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TEBIT 2015 EXECUTIVE REPORT

DIGITAL DELIVERS

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TEBIT 2015 EXECUTIVE REPORT

DIGITAL DELIVERS

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PREFACE

INDUSTRIES DIFFER, COMPANIES DIFFER, and markets differ, but there is one question every business needs to ask: How do we step ahead and stand apart? For telecom operators, it has become increasingly clear that the answer requires embracing new products and services as well as new ways of working—especially when it comes to IT. Telcos need to innovate, and they need to be agile. To enable this, they need to adjust their operating models while managing costs.

Since 2010, TeBIT—an IT benchmarking study jointly developed and conducted annually by The Global IT Association for Telecommunications (ETIS) and The Boston Consulting Group—has looked at the spending and performance of telcos’ IT units. We have analyzed data provided by participating telcos to better understand the challenges operators face and how well they are tackling them. But equally important, TeBIT has looked at identifying the opportunities for improvement and growth and the steps telcos can take to seize them.

This year, the benchmarking study took an especially close look at digital initiatives, and the findings are encouraging. TeBIT 2015 showed a clear correlation between the breadth of digital initiatives implemented by participating telcos and the changes in their revenues. Although the majority of participants saw revenues fall in 2014, those that pursued the widest variety of digital initiatives suffered the smallest declines. But survey responses and follow-up interviews strongly suggested that telcos can do more to maximize the benefits. Digital initiatives are often scattershot, and there is little coordination between business and IT strategies.

One of the great benefits of TeBIT is that participants can see which companies they were benchmarked against—and how they compared. What makes this possible is the tradition among TeBIT participants to openly share data (on a company level). This encourages discussion as well as an exchange of knowledge and, of course, the benchmark results. Although this executive report is publicly available, participating telcos can access the full set of benchmark results, including a comprehensive report that contains rich participant data as well as further trend analysis and data correlation. Telcos that take part in the survey can also discuss their individual results with the TeBIT benchmarking team.

The telecom market has never been light on competition: telcos compete against one another and, increasingly, against agile new entrants that are often already battle-tested in the digital arena. But TeBIT is about cooperation and collaboration—telcos working together to gain

insights that can benefit everyone. And that is the beauty of this benchmark study: it not only discovers what is happening but also points to the steps that telcos can take to move forward—and prosper.



Tora Tenden
ETIS Secretary General



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EXECUTIVE SUMMARY

***F**OR TELECOM COMPANIES, GROWTH tomorrow will mean placing the right bets today—making those investments that spur the innovation and customer experience that can set a telco apart. Digital initiatives have been a focal point for such investments, and this year’s telco IT benchmarking study (TeBIT)—a survey of European operators’ IT spending and performance that was completed in August 2015—showed that the bet is paying off. Telcos may be only just beginning to benefit from digital initiatives, but by boosting their investments—and coordinating their IT and business strategies—they may find that the best is yet to come.*

Although revenues stabilized for the overall telecom market, most TeBIT participants saw revenues decline. Like last year, any customer growth that occurred was not in traditional fixed and mobile services, but in newer areas, including content, value-added and digital services, and IT services.

- As a group, participants experienced a 1.8 percent drop in average revenue per user, after accounting for the fluctuations in exchange rates. This translated directly into a drop in revenues of 2.7 percent, on average.
- The number of fixed customers fell by 0.8 percent across participants, while the number of mobile customers dropped by 1.0 percent. Yet the number of customers in other revenue segments increased by 6.1 percent, on average.

Digital initiatives are paying off. TeBIT 2015 found that the participants most actively pursuing the digital space suffered the smallest revenue declines.

- A clear correlation was seen between the breadth of digital initiatives deployed and the changes in revenues, suggesting that such initiatives can help telcos compensate for at least some of the decline in revenues.

- Many participants, however, have yet to develop a comprehensive digital strategy. In addition, there are few business transformation initiatives—or none at all—being undertaken in sync with digital initiatives.
- These are still early days for telcos. On average, 36 percent of customer support is self-service, 13 percent of sales are online, and only 11 percent of customers have agreed to receive digital marketing promotions.

Revenue declines hampered participants' ability to invest, and overall, capital expenditures fell. The investment focus, meanwhile, continues to be on areas that reduce operational costs or improve the customer experience.

- On average, IT capital expenditures (capex) declined by 3.7 percent. The drop-off was similar for telcos in both mature and emerging markets.
- Yet as a percentage of revenues, IT capex rose—from 3.0 percent in TeBIT 2014 to 3.2 percent this year. This suggests that telcos are trying, as much as possible, to maintain IT investments, and even prioritize them.

Although participants are steering investments in digital initiatives almost exclusively to IT, the business side is leading big-data initiatives. The majority of participants are utilizing off-the-shelf—but not cutting-edge—software for big-data analytics, and no clear winner has emerged among the vendors.

- Nearly two-thirds of participants—62.5 percent—report that their big-data initiatives are led by the business side rather than IT.
- Although the vast majority of participants use customer and enhanced-reporting analytics, a smaller majority—63 percent—performs more advanced predictive analytics, and fewer still use market-segmentation analytics (38 percent) and location-based and social-network analytics (38 percent).

The TeBIT data showed that a higher degree of outsourcing correlated with lower IT spending—the first time such a link has been found. The survey results also suggested that participants are taking a more efficient approach to outsourcing. Moreover, although IT operating models are becoming more complex, telcos seem to be doing a better job of managing complexity.

- This year's participants scored, on average, 36 (out of 100) on TeBIT's complexity index—about a 6.5 percent increase over last year's score.
- At the same time, IT spending was 5.3 percent of revenues—unchanged from last year.

Overall, costs are under control: the majority of operators re-

duced IT operating expenses (opex) in line with—or even ahead of—revenue declines.

- On average, IT opex decreased 3.8 percent; as a percentage of revenues, it fell from 2.4 percent in TeBIT 2014 to 2.1 percent this year.
- Like last year, there was a significant gap in IT costs among participants, ranging from 3.7 to 8.6 percent of revenues.

DIGITAL INITIATIVES

STEMMING—AND TURNING—THE TIDE FOR TELCOS

IT DOES NOT TAKE many words to explain the biggest finding of this year's telco IT benchmarking study (TeBIT). To put it simply, digital initiatives pay off. This turn of events warrants the headline treatment—and perhaps a sigh of relief from Europe's telecom operators.

This year's study found that of the participating telcos, those that were most active in the digital space—deploying the widest variety of initiatives—suffered the smallest revenue declines. The correlation was clear, compelling, and significant. Telcos have struggled in recent years, often unsuccessfully, to maintain their revenue level, so the validation that digital initiatives are a way to stem or even turn the tide would seem to be break-out-the-champagne news.

But a couple of findings also revealed by this year's survey suggest that telcos should not pop the cork just yet. Many participants—representing a mix of integrated, fixed, and mobile operators from both mature and emerging markets—are pursuing digital initiatives without a comprehensive, long-term strategy. Instead, they are trying a little bit of everything. In addition, at many telcos, there are few business-transformation initiatives—or none at all—being undertaken. The lack of strategy and transformation initiatives may well be tempering the payoff. As Gian Enrico Paglia, Telecom Italia's director of IT and con-

vergent architecture, put it, “Digital has to be a concerted, company-wide effort, with telcos not only implementing new capabilities but also changing internal processes.”

The telcos most active in the digital space suffered the smallest revenue declines.

Now is an opportune time for telcos to think bigger, and deeper, about digital initiatives, particularly given our other major finding: participants are in the beginning stages of deploying digital products and services. The bulk of telcos' support, sales, and marketing efforts are still conducted through traditional off-line channels. In addition, most TeBIT participants are only just starting to develop capabilities in big data, an area closely related to, and dependent on, digitization; digital offerings generate data, and companies will gain actionable insights by analyzing it.

Indeed, more traditional areas—such as fulfillment and billing—continue to be the focus of telcos' investment budgets. Emphasizing these areas has long been a sound move, because they affect the customer experience and can help operators differentiate themselves. But digital initiatives can also help

companies stand out from the crowd. And by demonstrating the payoff—even through scattershot approaches—TeBIT 2015 raises the question of whether telcos should embrace digital initiatives a bit more boldly. This question doesn't cast doubt on telcos' current investment focus but rather asks if they should spend more than they do today on digital initiatives.

Over the years, TeBIT participants—and their IT departments in particular—have always found ways to maneuver in light of business challenges and opportunities, recalibrating their approaches to best suit their circum-

stances and needs. A case in point is IT operating models: as these models have become more complex, telcos have improved the way they manage the costs. TeBIT 2015 found participants better at this than ever.

Telcos are running a tighter ship even as they operate a more complicated one, and this points to their ability to adapt. Digital initiatives are a new lever that operators can apply in their ongoing quest to innovate and optimize. How telcos apply this lever will have a major effect on how far they step beyond—or fall behind—the competition.

