there is a lack of entertainment spaces such as cinemas and malls. The mid and low income customers want to have services that are affordable and can entertain them, such as horoscopes, jokes and games".

How do you see your mobile services helping to promote social/economic development of subscribers or businesses (e.g. such as by offering learning/education opportunities, financial services)?
"We are currently running a service called Ideas Idiomas; its main purpose is to teach English to users. This is a service which is attracting many customers and is growing very fast. We believe that promoting education through mobile enabled services is very important and is something customers look for and are willing to pay for, that is why this product has been having a positive growth rate".

How important is the balance between social impact and business oriented objectives in the services that you deploy? How does it fit in with Claro's wider strategy?
"This balance is very important not only in value added services, but also as a tool for the company to engage with the society as a whole. The service mentioned earlier, Ideas Idiomas, is an excellent example, as it brings a learning service to all segments of the population at an affordable price. The service is designed to be used on any device as it is delivered via SMS; however, it has the possibility of increasing its functionalities on high-end phones. We deliver a service that gives user the possibility to access a learning service that they usually would not be able to have access to, and as we grow our user base this will become a profitable business for us too".

Within your organisation, which department is responsible for decisions made around value added services development strategy? Is this done at a country or group level?
"Decisions around value added services are done both at a group and country level. A roadmap is designed at the group level, but this is adapted at a country level depending on local needs and market opportunities. The departments responsible for these decisions are both VAS América Móvil and local VAS."

Financial access and employment – a significant mobile opportunity

While the number of M4D services is low in Peru compared to the wider region, there is an opportunity for it to develop more. This is particularly the case in sectors like financial services and employment, but also in improving access to services in rural areas and closing the mobile gender gap. Peru has a relatively large number of M4D services per subscriber compared to other Latin American countries (see Figure 18). Compared to other countries with similar or higher mobile penetration rates, Peru has more M4D services, once corrected for the size of the mobile market. This does not suggest that more people have access to M4D services in Peru than Brazil, for example, or that these services are reaching more people, but that they have a greater potential of serving existing subscribers.

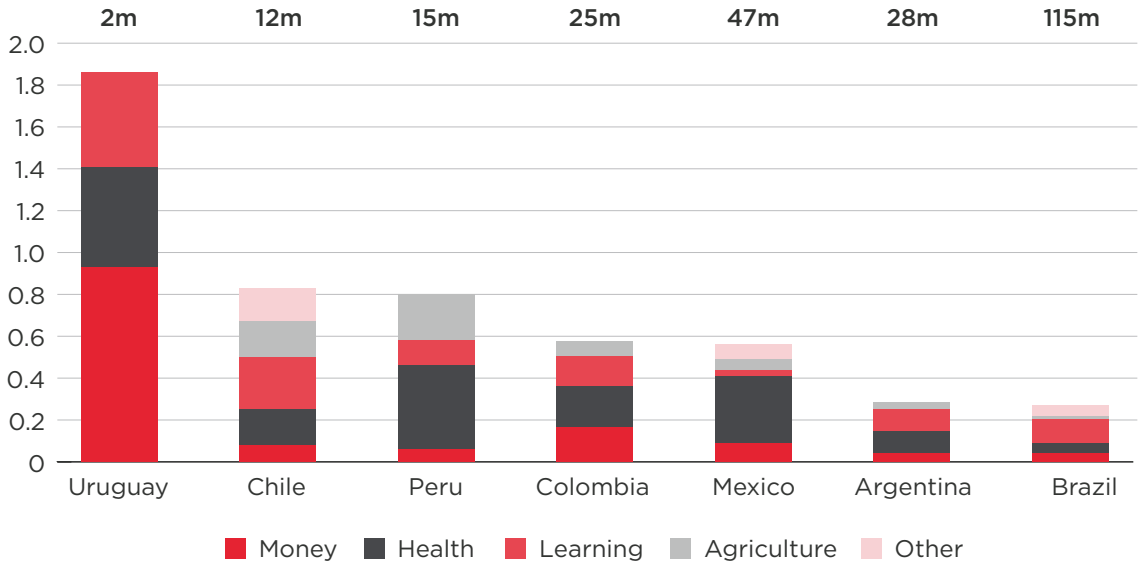

Figure 18: M4D services per million mobile subscribers
Source: GSMA Intelligence

(Note: other includes mobile-enabled services for disaster response, employment, mIdentity, green-powered networks, NFC and smart cities. Geographic distribution subject to sampling bias)

