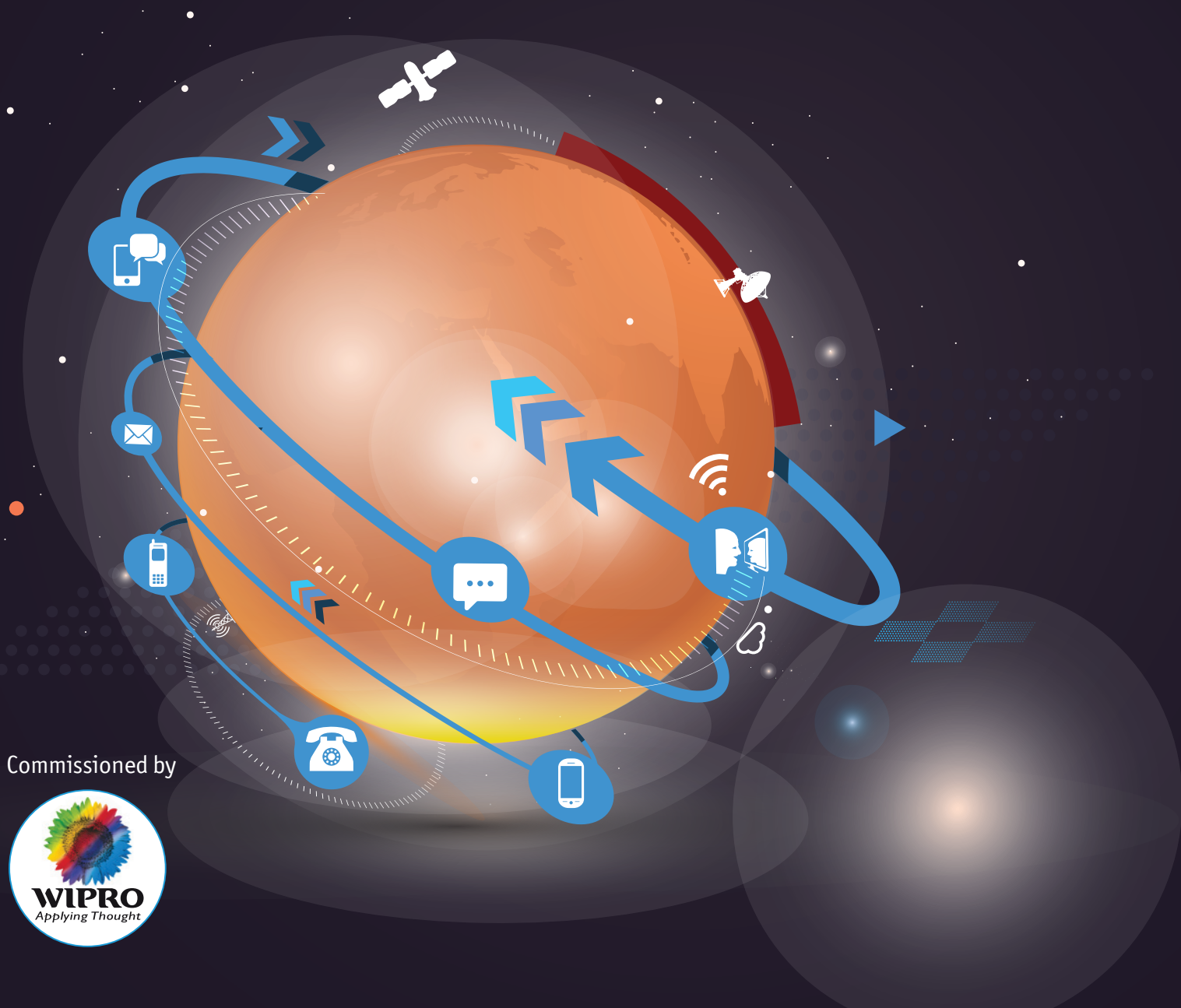


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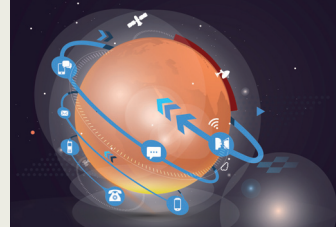
Telecoms firms prepare for the future

An Economist Intelligence Unit report



Commissioned by





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The digital dilemma:

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About the report

The digital dilemma: Telecoms firms prepare for the future is an Economist Intelligence Unit (EIU) report commissioned by WIPRO. The report strives to identify the key issues that companies within the telecoms sector are facing as they attempt to reshape their businesses to compete in a more digitised world.

This report draws on two main sources for its research findings.

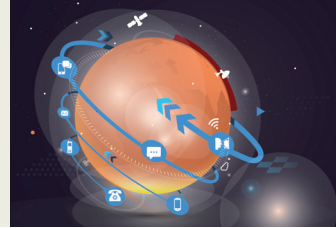
In 2014 the EIU undertook a global survey of more than 200 C-level and senior executives from telecoms firms, including 48 CEOs and 43 CIO/CTOs. More than half of the companies involved in the survey reported annual revenues of more than US\$500 million.

Alongside the survey, the EIU conducted a series of in-depth interviews with the following senior executives and experts (listed alphabetically by organisation):

- Mobeen Khan, VP/ Enterprise IoT, AT&T
- Marcus Weldon, CTO/President, Alcatel-Lucent, Bell Labs
- Bruce Churchill, CEO (LatAM), DirecTV

- Neal Milsom, CFO, EE
- Ulf Ewaldsson, CTO, Ericsson
- Chakrapani Perangur, CIO, Indus Towers
- Riku Salminen, CEO, Jongla
- Eddie Moyce, Chief Customer Experience Management Officer, MTN
- Peter Glock, Director of Enterprise Solutions, Orange Business Services
- Sebastian Schumann, Senior Designer, Slovak Telecom
- Eduardo Navarro, Chief Commercial Digital Officer, Telefonica
- Frode Stoldal, CTO, Telenor
- Mikhail Gerchuk, Chief Commercial Officer, CEO (CIS Business areas), VimpelCom
- Tom Mockridge, CEO, Virgin Media
- Marten Pieters, CEO, Vodafone India

The report was written by Ken Wieland and edited by Charles Ross. We would like to thank all interviewees and survey respondents for their time and insight.



Executive summary

Battered by increased competition, technological disruption and regulatory constraints, the telecoms industry is at a crossroads. One road leads to reinvention as a diversified telco with multiple offerings and new revenue streams; the other descends into a valley of falling revenues, thinner margins and commoditisation. Our research indicates that telcos are approaching this challenge in varying ways, with varying levels of success and confidence. Anxiety exists at the top of the organisation with CEOs in particular uncertain about the right strategy to take, while CTOs are generally more confident about having the skills and resources to reinvent themselves.

This report is based on extensive desk research, a survey of 209 senior executives from the telecoms sector and interviews with 15 senior industry executives. Among the key findings:

- **The telecoms industry at a crossroads:** EIU survey respondents expect dramatic falls in voice revenue over the next five years. Only a small minority representing fixed-line and mobile operators think voice calls—once the business mainstay of these firms—will generate more than half of their organisation’s turnover by the close of the decade. Operators wishing to remain service providers (and be relevant to customers) will need new revenue streams if they are to secure a long-term future.
- **Digital growing pains:** Survey respondents are confident digital technologies can create new products and services, but they are less convinced about overall revenue growth. As a CEO of one major operator puts it, “There are new opportunities in digital, but it’s extremely difficult to compensate for losses that result from those opportunities.” He draws a parallel with the challenges faced by traditional newspaper print publishers in adjusting to online news and social media. Digital transformation, for most established telcos, will not be painless.
- **Internet players are not going away, so it’s better to work with them:** Network operators have little to gain by complaining about so-called ‘over-the-top’ (OTT) players, such as WhatsApp and Skype, ‘stealing’ core revenue. A more constructive approach is to take advantage of OTT innovation. By making it easier for internet players to access their network and IT assets, operators can develop a broader (and more attractive) service portfolio which they can then package and promote. Operator interviewees for this report happily concede that internet firms are much better at designing digital consumer products than they are.
- **More spadework needed on OTT collaboration and partnerships:** Survey responses reveal an industry in the early stages



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of putting structures in place that will make collaboration with others easier. Less than a fifth of survey respondents views greater cooperation with app developers and content providers as a big transformative industry initiative today. Look to the future, however, and more than 85% of C-level executives think most new digital products and services will either originate from external parties or be developed in partnership with them. Realising this vision will require laying the groundwork for better collaboration.

- **Smart telcos build digital ecosystems:**

Operators can play a central role in building platforms for innovation, bringing together the likes of application developers, device manufacturers, distributors and systems integrators to develop digital solutions. "By developing digital ecosystems we're in a better position to collaborate on innovation and get products to market quicker," says one operator CTO. Laying claim to a central role is easier if operators have large network footprints and plenty of customers. Digital partners can be lured by the carrot of scale.

- **CMOs, CTOs and CIOs need to talk more:**

Survey respondents see the importance of superfast broadband and speedier mobile networks (it makes digital services easier to use) but they fret about getting a return on their investment. One way to alleviate that concern is to direct network investment firmly towards commercial opportunities (rather than simply achieving wider coverage, which has long been the industry habit). While CMO and CTO interviewees acknowledge a need for closer collaboration to make this happen, a worrying survey finding is that only 8% of CEOs canvassed think the way their organisations are structured might seriously inhibit internal (and external) cooperation.

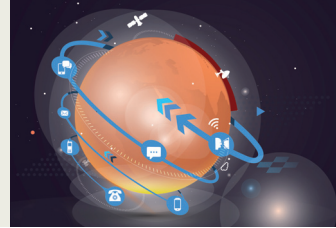
- **Unlock enterprise growth with value-added digital services:** Operators armed with solutions to improve the business prospects of

their enterprise customers are better placed for growth. They become less reliant on basic connectivity services which are under constant price pressure. An M2M solution, for example, could transform the business model of a copier manufacturer from products (one-off charges for equipment) to services (charging per page copied, better customer support) by remotely monitoring usage. While there's little survey optimism that value-added and managed services will drive much revenue growth in the near term, views will no doubt change if more digital success stories emerge. This may happen soon. Among the survey group which think it vital to be technology first movers, more than 40% see M2M (and Internet of Things) as being critical initiatives over the next five years.

- **Network virtualisation promises much, but operator chief executives wary:**

SDN (software-defined networking) and NFV (network functions virtualisation) promise a new era of quicker service provisioning, easier collaboration with application developers, new revenue streams and greater cost efficiencies. CTOs canvassed in the survey are brimming with enthusiasm. More than 70% see SDN and NFV as being critical over the next five years, but only a third of CEO respondents agree. One explanation is CTOs are too focused on cost efficiencies when telling the SDN/NFV story. "It's incredibly rare you get a CEO excited without the promise of both revenue growth and cost savings," says the president of Bell Laboratories, the world-renowned industrial research specialist, insisting operator CEOs do become enthusiastic once the 'full' story on network virtualisation is told. Suppliers and CTOs need to present a more rounded business case on emerging technologies if they are to quicken the pulse of chief executives.

- **Anxiety at the top:** Chief executives are not as confident about digital change as more technical-minded colleagues. While over half of CTO survey



respondents say management awareness about digital transformation is much stronger than their closest competitors, only a quarter of CEOs feel the same. Feelings of insecurity are perhaps understandable as innovation tends to be technology-led. A surprise survey finding is how widespread those feelings of inadequacy are. Nearly 40% of CEOs think they are the same or weaker on digital management awareness compared to their rivals. This report argues that digital transformation requires bold and confident leadership. Anxiety at the top should worry shareholders.

