



goetzpartners

STRATEGY | M&A | TRANSFORMATION



THE DIGITAL CHALLENGE

Redefining Business Models in the Telecommunications Industry

- + **Digitalization:** Telcos worldwide continue to lag considerably behind
- + **Strategic change for telcos:** B2B partnerships and platform models are key
- + **Big Data:** Monetization opportunities are missed
- + **Future growth strategies** and ways out of the commodity trap

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01 EXECUTIVE SUMMARY

❖ *With respect to digitalization, the telecommunications companies (telcos) continue to lag considerably behind market demand.*

94% of the companies surveyed have already begun developing initial digital business models or are implementing them. As it currently stands, however, not a single company has fully digitalized its business. One thing is certain – companies in the telecommunications industry will be compelled to digitalize their business models and develop new ones no later than by 2020 if they want to prevail in the market.

❖ *Cooperation agreements with “over-the-top players” (OTTs) provide new opportunities for the telcos.*

OTTs are threatening the telcos’ conventional revenue streams – given their strength, some providers virtually feel forced to act. Who will come out on top in the market for content – telcos or OTTs – has not yet been decided. To win the race for content, telcos will have to be prepared to invest a lot of money and develop a lot of insight into a market they don’t know that well yet. With this in mind, 56% of the telcos surveyed believe that alliances with OTTs will give them a shot at the future.

❖ *B2B partnerships will continuously increase in importance.*

As telcos can no longer generate adequate returns through voice and data transmission, new monetization models such as revenue sharing, platform fees and advertising are coming to the fore. This shifts telcos’ focus from consumer business to revenue gained from B2B business models. 93% of the study participants confirm this. Platform models are becoming particularly important for strategic success.

❖ *Telcos can use growth markets for their own strategy.*

The companies surveyed expect the strongest growth leading up to 2022 to occur almost exclusively in the B2B markets. Telcos are clearly in pole position for all mobile solutions and for consolidating all of the “things” that are to be connected to the Internet of Things (IoT) in the coming years. Smart cities, smart home solutions and autonomous driving are just some examples of the potential applications. Here, revenue streams are expected to come from B2B partners as well as from consumers, because the latter participate in these new value-added services, too. The IoT is expected to expand by triple-digit growth rates.

❖ *Telcos have so far failed to make the most out of Big Data.*

Due to their customer structure and their business model, telcos have huge quantities of customer data at their disposal. Once telcos manage to fully leverage the potential of the IoT environment as enablers, they will have access to even more data points – an excellent starting point for using Big Data as the basis for new business models. So far, however, telcos have barely been exploiting this potential. Many are merely experimenting with using Big Data to optimize both sales and the customer experience. Only 2 out of 5 of the study participants are already monetizing data externally through their companies. The study participants singled out the successful linking of data from numerous sources as the key to success in the development of Big Data services.

❖ *On the whole, telcos enjoy an environment well-suited to developing new business models – on the basis of partnerships as well as in the Big Data segment itself.*

What matters right now is that they jump on this opportunity quickly. If they succeed, telcos will play a central role in numerous growth areas. Beyond pure connectivity, however, the telecommunications industry can leverage value-added services to play an important role as an enabler for growth areas – and at the same time ensure the future viability of their own business.

*Telecommunication
companies
should be at the
forefront
of digital transformation.*

02 FOREWORD

Following years of digitalization in all sectors and industries, telecommunications companies actually should be at the forefront of this digital transformation. After all, their core business – connectivity – provides a critical basis for the transformation. In fact, however, very few telcos have fully implemented digitalization in their own companies and mined its potential. While many companies in this industry have already digitalized individual business models, most of them shy away from adapting their entire business to the new digital world, or are unable to do so.