Mobile money is nascent in Peru. In 2013 OSIPTEL has approved regulations allowing financial services to be offered by non-banks (including network operators), though we have yet to see new products launched. There is a need for a mechanism for financial inclusion, and mobile phones can play a role. In Peru only 20% of the adult population has an account at a formal institution, this is lower than the average for the region, which is 39%. There are nearly 17 million unbanked or underbanked adults in Peru, however, approximately 70% of them own a mobile phone (see Figure 19). Not only is there the demand, but there is also the right environment.

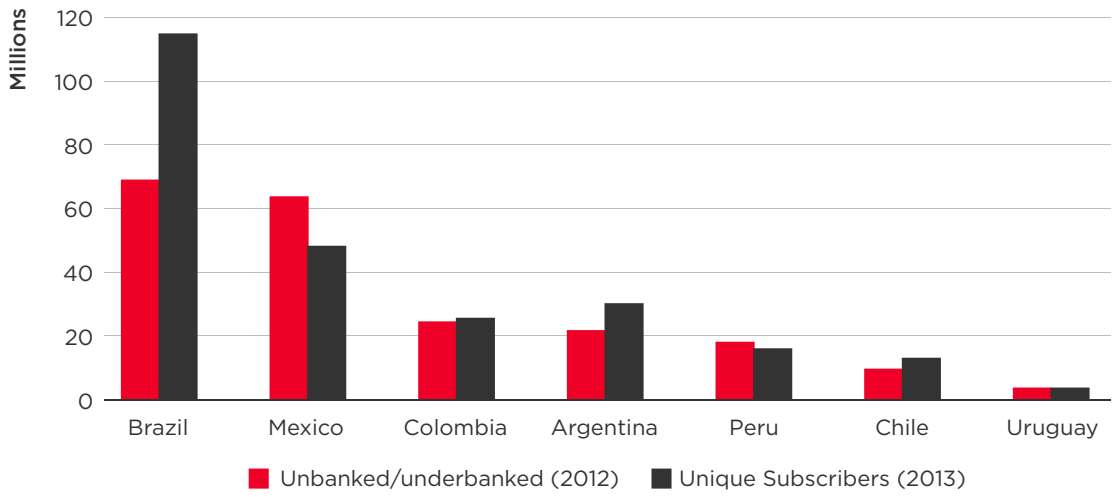

Figure 19: An opportunity for mobile money?
Source: GSMA Intelligence, World Bank

(Note: unbanked/underbanked represents adults, age 15 or over)

In addition, in Peru, the government launched the Juntos program in 2005; it provides a monthly dividend to mothers (whether married or single) living in extreme poverty who send their children to school and take them for regular medical check-ups. Given that most of the population is unbanked, cash transfers are made in cash; this is an inefficient and costly system. Costs for the government are massive; on average, the all-in payment cost is roughly 15% of the payment amount. Furthermore, there are issues around reaching all municipalities involved in the program and ensuring the right person receives the cash payment, and is able to retain it in the face of pressure from others in their community. As most governments in Latin America provide these types of social transfers, known as Conditional Cash Transfers, mobile money would offer them the possibility to reduce corruption, establish more transparent systems and reduce costs for these transactions. Last year Banco Davivienda in Colombia has started to deliver social transfers through the DaviPlata mobile money service reaching nearly 1 million families.

There is also a clear opportunity in terms of M4D services aimed at reducing unemployment. Countries like Mexico and Brazil have implemented popular and successful mobile recruitment platforms. For example, Assured Labor is a service that helps employers connect with the right candidates by leveraging mobile phones; the local brands are called EmpleoListo in Mexico and TrabalhoJá in Brazil. This type of platform could be used in Peru to help decrease youth unemployment rates; while unemployment rates as a whole are relatively low, youths between 18 and 24 years have higher unemployment rates. They also have high mobile penetration rates (see Figure 20) underlying the potential for mobile phones to become a tool to help nearly 1 million young people get a job.