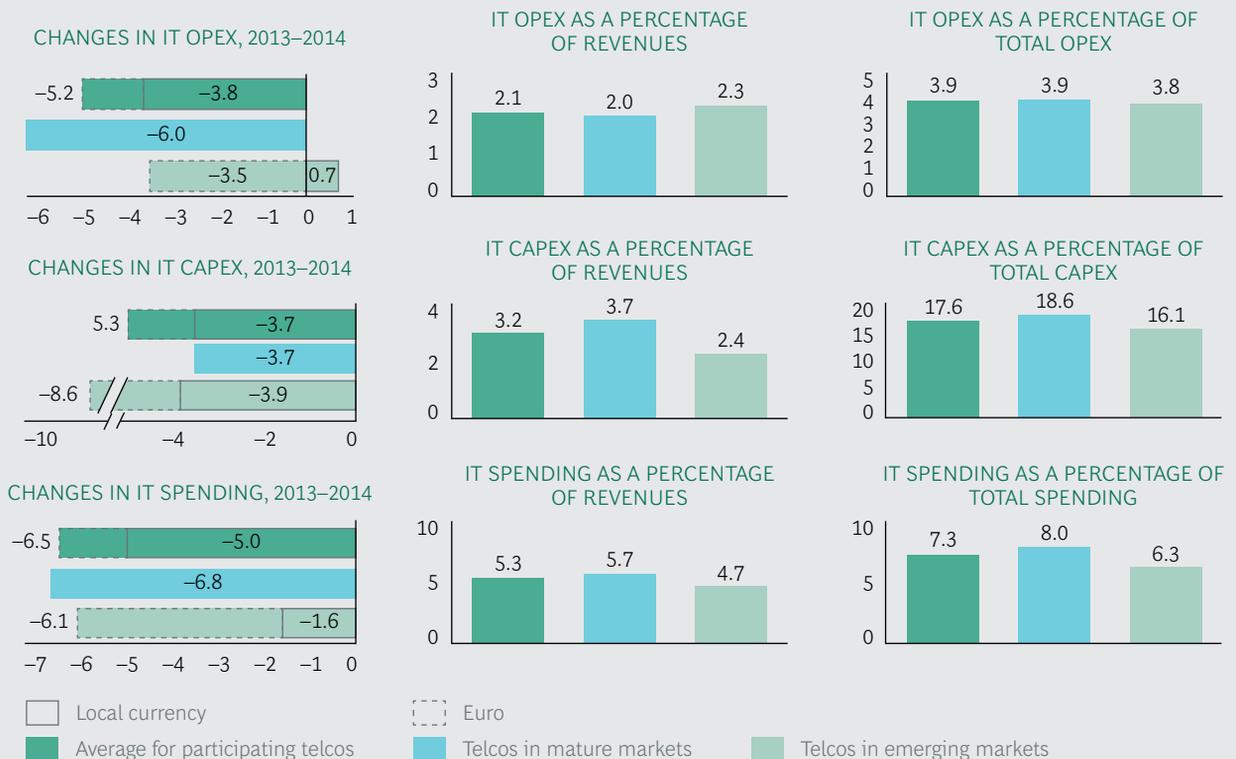
MAKING IT COUNT

LOWER BUDGETS RAISE PRESSURE TO SPEND WISELY

ALTHOUGH THE NEWS ABOUT digital initiatives was welcome, the finding of another trend was not: a decline in revenues—experienced by the majority of TeBIT participants—hampered their ability to invest. From 2013 through 2014, IT capital

expenditures (capex) declined by 3.7 percent, on average, after fluctuations in exchange rates were accounted for. Telcos in mature markets saw the same drop (3.7 percent), while those in emerging markets saw IT capex fall 3.9 percent. (See Exhibit 1.) The

EXHIBIT 1 | Telcos' IT Spending Decreased in Line with Revenues



Source: TeBIT 2015.
 Note: Opex = operating expenses. Capex = capital expenditures.

irony, of course, is that a revenue decline is often best attacked through *increased* investment, because it can fund the differentiation and innovation that creates competitive advantage—and growth.

TeBIT 2013 and 2014 found telcos adopting a “spend money to make money” strategy. But the latter study also showed that with revenues down for many participants, pulling off that strategy was no simple endeavor. Overall, IT spending rose only 1 percent in 2014, and IT capex increased 3.4 percent. This year,

with revenues down even more steeply, telcos had to dial back investment. (See the sidebar “The Business Environment.”)

Yet a closer look at participants’ spending reveals a more encouraging sign. Although the average IT capex fell in absolute terms, it actually rose, if only slightly, as a percentage of revenues (from 3.0 percent in TeBIT 2014 to 3.2 percent this year) and as a percentage of total capex (from 16.2 percent in 2014 to 17.6 percent in 2015). This suggests that these telcos are trying, as much as possible under

THE BUSINESS ENVIRONMENT

A look at the markets in which TeBIT participants do business revealed that telecom companies as a group seem to have held their own in the past year. Total revenues stabilized in 2014—even inching up over 2013. Yet a look at the individual performance of TeBIT participants shows that a majority still could not keep their revenues stable, let alone grow them.

Several telcos were negatively affected by exchange rate fluctuations. But even after comparing year-over-year results in their respective local currencies, revenues for most companies declined. The average revenue per user (ARPU) dropped by 1.8 percent across all participants, with operators in mature markets suffering a significant 5.7 percent decline. Telcos in emerging markets saw, on average, an ARPU increase of 4.1 percent, but in more than one case, exchange rate volatility negated any gain.

Like last year, a decline in ARPU translated directly into a drop in revenues. This year, that revenue drop was, on average, 2.7 percent. The market breakdown for revenues followed the pattern seen for ARPU, with participants in mature markets seeing a 4.9 percent drop and those in emerging markets having a slight gain of 0.5 percent. When we looked at earnings before interest, taxes, depreciation, and amortization (EBITDA) as well as profitability, the difference between market types was more

marked still. On average, participating telcos in mature markets saw EBITDA drop 9.2 percent and EBITDA margin decline 2.3 percentage points. The averages for telcos in emerging markets, meanwhile, were an increase of 10.4 percent for EBITDA and a rise of 1.9 percentage points for EBITDA margin.

But why did many participants underperform the market? The TeBIT survey revealed some clues. Most of the participating telcos are incumbents, and in Europe, as in other regions, incumbents are facing heated competition from challengers, many of them agile and less burdened by legacy IT and legacy processes. We also saw that, like last year, customer growth is coming from newer areas, such as digital products and IT services. Indeed, while the number of customers for fixed service fell by 0.8 percent across participants, and the number of customers for mobile service declined 1.0 percent, the number of users in other revenue segments (including content, value-added, and over-the-top services) rose by an average of 6.1 percent. This trend toward the nontraditional rewards flexibility and speed—traits that can help telcos develop innovative, differentiated offerings and that challengers, at least for the moment, are most likely to possess.

difficult circumstances, to maintain their IT investments and even, perhaps, give them some priority.

Still, there is no getting around one hard truth: lower revenues and capex make it more important than ever for telcos to place their bets wisely when they do invest. Are companies doing this? TeBIT 2015 suggests that operators are on the right track, but there may be room for improvement.

Compared with last year, TeBIT 2015 showed that investments were slightly less focused: on average, telcos steered 25 percent of their IT capex budgets to their top-three initiatives, down from 29 percent. But like last year, the highest shares of IT capex went to initiatives related to fulfillment and customer relationship management (CRM), general infrastructure, and billing and revenue management. This makes sense because investments in these areas can reduce operational costs or improve the customer experience—both of which can help telcos in a challenging mar-

ket. Yet TeBIT 2015's chief finding, that deploying a wide variety of digital initiatives has appeared to stem revenue losses, also suggests that such initiatives should get special attention. To be sure, this year's survey found that investments in those areas are growing. But they still receive less emphasis—and less funding—than the traditional priorities.

Without shortchanging their traditional investment priorities, telcos may want to double down on digital initiatives, which not only reduce costs and improve the customer experience but also foster new products and new revenue streams. Those are no small things, given that participants are continuing to see growth not in their traditional fixed and mobile services but in other areas, such as IT, cloud, and content services. Those areas may be varied, but they share one important trait: they are largely centered around digitization.

