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We need to talk about Capex
Benchmarking best practice in telecom capital allocation

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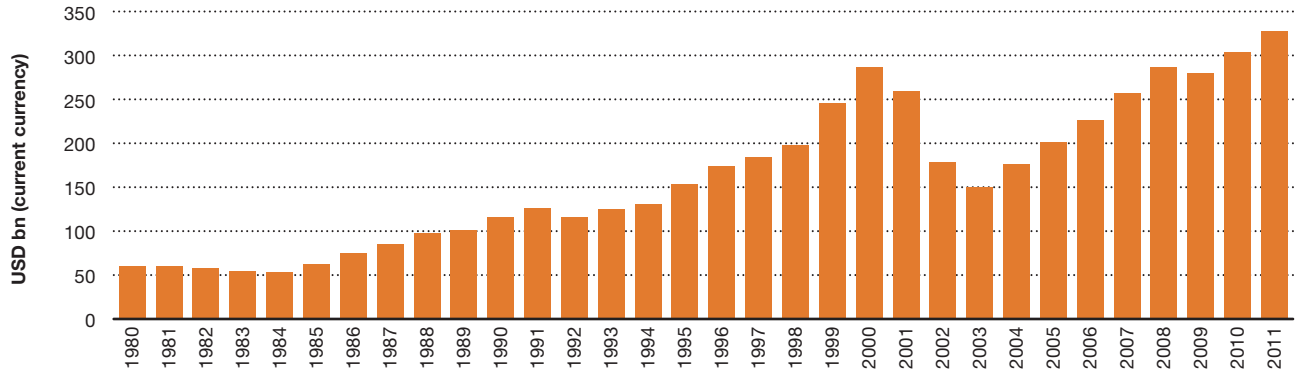
The scale of the capex challenge

There's an old saying that says 'what goes up must come down'—but this doesn't seem to apply to capital expenditure (capex) in the telecoms industry. As Figure 1 shows, global capex levels have soared from just over US$50 billion to about US$325 billion in real terms over the past 30 years.[1] They dipped briefly in the early part of each decade and at the height of the financial crisis in 2009, before resuming their relentless rise. Indeed, total capex levels have only once fallen by more than 5% since 1945.

Figure 1: Global capex levels in the telecoms industry



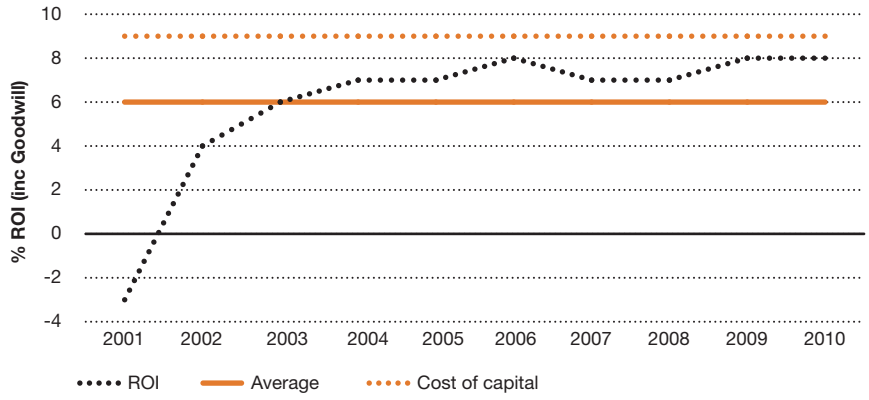
Excludes Licences, Spectrum and R&D
Source: OECD, PwC analysis

1. All subsequent references are to US dollars.

Yet this massive investment isn't producing the returns the industry requires. We studied the financial performance of 78 fixed-line, mobile and cable telecoms operators with a collective annual capex of some $200 billion, nearly two-thirds of the industry's total spend last year. (For details of our methodology, see Appendix 1.) Our research reveals that, in the past decade, the average long-term return on investment (ROI) has been just 6%—three percentage points less than the cost of the capital itself (see Figure 2).