- **Beware of chasing revenue:** A chief digital officer at a major operator warns chasing

revenue can stifle innovation. Remaining relevant to customers, he argues, might mean investing in areas where revenue generation is not immediately obvious. Many C-level executives canvassed in the survey appear to be wrestling with the same dilemma. Nearly 60% see a financial return as a significant influence when evaluating which emerging technologies to invest in, but as many as 45% say consumer desires are an equally important consideration. The two goals may not always be compatible. Launching new services without a clear idea where revenue might come from may well be necessary to build up consumer interest and develop a brand associated with innovation. The bold CEO will recognise that.





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Introduction

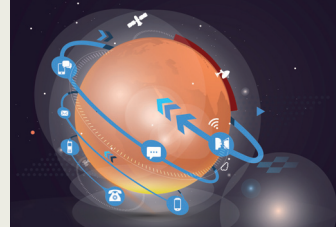
Stéphane Richard, in a glitzy presentation held in Paris, early October, showed off a range of new services his company was about to launch. One was giving smartphone users the ability to remotely adjust lighting and heating in their homes. If sensors pick up movement or smoke, they'll get alerts. A unified screen interface is another innovation. Family members accessing favourite videos, games and music—stored in a multimedia hub—can see the same screen layout, no matter whether they are using the TV, smartphone or tablet. Throughout his presentation Mr Richard talked about the importance of partnerships in driving innovation and that consumer services—above all—should be fun.

Mr Richard does not belong to a high-flying start-up or a well-known technology outfit. He is chief executive of France's Orange Group, a telecoms firm with fixed-line and mobile operations across Europe and parts of Africa. He's not alone in trying to revamp an established telecoms brand.

Spanish giant Telefonica, which has an extensive presence in Europe and Latin America, wants to be defined as a 'digital telco' and is pushing in different directions, including mobile money transfer and machine-to-machine (M2M) solutions for the enterprise. AT&T, a US telecoms

heavyweight, is prepared to splash out US\$48.5 billion to buy DirecTV, a US satellite TV provider, to deepen its involvement in media services. Millicom, a Luxemburg-headquartered telecoms group with operations in Africa and Latin America, wants to transform into a 'digital lifestyle company' by focusing on mobile data, broadband, pay TV and mobile banking. There are many other operators with digital aspirations.

A decline in core revenue, hastened by the growing popularity of so-called OTT providers, has increased the urgency to diversify. Using voice over IP (VoIP) technology, OTT players like Skype and Lync (both owned by software giant Microsoft) can offer customers a way to sidestep voice call charges. VoIP makes voice calling look like any other type of data spraying across an IP network (which is a relatively small amount when people are chatting) so operators miss out on substantial revenue from more expensive international calls and mobile roaming. Ovum, a consultancy, believes traditional telecom firms will lose out on US\$386 billion between 2012 and 2018 because of OTT VoIP. Popular OTT messaging apps, such as WhatsApp, WeChat and Facebook Messenger, also diminish the need for customers to make calls and spend money on texts. And it's to these internet brands which customers feel increasingly loyal, not the telco.



The pace of digital transformation—to compensate for core revenue declines—is far from uniform. Ulf Ewaldsson, CTO at Ericsson, the world’s largest supplier of mobile network equipment, says he’s never seen the operator customer base so diverse in terms of their strategies and willingness in where to invest. Some operators in North America, he says, are much more advanced. “They know they have to spend lots of money to transform their networks and develop new revenue streams, and they are ready to do so,” says Mr Ewaldsson.

An EIU survey of more than 200 senior executives in the telecoms industry nonetheless reveals widespread uncertainty about payback—at least in the short term—of taking the digital plunge. When asked to pick the top three primary business benefits of increased use of digital products and services today, 60% of survey respondents working in finance agreed that a big advantage was the substitution of declining core revenue streams with new ones. More worryingly, only 30% could see an increase in revenue as a major benefit, while a mere 15% highlighted a rise in profit margins.

The responses reflect a wider concern among canvassed C-level executives that consumers will be either unable or unwilling to dig sufficiently deep into their pockets to justify huge investment in superfast broadband and high-speed mobile networks. But without a network capable of supporting video and their customers’ favourite applications, the chances of future growth

decrease. Emerging technologies, such as network virtualisation, also hold out considerable promise in driving new revenue streams and generating greater cost efficiencies. Going down the network virtualisation route, however, will mean a radical change in network design and increase the need for people with both IT and network skills.

Digital transformation, then, involves risk. How to grow profitable revenue from network investment may not be immediately clear, and chief executives might have to weather a storm of lower margins until greater operational efficiencies from new technologies can be fully enjoyed (less efficient legacy systems can hardly be shut down immediately during the transformation phase).

That’s not to say operators can’t reduce their risk exposure. Putting structures in place that make collaboration easier with others can help spur innovation and quicken commercialisation of new digital products. Ensuring CIOs, CTOs and CMOs coordinate network rollouts with a clear commercial objective—rather than simply aiming for wider coverage than rivals—can also help in getting a quicker return on investment. Simplifying tariffs and empowering sales staff to pitch more sophisticated services could be another revenue boost.

Steering digital transformation will require strong leadership and a willingness to take risks. Mr Richard, and others like him, are on the right track. The alternative is to sit idly by and watch the traditional operator business slowly die.





1 Digital transformation needs bold helmsmen

Successful navigators of digital transformation will not be afraid to take risks. As traditional sources of revenue decline, chief executives searching for sustainable long-term growth will need to steer operators into the uncharted waters of nascent digital services and emerging technologies.

But when it comes to technology investment, the EIU survey shows only a minority of top management is willing to take bold action. Around a third of C-level executives canvassed think it's vital—if they are to meet changing consumer behaviour—to be a first-adopter of new technologies. In the fiercely-fought markets of Europe, more than 40% think it necessary to be a first mover.

Yet a hope that fortune might favour the

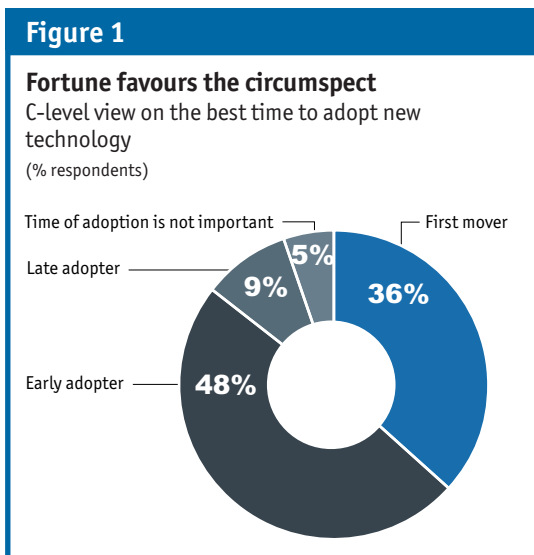
circumspect more than the brave nonetheless persists in the boardroom. The majority of C-level executives canvassed prefer not to be pioneers but early adopters of new technology. (Figure 1)

There are a number of reasons for a wait-and-see approach. Some are practical considerations. "Smaller companies may find it easier to jump generations of technologies, but it's harder for bigger companies sitting on billions of dollars of investment," says Marten Pieters, CEO of Vodafone India. Another more worrying explanation is network operators may have developed a deep-seated resistance to vendors touting the next big thing, which, in turn, slows down advantageous change. "Suppliers are always claiming they have a great technology, which can be implemented immediately, but there are always teething problems and it always comes slower than expected," says Mr Pieters, a telecoms veteran with more than 25 years' experience in various management roles. "And very often 'new' technology is the same as old technology, only dressed up differently. Operators have learned the hard way."

Dr Marcus Weldon, CTO of Alcatel-Lucent, a supplier of broadband and cloud-based technologies—and president of Bell Labs, Alcatel-Lucent's prestigious industrial research division—concedes the vendor community over-promised in terms of the transformative potential of technologies in the past and that many chief executives have become "fatigued" by constant pushes for technology refreshes. This makes the pitch for what Dr Weldon sees as genuinely transformative technologies—such as network functions virtualisation (NFV) and software-defined networking (SDN)—much more difficult.

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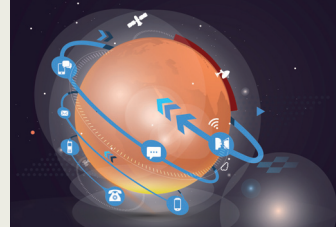
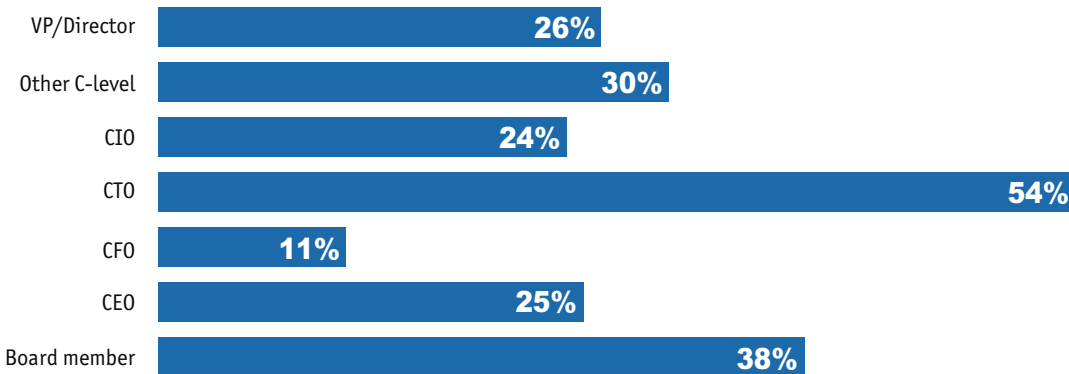


Figure 2

The technology guys say we are good at technology

Executives who believe they are stronger than their competitors in management awareness surrounding digital transformation

(% respondents)



Anxiety at the wheel

This level of scepticism will not be helped by knowledge gaps at the top of organisations. Chief executives do not appear as confident about change as more technical-minded colleagues. Over half of CTO survey respondents say management awareness about digital transformation is much stronger than their closest competitors (see case study: The confident CTO). Only a quarter of CEOs canvassed feel the same. (Figure 2)

Feeling out of their depth is understandable. As innovation tends to be led by new technologies, non-technical chief executives face the challenge of getting to grips with them and figuring out how they might lead to innovative and attractive products. What might come as a surprise from the EIU survey is how strong the feelings of inadequacy are. Nearly 40% of those at the industry helm think they're the same or weaker on digital management awareness than rivals.

An inferiority complex might help explain why many chief executives appear willing to play

down their role in steering technological change. Only a quarter of CEO survey respondents think management vision has a significant influence on decision-making when evaluating which emerging technologies to invest in.

This should worry industry shareholders. While it's wise to consult various experts who are knowledgeable about cutting-edge technologies, such as start-ups, innovators, entrepreneurs and clever graduates—and of course CTO colleagues—helmsmen still need a vision for the future and a good understanding of the technologies that can help them get there.

Mr Pieters, for example, says he's under constant pressure to strike a balance between competing claims on the capital expenditure budget and that tough decisions need to be made. Marketing and commercial directors are more likely to be keen on investing in big data analytics, while CTOs are generally more interested in cloud-based technologies. "Different departments might not see the bigger picture and are more focused towards specific investments," he says. "That's when the CEO needs to step in."



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Case study: The confident CTO

As the telecoms industry contemplates new technologies that will radically transform networks, such as SDN (software-defined networking) and NFV (network functions virtualisation), CTOs are inevitably thrown into the spotlight. The EIU survey suggests they are unfazed by the leading role. While only a quarter of CEO and CIO respondents believe management awareness about digital transformation is much stronger than their closest competitors, more than half of CTOs canvassed say it is.

CTO self-confidence is partly explained by being more up to speed on the latest technologies than their less technically-minded colleagues. Another reason is they seem to pay closer attention to market developments than other boardroom members, which gives their voice added authority. More than half of CTO respondents place great store in market research when evaluating which new technologies to invest in (compared with only a third of CEO respondents). As for competitive analysis, 50% of CTO survey respondents think it has a significant influence on decision-making.