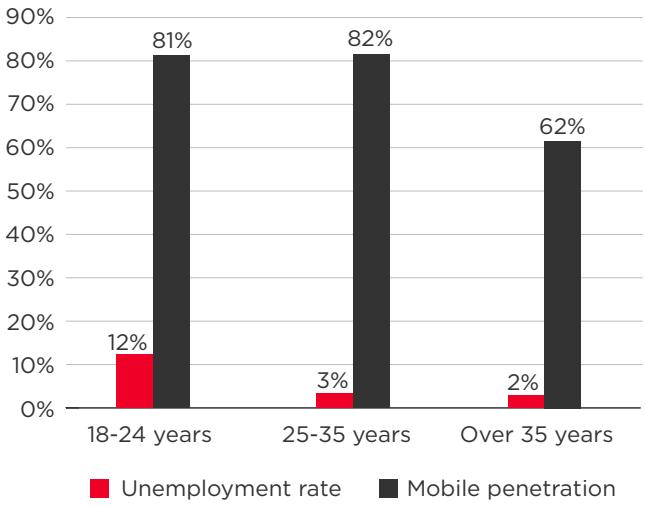

Figure 20: Unemployment rates vs. mobile penetration rates (2012)
Source: OSIPTEL, National Statistical Institute for Statistics and Informatics (INEI), GSMA Intelligence

Turning to other M4D opportunities, it is useful to look at the difference between urban and rural areas. Here, we see gaps in access to services, in particular in access to sanitation – 47% of the population has access in rural areas and 85% in urban[3].

This gap is also present in access to electricity and water. However, given the size and reach of the mobile industry, it is possible to leverage this to create ways to achieve greater access to water, electricity and sanitation. A GSMA analysis estimates an addressable market for mobile-enabled energy and water access in Peru of 2.9 million people and 2.5 million people respectively[4]. Secondly, there is a gender gap in access to mobile services (see Figure 21); in rural areas we estimate female mobile penetration is only 30%, meaning that more than 2 million women do not have access to mobile services. This gender gap would need to be a central focus in any strategy to roll-out M4D services in rural areas in particular.

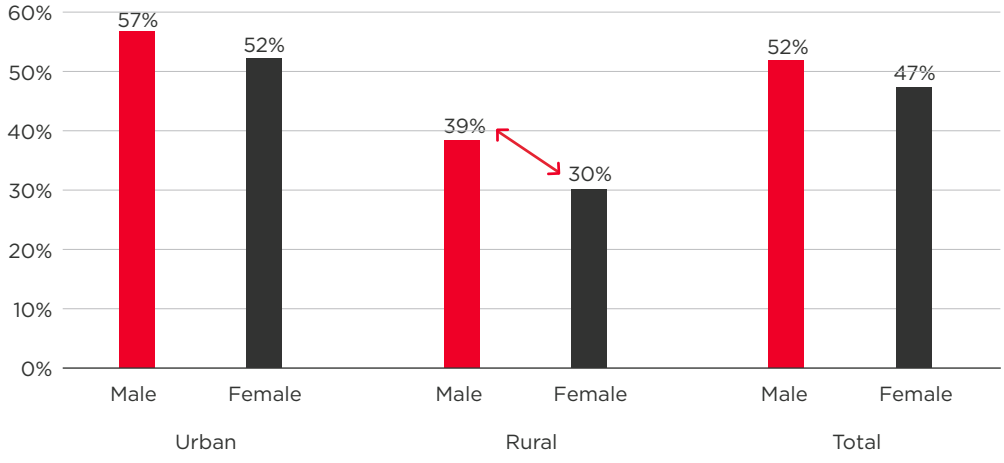

Figure 21: Mobile subscriber penetration rates by gender, urban and rural
Source: OSIPTEL, INEI, GSMA Intelligence

[3] Source: INEI
[4] Source: Sizing the opportunity of mobile to support energy and water access, GSMA, November 2013

Some Latin American countries are using mobile phones to improve business efficiency and examples could offer Peru models to realise similar opportunities. In Mexico and Colombia, where small shopkeepers have limited access to technologies to run their businesses to their full potential, mobile phones have been used to improve businesses operations for micro entrepreneurs. Frogtek developed the Tiendatek application, a point-of-sale system for shopkeepers that helps them better manage store sales, credit card transactions and track inventory (see Tiendatek case study).