In short, the telecoms industry is at an inflexion point. It's spending lots of money on new infrastructure, but it's not optimising returns. Most telecoms executives admit as much; they say the process of allocating and managing capital is both deeply flawed and deeply frustrating. Yet very few companies did anything to tackle the problem during the good times. It's only now, as the markets mature and the quick wins on operating expenditure dry up, that a small but growing number of operators are trying to 'crack the capex code'.

Figure 2: Average returns on investment

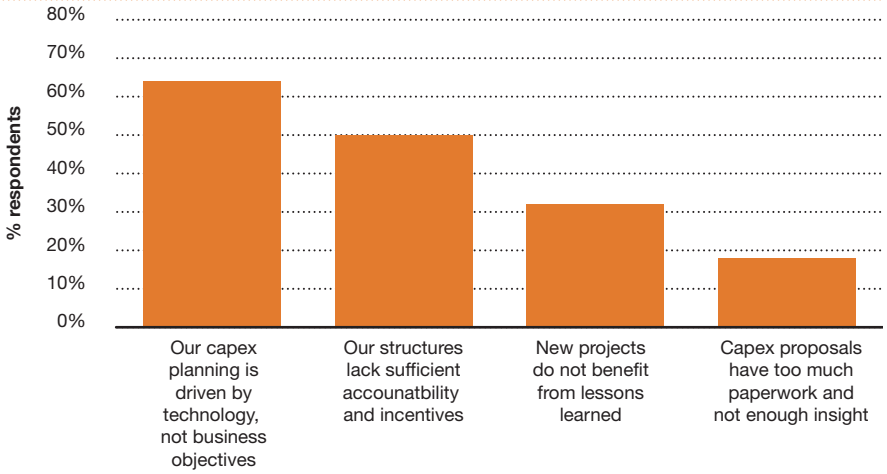


Source: Capital IQ, PwC analysis

Why telecom operators allocate capital inefficiently

We interviewed 22 telecoms executives from a representative cross-section of companies and regions to get a better picture of what lies behind the industry's financial performance. Their comments suggest that there are four key reasons for the inefficient allocation of capital (see Figure 3).

Figure 3: The root causes of inefficiency in allocating capital



Source: PwC
Note: Multiple responses allowed

"In our company there's still a bit of the 'build and customers will come' mentality, but those days are gone. If we build the wrong thing in the wrong place or at the wrong price, the customers won't follow. So, rather than letting technology drive our capex decisions, we need to adopt a more commercial approach."

— Executive at fixed-line incumbent

Nearly two-thirds say that capex is driven by technology, not business objectives

The single biggest factor is use of the wrong investment criteria. Nearly two-thirds of the executives we talked with told us that their capex planning is driven by technological considerations rather than business objectives.

Take the case of one very well regarded West European incumbent. Its strategy, business and market planning are all high-quality, forward-looking and customer-centric. It also produces robust forecasts of customer numbers, revenues and EBIDTA.

That's all as it should be. But then employees in the networks and IT functions look at the performance statistics, talk to vendors and estimate the capex implications of the business plan. Inevitably, this produces the 'wrong' answer, with cash and EBIDTA forecasts outside guidance, and so the bickering begins. The end result, after numerous iterations, is a 'political' compromise that inspires little confidence and cements divisional silos through a culture of confrontation.

There's much to regret about such a process, but perhaps the most insidious effect is that the people in the networks and IT functions are left with a capex budget they may not believe in and can't fully control. Many of the key capex levers—subscriber numbers, traffic levels and usage patterns—lie in the hands of other teams. Yet, regardless of how those upstream levers are pulled, the networks must support the traffic that comes through.

Half believe there are insufficient levels of accountability for capex

Technology-driven capex planning is by no means the only problem, though. Half the telecoms executives we spoke to said there's too little accountability for capex within their organisations. In some instances, assessment of the results is confined to large projects. In others, capex is attributed to specific business units and the ROI is measured, but the practice isn't widely enforced. And, in the very worst cases, ROI is only recorded at the corporate level (see Figure 4).

This lack of accountability is often a consequence of the technology-led capex approach we've already described. Most of the telecoms operators in our survey distinguish between 'business-as-usual' capex (sometimes called 'baseline' or 'production' capex) and 'project' capex (also known as 'innovation' or 'growth' capex). But though project capex typically represents just 20-30% of an operator's total capex, it receives 80-90% of the capex committee's attention.