The confidence could of course be part bluff. CTOs would unsettle colleagues if they admitted too much uncertainty about the worth of latest technologies. They may also be tempted to say things are going more smoothly than they are. More than 90% of CTO survey respondents, for example, think their organisation is effective at replacing legacy systems with new technologies and their confidence appears to be rubbing off on senior colleagues. Around three-quarters of CEO and CFO survey respondents agree that legacy replacement is indeed running along smoothly.

Ask the same legacy question to either general management or marketing and sales, however, and the responses are much more mixed. More than 40% of respondents from each group, who can arguably see more clearly than top management any service disruption from technology upgrades, flatly disagree that legacy replacement is being done effectively.

CEOs and CFOs will no doubt be comforted by a strong and authoritative CTO in the boardroom, but the EIU survey indicates they would be unwise to take everything they hear at face value.

Margin call

“Revenue growth and cost efficiencies are closely linked when investing in new technologies,” says Tom Mockridge, chief executive at Virgin Media, a UK cable broadband and pay-TV provider. “We’re not interested in profitless revenue.” It’s a sentiment no doubt echoed in all boardrooms contemplating new rounds of technology investment, but chief executives steering digital transformation will probably need to make sacrifices on margins and cost efficiencies in their bid for top-line growth.

The survey’s first-mover group seems well aware of bottom-line pressure. For them, the top three

business benefits of digital transformation are revenue increases, the ability to create new products and services, and a substitution of declining core revenue streams with new ones. Only a fifth thinks a rise in profit margins is a big advantage (Figure 3). One explanation is that voice and SMS have been high-margin earners for the telecoms industry, something which digital services may well struggle to match.

Moreover, expectations about operational efficiencies are low. The need to support legacy systems in parallel with emerging technologies during the process of digital transformation is no doubt a factor, as is the inevitable lack of

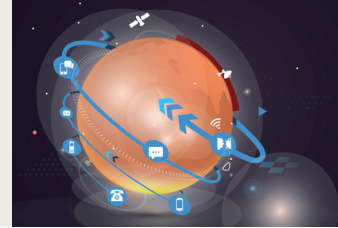
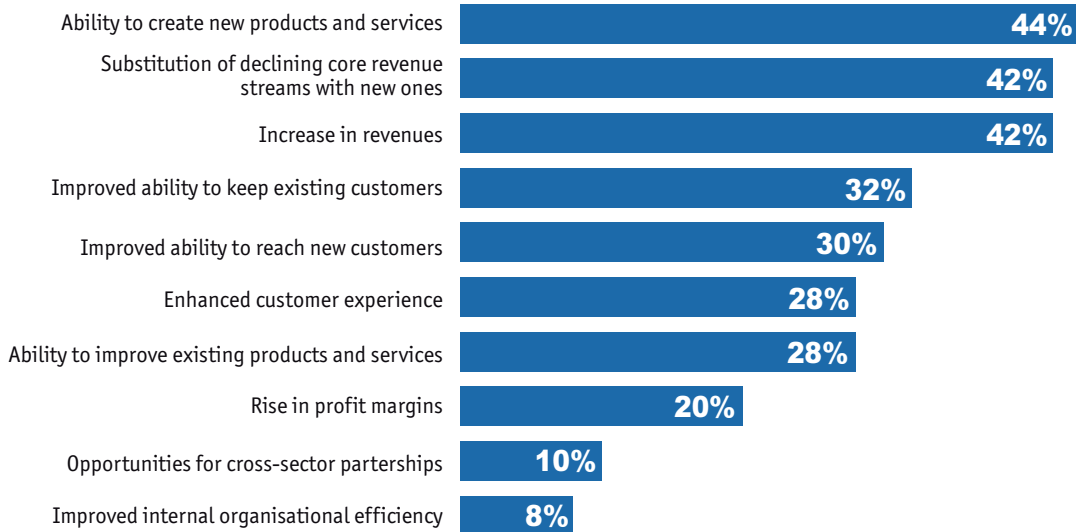


Figure 3

First movers aware of bottom-line pressure

Expected benefit of business transformation for technology first movers
(% respondents)



scale in the early stages of service development. Chief executives will need to endure bottom-line pain if they are to see through the digital transformation process.

Beware of chasing revenue

“When you have an idea for a new service, the first question the comptroller always asks is ‘Where’s the money?’” says Eduardo Navarro, Telefonica’s chief commercial digital officer. While the question is understandable, Mr Navarro says too great a focus on top-line growth can be harmful and betray a lack of long-term thinking. “Telefonica,” he adds, “was too focused on revenue generation as a sign of success and it was stifling innovation in services that might not have an obvious revenue stream in the very short term.” He points to ‘smart home’ and ‘smart city’ as some areas deserving more R&D attention.

Following a group restructuring in February—which saw the creation of the digital officer role—Mr Navarro can see top management becoming less obsessed, albeit slowly, about grabbing

immediate digital revenue and thinking more about how to remain relevant to customers. A good example is Tuenti. Initially billed as the Facebook of Spain, Tuenti is now transformed into a so-called mobile virtual network operator (MVNO). As well as running services over Telefonica’s mobile network in Spain, Tuenti Movil takes advantage of cloud-based technologies. It means customers can still access the operator’s aggressively priced voice and data bundles wherever they happen to be (provided they have internet access). Another innovation is the Tuenti app, which allows free voice calls using VoIP technology.

Although fully-owned by Telefonica, Tuenti competes directly with Movistar, Telefonica’s domestic mobile operation. Why take the risk of unleashing more competition, especially when it might harm an established operation? “It’s the famous innovation dilemma,” says Mr Navarro. “If it can be done then someone else will do it, but it’s better to do it ourselves and learn. Instead of Tuenti being disruptive to our core connectivity



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services, perhaps it can build on our core.” Mr Navarro admits a journey of innovation and service development mapped towards attracting customers (rather than driving immediate top-line growth) can be an uncomfortable one.

Many C-level executives canvassed in the survey appear to be wrestling with the same problem of how to attract customers and drive revenue at the same time. Nearly 60% of them see financial ROI as a significant influence when evaluating which emerging technologies to invest in, but as many as 45% say consumer desires are an equally important consideration. Getting the balance

right between driving sales and satisfying customers will be a difficult trick to pull off, but strong CEOs thinking long term will recognise the two goals are not always compatible.

Experiment and have fun

Sebastian Schumann, a senior network designer at Slovak Telekom—who is also tasked with exploring the potential of new communication technologies—believes traditional network operators should adopt a more experimental approach to services in parallel with what they do already. If they continue to be fixated on quality of service alone, he says, where everything is

Case study: TU Go: Telefonica’s global communications app with a local twist

Ask Eduardo Navarro if he thinks Telefonica should be a global or local player and he says it should be both. “By bringing our internet and local network assets together we can offer a distinctive proposition,” says the operator’s chief commercial digital officer. He highlights the TU Go app as a prime example of this type of thinking.

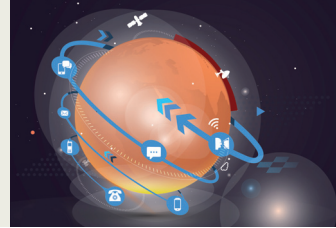
O2, Telefonica’s UK-owned subsidiary, launched TU Go in February 2013. By downloading the app, freely available to contract customers, users can make and receive phone calls and text messages—on up to ten devices—with their mobile number. Customers can enjoy a number of benefits. If the smartphone runs out of battery power, the app can be used on a laptop or tablet (a dialer-screen enables calls). When beyond the range of a mobile signal, customers can still use the app over Wi-Fi. Those on the receiving end of TU Go calls and texts don’t need to have the app installed to answer back. All TU Go minutes and texts are deducted from customers’ monthly allowances.

Mr Navarro parades TU Go as an example of how operators can exploit the advantages of digital scale—TU Go runs on a global platform—but still differentiates from internet players through

the use of national assets (the mobile phone number in this case). “It’s a very local experience provided with a global product,” he says.

Not that TU Go has been without teething problems. An O2 UK spokesperson concedes the handling of customer feedback on certain aspects of the service could have been better when TU Go was in beta phase, which might have led to a smoother commercial launch and more targeted marketing campaigns. Moreover, TU Go’s official feedback thread on O2’s website shows plenty of early customer disgruntlement, ranging from poor voice call performance, high battery power usage and the absence of text syncing between the mobile phone and other devices. It wasn’t until May 2014 before TU Go was made available in another country (Argentina) where Telefonica has a presence, but Mr Navarro says more launches are now in the pipeline.

O2 UK doesn’t reveal the number of active TU Go users, but it does say the benefits for operators go beyond reducing customer churn (the original intention of the app). TU Go users communicate more, have longer calls, and send more texts than those who don’t use the app.



engineered to 99.999% reliability—the exacting ‘five-nines’ industry standard—telecom firms will be too slow to adapt in a fast-moving digital world.

“You have to try new things,” says Mr Schumann. “You may not want to dabble with web-based services for big B2B partners or mission-critical applications, but if you approach it in the right way, perhaps by targeting not-so-sensitive and open customer segments first, you can launch fun things. Some might take off, some won’t, but you can always bring them down again if they don’t. They can have a positive impact for the brand even if they don’t make money initially.”

It’s a philosophy shared by Telenor Digital, the Nordic operator’s standalone digital unit.

In summer 2013 Telenor quietly launched appear.in, a video chat room service allowing users to launch video conversations with up to eight people with just a click on compatible browsers. No money was spent on marketing, relying instead on early adopters and influential bloggers to spread the word on social media. The Telenor Digital team answered questions quickly, listened to feedback and made modifications. The service is now used in 175 countries.

Launching ‘fun things’ without a clear idea of where revenue is coming from may not sit comfortably with traditional-thinking top management, but building up customer interest and developing a brand associated with innovation are valid business goals as well. The bold helmsman will recognise that.



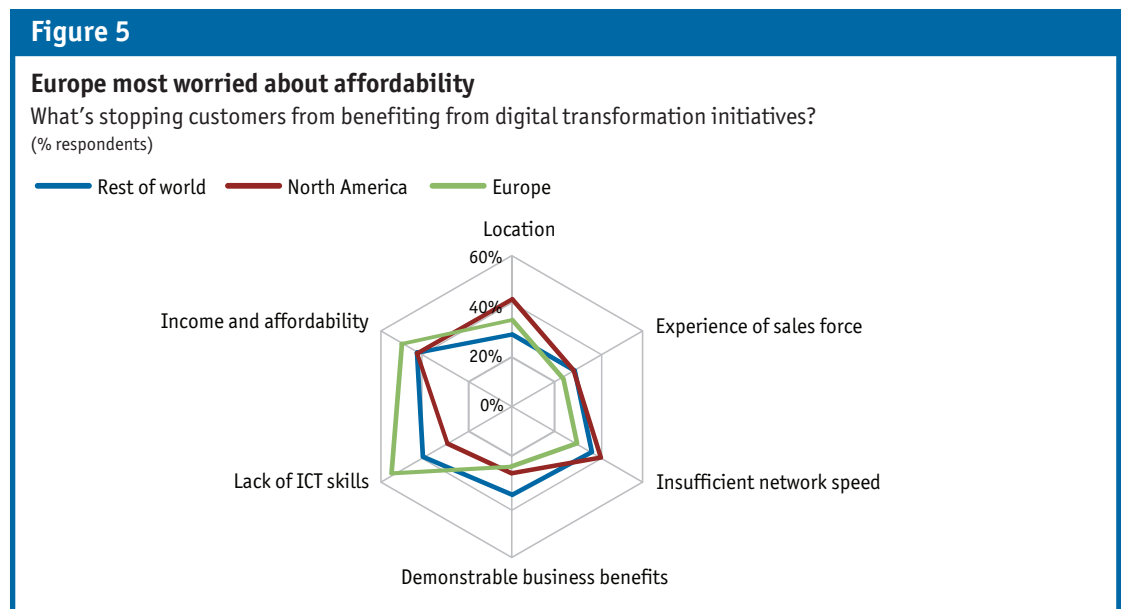
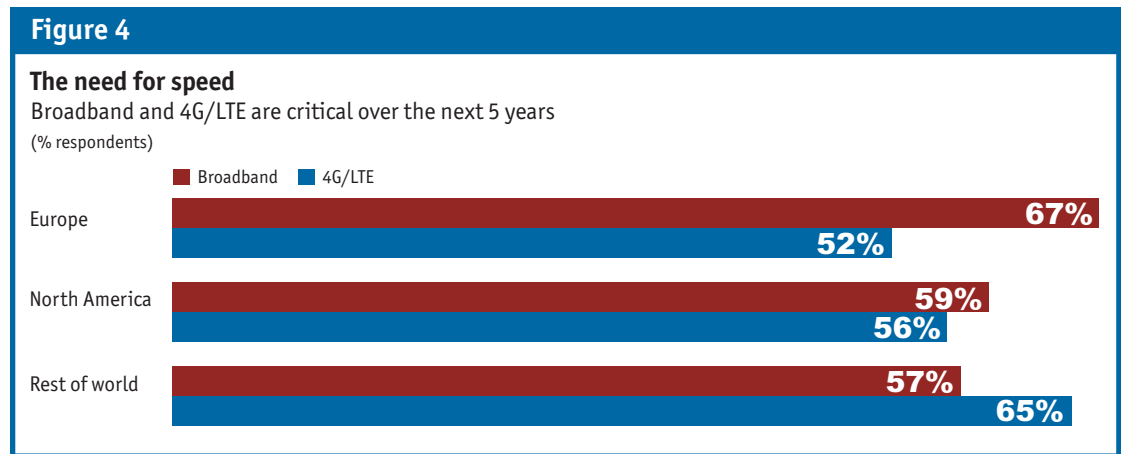