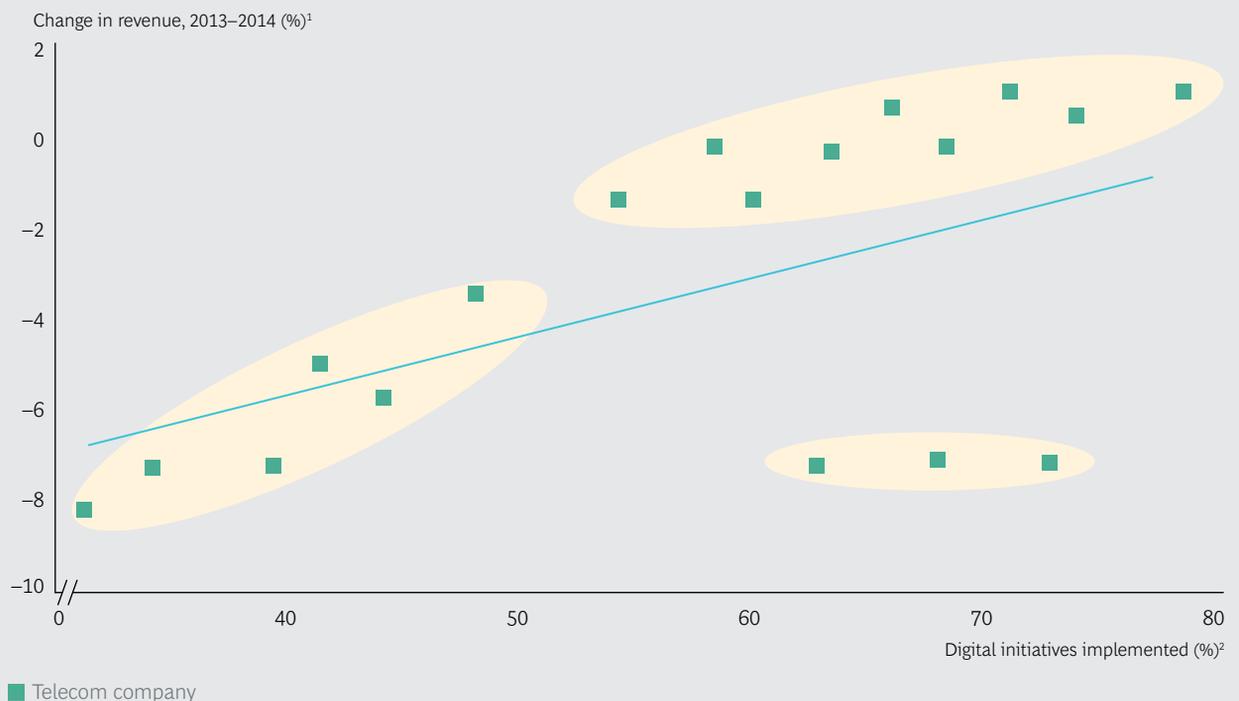
TAPPING THE POTENTIAL

REALIZING—BUT NOT MAXIMIZING—
DIGITAL INITIATIVES' PAYOFF

TEBIT 2015 FOUND THAT telcos are beginning to reap tangible benefits from digital initiatives. We saw a clear correlation between the breadth of digital initiatives a telco has implemented and the improve-

ments in its revenues. (See Exhibit 2.) In general, the telcos that are most actively pursuing digital initiatives are performing best. But the question is this: Could they further improve performance?

EXHIBIT 2 | Digital Initiatives Helped Telcos Compensate for Some Revenue Loss



Sources: TeBIT 2015; BCG analysis.

Note: Data points have been added or removed to ensure the confidentiality of participants.

¹The analysis accounted for market effects and fluctuations in foreign exchange rates. The change in revenue for a participant is relative to the change in revenue for all telcos in the market in which the participant operates; this is called the market effect.

²This reflects the percentage of the digital initiatives analyzed that participants have implemented, including self-service apps, on-demand content services, and mobile payments.

Survey responses suggest that telcos are taking more of a slapdash approach to digital initiatives, embracing all manner of them. On average, telcos are implementing more than half of the digital offerings we asked about—a list that included customer self-service apps, paperless sales and contract management, on-demand content services, customer service through social-media sites, and mobile payment capabilities. (See Exhibit 3.) Yet only slightly more than one-third of respondents said they have an overall, company-wide digital strategy in place. For the majority, investments seem to be less concerted; standalone efforts are made here and there.

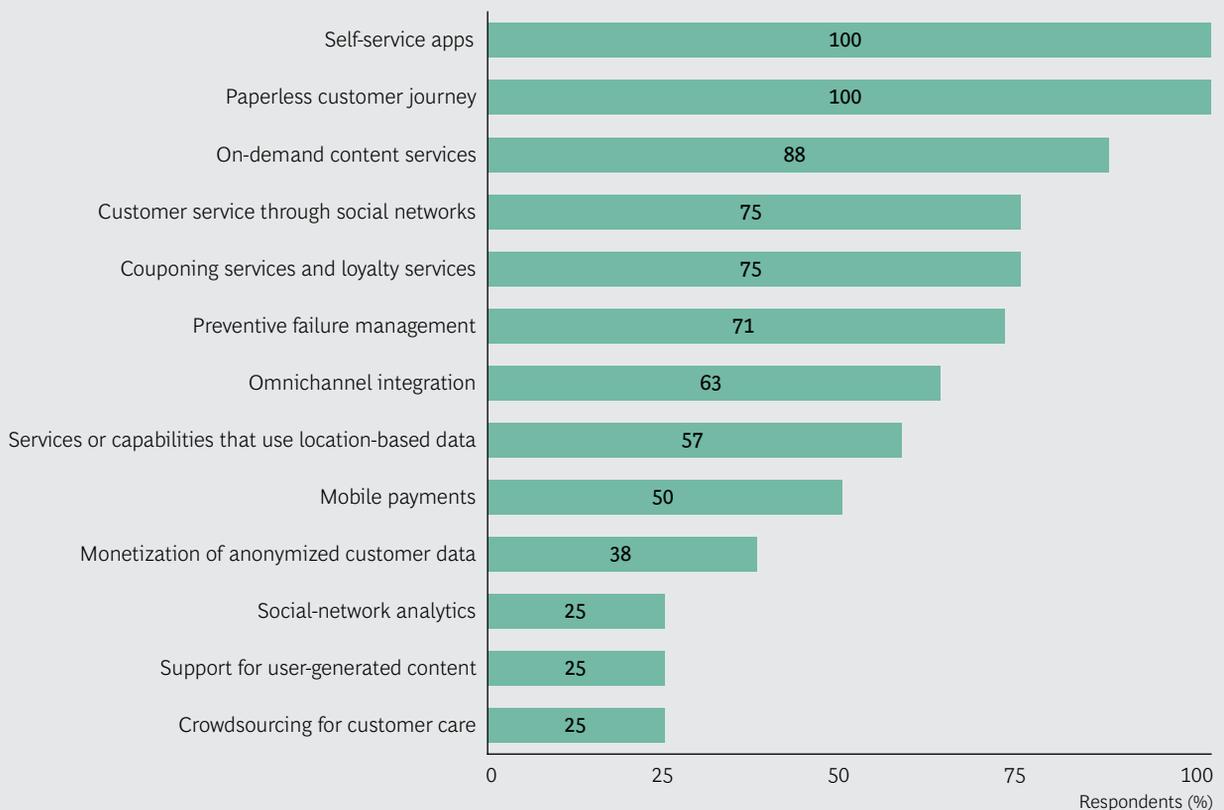
Moreover, for many telcos, their investments in digital initiatives have not yet reached critical mass. Although spending levels vary widely among participants, the majority did not report significant expenditures for digital initiatives—at least not when compared with their top investment priorities, such as fulfillment and CRM. Also, what is invested in digi-

tal initiatives is being steered almost exclusively to IT—not to the business side. Together, these factors—a lack of strategy, comparatively low investment levels, and the absence of business-side digital capex—suggest that digital initiatives are often seen mainly as an IT effort, one that can be performed without business transformation.

This is a notion telcos should challenge—and, indeed, some already are. “Even if the execution is an IT responsibility, the process is more than a technical effort,” says Telecom Italia’s Paglia. “Operators need to develop new ways of working, across the enterprise, to ensure the required speed and agility.” (See the sidebar “Building a Faster, More Agile Telco: An Interview with Gian Enrico Paglia of Telecom Italia.”)

For telcos, these are still early days. Among participants, the TeBIT survey found that, on average, 36 percent of customer support is self-service, 13 percent of sales are online,

EXHIBIT 3 | All Types of Digital Projects Are Being Implemented



Source: TeBIT 2015.

BUILDING A FASTER, MORE AGILE TELCO: AN INTERVIEW WITH GIAN ENRICO PAGLIA OF TELECOM ITALIA

“Digital has to be a concerted, company-wide effort, with telcos not only implementing new capabilities but also changing internal processes. Telcos need to do both to have the speed and agility required to support the business.”

For telcos, the competitive landscape is changing on multiple fronts, with new services and new players battling for subscribers. This requires operators to embrace nontraditional areas, such as digital, and to work in faster, more agile ways. For insight on how one operator—Telecom Italia—is tackling these challenges, BCG and ETIS spoke with the company’s director of IT and convergent architecture, Gian Enrico Paglia.



In what areas are you currently investing?

We are investing heavily in digital and in the systems through which we engage with the customer, such as CRM. We are also investing in big data, the cloud, and the evolution of our infrastructure.

How do you see digital initiatives and big data affecting the business environment for telcos over the next few years?