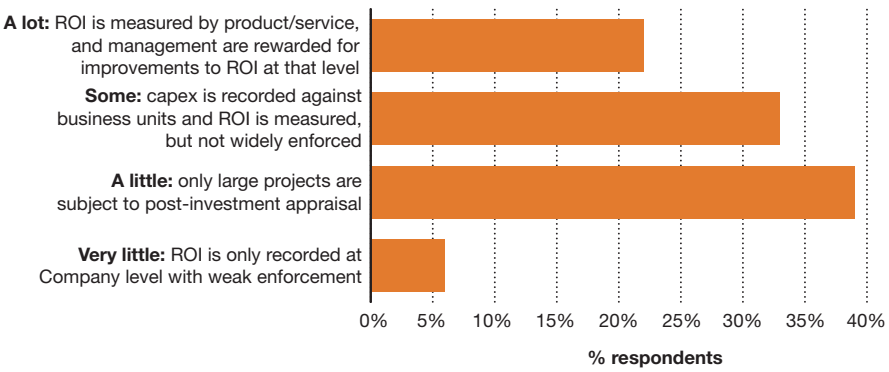
In the vast majority of companies, all applications for project capex must be supported by clear evidence of how a proposed project ties in with the company's strategy and business priorities. And the capex committee will happily send weak proposals back for additional work or reject them altogether.

> *"There's no accountability for results in the business. We're never able to measure the real return on our investments. It's too difficult when so many different factors are involved, and the results wouldn't be credible, so it's seen as a waste of time. With cutting-edge projects, we're also under so much pressure to get to market ahead of our competitors that we don't run the projects properly from a capex perspective."*
>
> — Executive at tier 1 quad-play

Business-as-usual capex, by contrast, is treated in a far less sophisticated way. The networks generally submit requests for RAN consolidation, core upgrades, additional carriers or whatever else they need to support an increase in traffic. But since the link between traffic and value has been broken at the planning stage, these capex proposals are effectively 'technical costing' papers based on the assumption that the additional traffic will be profitable.

The finance function or capex committee might ask a network to investigate different vendors, challenge the timing of the investment or even query the need for it. But it rarely asks—let alone gets answers to—the obvious questions about baseline capex. Is the extra traffic part of a profitable service? Is it being generated by profitable customers? Will it produce a positive ROI?

Figure 4: Weak levels of accountability for ROI



Source: PwC

Of course most of the respondents in our survey recognise that not all traffic is equal. Yet, for many, this remains an intellectual fine point. The leading operators behave quite differently; they analyse their business-as-usual capex very carefully to make sure that it will create real value.

Many respondents are also keenly aware that where accountability for capex does exist, it often resides in the wrong place. "Capex cases should be presented by marketing and sales people, not technology and engineering people," an executive at one incumbent operator in the Middle East and Africa (MEA) noted. Moreover, even when the right people are involved, they're often given the wrong incentives. "Marketing and product management aren't rewarded on capex but on revenue and EBITDA," an executive at a quad-play operator in the Americas explained.

Taken together, these two observations highlight just how embedded the obstacles to improving returns in the telecoms industry are. In most companies, a network has to solicit support for its capex proposals from the product management, sales or marketing function. But it's easy to get such support from a team that's rewarded for increasing subscriber numbers, revenues and EBITDA. The resulting coalition—between a network that wants to maximise its operational performance and a marketing function that wants to maximise revenues—is therefore biased in favour of the proposal, whether or not it makes commercial sense. Worse still, responsibility for the ROI is diffused. Indeed, it's often passed to the finance function, which has even less control than the other parties.