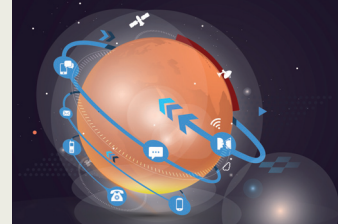
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2 Making customers pay

Many senior executives in the telecoms industry, on survey evidence, appear to be in a quandary. On the one hand they see the importance of investing in superfast broadband and LTE, a

fourth-generation (4G) mobile technology: faster speeds and greater network capacity should make digital services more attractive (Figure 4). On the other hand they fret about





customers' ability to pay extra and so justify the enormous outlays in capital required (Figure 5).

"The challenge in the media and communications market is to get customers buying more existing services and more new services," says Mr Mockridge, chief executive at Virgin Media.

The 'smart home', the 'connected car', and M2M services are some of the promising new growth areas explored in this report (see *Chapter 4*). But offering these additional services—not necessarily charged by the amount of data they consume but by how much value customers and enterprises attach to them—are arguably longer-term prospects.

In the shorter term, C-level executives can do a number of things to extract greater returns from network investment and encourage customers to spend more on existing digital services.

CTOs, CMOs and CIOs need to talk more

Operators have tended to build network capacity first and think about ways to fill it later. A 'build it and they will come' attitude has long prevailed, although this is beginning to change.

Eddie Moyce, chief customer experience management officer at MTN, a mobile operator in South Africa, says "huge investment" in LTE—and the pressing need to get a return on it—has focused minds. "There needs to be closer collaboration between engineers and commercial managers and marketing," he says. "We need to make sure that the marketing plan is tightly integrated with the network investment plan."

Some ideas seem obvious. Roll out the 4G network where customers have access to compatible devices, for example, or target more lucrative commercial areas first to get a quicker return on investment. But changes in the way MTN makes decisions on capital allocation have

only been made recently. "How we sell and where we market is jointly discussed by the CMO, CIO, CTO and me," continues Mr Moyce, "but these types of conversations were unheard of 18-24 months ago".

A more collaborative approach also requires a redefining of C-level responsibilities. "The role of the CMO and CTO is in many ways converging," says Frode Stoldal, CTO at Telenor Group, a Nordic operator with a presence in numerous emerging markets in Asia. "The CMO has to understand what technology means for my value proposition, while the CTO also has to understand how to bring value to the top line. This will be extremely important going forward."

There's little survey evidence, however, that top management is giving the issue of boardroom collaboration much thought. Only 8% of CEOs canvassed think the way their organisations are structured might seriously inhibit internal (and external) cooperation; a meagre 7% of CTOs surveyed reckoned it was a major problem.

A third of CFO survey respondents nonetheless do see organisational flaws as a pressing issue. It may fall on finance executives, perhaps more aware than senior colleagues about revenue opportunities slipping through their fingers, to push for organisational change if CEOs don't take the lead.

Network performance

There's an opportunity for operators to differentiate on a well-designed network that can handle booming volumes of data (and a threat for those who don't). Customers are more likely to stick with operators who make sure their favorite apps work well and deliver video without annoying interruptions.

"When video quality goes down customers stop watching it," says Ericsson's Mr Ewaldsson. "If you're charging per packet of data, that's clearly



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lost revenue, but even if you're delivering data as part of a flat package, and don't lose revenue directly, you still get angry subscribers. That could start a downward spiral."

And video traffic looks set to boom. According to Ericsson, video accounted for 40% of all mobile data traffic worldwide in 2013 but spurred on by bigger screen sizes with higher resolutions, the Swedish network supplier reckons video will chew up more than half of a much bigger global mobile data traffic pie by 2019.

But operator enthusiasm to pay extra for improved network performance, as the Ericsson CTO acknowledges, is far from universal. And when there is a reluctance to invest, he says, it usually stems from uncertainty about customers' willingness to pay more.

There are some encouraging signs from North America where investment in LTE does appear to be paying off. A report published in September 2014 by GSMA, a mobile industry lobby group, found that mobile revenue in North America grew by 4.7% a year on average between 2008 and 2013, but declined in Europe at an annual average of 3% over the same period.

Stiffer competition in Europe, and greater regulatory pressure on voice and texting revenue, no doubt play a part in explaining the difference, but not entirely (See *case study: Helpful regulatory environment?*). Data from Cisco¹ indicates that North America in 2013 accounted for over a quarter of global mobile data volumes, despite the region having just over 5% of total mobile connections. Relatively low prices²—combined with the likes of tiered pricing, shared family data plans, broad device portfolios and faster networks—are helping to stimulate usage and revenue.

"Customers are willing to pay more for better quality and enhanced products, such as faster

broadband to access more content," affirms Mr Mockridge.

Fears about shallow pockets might well be assuaged, then, provided there's no skimping on targeted network investment. It helps too if you have scale—to better accommodate modest premiums—and a well thought-out data pricing strategy.

Monetising data

As customer habits move from calls to consuming video, operators are wising up to the implications of this shift. If generous data offers are scatter-gunned across an entire subscriber base, customers might not attach much value to the extra they're getting. Consequently, revenue growth lags well behind data consumption. This puts a strain on the business case.

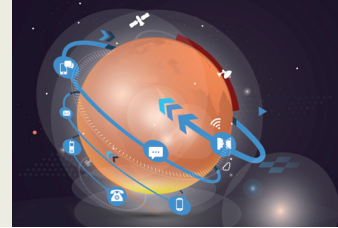
"Our traffic volumes are growing 50-80% a year while revenue is stable," says Mr Stoldal, Telenor CTO. "In a couple of years we will have to produce one gigabyte (GB) of data 10-20 times more efficiently than what we are doing today."

It is important, therefore, to have a well-thought out data pricing strategy—although roll-out can be tricky. When Vodafone launched its 'Vodafone Red' pricing plans in the UK in September 2012, it mapped out a strategy for long-term revenue growth based on data usage. Vodafone Red subscribers get unlimited voice and SMS for 'free', while only data is charged for—the higher the data allowance, the more expensive the tariff.

Although Vodafone saw some downturn in ARPU (average revenue per user) with the introduction of Red, the simplified tariff structure has led to numerous benefits, including higher net promoter scores (a key metric for measuring customer satisfaction), lower churn and greater data usage. Among Vodafone Red smartphone customers, monthly average data usage per user is 800 megabytes (MB), nearly double

¹ Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update (February 2014)

² European Commission report, 'Implementation of the EU regulatory framework for electronic communications—2014', (July 2014) says mobile voice call and data prices are higher in EU than US, but usage is greater in US leading to higher ARPU



Case study: Helpful regulatory environment?

By the end of 2015, the EU plans to abolish roaming fees for European mobile users. This is welcome news for customers. European telcos, however, see the end of a highly profitable revenue stream.

These operators, particularly the larger ones, have grown weary about what they see as unhelpful meddling in wholesale and retail prices. Only 21% of respondents from Europe agree that the regulatory environment is good for network investment and innovation, yet nearly a third of executives based in North America take the positive view (Figure 6).

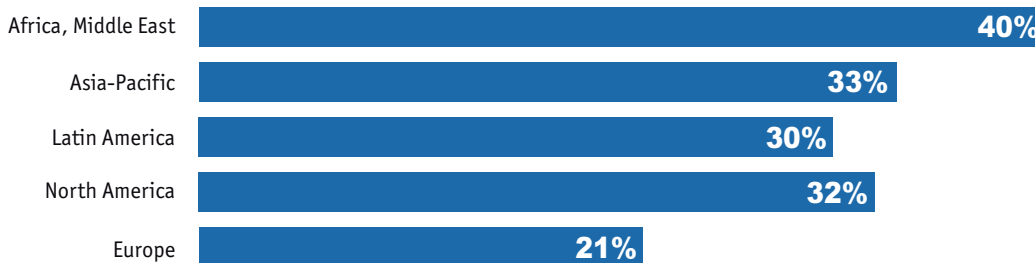
service, giving the content provider an assured performance level (so not scaring potential Netflix subscribers away). “We work with Netflix so they pay their fair share of connectivity and can’t ride on top of infrastructure for free,” says Frode Stoldal, CTO of Telenor.

It is unclear what the official regulatory position is on paid peering arrangements, both in Europe and elsewhere, and whether or not authorities will clamp down on them. A two-tier internet, in which operators are free to charge extra for better quality of service, is nonetheless vital for Mr Stoldal. “If telcos are to exist long term, net

Figure 6

Mixed views on helpfulness of regulators

Operators who agree the regulatory environment encourages network investment and innovation
(% respondents)



“I’m wary when regulators take the consumer perspective that voice and data prices should always be lowered, as this can lead to network underinvestment,” says Ulf Ewaldsson, Ericsson CTO. “That should worry regulators and society at large. There’s a link between broadband development and GDP growth.”

The next area of concern for European and global telecoms executives is that regulators stamp down on paid peering arrangements between content providers and network operators on the grounds of net neutrality (the principle by which all web-based traffic should be treated equally by networks), even though such arrangements involve direct links that bypass traditional internet traffic.

Telenor, for instance, has struck a commercial deal with Netflix, a popular video streaming

neutrality has to go away,” he says.

Despite grumblings about an unfriendly investment environment, Europe’s network operators keep digging deeper to pay for the likes of 4G and superfast broadband. A report from the European Commission said EU telecoms revenue declined in 2013 yet investment grew.³ Even arch-critics of Europe’s regulators—Cesar Alierta and Vittorio Colao, the chief executives of Telefonica and Vodafone Group respectively—have sanctioned enormous increases in network spending.

The need to ‘stay in the game’, either through network differentiation or developing new digital services to offset core revenue declines, is clearly a strong investment driver. Digital transformation is not for the faint-hearted.

³ European Commission report, ‘Implementation of the EU regulatory framework for electronic communications—2014’, (July 2014)



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the average consumed by non-Red customers (430MB).