Digital is essential if telcos want to be able to compete. Big data is also crucial, as it helps you understand everything that is happening around you—for example, whether your infrastructure is working and what your customers are doing. More important, it helps you gain insight. With big data, you can identify customer needs that otherwise would go undiscovered, understand customer behavior, and grasp how users perceive the quality of products and services. Longer term, you can monetize big data—create a new sellable asset.

TeBIT 2015 survey responses suggested that many telcos are investing in digital initiatives without having an overall digital strategy in place. What is Telecom Italia’s approach?

We have found that digital has to be a concerted, company-wide effort, with telcos not only implementing new capabilities but also changing internal processes. Telcos need to do both to have the speed and agility required to support the business in the digital era. In our case, this concerted effort has given rise to a coherent view on digital across the company and a long-term plan.

This year’s survey also revealed that while big-data initiatives tend to be led by the business side, digital initiatives seem to be an IT undertaking. Is this the approach at Telecom Italia?

In our case, the path for digital transformation involves a number of programs, all of which have stakeholders from across the company—from the business side and from IT. Even if the execution is an IT responsibility, the process is more than a technical effort. Operators need to develop new ways of working, across the enterprise, to ensure the required speed and agility.

The main objective is to enable the company to compete in the digital business—to maintain our commercial stake in a telecom market that is very competitive. For IT, a side effect of this effort is that it creates an opportunity to transform our infrastructure, replacing legacy infrastructure with new technology that has a lower total cost of ownership. New technology also enables operators

BUILDING A FASTER, MORE AGILE TELCO (continued)

to develop products and services for less money and get them to market faster. In effect, telcos move toward a paradigm where they are developing smaller services in a more dynamic way. So operators become faster, more efficient, and more agile companies, while they improve quality.

Overall, the TeBIT data suggested that telecom operators are outsourcing more selectively. At the same time, it showed a comparatively high degree of outsourcing at Telecom Italia. From your perspective, what are the critical tasks that telcos cannot—or should not—delegate to external providers?

Clearly there are areas where outsourcing is necessary—areas, for instance, where operators have fluctuations in the required capacity. It is much easier—and more practical—to adjust for changes in demand by complementing the internal staff with an external workforce. Yet there are certain areas where telcos want to be in control. In engineering, for example, we prefer to control all of the critical topics and processes, such as design and integration testing, particularly for business-critical systems.

The level of fluctuation can also affect how operators structure outsourcing contracts. Operations, for example, tend to have more stable capacity requirements than software development.

Over the past couple of years, we have been working to insource as much as possible, and as a result, we have reduced our level of outsourcing. But insourcing should be done in conjunction with efforts to boost productivity and reduce overhead and inefficiencies in processes. So we have set up a massive change program internally to help our staff take over the work that had been done by the external workforce and gain efficiencies in the process.

In TeBIT 2011, Telecom Italia's Luca Franco Varvello shared some insights on the company's outsourcing approach. In the time since, have you adopted any new strategies to further improve the sourcing model?

One thing we have done is to move from outsourcing contracts based on generic terms to contracts based on service elements. So for infrastructure, for example, we will contract with providers on the basis of cost for specific operations and service elements. For application development, we will manage on both man-days and function points. This gives us better control over the productivity of the vendor.

Telecom Italia is an integrated telecom operator. From an IT perspective, what challenges does this present?

The main challenge is that when compared with the mobile business, the fixed business has much higher complexity in the back-end systems and network—the technology and the processes used are more complex, as is the regulatory environment. As an incumbent, we have to provide wholesale services to other licensed operators, and these are heavily regulated.

Commercially, bringing mobile and fixed together gives a telco opportunities to leverage convergence and better satisfy customers' needs. But on the technical side, integration means mixing something that is lean and virtual with something that is largely physical. This is especially true in the B2B segment, where there are a multitude of ways in which operators can provide services to their business customers. The challenge is keeping this complexity under control.

Commercial off-the-shelf (COTS) software is something Telecom Italia uses quite intensively in some parts of the value chain. What has been the company's experience with COTS software?

The challenge with COTS software is that it can come with very high costs that are difficult to keep under control. You pay for the software, then you pay for the maintenance, and then, when you think you are finished paying, you discover that a new functionality has become available—but as a new part number. So you end up paying for that, too, because that was not part of your original contract.

The other thing about COTS software is that you're buying very complex software, but you usually make use of only a small subset of its capabilities. And you have to customize it—a lot, in some cases—to obtain the specific functionality you need. Since you wind up doing customization in the end, it often makes more sense—except in very specific cases—to embrace open-source or custom-built software from the start.

How should a telco implement software? Is it better to develop the software internally or to work with an integrator that would develop the software according to a telco's requirements?

If an operator is big enough, it should be developing its own software with its own programmers. In the end, IT is a technical job. If a telco hands over the technical tasks to a systems integrator, it will be in control of the operator's fundamental assets in the end, because it will be the only one that knows the details.

The other thing a telco should be doing is codevelopment. If you look at other sectors, there is an open-source process that is well defined, and complex software is being developed using that process. But this isn't happening in the telecom sector. It's a closed environment. Many telcos are buying or developing similar capabilities—even if those capabilities do not help differentiate them in the marketplace. For example, we buy the software we need to get call data records from switches into the IT systems, and it costs millions of dollars. I'm sure that most other telcos are buying this same software. It's hard to believe that telcos can't work together to develop something open that they can all use and share through a community process.

And the lack of codevelopment is mainly because telecom operators always think about differentiation and how to use it to compete in the market and gain market share, isn't it?

Yes, but what telcos forget is that they are not competing as much against each other as they are against new players. We should be thinking about competition in terms of the telecom industry going up against other industries, such as media.

How important is a stable IT architecture for a highly productive and efficient IT function?

I think it is very important. If you are an elephant, you can aspire to become an agile elephant, but at the end of the day, you will still be an elephant. In other words, the form factor counts. If you really want to make a step-change in agility—which is essential if you want to compete in the digital business—you need to become a tiger. The companies we are competing with now—such as Apple, Amazon.com, and Facebook—they are already tigers. To compete with them, telecom operators need to transform their architecture, not simply change their processes. This means that telcos need an IT infrastructure made of modular components that are developed inde-

BUILDING A FASTER, MORE AGILE TELCO (continued)

pendently by small teams, quickly and continuously. Transformation of the architecture is the key to becoming an agile player.

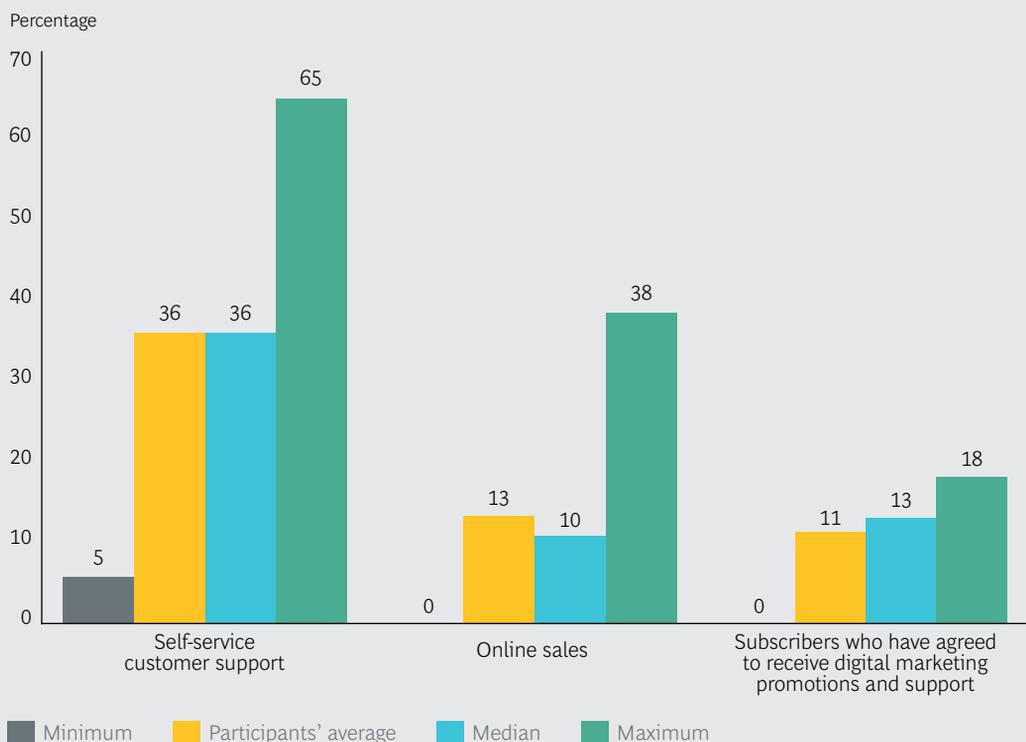
What do you see as the most important technology advancements or investment trends for telcos in the coming years?