> *"The biggest barrier is the sense of entitlement in those asking for capex each year. They have the attitude: 'I had the money last year, so I must get it this year.' It's a big game for a lot of the groups. The people that ask for the most and shout the loudest get the most. That's just not right."*
>
> — Executive at a mobile operator

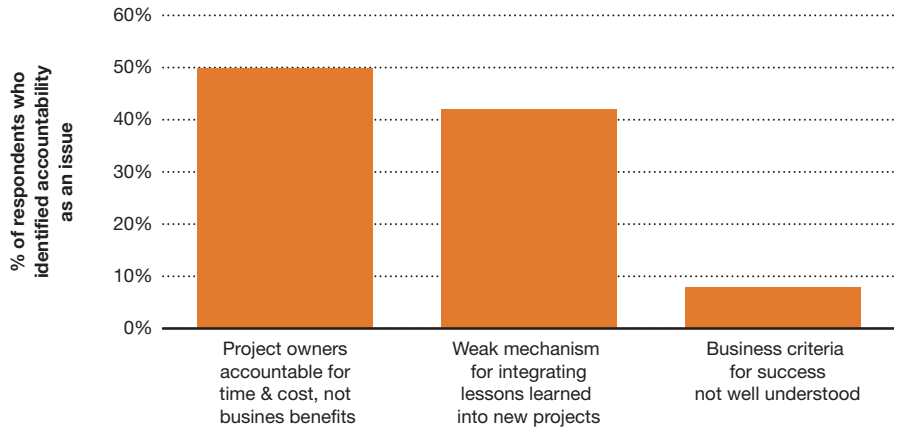
"No one's happy with this situation but it's difficult to fix," an executive from a global mobile telecoms company remarked. "There's a lack of planning between the business teams and the IT delivery team. We don't take sufficient account of unknowns. Commissioning departments typically understate the scope of what they want to do [because they don't know how to specify correctly] and then there are always cost overruns, which means the numbers always look bad."

Nearly one-third say the business doesn't learn its lessons

Failure to focus on the right investment criteria and make the right people accountable is compounded by failure to learn from the past. A third of the executives we surveyed said their companies haven't learned from experience. That's sometimes because the definition of success is too narrow; a project is deemed successful if it comes in on time and to budget, whereas the real issue is whether it's delivered the benefits that were envisaged. Many telecoms companies also have weak mechanisms for integrating the lessons from earlier projects into new ones, and some don't have a clear grasp of the goals they want to achieve (see Figure 5).

One classic bugbear—especially for the finance function—is the inability to perform proper post-investment appraisals. Without such appraisals, it's very difficult to look back and learn. But inadequate assessment of prior spending is only a symptom of the disease, not the disease itself. That lies further upstream. When capex planning takes place in parallel with budgeting, networks are responsible for budgets they can't completely control, business-as-usual capex isn't subject to the normal checks and accountability is split between different divisions, it's impossible to disentangle the benefits of any one investment.

Figure 5: Why telecoms operators don't learn from the past



Source: PwC

How can these problems be resolved? There are two questions to ask during the capex planning process that get to the heart of the issue. First, should a particular investment be made at all? The majority of operators have a long tail of marginally profitable—or downright unprofitable—products, networks, customers, channels and segments. A request for additional investment in such assets is an obvious point at which to consider terminating, migrating or consolidating them. Yet telecoms operators are notoriously slow to prune their product portfolios and rarely use investment cases as an opportunity to review the basic assumptions underpinning the different parts of their business.

The most common reason for skipping this step is simply lack of good information; without reliable facts, capex proposals and challenges become politicised, arbitrary and inefficient. In our experience, the antidote to such flawed decision making is the creation of a robust fact base regarding the (post-capital) economic profitability of products, network, customers, channels and segments. That delivers two advantages: not only is capital diverted away from low-growth, marginally profitable activities, but the business case for network and system convergence is also strengthened.

The second question to ask is: can existing assets be reused or recycled? In other words, can the investment be deferred? One of the most common claims used to support an investment case is that the investment is necessary because the network is congested. This is often correct; capacity upgrades are a fact of life for all operators. But it's also true that operators regularly have hidden capacity masked by incomplete, inaccurate or unconnected databases.

Here's an example of what we mean. A leading European network operator had spent more than $2.5 billion on capex since it was launched. But, in its drive for growth, it wasn't particularly concerned about controlling its costs or ensuring the financial accountability of the project managers responsible for buying network assets. As a result, the information it possessed about its network inventory and infrastructure was very poor. So the company embarked on a major programme to improve the consistency of the data and harmonise the processes the finance and operations divisions used, with common reporting and data control frameworks. This exercise prevented it from erroneously writing off 5% of its accumulated network asset base and helped it cut its capex by more than $25 million the following year, as a result of identifying stranded assets, capturing unbilled services and preventing duplicate out-payments.