Vodafone Red customers also talk more than those on different plans. Although there's no direct revenue uplift, free voice and texting gives Vodafone some protection against the likes of Skype and WhatsApp. The appeal of OTT players diminishes if customers can already get free voice and SMS from their mobile operator. Vittorio Colao, Vodafone's chief executive, says the more successful he is with Red, the more relaxed he is about discussions with OTT players.⁴

Going for a bundle

Increased pressure to offer bundled services—a mixture of broadband access, TV, fixed-line voice calls and mobile—is forcing an industry re-think. In recent months, this has been manifested in a frenzy of M&A activity: AT&T has agreed a US\$48.5 billion deal to buy DirecTV, a satellite provider; Telefonica has snapped up GVT, a fixed-line broadband player in Brazil, to complement its Vivo subsidiary (Brazil's largest mobile operator); Orange has launched a US\$4.4 billion bid for Jazztel, a Spanish fixed-line operator, while Nordic operator TDC has splashed out US\$2.2 billion to buy Get, a cable-TV provider in Norway.

Underpinning these deals is a desire to get bigger shares of customers' wallets, boost economies of scale and reduce churn—it's trickier for customers to leave operators if they're signed up to multiple services. Analysts at Sanford

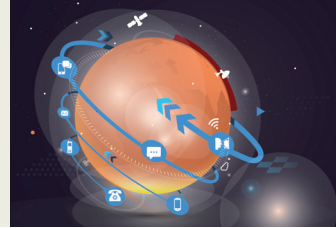
C. Bernstein, a brokerage, calculated in 2013 that mobile contract churn among established European operators was averaging out at about 16% a year. The quad-play churn levels of Virgin Media in the UK, however, were under 8%.

However, bundling is not only about connectivity and content. Operators can be aggregators and distributors, cleverly packaging digital services that have been created by others, as well as adding their own products—such as cloud-based storage and back-up—on top of core connectivity. This type of bundling extends to both the consumer and enterprise segments.

Mobeen Khan, responsible for bringing AT&T's M2M and internet of things (IoT) products to market—targeted at the enterprise—says building on core connectivity with valued-added services takes customer discussions away from the cost of data—which, in competitive markets, is likely to fall—and onto talks about products and solutions that add value and which have greater resilience to price erosion.

“We offer best in class M2M solutions that go beyond global connectivity,” asserts Mr Khan. “Yes, there's value in transport and communications, but there's lots of additional value in other infrastructure elements, such as cloud and security platforms, which we provide already to our enterprise customers. We want to extend those services to M2M customers, which increases value.”

⁴ Speaking at Vodafone Group Q4 earnings call, 20 May 2014



3

Smart telcos build digital ecosystems

César Alierta, Telefonica's chief executive, outlined four 'growth pillars' after a group restructuring in February. One was increased revenue through new services, another was network and system modernisation by deploying fibre and LTE, and a third was increased efficiency through cost cutting and simplified structures. The fourth was strengthening the company's position in the digital ecosystem.

Mr Alierta is not alone in seeing the benefits of a more central digital role. "Through partnerships we can acquire skills sets that would take too long to build up ourselves," says Mr Stoldal, Telenor CTO. "And by developing digital ecosystems, we're in a better position to collaborate on innovation and get products to market quicker."

Mr Khan enthuses about the operator's 'foundry' innovation centres. Funded to the tune of US\$100 million from AT&T and a range of big-name technology sponsors (including Microsoft and Intel) there are five centres (four in the US, one in Israel) where AT&T innovators can work with outside experts to develop consumer and business solutions. One based in Plano, Texas, is focused on M2M solutions for different industry sectors. "Engineers, customers and ecosystem partners can collaborate and jointly innovate using our tools and resources," says Mr Khan. "The foundry is a very important growth platform for us."

Laying claim to a central role is easier if operators have large network footprints and plenty of customers—digital partners can be lured by the carrot of scale. It helps explain why Telefonica's M2M global partner programme managed to attract as many as 250 partners in Europe and the US little more than a year after it was launched in June 2013. Partners include device manufacturers, solution providers and distributors.

Running fixed and mobile networks, which collect and analyse data, can give operators a head start in 'smart cities' too. By bringing together what can often be a fragmented ecosystem, operators are in a strong position to become the single point of contact for local authorities, especially if they already have strong links with them. Orange is aiming to do just that in France. Armed with numerous partnerships to beef up its smart city proposition, the country's biggest operator has launched a five-point plan targeted at local government. The programme includes giving car drivers real-time information on traffic jams and suggesting alternate routes to avoid congestions. The use of public transport is encouraged through mobile payments for tickets and on-board Wi-Fi. Smart grids (helping distributors to manage energy more efficiently) and smart buildings (monitoring energy consumption) are also included in the scheme.



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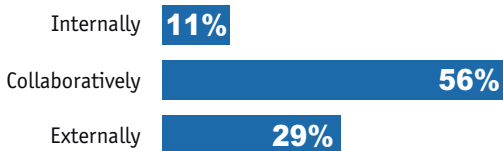
For all the growing industry recognition about the importance of partnerships and ecosystems, the EIU survey suggests there's still some work to do. Under a fifth of respondents, for example, view greater cooperation with app developers and content providers as a big transformative industry initiative today. And only 13% of C-level respondents think opportunities for cross-sector partnerships is currently one of the main benefits of digital transformation—a meagre 2% of C-level executives based North America think this is the case.

The survey reveals an industry in the formative stages of digital transformation. Look to the future and more than 85% of C-level executives think most new digital products and services will either originate from external parties or done in partnership with them (Figure 7).

Figure 7

Innovating together

Where C-level executives believe future products and services will originate from in the next 5 years
(% respondents)



More spadework needed on OTT collaboration

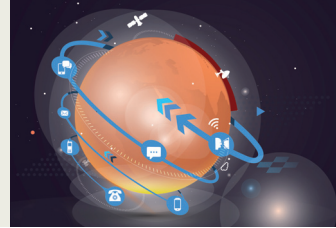
Riku Salminen, chief executive of Jongla, a start-up with an app for instant messaging, believes operator attitudes towards OTT players have “totally changed” over the last two years. “They’ve moved from competition to collaboration,” he says. One reason, he argues, is regulators have taken a tough stance on net neutrality—the principle that all digital traffic should be treated equally by internet service providers. Operators, he says, now have

more incentive to work closer with OTT players knowing they can’t easily elbow them out of the digital game.

Another explanation is operators increasingly recognise OTT players as being more innovative in consumer services. It’s a view held by VimpelCom, which has mobile operations in Russia, Italy and various CIS markets. It has partnerships with more than 40 global OTT players, including Google, Facebook and WhatsApp. Mikhail Gerchuk, VimpelCom’s chief commercial officer (and chief executive of CIS operations) happily admits that internet players are more skilled at designing digital services.

A study from Northstream, a telecoms consultancy, nonetheless shows operators—on the whole—are not doing a very good job at working with internet firms. By not having platforms in place that would make collaboration easier, the consultancy calculates operators in Western Europe are in danger of missing out on €2 billion gross profit over the next three years.

A platform allowing OTT players to access the operator’s network and IT assets can have a number of mutual advantages. A music streaming provider, for example, wishing to create a free day pass by ‘zero-rating’ data (so customers don’t pay for the service), could set that up quickly if it had easy access to the operator’s billing systems. And if the operator made an SMS application programming interface (API) available, the music company could launch its offer via text (to which customers reply to access). The OTT firm, not the operator, is doing most of the work in setting up the service, which reduces cost. There are various revenue-generating business models as well. OTT players could pay operators wholesale data rates when data is fully sponsored—as in the free day pass example—or revenue could be split when customers pay for services or goods. Operators can also charge for API usage.



It's also easier to scale up the number of OTT partners and services if the IT department doesn't need to be involved each time something new is offered. "There's a vibrant start-up community in Scandinavia but they've been put off from dealing with operators because it's too difficult to work with them from a technological point of view," says Bengt Nordstrom, Northstream's chief executive.

Seeing the benefits for both internet and telecom firms to collaborate, VimpelCom invested in a 'global hub' that makes working together easier. By using an API, OTT players can plug into the hub and make their services accessible in each of the 14 markets where VimpelCom has operations. Paid-for applications and services are billed to the user's mobile account; any revenue-sharing agreements between VimpelCom and OTT partners can be settled (see case study: Smart pricing gives Bangladesh a mobile data boost). "The hub is our big achievement and a point of differentiation for potential partners," says Mr Gerchuk. "Many OTT players are very lean start-ups, so they can't afford to integrate and launch services in each of our country operations. The global hub makes it much easier."

Mr Salminen at Jongla agrees there are mutual benefits for OTT players and network operators to work together. To create a stronger local presence in Asia's emerging markets, Jongla has partnered with Nordic operator Telenor (which

has various mobile operator subsidiaries in Asia) and XL Axiata, a mobile operator in Indonesia. Jongla can then take advantage of operator partners' greater marketing muscle. But Jongla's partners, maintains Mr Salminen, can also take advantage of start-up innovation. Jongla's lightest instant messaging app, for example, takes up only 0.7MB of data—the lightest IM app ever created, claims Mr Salminen—making it ideal for low-budget smartphone users: it doesn't hog limited memory space on the device and money-conscious customers don't make big dents in their data allowances by downloading the app. By packaging the IM app into their service portfolios, argues the Jongla CEO, mobile operators in emerging markets can offer more attractive services to budget-conscious smartphone users.

If OTT players and operators are to strike up partnerships, however, Mr Salminen says it helps if the operator has a clearly-defined digital strategy. "It's better to talk with people who see the value of the digital world and how digital content can be consumed."

Softening operator attitudes towards OTT players doesn't mean industry resentment for 'stealing' revenue has gone away. The EIU survey finds OTT players much more optimistic they will be comfortable partners with traditional telecom operators than the other way round. A sizeable minority of operators still envisage OTT players as being outright competitors in the future.



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Case study: Smart pricing gives Bangladesh a mobile data boost

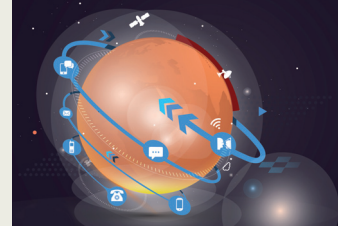
If VimpelCom can make it in Bangladesh then maybe it can make it anywhere, at least when it comes to boosting mobile data revenue in developing markets. The country's monthly average revenue per user (ARPU) is only US\$3.50, but through a mixture of newly-launched 3G networks and attractively-packaged data promotions, Banglalink, the operator's Bangladeshi subsidiary, is doing a roaring trade. During the three months ended June, Banglalink raked in sales of US\$142 million, up a healthy 9% from the same period last year. Bangladesh is one of VimpelCom's fastest-growing markets.

One lesson learned is that giving away mobile data is not necessarily a bad thing. To tempt customers onto its pre-paid 'Play' tariff, Banglalink offers WhatsApp for free. Banglalink calls it an "internet add-on". Once on the Play plan, customers are then offered various add-ons which they can buy. Taking into account limited budgets, these are charged for on a daily basis. An add-on could be a straightforward 5MB data pack, say, or perhaps a day's access to Facebook (linking offers to a service is much easier for customers to understand if they are not familiar with megabytes).

Since launching daily add-ons in September 2013, Banglalink says more than half of the data-pack offers on Play have been activated. Play customers also typically purchase seven times more daily data bundles in a month versus the average mobile data customer. By offering something for free (WhatsApp) customers seem more willing to pay extra once they see what mobile data can be used for.

More pricing innovation is on the way. Mobilink Pakistan, another VimpelCom subsidiary, has made it possible for users to make one-click data purchases while browsing the internet, such as one-hour Facebook or one-day internet. Banglalink and Mobilink, like many other VimpelCom subsidiaries, work closely with Opera Software to develop their offers. Opera Mini, the firm's mobile phone browser, provides data compression in the 60-90% range. It means VimpelCom can trim the cost of its mobile data giveaways and discounts.