I think the cloud paradigm will be very important. Specifically, I see a platform-as-a-service approach. Operators would develop their applications as small services and then deploy them on a cloud-based platform where they can be executed and operated. The operator would also have foundational services, such as communications and integration, on the cloud-based platform. This approach would enable the architectural transformation to modular components that I described. And that, in turn, would enable the step-change in agility that telcos need if they are to compete—and thrive.

and only 11 percent of customers have agreed to receive digital marketing promotions. (See Exhibit 4.) The bulk of these activities continue to take place the old-fashioned way, through traditional channels. As telcos ramp up their digital efforts—and digital’s role in their business—they may want to

think not only bigger but also more strategically and more holistically, making digital initiatives a collaborative, company-wide focus. That may mean more radical changes for the business, but it may also bring more dramatic changes in revenues.

EXHIBIT 4 | Telcos Are Beginning to Benefit from Digital Initiatives



Source: TeBIT 2015.

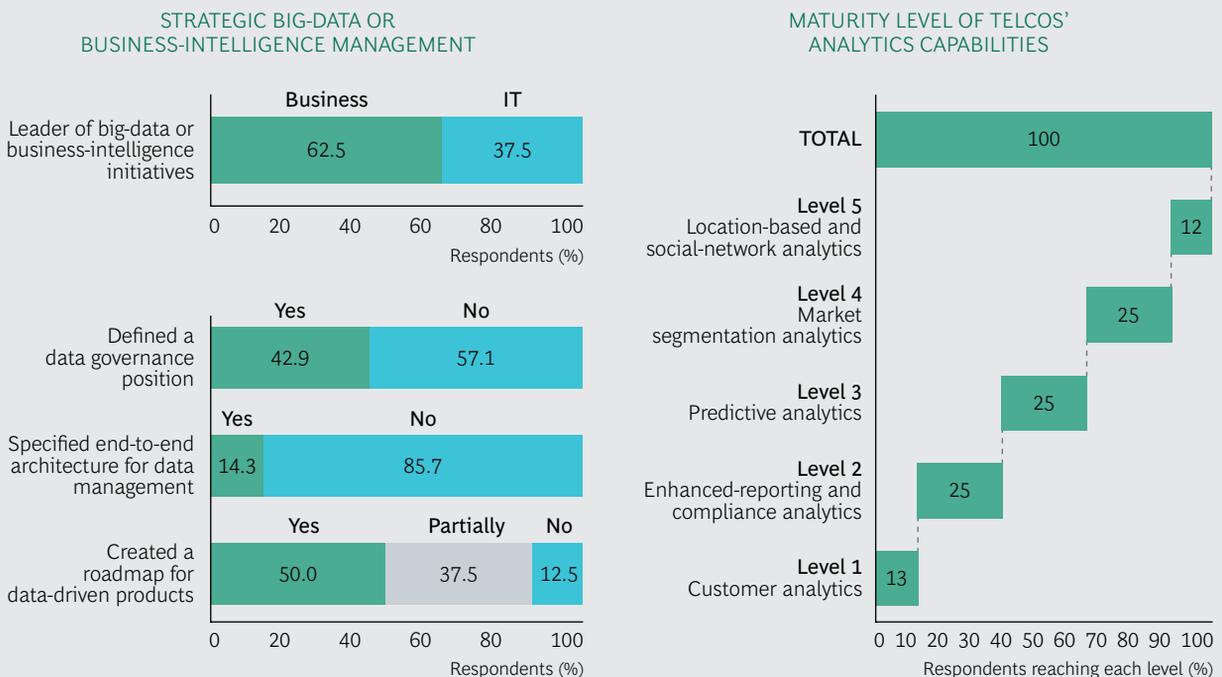
BIG DATA

UNCOVERING BUSINESS INSIGHTS

ALTHOUGH DIGITAL INITIATIVES MAY not be seeing as much business-side involvement as perhaps they should, the story is different for another hot industry topic: big data. Indeed, TeBIT 2015 revealed that for nearly two-thirds of participants—62.5 per cent—big-data initiatives are led by the business side rather than IT. The survey also

showed that more than half of the participating telcos have reached at least a midlevel of maturity in their analytics capabilities. (See Exhibit 5.) The influential and apparently beneficial role the business side has played in big data may be a blueprint—and present an opportunity—for advancing digital initiatives, as well.

EXHIBIT 5 | Telcos' Business Side Tends to Advance Big-Data Initiatives



Sources: TeBIT 2015; BCG analysis.

That big data would be a focal point for the business side makes sense. By analyzing customer transactions, behavior, and demographics, the business side can uncover valuable insights into how the company can better serve, and win, subscribers. Yet as with digital initiatives, many operators lack an overall big-data strategy: only half of the telcos that responded said they had a roadmap for data-driven products in place.

The majority of telcos are using relatively traditional analytics tools.

We also saw that the volume of data being managed varies widely (from 0.2 to 3.5 megabytes of data per customer), as does the sophistication of telcos' analytics capabilities, which fell into five maturity levels. (See Exhibit 6.) The vast majority of participants have customer and enhanced-reporting analytics capabilities, while a smaller majority—63 percent—have more advanced predictive capabilities (forecasting churn, for example). Fewer still (38 percent) have achieved the most sophisticated capabilities,

such as market-segmentation analytics or location-based and social-network analytics. (See Exhibit 7.)

Despite telcos' increasing adoption of analytics, the TeBIT data did not show operators gravitating toward a particular analytics software vendor. The majority of telcos are using commercial off-the-shelf (COTS) solutions for analytics, with Google Analytics, IBM SPSS Statistics, Oracle BI, and SAS Business Intelligence and Analytics all broadly deployed. Significantly, these are all relatively traditional analytics tools, though some have been upgraded to include big-data functionality. Newer software that has been developed specifically for big data (and used with great success by many Internet start-ups) is rarely used in the telecom industry—and TeBIT 2015 found no evidence that this is changing.

Also noteworthy was the finding that the majority of telcos (57.1 percent of respondents) have not yet defined a data governance office or position with a clear mandate—and accountability—for setting and enforcing data policies (such as those that govern the creation, deletion, storage, use, and archiving of information). An even greater number of telcos (85.7 percent of respondents) has yet to

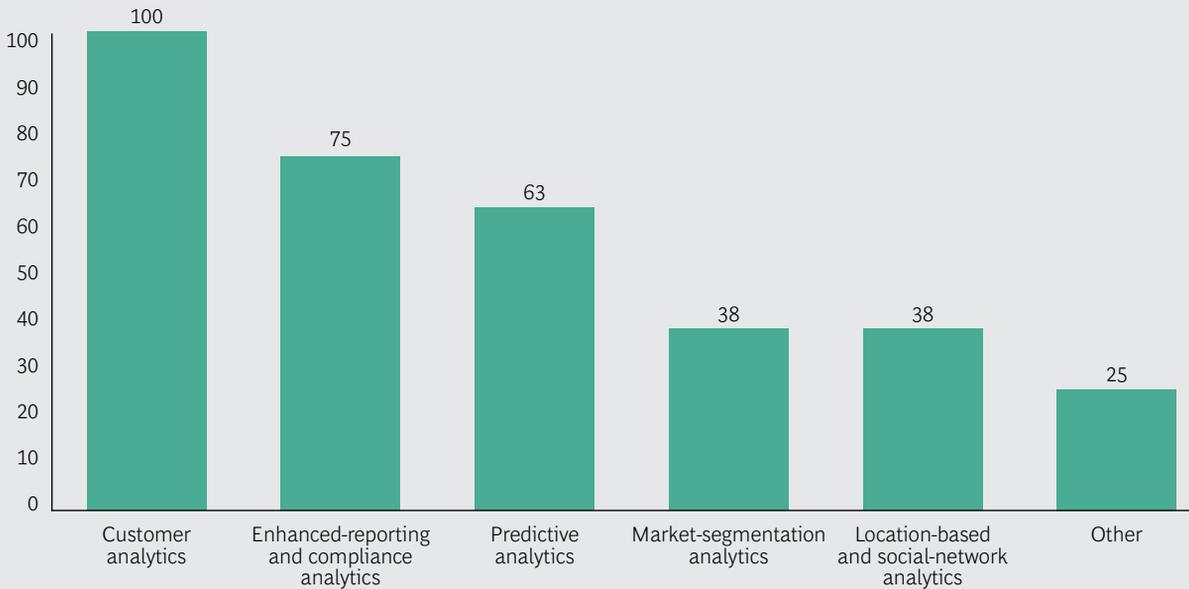
EXHIBIT 6 | Telcos' Analytics Capabilities Can Be Categorized into Five Maturity Levels



Sources: TeBIT 2015; BCG analysis.

EXHIBIT 7 | The Most Sophisticated Analytics Capabilities Are Used by a Minority of Participants

Respondents with analytics capabilities in selected areas (%)



Sources: TeBIT 2015; BCG analysis.

create an end-to-end data-management architecture. This is a surprising and worrisome finding, as such an architecture is essential for ensuring that multiple systems can seamlessly access data and access consistent data—a single version of the truth. Without a

data-management architecture, various systems are likely to be using different, and potentially conflicting, sets of data—a recipe for errors.