Another example is fast food chains: the Mexican fast food chain Chipotle is planning to invest in improving its food ordering app which allows customers to order and pay before picking up their meal. Using phones for transactions such as this makes the process quicker, thus benefiting both the company and the consumer and increasing the country's overall productivity and thereby its competitiveness in the regional and global market. The opportunities for such business efficiency tools are almost limitless, and apply across all sectors of the economy.

With significant opportunities for M4D services across a range of sectors, most notably in financial services, employment, utilities (particularly in rural areas) and business efficiency, there is an opportunity for different players to be involved. However there is little involvement from operators. We believe there remains much scope for operators and other players, such as content providers, to drive innovation and new product development given the fast growing nature of this market and still present opportunities for improved socio-economic impact.

Appendix

Relevant groups and organisations:

Government bodies and trade associations:	• Ministry of Transportation and Communications (MTC) • Supervisory Agency for Private Investment in Telecommunications (OSIPTEL) • Association for the Promotion of National Infrastructure (AFIN)

Data: regulation, business, demographics and economics

2013	Peru	Brazil	Mexico	Uruguay	United Kingdom
ICT regulation (1 = nonexistent, 7 = well developed)	3.7	4.4	3.0	4.0	5.6
Government emphasis on ICT (1 = weak priority, 7 = high priority)[5]	5.5	5.1	5.0	5.2	5.6

Table 2: Government and regulation
Source: Global IT Report 2013, World Economic Forum

2013	Peru	Brazil	Mexico	Uruguay	United Kingdom
Venture capital availability (1 = very difficult; 7 = very easy)	2.9	2.8	2.6	2.5	3.8
Impact of ICT on new products, services & business models (1=not at all; 7 = significantly)	4.6	5.0	4.7	4.8	5.9
Impact of ICT on access to basic services (1 = do not enable access at all, 7 = enable access)	4.0	4.2	4.2	4.7	5.6
Ease of doing business rank	42	116	53	88	10
Business entry density rate[5]	3.83	2.17	0.88	2.98	11.04
Number of days to start a business	25	107.5	6	6.5	12
Corruption Perception Index 2012 (0 = Highly Corrupt, 100 = Highly Clean)	38	42	34	73	76

Table 3: Business environment and entrepreneurship
Source: Global IT Report 2013, World Economic Forum, Transparency International, World Bank

[5] Data for 2012

Topic	2014 rank	2013 rank	Change
Overall Ranking	**42**	**39**	**-3** ↓
Starting a business	63	60	-3 ↓
Dealing with construction permits	117	107	-20 ↓
Getting electricity	79	78	-1 ↓
Registering property	22	19	-3 ↓
Getting credit	28	24	-4 ↓
Protecting investors	16	16	-
Paying taxes	73	76	3 ↑
Trading across borders	55	49	-6 ↓
Enforcing contracts	105	108	3 ↑
Resolving insolvency	110	108	-2 ↓

Table 4: Ease of doing business, by topic
Source: World Bank Ease of Doing Business Rankings

2013	Peru	Brazil	Mexico	Uruguay	Latin America
Population (million)[5]	30	198	120	3	610
Urban population[5]	73%	81%	73%	91%	75%
Literacy rate[6]	93%	90%	94%	98%	92%
Median age (years)	26.7	30.3	27.7	34.1	30.2
Mobile penetration, connections	98%	138%	86%	149%	115%
Mobile penetration, subscribers	50%	57%	38%	64%	53%

Table 5: Demographic data
Source: GSMA Intelligence, World Bank

[6] Data for 2011

2012	Peru	Brazil	Mexico	Uruguay	Latin America
GDP growth	6.3%	0.9%	3.6%	3.9%	3.0%
FDI (% of GDP)	6%	3.4%	1.3%	5.8%	3.3%
Unemployment	3.6%	6.7%[6]	4.9%	6.5%	6.7%[6]
Inflation	3.7%	5.4%	4.1%	8.1%	3.9%