"Scrutiny at the back end is too late. People come and ask for forgiveness, when things have gone wrong. What we want is for them to get permission first. That way is better. We need everyone to understand that this isn't 'our' money!"

— Executive at alternative operator

Nearly one-fifth admit that capex proposals don't have enough insight

The last key reason why so many telecoms companies allocate capital inefficiently is because they confuse information with insight. All operators recognise the importance of capital allocation and employ teams of analysts to evaluate the capital projects they're considering. Many executives find the reams of paper these teams produce reassuring because they think it means every angle has been covered. But generating paperwork can be a displacement activity to avoid addressing the difficult questions: is this investment simply propping up an unprofitable segment? What's the evidence for our assumptions? What options haven't we explored?

There's a related issue here, to do with the decision-making process itself. Most operators currently rely on the sort of approach that's used in courts, with cross-examination of the advocates culminating in a judgement. But rather than thinking of capex planning as a process of recommendation and qualification to find the 'answer', it's better to think of capital projects as milestones in the strategy-making journey and thus as opportunities to explore the trade-offs inherent in every allocation of resource.

Consider how one European operator handled its next-generation access (NGA) plan. Its competitors had already upgraded their networks and spoken in public of the benefits. Primary research confirmed that consumers wanted faster services and case studies from other markets offered a precedent for the likely uptake. The network operations division could point to network congestion, the product management division could point to competitive pressure and the business planning division could see the strategic advantages. There was just one problem: the projected ROI was very poor.

When we analysed the investment case, though, we discovered a methodological flaw. The various parts of the business were all keen to get the investment approved, so they made optimistic assumptions about the speed of uptake—which, in turn, inflated their forecasts about the additional capacity that would be required and the incremental ARPU that would be generated. But rather than destroying the investment case, as its advocates had expected, this information opened up a new option: namely, to stage the rollout. Although deferring the second stage of investment would increase the total bill, it would also add five percentage points to the internal rate of return (IRR), reduce the operational risk associated with a 'big bang' launch and provide better financial control by linking the second stage of expenditure to the success of the first. Given these findings, the investment committee was happy to go ahead with a phased approach.

This example illustrates how the search for a single answer can backfire. It encourages the advocates of an investment case to close in prematurely on one way forward and then defend that way at any cost. Conversely, a company that keeps its options open and analyses the key underlying assumptions is better able to generate the insights it needs. The advocates themselves are also spared from having to take responsibility for assumptions that can't be proved and get the opportunity to raise strategic issues in the appropriate forum.

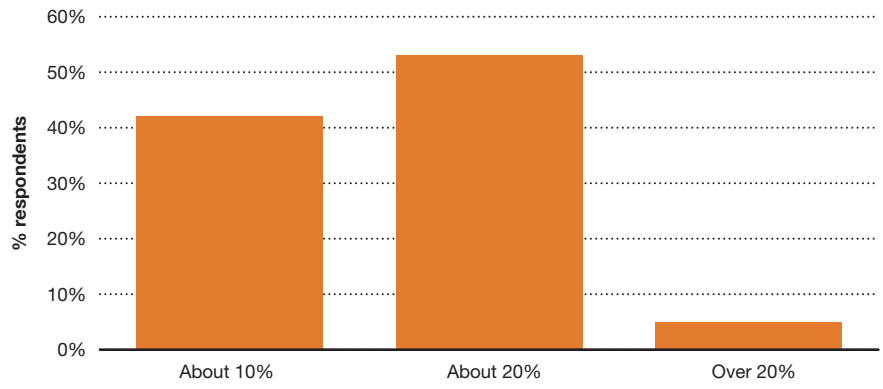
Billions of dollars misallocated

Poor decision making can cost– and, in an industry that invests as much as telecoms, the total cost can be very large indeed. More than half the respondents in our survey estimate that about 20% of their company's capex is spent on assets which don't recover their cost of capital (see Figure 6).