VimpelCom has around 220 million customers—most of who are in emerging markets—but only 45 million are active data users. For Mikhail Gerchuk, VimpelCom's chief commercial officer, this represents an enormous digital growth opportunity, "but only if we get our pricing models right".



4

Untapped opportunities: from big data to M2M and IoT

There is little survey optimism among network operators that M2M, IoT and big data analytics will be big revenue drivers over the next five years (Figure 8). In some ways this is a surprise. After all, the telecoms industry is continually bombarded with forecasts of huge growth in these areas, particularly for M2M and IoT.

M2M involves connecting devices and transferring data, typically used for remote monitoring (a vending machine equipped with an M2M module or device, for example, might message the distributor when a particular item is running low). Cisco predicts there will be 7.3 billion M2M connections in 2018, an enormous leap from 2.3 billion in 2013. Ericsson reckons the number of M2M devices connected to mobile networks, from about 200 million in active use at the end of 2013, will shoot up by between three and four times by 2019.

IoT tends to be associated with M2M, and does

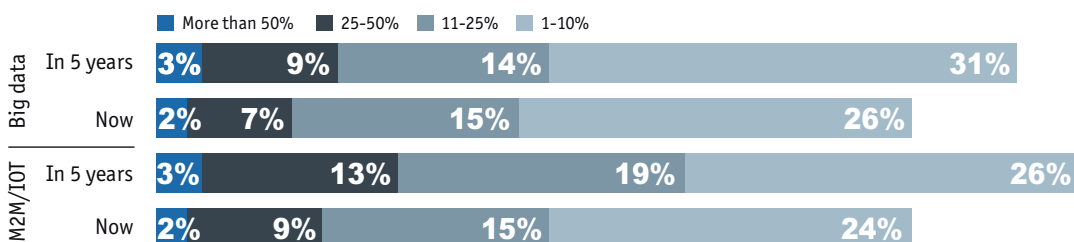
rely on it, but is much wider. Machina Research, an analyst firm, says M2M typically involves an application designed to solve a particular need (such as fleet management). IoT, however, replaces the 'stovepipe' M2M mentality with common application platforms where data from lots of different sources (things) can be combined and where developers can build new apps. 'Things' are anything that can be connected to the internet, ranging from a heart monitor implant to built-in sensors that alert drivers when tyre pressure is low. Even pets can be connected to the internet. Cisco and Ericsson believe around 50 billion devices will be online by 2020. Huawei, a Chinese supplier of telecoms equipment, predicts there will be 100 billion terminals interconnected on the web by 2025.

EIU survey respondents seem largely unmoved by these enormous growth projections. Nor, it seems, has Google's US\$3.2 billion cash buy of Nest, a start-up that makes smart thermostats

Figure 8

Little hope in new revenue streams

Percentage of revenues expected to come from new technologies
(% respondents)





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and smoke-alarm systems for houses and apartments, had much of an impact. Google's move in January might indicate the IoT market is ripe for growth.

One explanation for revenue pessimism is that M2M and IoT are relatively young markets with much to prove. Another possible reason is that the amount of data chewed up by M2M and IoT devices is typically very small. Cisco found that the global average monthly traffic per M2M module was 78MB in 2013. The average for the smartphone was 1GB (1,000MB) and the tablet 4GB.

Network operators can nonetheless add value beyond M2M and IoT data connectivity, not least by playing a central role in developing digital ecosystems. The survey's first movers also seem well aware of M2M and IoT worth. More than 40% of respondents from this group believe these two areas will be critically important over the next five years.

Network operators can add value

Mr Khan at AT&T sees expanding value by focusing not only on M2M data consumption but on offering business solutions. "Although total data usage in applications is going up, the price per MB is going down," he says. That clearly affects revenue growth prospects if operators are solely dependent on making money from transporting bits and bytes.

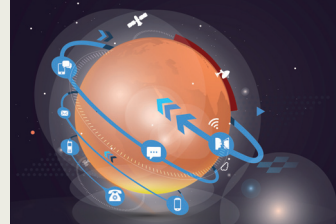
A good example of how operators can add value, adds Mr Khan, is AT&T's global SIM solution combined with M2X (AT&T's cloud-based and fully managed data storage service for network-connected M2M devices). SIM cards, otherwise known as subscriber identification modules, allow mobile network operators to recognise M2M devices that have SIM cards embedded within them. In this way, they can supply data

connectivity and charge accordingly. Without a global SIM product, then, an enterprise based in North America, if it had ambitions to track a fleet of vehicles worldwide with SIM-based devices, would need to strike individual operator agreements in each country. With the global SIM solution, AT&T does all the legwork on agreements and gives customers one bill (as well as a faster route to market). A single portal also allows global SIM users to make software upgrades to SIM-based M2M devices 'over-the-air' remotely—perhaps to adhere to individual country regulations—and to monitor vehicles.

"Enterprise customers can either build global solutions themselves or contract with third parties to build them using M2X and global SIM," says Mr Khan. "But we want to make it easier for customers to build solutions by coming to AT&T. That's why we're investing in connectivity options, security infrastructure, platforms, device options and applications for IoT solutions."

A similar platform approach has been adopted by AT&T's Digital Life, which includes the 'connected home' as part of its service portfolio. To make sure the connected home service got off to a solid start, AT&T initially selected only a handful of partners to work with. Now it's developing an open API programme that clears the way for innovation with a much wider range of partners (provided they pass a certification process).

Launched in April 2013, AT&T's connected home is now available throughout the US, offering home security and automation. Packages range between US\$30 and US\$50 per month on two-year contracts (plus an upfront cost for sensors). Smart security includes features such as door and window sensors, which can be accessed remotely via mobile devices or the PC, as well as text and email alerts. Automation services allow customers to open garage doors remotely, say, or adjust room temperatures and lighting.



As more features are added, it seems likely customers will be increasingly attracted to them and willing to pay extra—provided they have committed to making their homes smarter in the first place—which is an encouraging trend. AT&T reports that customers typically start with a home security package and then upgrade to home automation. Early next year a Digital Life Care service will become available to remotely monitor and help people. It will include motion sensors that can turn on lights when the person being monitored moves around, as well as alerting carers if the person doesn't get out of bed. Contact sensors will also be used on refrigerators so families can tell if an elderly relative has (or hasn't) opened the refrigerator during a certain time period. Water sensors can issue an alert if a tap is left on.

Still crunching the numbers on big data

Survey respondents tend to see big data analytics as useful but not critical. There's not much optimism it will drive significant revenue growth over the next five years (Figure 8). It might help explain why CEOs are the least enthusiastic about it compared with senior colleagues. Only 23% of CEOs think big data analytics will be a critical technology initiative over the next five years. Nearly a fifth think it won't be important at all during that time.

There are a number of reasons for this. Despite some promising success stories (see case study: Shopping in South Korea transformed by mobile and big data), it's a relatively new and untested area. It's also an enormous undertaking for telecom firms. If they do sense benefits, more pressing priorities—probably easier to deliver on with a promise of quicker returns—may well pull resources elsewhere. "One difficulty is integrating huge volumes of data from different sources," says VimpelCom's Mr Gerchuk. "It's a huge task and we've just started to think about it."

Mr Gerchuk can certainly see advantages of a well-oiled big data analytics machine. One common customer complaint, he says, is that services—either from VimpelCom or third parties—are not always relevant. But while Mr Gerchuk can see a need to be more sophisticated in the way customer data is handled, so as to enable greater service personalisation, he also points out that pressure to launch broad marketing campaigns that get services and offers noticed—and so capture first-mover advantage—can often divert operator energy away from developing more personalised products.

Mr Moyce of MTN, which has a presence in 21 countries across the Middle East and Africa, agrees big data analytics will have an important role to play. But that's mainly for the future, he says, casting doubt on its readiness to overhaul often antiquated business processes. Today, in order to understand why post-paid customers leave the firm's mobile network in South Africa, MTN's customer support staff ring them up. As Mr Moyce concedes, this strategy is far from ideal. Some lessons might be learned from talking to departing customers, but once they've decided to leave, the chances of changing their minds are slim. Ringing around also soaks up manpower. It would be much better if MTN could predict more accurately when a customer was thinking of leaving and then take pro-active measures to stop it. Wouldn't some clever algorithms help? Mr Moyce is not convinced. "There are so many algorithms related to customer behaviour, and we do pay attention to them, but they're not full proof," he says. And like Mr Gerchuk, he doesn't have the necessary in-house expertise or resources to develop in-house solutions.

In South Korea, however, e-commerce specialist SK Planet has gone some way to address this problem. Working closely with parent company SK Telecom, the largest mobile operator in South Korea, SK Planet has developed an algorithm that has improved fourfold the accuracy of



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predicting service cancellation. The unique churn forecasting model takes into account specific word searches and site visits. Anybody thinking of churning off the network has the habit it seems of doing searches for such things as “data plan” and visiting device comparison sites. SK Planet’s predictive algorithm takes this into account.

When telecoms firms do have plenty of resources and software skills to lavish on big data analytics (such as SK Planet), optimism about its usefulness tends to increase. One survey finding is that the larger the company, the more importance they generally attach to it. Bigger

companies will also generate more data, perhaps giving greater incentive to sift through for meaningful information.

Chakrapani Perangur, CIO at Indus Towers, is working with his IT team on a cloud-based ‘smart towers’ system, which, taking advantage of big data analytics, is designed to cut operational expenses. Based in India, Indus Towers is the largest company of its kind in the world, operating around 114,000 towers that house and power equipment of the country’s mobile operators.

Case study: Shopping in South Korea transformed by mobile and big data

Jinwoo So is a firm believer in superfast mobile and big data analytics. As chief executive of SK Planet, an e-commerce specialist based in South Korea, he’s seen at first-hand how combining the two can boost online transaction volumes and sales. “South Korea has become a hot bed of big data potential through mobile,” he says.

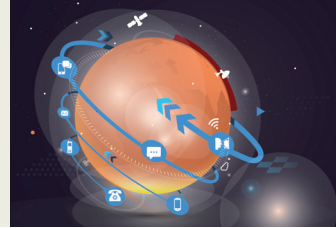
Three-quarters of smartphone users in the country are connected to LTE, a fourth-generation (4G) mobile network. It’s the highest LTE penetration in the world. SK Telecom, the largest mobile operator in the country—and SK Planet’s parent company—has seen customer data usage balloon more than 250 times since January 2010. And the more data customers consumed, says Mr So, the better chance there is of understanding them. “The personalisation of offers and recommendations based on big data analytics always gives us great returns,” he says.

SK Planet gathers information from a variety of sources. They include SK Planet’s OK Cashbag, the largest loyalty programme in the country with 37 million members (74% of the South Korean population) and 50,000 affiliated merchants. A mobile app for OK Cashbag was launched in 2010. Other information streams

come from its mobile payment app (12 million users) and 11st, a popular e-commerce website. By analysing consumer enquiries and purchases, and taking into account historical behaviour, software engineers at SK Planet came up with an algorithm which doubled the purchase conversion rate of the 11st ‘daily deal’.

Online recommendations are not the end-game for Mr So. He thinks it would be much more convenient for in-store shoppers if they could redeem their targeted coupons and promotions at retailers nearby rather than having to traipse long distances. Shopkeepers would also stand a better chance of drumming up more business.

With that in mind, SK Planet launched ‘Syrup’ in June. The new service uses satellite positioning technology to determine the location of ‘offline’ shoppers and tells them, via their mobile devices, where they can redeem their targeted coupons in the surrounding area. Syrup is part of SK Planet’s ‘Next Commerce’ initiative to entice more retailers to take advantage of big data analytics. The South Korean firm plans to roll out the concept into other markets and has already started testing the service in the US.