A REVERSAL OF FORTUNE

OUTSOURCING—FINALLY—IS LINKED TO LOWER IT SPENDING

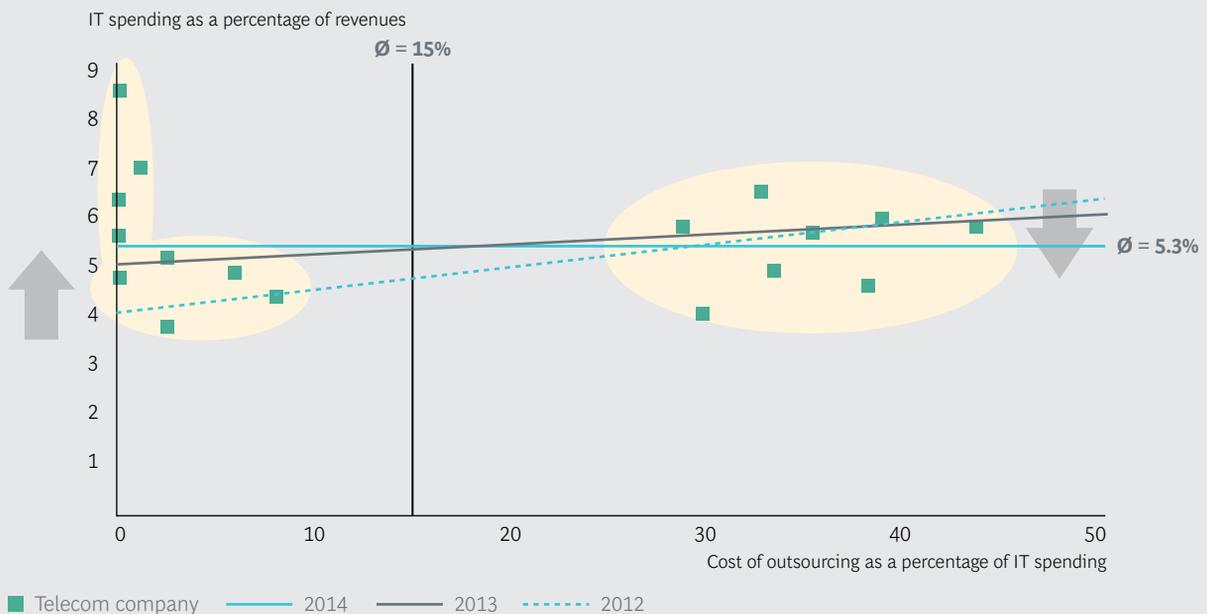
YEAR AFTER YEAR, COST reduction has been TeBIT participants' most commonly cited reason for outsourcing. But year after year, the survey data did not show a link between the two. In fact, historically, TeBIT has found that an increase in outsourcing was linked to an increase in IT spending.

This year was different. TeBIT 2015 found that a higher degree of outsourcing correlated

with lower IT spending. (See Exhibit 8.) As a means of lowering costs, outsourcing—at long last—is paying off.

Although this change could be an exception, there is reason to believe it is a sustainable trend. The survey data supported the idea that telcos are taking a more efficient approach to outsourcing. We found that participants are being more selective about which

EXHIBIT 8 | This Year, a Higher Degree of Outsourcing Correlated with Lower IT Spending



Sources: TeBIT 2015; TeBIT 2014; TeBIT 2013; BCG analysis.

Note: Data points have been added or removed to ensure the confidentiality of participants.

processes are outsourced and which stay in-house. In effect, telcos are outsourcing where it can make the most difference.

We saw evidence of this—and a hint of the payoff—last year, when the historical correlation between outsourcing and costs weakened. In that survey, the data showed that the areas with the greatest degree of outsourcing—such as application development and maintenance—were areas where skills and capabilities were more likely to be found externally than in-house. Conversely, areas where telcos generally had ample internal expertise and resources—such as IT infrastructure—were areas that had lower levels of outsourcing.

This year, these trends continued. Application development and maintenance, for example, had a higher degree of outsourcing than IT infrastructure. (See Exhibit 9.) Moreover, TeBIT 2015 revealed that telcos are devoting a smaller share of their IT budgets to outsourcing than they have in the past: on aver-

age, telcos allocated only 15 percent of total spending to outsourcing, compared with 23 percent and 26 percent in TeBIT 2014 and TeBIT 2013, respectively. This lends weight to the notion that operators are continuing to use outsourcing in a more selective and more efficient manner—and as a result, outsourcing is becoming more effective. The cost payoff we are finally seeing, then, is likely here to stay.

The use of commercial off-the-shelf (COTS) software, however, continued to drive total IT spending. A likely reason is that in addition to paying licensing and maintenance fees, telcos often customize such software packages significantly to meet their unique needs. (See the sidebar “Getting in Sync: An Interview with Thorsten Albers of Hrvatski Telekom.”) Furthermore, like last year, we saw that for many process areas—such as enterprise resource planning—only two or three vendors dominate. A strong market position, combined with telcos’ reliance on their software, puts these vendors in a good position to

EXHIBIT 9 | Operators Carefully Selected Which Areas to Outsource



Source: TeBIT 2015.

Note: For the purposes of this exhibit, outsourcing degree is the percentage of effort expended by, or the percentage of processes completed by, external resources; outsourcing degree is not a percentage of spending.

GETTING IN SYNC: AN INTERVIEW WITH THORSTEN ALBERS OF HRVATSKI TELEKOM

“The key to using COTS software is to avoid the customization that often results in exploding costs Once that happens, the benefits from standard COTS software erode.”

Cooperation and coordination aren't just buzzwords for telcos, they are critical ingredients for success in a fast-moving, increasingly digital-centric market. To steer investments in the right directions, and to set—and meet—the goals that can bring growth, IT and the business side need to work closely together. In the interview that follows, Thorsten Albers, chief technology and information officer of Hrvatski Telekom (or Croatian Telecom), discusses his company's approach—and more.



The TeBIT data indicated that Hrvatski Telekom has significantly reduced its budget for both operations and investments. What does this mean from a business perspective and what are your priorities over the next few years?

Actually, we haven't planned for a significant IT-spending reduction but for an IT transformation, with projects designed to upgrade our billing and CRM landscape—such as new CRM support tools for customer experience management. This activity has just started this year, so that would explain the low spending in 2014, but we'd expect an increase in 2015.

How do you see digital initiatives and big data affecting the business environment for telcos over the next few years? Do you expect operators to invest significantly in these areas?

I think digital and big data will change the telecom landscape—and the business—significantly. Perhaps the hype will dissipate, but these are areas that are here to stay, and I would definitely expect telcos to continue to invest in them. That said, the investments might be somewhat slower or less in big data. The reason, I think, is a lack of clear perspective on what can be done with it. Telcos have many ideas on what they can do with big data, but the overall picture on its full potential is still missing.

We saw that 100 percent of Hrvatski Telekom's capital expenditures for digital initiatives is allocated to IT. What is the thinking behind this?

When we are talking about digital, it is important to understand that the drive for projects is coming from the business side, but the funding, resources, planning, project management, and delivery comes from IT. So for initiatives such as mobile apps, customer self-service processes, troubleshooting tools, process digitization, and so on, the business units will specify the requirements and IT will implement them in the day-to-day execution. Therefore, the budget is allocated to IT. But the strategy, business case, and requirements are all coming from the business side.

In TeBIT 2015, we saw many telcos investing in digital initiatives without having an overall digital strategy in place. What is Hrvatski Telekom's approach?

For us, the focus around digital includes two business areas, which we refer to as e-company and e-business. The first focuses on internal digitization; the second concentrates on our external digital business. We have this dual focus because the requirements are different for each area. However, in both cases, the business side will determine how it wants to improve service digitization,

implement the digitization of services, run process improvement, and so on, but the strategies to do so are developed together with IT. So the result is a joint strategic approach.

That raises another question: How do Hrvatski Telekom's business and IT sides reach a consensus about how to focus investments? Do you follow specific processes or employ certain governance bodies?

We have introduced a governance body that coordinates investment priorities across all projects. It also manages the alignment among technology units, IT, the business areas, and the residential or B2B customer segments—and ensures a reasonable use of the budget. Most alignment takes place in individual interactions, but having this kind of governance becomes essential when the budget becomes tight. The process also can vary depending on the investment amount. For the largest projects, the governance body might reach out to the board to get a final decision or approval.

We also saw that among TeBIT participants, big data tends to be championed by the business side, while digital initiatives seem to be more of an IT topic. Does the role of the business side vary at Hrvatski Telekom?

We will see a few ideas driven by IT, but in the majority of cases, the activity is being led by the business side. This makes it critical to facilitate cross-functional cooperation among the business, IT, and finance units. In the past year, we have started many joint projects that have really helped to improve communication among these groups, which in turn has improved the way they work together.

Hrvatski Telekom seems to execute many tasks and responsibilities in-house. Why doesn't the company outsource less relevant tasks and direct its focus toward strategic priorities?