This, even though digitalization is a material threat to the telcos' traditional business models. The text message is emblematic of entire revenue streams that have been obliterated within a short time due to new technologies. At the same time, consumers' willingness to pay for voice and data connections is declining. Such developments are being spurred by OTTs, meaning companies such as WhatsApp and Netflix that make products and services available via the Internet, allowing them to circumvent conventional marketing routes and pick off the revenues of the traditional telcos. Add to this the OTT services of equipment manufacturers (e.g. Apple's iMessage or Face-time) as well as the pressure from ICT service providers, which is completely independent of digitalization. All of it has led to a sea change in the telecommunications industry.

Conclusion: Established telcos, such as mobile and land-line service providers, mobile virtual network operators (MVNOs), and resellers are now increasingly competing, not just with each other, but also with companies that have come of age in the digital era. The business models that telcos have been following for years will have to be revamped accordingly. Telcos will slowly but surely lose their dominant position in the market if they fail to both act soon in this situation and adapt their business models to the digitalized world.

Do the established players in the telco market even stand a chance of gaining new competitive advantages in this ever-changing environment? Must they become more like their new competitors in order to be able to ride the trends of the future in digitalization? And if so, must they ultimately redefine themselves completely if they ever want to be a relevant market player again?

To tackle these issues, goetzpartners surveyed top executives and C-level executives from renowned telecommunications companies worldwide in an international study. The study shows how the companies are reacting to the current market developments and what they expect the future to bring by 2020 and beyond. The findings provide highly significant guidance for the future of telco companies on every level of value-added services. ||

03 DIGITALIZATION: FROM EXPECTATION TO IMPLEMENTATION

3.1. FORCED TO INNOVATE

Whatever the sector and industry, all companies around the world know that digitalization will define how the future unfolds. What this means especially and particularly for the telecommunications industry is that it must adapt and reinvent its business models:

81% of the study participants believe that digitalization threatens their traditional business models and established revenue streams.

The relevant players in the telecommunications industry are being squeezed from two sides. On the demand side the telcos are faced with increasing market saturation, low willingness to pay and commoditization trends. On the supply side there is a growing convergence in which traditional (industry) boundaries between telco and content providers as well as those between fixed and mobile operators are being torn down. This is calling established approaches into question. Moreover, telcos are increasingly having to deal with regulatory interventions such as the recent statutory tightening of identification requirements for prepaid users as well as the new range of requirements that the German Federal Network Agency (Bundesnetzagentur) has imposed in connection with data retention.

Some of these interventions also pose a threat to long-established revenue streams. The most recent examples: At the end of 2016, the German Federal Network Agency decided to incrementally lower the termination fees applicable in Germany, the fees that the network operators charge each other when transferring phone conversations from one network to another. Since mid-June of this year, the elimination of roaming fees in the EU has stripped telcos of a lucrative source of revenue – people’s cell phone conversations and data usage when traveling within Europe¹⁾.

In addition, telcos are being challenged by the attacks on their traditional business models from OTT services such as WhatsApp, Netflix, or Skype. OTTs are making it harder for telco companies to generate value, not to mention that they are considered responsive, eager to experiment and highly oriented toward end customers. These days, traditional revenue streams such as voice transmission have become either dramatically less important or have become almost completely irrelevant, as is the case with text messaging, and have been replaced by OTT services.

PERCEIVED IMPACT OF DIGITALIZATION

“Overall, how much do you think digitalization is affecting the telecommunications industry?”

Voice transmission is no longer a money-making business; it is a commodity and now happens via bandwidth.

Top executive, HR, Veon, Germany

In the future digitalization will be the intrinsic core of how the industry supplies services and processes.