By installing sensors first on a few hundred towers, which monitor diesel consumption efficiency, Mr Perangur is aiming to establish a proof of concept for “hard cost savings”. The smart towers system structures the data received from sensors, processes it in the cloud, and then comes up with business-orientated action plans. Through identifying inefficiencies in energy consumption and doing ‘preventative maintenance’—sending out engineers to fix an impending problem—Mr Perangur believes even a 2-3% reduction in diesel consumption—such is the size of the company’s fuel bill— would justify the business case for rolling out smart towers on a larger scale.

Bruce Churchill, chief executive of the Latin American operations of DirecTV, a satellite TV provider, is looking at ways of harvesting viewing-habit information gleaned from internet-connected digital video recorders in order to place advertisements more targeted at individual interest. Drumming up advertising dollars, says Mr Churchill, depends more on purchasing transactions than the old CPM (cost per one thousand impressions) metric traditionally used in online advertising. But it’s still a relatively new tack. “I believe it’s going to be important but we haven’t come far enough down the learning curve to demonstrate yet that we’re going to make lots more money on it,” says Mr Churchill.

Trust me, I’m a telco

Gaining greater acceptance for big data analytics, as well as M2M and IoT, will need more success

stories and the word spread about them.

Consumer concerns about sharing personal data need also addressed. Jinwoo So, SK Planet’s chief executive, is convinced if customers can see clear value in sharing information they will be more inclined to do so. But operators, he adds, have got to prove themselves as trusted data guardians. “Competition is not only in developing and innovation on services, but earning trust in managing data,” he told an audience at Mobile World Congress, an industry jamboree, in February.

It’s a common gripe among network operators that global internet players, such as Google and Facebook, are not as heavily regulated when it comes to making use of customer data. Telcos, fearing a regulatory backlash if they are seen to be using personal information without permission, tend to be more conservative than internet players in exploiting it for commercial purposes.

Mr Navarro, Telefonica’s chief commercial digital officer, believes this conservatism—and the fact telcos are not as heavily reliant on advertising revenues in the same way as internet companies are—places them in a strong position to win over customer trust. “We can be very transparent to customers about how we process and store data because we don’t need to sell it to survive as a company,” he says. “We may not be the most loved companies in the world, but we can be trusted.”



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5 The promise of network virtualisation

The telecoms industry loves acronyms, but two in particular promise a radical transformation in network design and the way operators do business: SDN and NFV.

Both technologies take advantage of virtualisation techniques, commonly used in data centres to handle cloud computing. With virtualisation, applications are not tied to a specific hardware or server. Instead, servers are partitioned to support multiple applications, which helps prevent hardware from being underused. Software-based ‘virtual machines’ enable the application to function as if it were running on dedicated hardware. With NFV and SDN, however, virtualisation can move from the data centre and into the network.

Dr Weldon, president of Bell Laboratories, is adamant that benefits will not solely lie in more efficient use of hardware but in generating new revenue streams, particularly from the enterprise. “Telecom chief executives are afraid

of losing enterprise revenue, but we show them how to increase it by adding value on top of existing business models,” says Dr Weldon.

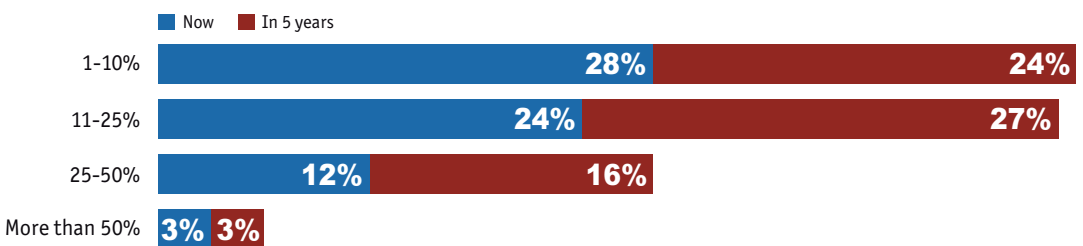
The words of the Bell Labs president should prick up industry ears. Operator chief executives have long been frustrated by a lack of enterprise growth and there’s little survey optimism that value-added and managed services will see much of a revenue bounce over the next five years (Figure 9).

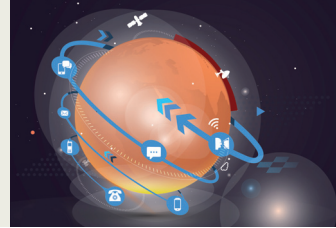
“There isn’t a fantastic growth story,” admits Peter Glock, solution director for secure infrastructure at Orange Business Services (OBS). Targeting multinational corporations, OBS—like other business service providers—is up against purchasing departments that have become adept at driving prices down when contracts come up for renewal. Mr Glock says one of his biggest challenges is making sure costs fall faster than revenues so he can maintain margins on existing services.

Figure 9

Little hope in value added services

Percentage of revenues expected to come from value-added and managed services (% respondents)





Why SDN and NFV matter

Dr Weldon's reasoning for growth is based on the greater flexibility that SDN and NFV bring. Network upgrades today typically involve overlaying the latest generation of specialised hardware on legacy equipment. The new hardware technologies come with a lower cost of delivering each data bit, but upgrades of this sort typically require a lot of heavy lifting—which can be time-consuming and expensive—to make sure existing services still work. Hardware-based appliances (in which applications and hardware are inextricably linked to each other) can also quickly reach end-of-life, requiring another upgrade cycle with maybe little revenue benefit at the end of it.

By using SDN and NFV architecture, upgrading and configuring the network promises to be much quicker and cheaper. Industry-standard servers are deployed for the software and control functions—which are invariably cheaper than proprietary equipment—and the software that enables services is not tied to one type of hardware from one vendor. New applications and services can then be quickly launched in a standard way without having to configure each 'box' on the network. This is the essence of NFV. Steering traffic around the network is then done by SDN, which connects these cloud-based software servers and controls the underlying network hardware. Suppliers call it the programmable network.

Through NFV, network functions are implemented on virtual machines. First movers, such as Telefonica and AT&T, are looking to virtualise various functions that are central to their operations. They include IP multimedia subsystem (IMS) and evolved packet core (EPC). IMS supports a range of 'carrier-grade' communication services over IP networks (more cost efficient than old-style networks) while EPC manages data traffic over LTE.

With these building blocks in place, the Bell Labs president sees two areas of growth. First, the delivery and management of enterprise virtual private networks (VPNs) can be dramatically improved. VPNs are commonly used by enterprises to share the physical service provider network (which reduces cost) but are made to look 'private' by separating traffic securely. Provisioning them, though, can be a clunky process since it's heavily dependent on deploying and managing customer premise equipment (CPE). But if VPNs could be software-defined, says Dr Weldon, service providers would be able to reach more enterprises a lot easier, as well as extend VPNs down to smaller branches and even the home office without having to hand-crank lots of network components. More VPNs, with the added advantage of being more scalable, mean higher sales. Enterprises could also self-provision services, using an API plugged into the operator's SDN network, which would allow them to adapt quickly to changing business needs.

The next and more interesting step, adds Dr Weldon, is the selling of virtual communication and valued-added services on top of software-defined VPNs that are designed specifically for the customer. Through the use of virtual IMS, for example, operators could offer a hosted private branch exchange service tailored to match the needs of companies, even very small ones, without spiralling costs wrecking the business case. And as enterprises increasingly look to M2M solutions to track their assets, the maturing of LTE—combined with the advent of virtual EPCs—could allow operators to offer bespoke solutions here as well. A dedicated virtual EPC, perhaps set up in hours, could track the assets of a single company. "It would be odd if operators couldn't monetise things like this," asserts Dr Weldon.

Why many chief executives don't see the urgency

For all of Dr Weldon's enthusiasm, the majority



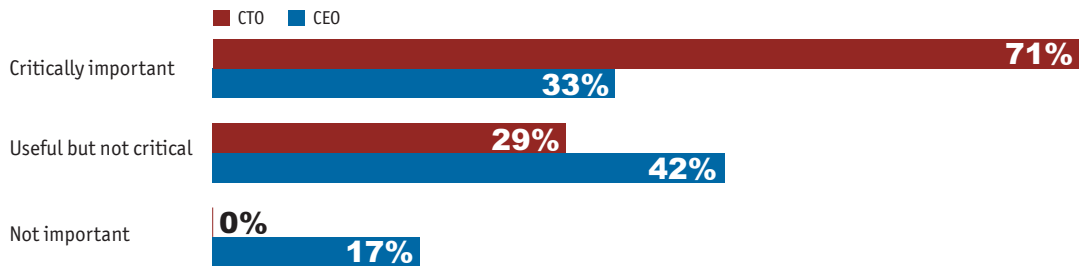
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Figure 10

Sceptical at the top

Importance of SDN and NFV in the next 5 years
(% respondents)



of chief executives canvassed in the EIU survey remain sceptical. Only a third think SDN or NFV would be a critical technology initiative over the next five years. CTOs, on the other hand, are enthusiastic. More than 70% of this group see SDN and NFV as being critical (Figure 10).

The Bell Labs president thinks one reason why chief executives don't get enthused about SDN and NFV is because CTOs and CIOs are too preoccupied with the promised cost-efficiencies. "It's incredibly rare you get a CEO excited without the promise of both revenue growth and cost savings," he says. (Dr Weldon claims CEOs have something close to an epiphany when they're told the growth story on value-added services.)

Another reason for scepticism is uncertainty about the wider impact that SDN and NFV might have. Neal Milsom, CFO at EE, the largest mobile operator in the UK, says his concerns go deeper than the immediate business case surrounding revenues and cost savings. "What does the impact of virtualisation have on network resilience, security and quality of service?" he asks. "These things are not yet known and they are our priority. We have to tick all the boxes before we endeavour on it."

Mr Glock of Orange Business Services (OBS) questions the readiness of SDN to move beyond the data centre and into the network. "If you're building a new data centre the SDN itself has

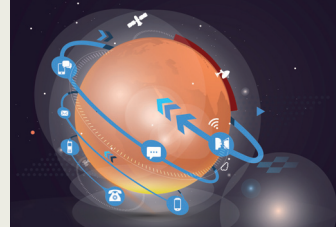
to be everywhere for it to be useful," he says. "Likewise with the network the SDN has to be everywhere for it to be useful, so you're not going to just swap out the existing network infrastructure for an SDN tomorrow, even if the technology was mature."

Some big network operators, however, are taking the virtualisation plunge, particularly on NFV. One of the most ambitious is Telefonica, which introduced virtualised functions this year. The operator has set a target of having about 30% of its new platforms in a virtualised format by 2016.

A new operator-supplier relationship

Quicker service set-up times are not the only motives for shaking up the network. Telefonica, like other first-movers on network virtualisation, insist on an open standards platform. If hardware and software from different vendors is interoperable, software suppliers can be changed easily. This way they are under more pressure to offer better deals.

In today's environment, a supplier's software tends to be tied to their hardware. Operators looking to software-upgrade equipment are then stuck with having to ask their existing hardware suppliers to do it. A true digital transformation will see the removal of customer lock-ins.



6

Beware of digital transformation banana skins

Marketing and sales in many organisations, on survey evidence, feel ill-equipped to carry out their roles. When asked to identify main barriers in making digital progress in the eyes of customers, 42% of this group flagged up a shortage in technical and sales skills (Figure 11). Of all job functions canvassed in the EIU survey—which cover IT, finance, general management and strategic roles—marketing and sales are the most uncomfortable when it comes to skill levels. Whereas security concerns keep IT awake at night. Feelings of unease no doubt reflect concern about their own readiness to handle new digital products and services.