Frankly, we haven't felt any pressure to outsource. Our internal cost position has been quite good, as our in-house IT has been able—at least so far—to deliver the majority of services we need at lower costs than external vendors. We benefit, too, from having a highly educated staff, and as an alternative, we could use our own information communications technology (ICT) subsidiary. So in the end, the vendor landscape around us is not sufficiently attractive. In fact, there is only one area where we have outsourced: standard external-field services.

We saw from the data that Hrvatski Telekom seems to employ a large amount of commercial off-the-shelf (COTS) software. What are your experiences with it—and your future plans?

I don't think we have reached an end state regarding COTS software. One of the aims of our IT-transformation projects is to replace self-developed software with commercial solutions. But the key to using COTS software is to avoid the customization that often results in exploding costs, not only because of the customization itself but also because of ongoing maintenance and support. Once that happens, the benefits from standard COTS software erode.

But how do you manage to keep customization low? How do you avoid rebuilding today's business processes in COTS software?

One key lever is cost transparency. Since our projects are mainly business driven, the sensitivity to cost is well understood and triggers reconsideration of specific, costly customizations. Moreover, a

GETTING IN SYNC (continued)

telco of our size has a certain advantage, compared with much larger operators. With more units having specific requirements, they are more likely to need customization.

How do you ensure innovation and the exploration of promising IT trends? Some telcos have innovation labs that track new technologies so they can be the first movers; others wait to see how their peers proceed. What is the Hrvatski Telekom approach?

There is no general approach, per se; it really depends on the topic. For example, for network technology, we will be quite proactive, embracing high-speed networks and so on. For big data, meanwhile, we have launched several pilots with Croatian companies and implemented several applications, but we have not run a larger R&D effort in this area. One advantage we have when it comes to technology trends is the ability to interact with other Deutsche Telekom subsidiaries that have developed or successfully used interesting technologies. For example, we have taken ideas developed by T-Labs in Germany and adapted them for the Croatian market.

How important is a mature IT architecture for a highly productive and efficient IT function?

I believe that investing in a good IT architecture pays off. Otherwise, we would not be running our transformation projects. A main question I often ask myself is how comfortable do I feel with my current systems. The worst thing telcos can do is not take care of their IT landscape; if they ignore it, then they shouldn't be surprised when the IT no longer works properly. I felt that we were on the verge of that happening, and we are not going to let it happen, so we are taking a big step forward with our transformation effort. It is essential to invest well, and invest right, in IT.

What are the critical challenges for telcos today? What do they need to tackle most?

One thing most telcos have to tackle is declining markets. A large portion of my day-to-day work is related to managing operational cost. I'd love to be focusing on developing innovative new services and bringing them to market—those are the areas that are fun for us. But the general market situation is still challenging, with both fixed and mobile now suffering from declining markets and prices. For many telcos, that decline has hindered their ability to invest. In the Croatian market, at least, we are not yet in a position to realize the full potential of converged offerings because the IT landscape does not yet support it. So there is less freedom to develop a new growth area. This is exactly what we are addressing with our transformation projects. At the same time, there is an opportunity for us in the Croatian market. It makes a lot of sense for us to serve the ICT market and gain traction in that area. This is an upside that we can unlock—if we play the game well.

charge premium prices and maintenance fees. Yet TeBIT participants also reported high levels of satisfaction with COTS software: only 10 percent of respondents indicated room for improvement. One hypothesis for this finding is that COTS software may cost more than telcos expect, but it also gives them a wealth of new—and much needed—functionality.

Overall, the picture TeBIT 2015 paints is an encouraging one: participants appear to be better managing their IT operating model—and in more effective ways. This progress is crucial, as digital and other initiatives that enhance revenues will require further investment, and efficiencies gained in running the business can free up funds for growing it.

IT COMPLEXITY

GROWING BUT WELL MANAGED

THE OPPORTUNITY TO PROVIDE services to the digital marketplace provides telcos with the perfect incentive to replace outdated, inefficient legacy systems and processes with lean, automated ones—and ideally, as operators implement digital initiatives, that is exactly what they will do. But in the meantime, complexity in IT operating models is increasing. In many cases, digital processes are coming online in addition to existing processes. More selective outsourcing is also raising complexity, as are new computing paradigms, such as the cloud and software as a service. This additional complexity raises a crucial question: Are telcos doing a good job of managing it?

The TeBIT data suggested that they are. This year’s participants scored, on average, 36 (out of 100) on TeBIT’s complexity index, about a 6.5 percent increase over 2014’s average score of 34. Yet participants’ IT spending was the same as last year’s: 5.3 percent of revenues. This suggests that telcos are improving the way they manage complexity in their operating models—a welcome sign given that complexity, at least in the short term, is likely to rise. (See the sidebar “Investing Wisely to Help Transform the Business: An Interview with Erdal Altintas of Türk Telekom.”)

The TeBIT data also confirmed an important finding from last year, the first time the TeBIT benchmark examined in depth the re-

lationship between complexity and costs. Overall, complexity in a company’s IT operating model seems to significantly influence IT spending. (See Exhibit 10.) But once again, when we looked at individual complexity levers, the link was more nuanced—something telcos should keep in mind as they adjust their models going forward.

Telcos are improving the way they manage complexity in their operating models.

For example, the higher the percentage of external professionals in a telco’s workforce, the more complicated it is to manage and the higher the level of IT spending tends to be. Overall, outsourcing was not found to push up costs. However, like last year, we found that telcos that take a mixed approach to outsourcing—that use outsourcing for about half of their processes—had the most complicated operating model to manage and tended to have higher cost levels than companies that use outsourcing either zealously or in moderation.

Similarly, COTS software, which in theory should lower complexity, seemed to increase IT spending. We first uncovered this finding

INVESTING WISELY TO HELP TRANSFORM THE BUSINESS: AN INTERVIEW WITH ERDAL ALTINTAS OF TÜRK TELEKOM

“It is hard to measure in numbers the return of investments in big data. But we are certainly benefiting from it.”

IT transformations can be expensive and challenging, but for telecom operators, the payoff—when it comes—can be on multiple fronts. Chief among the payoffs are lower operating costs as well as the ability to support innovative and differentiating products and services. Investments in this area are crucial, but they need to be decided wisely, as Erdal Altintas, network and IT budget planning manager for Türk Telekom’s finance department, explains.



In the TeBIT 2015 data for Türk Telekom, we saw, for instance, that IT capital expenditures (capex) make up a relatively high share of total IT spending and that the project landscape is fragmented. This investment pattern suggests that Türk Telekom is undergoing an IT transformation. Is that the case and, if so, what are the critical areas of focus?

We are indeed undergoing a transformation. Last year, we started an all-new phase of a transformation, and we started to integrate our three companies. For the IT side, that means investing broadly in integrating their systems. The goal is to have one integrated IT landscape in the end.

We saw that a significant portion of Türk Telekom’s capex for digital initiatives is allocated to IT. How important are digital initiatives to Türk Telekom?

Digital is the future of all telecom and IT services. As a company, we are directly making this revolution happen and are very aware of the importance of digital. As such, we will continue to invest in digital technologies, such as IPTV, as well as data centers, Internet technologies, e-advertising, and so on.

What other areas are currently a focus for investment—and why?

We are mainly focusing on IPTV and data centers. For example, recently, we have invested heavily in Tivibu, which is our premium television offering. We see a lot of potential in the pay-TV market, and we have a fiber network. In data center services, we see great potential as well; it is an area where demand is increasing significantly. So we invest in all of the topics mentioned earlier.

In TeBIT 2015, as well as in last year’s benchmark study, we saw that integrated players seem to manage costs better than pure fixed players. How does Türk Telekom manage IT costs?

Although a transformation, of course, initially increases complexity and costs, in the long run—and even in the midterm—we expect it to bring significant cost reductions. Integrating the three companies will bring other benefits, too, such as increased negotiating power with suppliers. Right now, we are sourcing from various vendors for IT services, hardware, and so on. Consolidation is a key lever in managing these costs. We try to review existing contracts and not only reduce the number of suppliers but also renegotiate pricing.

Already Türk Telekom is conducting quite sophisticated big-data analytics. How is the business benefiting from it?