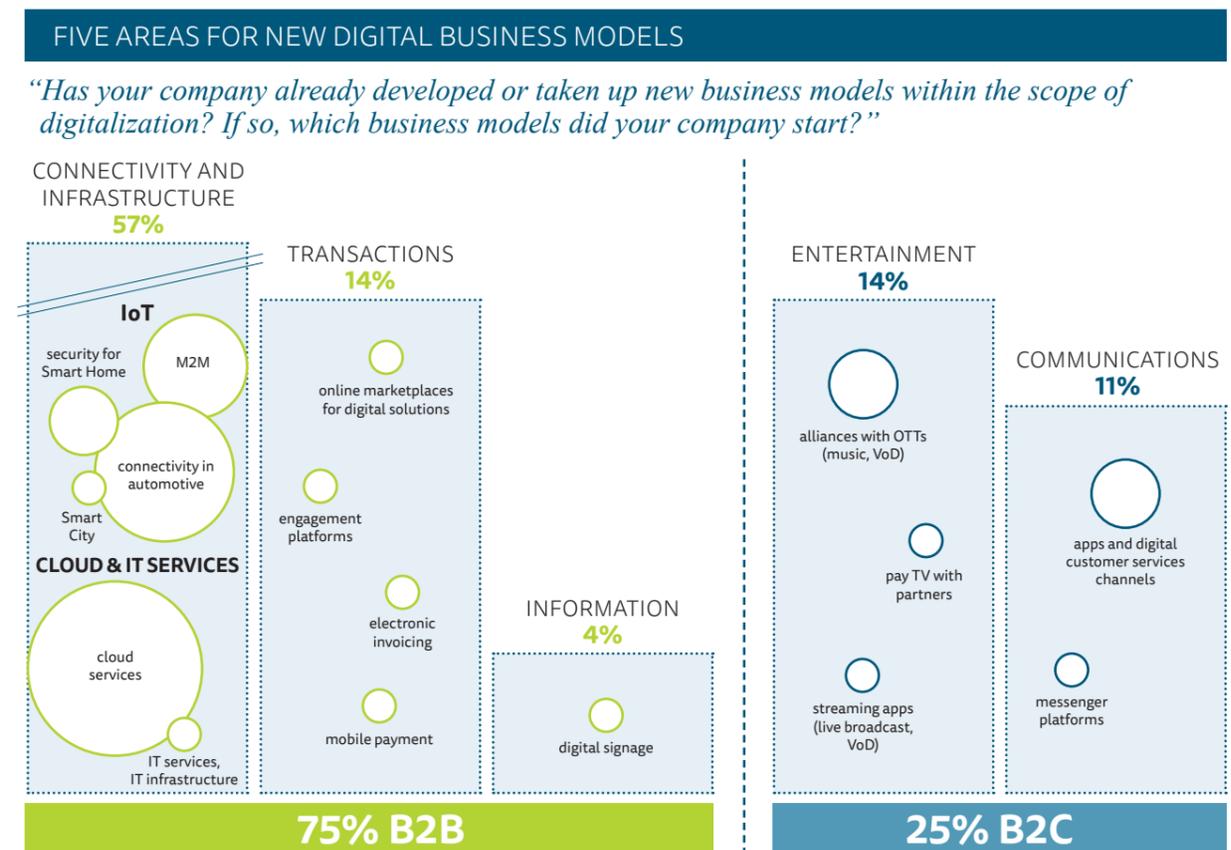
Top executive, COAI, India

In the end, digitalization is the oil field that will keep the entire telco industry alive.

Top executive, Technology & Innovation, Deutsche Telekom, Germany

The telcos must step up to this threat – by digitalizing their own processes and making them more efficient, but especially by developing new, digital business models themselves. But telcos lag considerably behind with such requirements. To be fair, 94% of the companies surveyed are already working with or developing new digitalized business models. New products and technologies are also being brought to market in the field of voice transmission, as seen in recent years with Voice over LTE and Voice over Wi-Fi. At this point, however, not a single company has fully digitalized its business.

In developing new business models, telcos are focused primarily on the following five areas, whereby 75% can be attributed to the B2B sector, and only 25% to B2C:



In the B2B context, new business models can be divided into the fields of connectivity and infrastructure, transactions and information. The field of connectivity and infrastructure, which covers 57% of the mentioned business models, includes solutions particularly for the IoT – specifically, the surveyed study participants mentioned the fields of connectivity in automotive, M2M, security for Smart Home and Smart City. In addition, there are cloud and IT services. To the field of transactions are attributed online marketplaces for digital solutions, engagement platforms for OTTs and other companies, electronic invoicing and mobile payment. Digital signage (i.e. the operation of digital advertising and information systems), was mentioned in the field of information.