This is consistent with the fact that the industry generates average returns of 6% on capital that costs 9%, although it implies that the misallocated capital generates absolutely no return. What's more likely, as one respondent noted, is that about 70% of investments cover their cost of capital and about 30% generate very poor returns indeed. The difference is easy to explain. We calculate that most telecoms operators misallocate about 20-22% of their discretionary capex, but when you include the non-discretionary capex they're required to make for regulatory reasons the percentage rises to about 30%.

So, what are the implications? If the industry invests about $325 billion a year on capital projects and generates returns that are equivalent to nil on 20% of its investment, it's effectively wasting about $65 billion a year. That's more than the entire revenue generated by the global video games market in 2011 ($59.3 billion).[2] In fact, it's enough to run point-to-point fibre to every home and business in Britain (at a one-off cost of about $50 billion) and still have some spare change.

Figure 6: The proportion of annual capex spent on assets that fail to return their cost of capital



Source: PwC

2. PwC, Global Media and Entertainment Outlook 2011-2015. This figure includes consumer/end-user spending of $57.2 billion and advertising revenues of $2.1 billion.

What winners do well

Our analysis of the financial performance of 78 telecoms operators around the world shows some significant variations in how well they're doing. Our in-depth conversations with 22 senior industry executives have likewise uncovered major differences in the way they manage their capex. In the course of these discussions, we identified 12 attributes the telecoms companies that allocate capital most efficiently share (see Figure 7). Collectively, these attributes form the building blocks of a well designed capital management programme.

Figure 7: The 12 attributes of capital excellence

		Underperformance	Emerging best practice
Plan	Performance metrics	Decision making is dominated by impact on subscriber numbers, revenue, EBITDA & cash	Decision making is dominated by impact on post-capital returns
	Capex levels	Capex levels are set with reference to last year's spend or capex/sales benchmarks	Baseline capex is set with reference to post-capital profitability of services, segments, tariffs & territories
Organise	Budget owners	Capex budgets are justified merely if they are within a department's budget caption	Capex projects are all justified & aggregated under approved programmes
	Responsibility	Engineering & Operations take responsibility for spending within the annual capex budget. Marketing takes responsibility for revenues	Business unit leaders are responsible for post-capital outcomes
	Scope & options	Capex proposals are justified with engineering metrics like utilisation or marketing metrics like 'revenue protection'	Capex proposals are justified on the basis of improving performance metrics from underlying services or territories
Build	Projects	Capex projects are broken down into technical components to avoid scrutiny	Capex projects are grouped into programmes to enable a more well rounded level of scrutiny
	Proposals & variations	Capex proposals come with a single recommendation, leaving key assumptions unstated	Proposals come with a clear explanation of the options & evidence to support underlying assumptions
Operate	Procurement & supply chain	Procurement decisions are made on the basis of the lowest unit cost	Procurement decisions are based on maximising the intended business outcomes (e.g., run for cash, interim measure, gold-plated solution)
	Fixed asset register (FAR)	FAR operates as a depreciation engine	FAR captures information on how fixed assets relate to services & territories to populate post-capital reporting
Respond	Post-investment appraisal	The success of a project is defined solely in terms of whether it's completed on time & within budget	The business has a formalised post-investment appraisal process to share best practice
	Reporting	Key management reports focus on 'pre-capex' performance indicators like subscriber numbers, revenue & EBITDA	Key management reports focus primarily on 'post-capex' performance indicators like residual value, ROI & economic value added (EVA)
	Rewards	Business unit leaders, engineers & finance staff are rewarded on the basis of measures like EBITDA, cash & network performance	Senior managers are all rewarded on value-based objectives like increase in residual value, ROI & EVA

Source: PwC Capex Survey 2012

We also divided the telecoms companies participating in our survey into two segments: those that have markedly and consistently improved their capex performance over the past decade, and those that haven't. We then measured how these two segments behave with regard to each of our 12 attributes of capital excellence (see Figure 8).