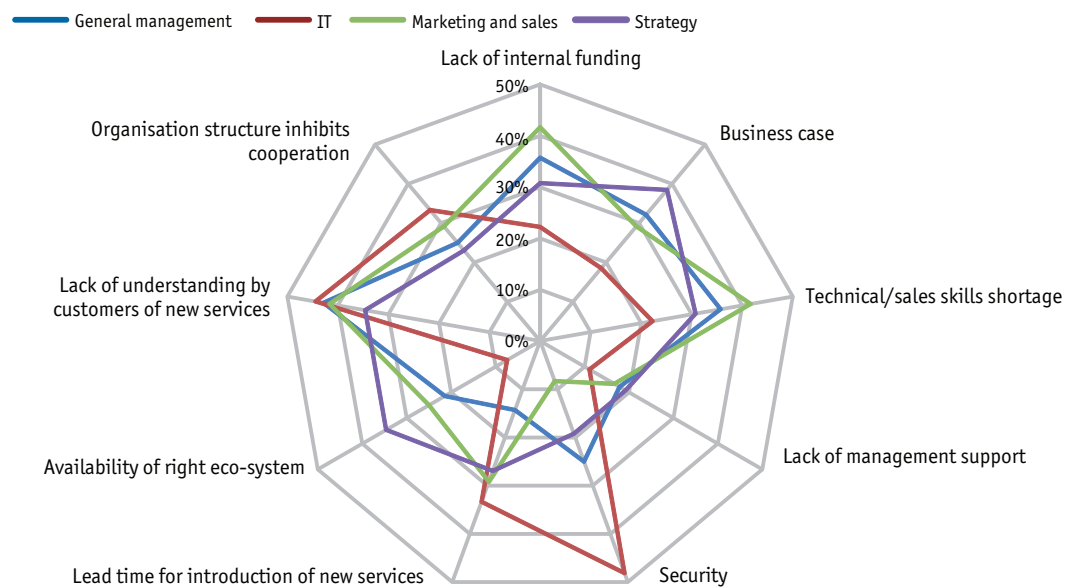
This should trouble senior management. Customer-facing staff—those on the front line—will need to engage knowledgeably with customers if they are to close deals. Successful digital transformation is not solely about adopting latest technologies but revamping sales and go-to-market channels.

Yet many C-level executives, particularly CEOs and CTOs, seem insensitive to front-line fears. Only 19% of CEO survey respondents thought sales forces' inability to articulate value propositions of new products was a big issue, while a meagre 14% of CTOs thought this was the case. Around

Figure 11

Held back by knowledge and money

What's stopping companies from benefiting from digital transformation initiatives?
(% respondents)





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a third of marketing and sales, however, are prepared to admit weakness in explaining the worth of new products. CFOs, arguably more sensitive to revenue bottlenecks than senior colleagues, appear to have greater awareness that all might not be well with customer-facing staff. Over half of this group think inability to pitch the value of digital services is a barrier to progress.

The smart CEO, however, will listen to the front line. By doing so, some problems might be identified (and fixed) pretty quickly. One of the first things Marcelo Claure did as new chief executive at Sprint, the third-largest mobile operator in the US (which has struggled to retain customers), was to spend time with the company's dealers and sales teams. He quickly found they were having problems selling data plans because they were overly complicated and expensive compared with competitors, so he simplified them and made them cheaper. It's easier to articulate value propositions when products are attractive and simple to understand, which in turn makes for a happier sales force.

There seems plenty of industry scope to simplify. When asked what the primary barriers are for customers to benefit from digital transformation products, over 60% of survey respondents from marketing and sales flagged up inability or lack of skills to use the latest information and communications technology (ICT). While customers' ICT skills can no doubt be improved, easier-to-use services means they don't have to be so tech savvy.

Give them the tools

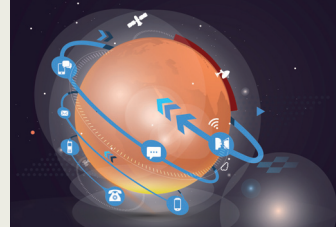
Digital tools can help make things easier. One problem faced by MTN in South Africa was the fast pace of new smartphones coming onto market, making it difficult for the operator's customer support staff to keep up to speed with all the different models. When customers rang the call

centre with questions about their latest gadget, it was often difficult to give satisfactory answers. Around a fifth of calls ended up with staff having to refer customers to device manufacturers—an annoying inconvenience. "You can't get all the staff trained on every single device or every application," says Mr Moyce, MTN's chief customer experience management officer.

To help get round the problem, MTN gave customer support staff—dealing specifically with smartphone and data enquiries—a 'smartphone tool'. When smartphone owners now ring up with questions about their device, agents can see on their screen everything they need to know about the model. "After three to four months we saw fantastic gains," says Mr Moyce. "There was a dramatic reduction in call handling times and less strain on staff resources by getting through the issue at the first time of asking. It also gave the front line much more confidence."

Mr Perangur of Indus Towers, has developed a mobile app with his IT team that better organises field technicians. It also helps them do tasks more efficiently. "If you ask me what I'm most proud of, this is it," he says.

To maintain the firm's some 114,000 towers, which house and power network equipment of the country's mobile operators, Indus has more than 30,000 field staff. The mobile app, which links to Indus' back-end IT systems in real time, gives field engineers a history of tower maintenance and information on which parts have been changed and who has changed them (making technicians more accountable). It also maps procedures for technicians to follow. And with the assistance of tracking and location technologies, the most suitable technician—in terms of skill and location—can be sent to fix the problem. "At a minimum, the mobile app can increase productivity time by 20-30%," says Mr Perangur. "There's a very clear business case."



Social media as customer support channel

Clever use of digital channels can help operators keep better in touch with customers. By monitoring social media sites for comments, questions or complaints, for example, interventions can be made quicker. Addressing problems in this way can also prevent negative social media comment developing. Creating customer forums, monitored by the company, might also take some of the load off customer-facing staff. Customer questions can be answered by other customers.

By using some of these techniques at its Wind subsidiary in Italy, VimpelCom found average customer response time had been cut dramatically from ten hours to around 13 minutes within the space of 6-7 months.⁵

Morale booster

Empowering front-line staff is good for morale, which can help boost sales and increase customer retention. From survey responses, however, there's a detectable downbeat mood within the marketing and sales camp. It might stem from a mixture of feeling inadequately prepared and a sense that some services are too complex to sell.

Remarkably few of them, just 16%, think improved ability to reach new customers is a main business benefit of digital transformation. Only around a quarter see enhanced customer experience as a big plus. Marketing and sales are more pessimistic about these areas than those occupying general management roles. Wise managers will make it a priority that front-line staff don't feel disenfranchised by digital transformation.

Watch your back

Survey respondents have seen significant disruptions in networks, apps, content and

devices over the last five years—and can anticipate continued disruption in these areas in the next five—but, on the whole, they are not seeing the same pace of change in back-office IT and operations and business support systems (OSS/BSS). True, the latest snazzy device or network upgrade will always be more immediately visible than changes in back-office workings, but even among CIOs and IT workers there's no widespread recognition of significant change where they work.

Nearly 40% of survey respondents within the IT function say digital transformation has had minimal or no impact on the back office within the last five years. A similar proportion says the same about OSS/BSS. Even among CIOs and IT directors, which might be expected to be more effusive, there are many who feel progress is stagnating. Over half of this management group see little or no change in OSS/BSS over the last five years; just below 50% think the same about back-office IT development.

This is a red flag for top management. If billing systems are not developing as they might, it calls into question their ability to cope with dramatically increasing volumes of data traffic—all of which needs to be billed for correctly to avoid revenue leaks. An undeveloped OSS layer also undermines ambitions surrounding customer experience management (CEM).

Two-thirds of C-level executive respondents think customer experience and engagement will be a critical technology initiative over the next five years, but that requires a sophisticated OSS layer. OSS, when working well, can identify reasons behind customer experience issues—flagging up network faults—which enable service operation centres to do something about it and reduce repair times. Customer-facing staff, armed with knowledge about causes of difficulty, can give a better-informed explanation of problems, leading to shorter call resolution times.

⁵ Jo Lunder, VimpelCom CEO, speaking at Mobile World Congress (February 2014)



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7

The road ahead

There is no telling what new services and applications might prove popular in five years' time. WhatsApp, which Facebook bought for US\$22 billion, went from obscurity to more than 450 million active monthly users in little more than four years.

Despite the absence of a crystal ball, there are a number of things network operators can do to position better for growth. The most obvious—if operators are serious about remaining relevant to consumers and businesses—is to prepare networks for ferocious data growth. Cisco anticipates annual global IP traffic, by 2018, will reach 1.6 zettabytes—the equivalent of everybody on the planet downloading ultra-HD video for one day—which is thirteen times the amount of all IP traffic generated in 2008.

Growth will be driven by evermore powerful smartphones and tablets—and indeed faster networks—making it easier to download HD video and access data-hungry apps. Internet-connected sensors in the home and the car, as well as 'wearable technology'—such as smart watches and health and fitness gadgets—are predicted by technology firm Cisco to number 50 billion by the end of the decade⁶.

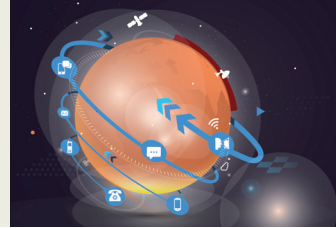
Gearing up the network, so it can cope with data deluge without breaking the business case for investment, will rely on continued innovation from equipment suppliers. It's a challenge Dr Weldon, president of Bell Labs, recognises.

"There'll be continued innovation on devices, which will be abundant and cheap enough to buy," he says. "The constraint then becomes how to connect those devices to the cloud—to store and process all the data they generate—which puts focus on network innovation." Given the network is constrained by laws of physics—a finite amount of wireless frequencies available, and signals becoming weaker over longer distances—Dr Weldon thinks the darlings of the investment community over the next decade will be those that can solve those physical constraints which exist in the networking layer.

Dr Weldon wants to help solve problems by "opening the doors to external innovation". The Bell Labs Prize, for example, is a competition for innovators, based anywhere in the world, to come up with "game-changing proposals" in ICT technologies. A collaborative attitude is one that forward-thinking operators can adopt in developing new digital services. That might mean competitions to tap into outside innovation, although giving financial backing to promising start-ups can be another useful tack. Wayra, Telefonica's start-up incubator, has invested in more than 300 businesses.

Building digital ecosystems—and providing centres where partners can come together to exchange ideas and solve problems—is another way to better position for growth. AT&T set up the first dedicated 'connected car' centre in the US—the AT&T Drive Studio—bringing together

⁶ Cisco: <http://share.cisco.com/internet-of-things.html>



equipment suppliers (including Ericsson) and systems integrator Accenture to work directly with car manufacturers, such as GM, Tesla and Audi. In this way, AT&T can play a central role in product deployment rather than being marginalised in what looks like a promising area. Machina Research, an analyst firm, predicts 90% of vehicles will have built-in connectivity by 2020.

By taking advantage of cloud platforms, operators can also collaborate with each other in places where they don't directly compete. Etisalat, an operator in the Middle East, has signed a deal with Telefoncia that allows it to take advantage of the Spanish giant's cybersecurity solutions and beef up its portfolio of managed security services in the UAE.

As welcome as these advances are in technology and attitudes toward partnerships, there is still some way to go on both fronts. The EIU survey reveals there aren't many respondents who view greater cooperation with app developers and content providers as a big transformative industry initiative today, while little more than

10% of C-level respondents think opportunities for cross-sector partnerships is a main benefit of digital transformation. Another worry is that only 8% of CEO respondents think their organisational structures don't encourage cooperation and so pose a large barrier to progress. This seems complacent. More than a fifth of survey respondents think the way firms are structured is indeed alarmingly weak when it comes to facilitating partnerships.

Networks have much scope for improvement too with the advent of virtualisation, promising to unleash new revenue streams and greater cost efficiencies. "The introduction of new IT technologies into telecoms networks is the biggest disruption we have ever seen," says Mr Ewaldsson, Ericsson CTO. This research has shown that while technological disruption brings the hope of new revenue streams, anxiety about the right strategy to take and suspicion about growth from value-added services prevails at the top of telecoms firms.

Digital transformation, despite progress made by some telecoms firms, is only just beginning.



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