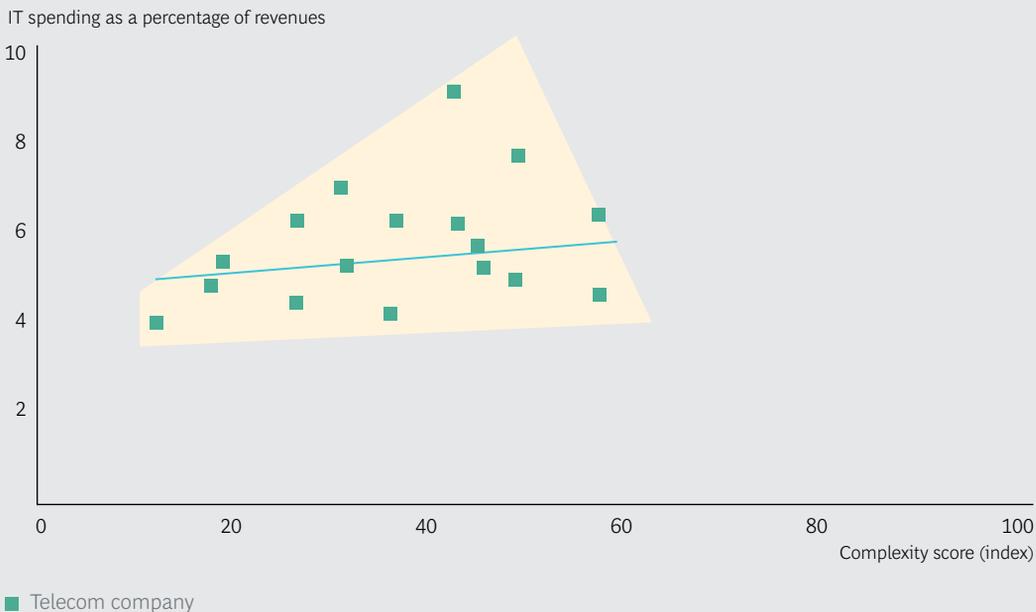
Since I am in the finance department right now, I cannot comment on the technical side of big-data analytics. What I can say is that measuring the benefit realization of IT projects is hard in general, because the relation between the revenue and the investment is not direct, as in the case of network investments, for example. Since big-data analytics is not an IT service directly used by the end customer, such as CRM or billing, it's even harder to measure in numbers the return big data provides. But we are certainly benefiting from it.

last year, and the likely reasons cited then for the correlation still apply: COTS software often requires customization, which can get expensive, as can ongoing maintenance fees. COTS software, however, also provides standardized, best-practice processes that can boost efficiency on the business side. So the benefits can often outweigh the costs—as evidenced by the high satisfaction rates we found among participants.

Overall, however, this year's story was one of costs being under control, not out of hand. The majority of telcos reduced IT's operating expenses (opex) in line with—or even ahead of—revenue decline. On average, IT opex de-

creased by 3.8 percent; as a percentage of revenues, it fell from an average of 2.4 percent in 2014 to 2.1 percent this year. As in previous surveys, we saw a significant gap in IT costs (the sum of IT opex and IT capex) among participants, ranging from 3.7 to 8.6 percent of revenues. Even after TeBIT's normalization process, which accounts for differences in size, business mix (fixed-only, mobile-only, and integrated services), and IT complexity, the gap was still wide. A possible reason for the disparity is that some telcos are still trying to reduce costs, while others have kicked off IT transformations or are investing heavily in previously postponed programs to improve the customer experience.

EXHIBIT 10 | Complexity in IT Operating Models Appears to Increase IT Spending



Sources: TeBIT 2015; BCG analysis.

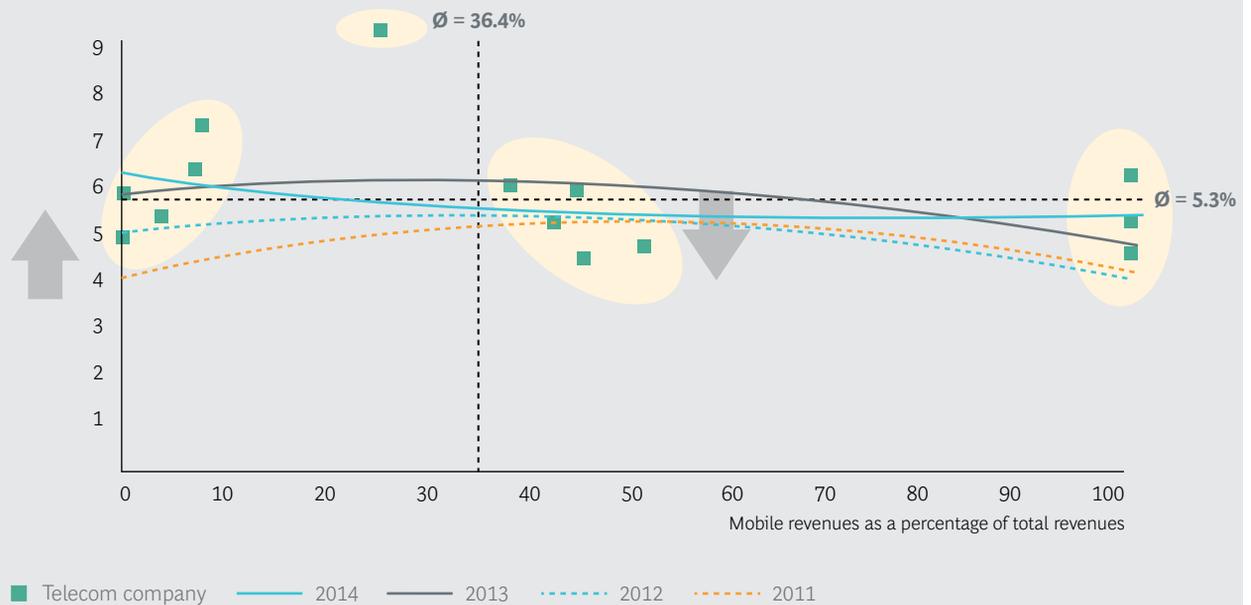
Note: Data points have been added or removed to ensure the confidentiality of participants.

Finally, TeBIT 2015 found integrated providers continuing to reduce their cost disadvantages. In the past, these players had typically seen their IT spending account for a higher percentage of revenues than fixed- or

mobile-only providers. But the gap is closing. (See Exhibit 11.) And as integrated providers continue to consolidate their fixed and mobile IT onto a single platform and replace legacy systems, this trend should continue.

EXHIBIT 11 | Integrated Telcos' Cost Disadvantages Continue to Disappear

IT spending as a percentage of revenues



Sources: TeBIT 2015; TeBIT 2014; TeBIT 2013; TeBIT 2012; BCG analysis.

Note: Data points have been added or removed to ensure the confidentiality of participants.

DOUBLING DOWN ON DIGITAL INITIATIVES

A NEW WAY FORWARD

IS THE TELECOM MARKET stabilizing or undergoing fundamental change? Although one can make a case for the former, with overall revenues holding steady for the first time in years, TeBIT participants are experiencing a new kind of competitive environment. It is one where traditional services—and traditional ways of doing business—do not bring the returns they once did.

Most participants did not see their revenues rise last year; in fact, the opposite was the norm. And as a group, participants did not see growth in their tried-and-true (or at least, previously true) fixed and mobile services but in new areas, such as digital products and services. Providers are facing more—and increasingly successful—challenges from agile competitors, many of them new to the sector.

Telcos need to understand how to make adjustments. At the top of the list should be digital initiatives. TeBIT 2015 showed that these pay off; they can help participants compensate for some declines in revenues. The survey also showed that e-sales and e-services—which by their nature help reduce manual effort—are beginning to gain traction and, in the process, are starting to reshape how telcos sell to and support their customers.

Yet this year's survey also showed that most telcos have yet to develop an overall digital game plan, one that coordinates the digital

strategy for the business side with that of IT. Creating an overall strategy—and continually tweaking it—is essential for fully realizing, and taking advantage of, the benefits that digital initiatives can bring. The good news is that a model for such a joint effort may already exist: big data. Although the full potential of big data has yet to be discovered by telecom operators, it is an area where the business side plays a crucial and influential role.

The full potential of big data has yet to be discovered by telecom operators.

Telcos may also want to take a close look at their investments. Their current focus on initiatives that improve the customer experience is a sound one—as are their investments in the levers that reduce or manage operating costs (freeing up funds to keep those customer-experience initiatives coming). These should continue. But given the payoff of digital initiatives, investments should be stepped up there as well—and once again, with collaboration and joint prioritization between IT and the business side.

We also saw how TeBIT participants appear to be doing a better job of managing their IT

operating models, even as those models become more complex. This is a welcome development, one that telcos need to continue. To that end, cost transparency is important, but so, too, are KPIs (such as the share of sales made and services provided through digital channels) that can help telcos measure progress toward greater efficiency and automation.

Indeed, telcos will want to continuously adjust their operating model, taking into account new factors—and increasingly crucial ones—such as the cloud and software as a service. In the new telecom environment, agility, flexibility, and openness to new ways of thinking and working are important. Nothing—neither IT operating models nor telcos themselves—can stand still.

FOR FURTHER READING

This publication is part of a series of TeBIT Executive Reports—telco IT benchmarking studies jointly developed and conducted annually by ETIS and The Boston Consulting Group.



Paving the Paths to New Revenue
The TeBIT 2014 Executive Report, October 2014



Telco's New IT Weapon: Business Value Creation
The TeBIT 2012 Executive Report, October 2012



Telcos' New Business Cycle: Time to Invest Again
The TeBIT 2013 Executive Report, October 2013



Telco IT Units Did Their Homework
The TeBIT 2011 Executive Report, October 2011

NOTE TO THE READER

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