Figure 8: What winners do well

		Underperformance	1-5 maturity level	Emerging best practice
Plan	Performance metrics	Decision making is dominated by impact on subscriber numbers, revenue, EBITDA & cash	1.9 → 2.8	Decision making is dominated by impact on post-capital returns
	Capex levels	Capex levels are set with reference to last year's spend or capex/sales benchmarks	3.4 → 4.1	Baseline capex is set with reference to post-capital profitability of services, segments, tariffs & territories
Organise	Budget owners	Capex budgets are justified merely if they are within a department's budget caption	2.8 → 4.3	Capex projects are all justified & aggregated under approved programmes
	Responsibility	Engineering & Operations take responsibility for spending within the annual capex budget. Marketing takes responsibility for revenues	2.6 → 3.8	Business unit leaders are responsible for post-capital outcomes
	Scope & options	Capex proposals are justified with engineering metrics like utilisation or marketing metrics like 'revenue protection'	2.9 → 4.1	Capex proposals are justified on the basis of improving performance metrics from underlying services or territories
Build	Projects	Capex projects are broken down into technical components to avoid scrutiny	3.4 → 3.9	Capex projects are grouped into programmes to enable a more well rounded level of scrutiny
	Proposals & variations	Capex proposals come with a single recommendation, leaving key assumptions unstated	3.4 → 3.6	Proposals come with a clear explanation of the options & evidence to support underlying assumptions
Operate	Procurement & supply chain	Procurement decisions are made on the basis of the lowest unit cost	3.4 → 3.8	Procurement decisions are based on maximising the intended business outcomes (e.g., run for cash, interim measure, gold-plated solution)
	Fixed asset register (FAR)	FAR operates as a depreciation engine	2.5 → 3.3	FAR captures information on how fixed assets relate to services & territories to populate post-capital reporting
Respond	Post-investment appraisal	The success of a project is defined solely in terms of whether it's completed on time & within budget	2.2 → 3.4	The business has a formalised post-investment appraisal process to share best practice
	Reporting	Key management reports focus on 'pre-capex' performance indicators like subscriber numbers, revenue & EBITDA	2.6 → 3.2	Key management reports focus primarily on 'post-capex' performance indicators like residual value, ROI & economic value added (EVA)
	Rewards	Business unit leaders, engineers & finance staff are rewarded on the basis of measures like EBITDA, cash & network performance	1.9 → 2.8	Senior managers are all rewarded on value-based objectives like increase in residual value, ROI & EVA

Source: PwC Capex Survey 2012

Average of 'Others' — Average High Performer

The most striking disparities between those telecoms operators that allocate capital efficiently and those that don't occur at either end of the asset lifecycle: in how they plan and organise investments, how they report on that expenditure and how they reward the employees responsible for managing it. But our research shows that there are some significant, albeit less obvious, differences in the middle stages too. The leading operators not only set themselves more demanding targets at each 'endpoint' in the planning, organising and responding phases, they also have higher expectations of the building and operating phases that 'connect' these endpoints. That said, it's normally best to start with the endpoints when designing a more robust capital operating model, since this is the most effective way of highlighting deficiencies in the enabling 'connectors' as well.

Moreover, our data clearly demonstrates that it's worth making the effort to improve your company's capital management (see Starting small yields big wins). The top quartile of telecoms operators in our survey not only have more mature capital management practices, they also report lower levels of misallocated capex, enjoy better ROI and deliver superior shareholder returns.

Figure 9—Is your ROI coming under pressure?

Our analysis shows that the returns operators generate are not always stable. Here are the leading indicators of an impending squeeze on ROI:

1. Slow broadband speeds, where LTE is a viable substitute
2. Adoption of smartphones as a precursor to use of WhatsApp, iMessage etc., and thus the destruction of your SMS business
3. Rising levels of mobile VoIP take-up
4. Increased competition
5. Unclear mobile data economics
6. The release of analogue spectrum, paving the way for new entrants with better mobile data economics as a result of lower frequency
7. A business model based on subscribers, average revenue per user (ARPU), revenues and earnings before interest, taxes, depreciation and amortisation (EBITDA), with a network configured to service these metrics
8. High levels of capex spend.

Starting small yields big wins

It's easy to feel overwhelmed by the scale of the challenge involved in improving your capital management, so where should you start? One company—a former incumbent now providing communication and entertainment services in an intensely competitive market—decided to begin by focusing on a specific line of business.

The company's revenues were static and its profitability was declining. Yet much of its capex was still going on day-to-day business, leaving little to fund the 'big bets' that underpinned its business strategy. With competitors circling and investors querying the slowdown in fibre rollout and the dividend outlook, the case for change was compelling.