Table 6: Economic data
Source: World Bank, IMF, GSMA Intelligence

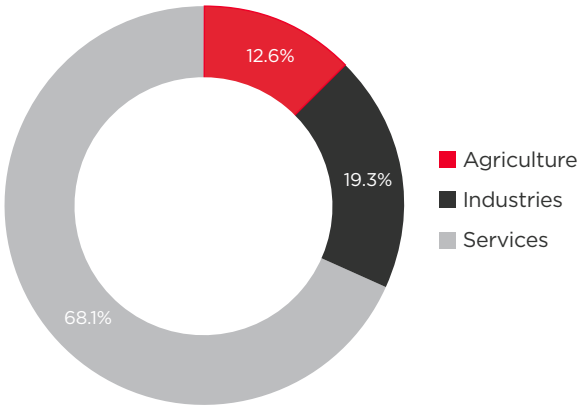

Figure 22: Employed population, by industry group (2012)
Source: INEI

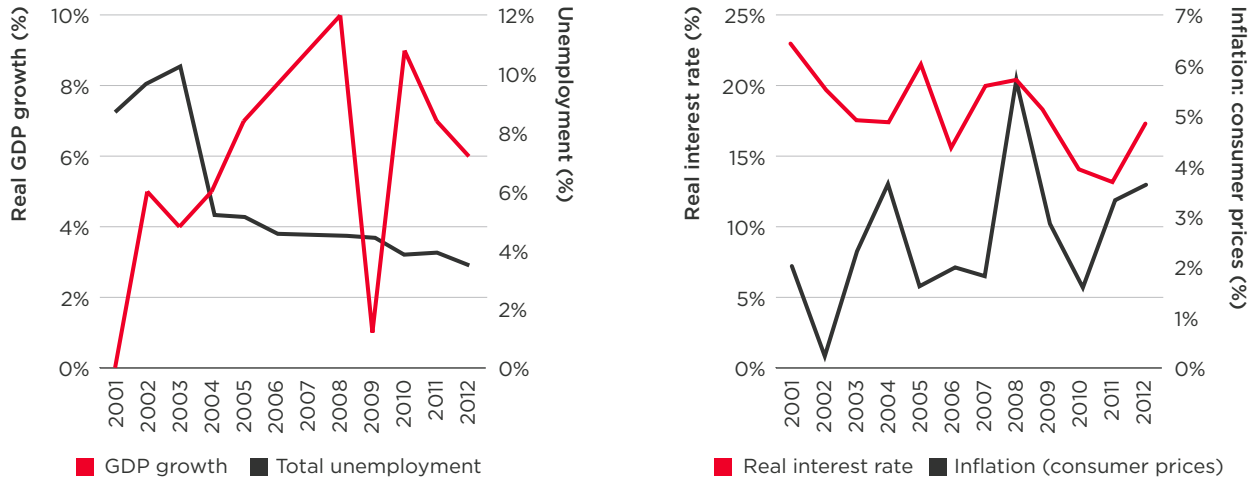

Figure 22: Peru, economic data
Source: World Bank, GSMA Intelligence

Glossary

ICT regulation
How would you assess your country's laws relating to the use of information and communication technologies (e.g., electronic commerce, digital signatures, consumer protection)? Key: 1 = nonexistent; 7 = well developed, 2010–2011 weighted average.

Government emphasis on ICT
How much priority does the government in your country place on information and communication technologies? Key: 1 = weak priority; 7 = high priority, 2010–2011 weighted average.

Venture capital availability
In your country, how easy is it for entrepreneurs with innovative but risky projects to find venture capital? Key: 1 = very difficult; 7 = very easy, 2010-2011 weighted average.

Impact of ICT on new products, services and business models
To what extent are information and communication technologies creating new business models, services, and products in your country? Key: 1=not at all; 7 = significantly, 2010–2011 weighted average.

Impact of ICT on access to basic services
To what extent are information and communication technologies enabling access for all citizens to basic services (health, education, financial services, etc.) in your country? Key: 1 = do not enable access at all, 7 = enable access significantly, 2010–2011 weighted average.

Business entry density rate
Recurring (service) revenue generated in the period, including revenue generated from the use of the network (voice, messaging, data, VAS), but excluding non-recurring revenue such as handset or equipment revenue.

Unique subscribers
Total unique users who have subscribed to mobile services at the end of the period, *excluding* M2M. Subscribers differ from connections such that a unique user can have multiple connections.

Mobile penetration, subscribers
Total subscribers at the end of the period, expressed as a percentage share of the total market population.

ARPU, by subscriber
Average revenue per user (ARPU). Total recurring (service) revenue generated per unique subscriber per month in the period. Different from ARPU by connection, ARPU by subscriber is a measure of each unique user's spend.

Mobile termination rate (MTR)
Charges which one mobile operator charges to another for terminating calls on its network

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