Internally, too, dissatisfaction was rife. The networks were disgruntled with the marketing function's 'unreasonable' quality-of-service demands; the marketing function was unhappy about the lack of information on service availability; and the capital management team was concerned because it lacked the information it needed to test its suspicion that many of the capex proposals it received were destroying value. Meanwhile, the technology department carried on investing its business-as-usual capex using the same capacity-based inputs.

The chief finance officer (CFO) was well aware of these problems and deeply frustrated by them. So he created a team of people from the finance, marketing and technology functions for one line of business to catalyse the changes that were required. The team started by diagnosing the existing performance gaps. Then, drawing on external expertise, it identified the key building blocks of best practice. This process helped everyone understand what was going wrong; the people from the finance function realised they'd been operating reactively to each crisis, while those from the technology department realised they weren't using the finance function to support their forecasting and investment decisions.

Thereafter, the team focused on working out how to redeploy 20% of the business unit's capex for growth initiatives, and crafting a plan to upgrade its capital management. Thanks to a common vision that spanned all the key departments, it was able to develop a better approach within ten weeks. The antagonistic relationship that had previously prevailed, with the finance function scrutinising what the networks delivered, was replaced by one in which they collaborated to decide where capex should be directed.

This template proved so successful that the CFO was also able to persuade the Chief Technology Officer of its potential for the rest of the business. And, together, the two were able to show the CEO how they'd solved the capex challenge.

Could capex be harming your business? Take a two-minute test

1. Your peers are misallocating about 20% of their annual capex. Do you suspect the amount of capex you misallocate is much different? How much recycled capex would that represent to your business?
2. What 'big bets', such as 3G, LTE or NGA, is your business currently struggling to fund? Would reallocating business-as-usual capex help much?
3. Are your colleagues in Marketing, IT, Networks or Finance frustrated with how your company's capex is allocated, how that capex is controlled or the performance it delivers?
4. Are you confident you know enough yet about best practice at other operators?
5. Do you have the independence and credibility to push through the necessary changes and make them stick?

Conclusion

The telecoms industry has a long history. Even the companies that came late to the mobile telecoms market are now more than 20 years old. But the capital operating model that's emerged over the decades is no longer serving the sector well—if, indeed, it ever did. The process described by most of our respondents is unstructured, politicised and inefficient. It's a process that wastes some $65 billion a year.

What's true for the industry as a whole, though, is certainly not true for every participant. A small cohort of fixed-line, mobile and cable telecoms players have consciously redesigned their capital operating models. They track and measure their ongoing capex; analyse it to identify where they can release resources for other projects; establish clear accountability; and use incentives to encourage smarter behaviour. Making these changes is neither easy nor quick, but the rewards more than compensate for the effort that's required. Cracking the capex code lets a company invest its resources where they're most needed, prepare for the future more effectively and position itself to win in an intensely competitive marketplace.

Appendix 1: How we conducted our research

We analysed the financial performance of 78 fixed-line, mobile and cable telecoms operators around the world, using information drawn from Standard & Poor's Capital IQ database. (Equipment manufacturers and handset vendors were excluded from our study.) All the companies in our sample have an enterprise value of more than £250 million and a full 10 years' worth of financial data. Collectively, they made capital investments of about $200 billion—i.e., 62% of the industry's total $325 billion capex—in 2011.

We supplemented this work with a qualitative survey of 22 senior telecoms executives from a representative cross-section of companies in terms of size, services, location and financial performance. The interviews were completed in January 2012.

The information these executives supplied enabled us to analyse the performance of the companies they represent in more detail and provide them with additional insights, including information on the specific metrics and incentives that constitute best practice; how investors view companies with well designed capital operating models; and how to improve their capital operating models. We are deeply grateful to the executives concerned for participating in our study.

Of further interest

Communications Review: Growing telecom revenues—what's next?

15th Annual Global CEO Survey—Communications industry

Managing your megabytes—how fear of data charges is driving mobile users to WiFi

No wires attached Changes and trends in the North America wireless industry
A survey for 2011

Raising your digital IQ

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