¹⁾ Heitmann, G. (2017). 2017 – An outlook: This is what the telecommunications industry faces. Retrieved from <https://blog.telefonica.de/2017/01/2017-ein-ausblick-das-erwartet-die-telekommunikationsbranche/>

In the B2C context, new business models can be divided into the fields of entertainment and communications. For the field of entertainment, the surveyed study participants mentioned alliances with OTTs regarding music and video, content streaming apps for live broadcast or Video on Demand and pay TV offerings with partners. According to the study's findings, approaches for new business models in the field of communications might involve apps and digital customer channels in customer services or messenger platforms.

But telcos have confidence in themselves. Most of the interviewees considered their own company to be rather more innovative compared with its direct competitors. The companies that are headquartered in Europe and the United States in particular believe that they are innovative, whereas four out of six representatives of companies in the emerging markets (UAE, Saudi Arabia, Russia, India, Pakistan) and Bangladesh assigned a relatively low value of five to their companies (i.e. neither out in front of nor behind the competition). However, the gaps between various companies in the market are judged to be relatively small, and every company also believes that there is room for improvement within their own entity with respect to innovation and digitalization.

3.2. ENABLER ROLE AND PROMISING PARTNERSHIPS

Telecommunications companies are emphasizing their role as important enablers of digitalization. The expansion of broadband for the purpose of handling growing data volumes and ensuring network security are prerequisites for developing the digital economy. This is where new revenue streams and innovative business models from which the telcos can – and will – profit are being created. In turn, they will be able to support corporate customers and partners with their products and services in connection with digitalization. Digitalization will also permanently lower costs in the future: for customers as well as for the telcos themselves.

Two reasons are key to promoting alliances with the OTTs: One, the telcos benefit from the OTTs' differentiation potential and attractiveness in connection with improved customer satisfaction and the battle for new customers. Two, these factors drive the growing demand by customers for larger data allowances, more bandwidth, and faster connection speeds.

But many telcos still lack a genuine strategy for how to deal with OTTs. Two of the study participants got to the heart of the matter. They believe telcos must collaborate with OTTs, because the latter's clout in the market virtually compels the providers to act. Yet others have a clear goal. It's all about working with specialists to open up markets together: "Netflix is partnering with our company on new streaming segments. The same is happening in the music industry with Spotify and Apple Music."

On the continuum between competition and collaboration with OTTs, the telecommunications companies have three options for developing viable models for the future:

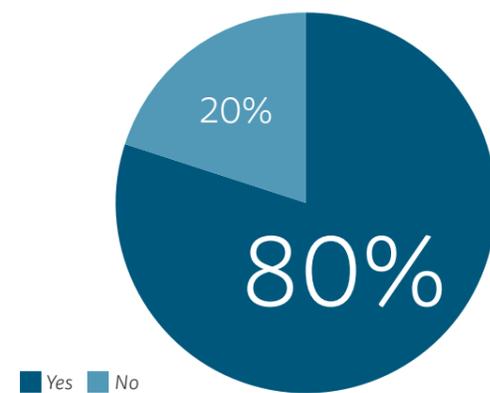
56% of the interviewees also believe that OTTs offer opportunities for the future – despite jeopardizing traditional revenue streams.

19% perceive the OTTs as both an opportunity and a risk. And even those 25% of study participants according to whom OTTs do nothing but put pressure on their business outlook limit this view to B2C and content. In the final analysis, they too see alliances with OTTs as an opportunity to gain significant advantages in the battle for new cell phone customers.

To tap into this potential, 80% of the interviewees stated that their companies have already forged alliances with OTTs or are planning to do so:

MAJORITY OF TELCOS COOPERATE WITH OTTs

"Are you at the moment cooperating or could you imagine cooperating with an OTT?"



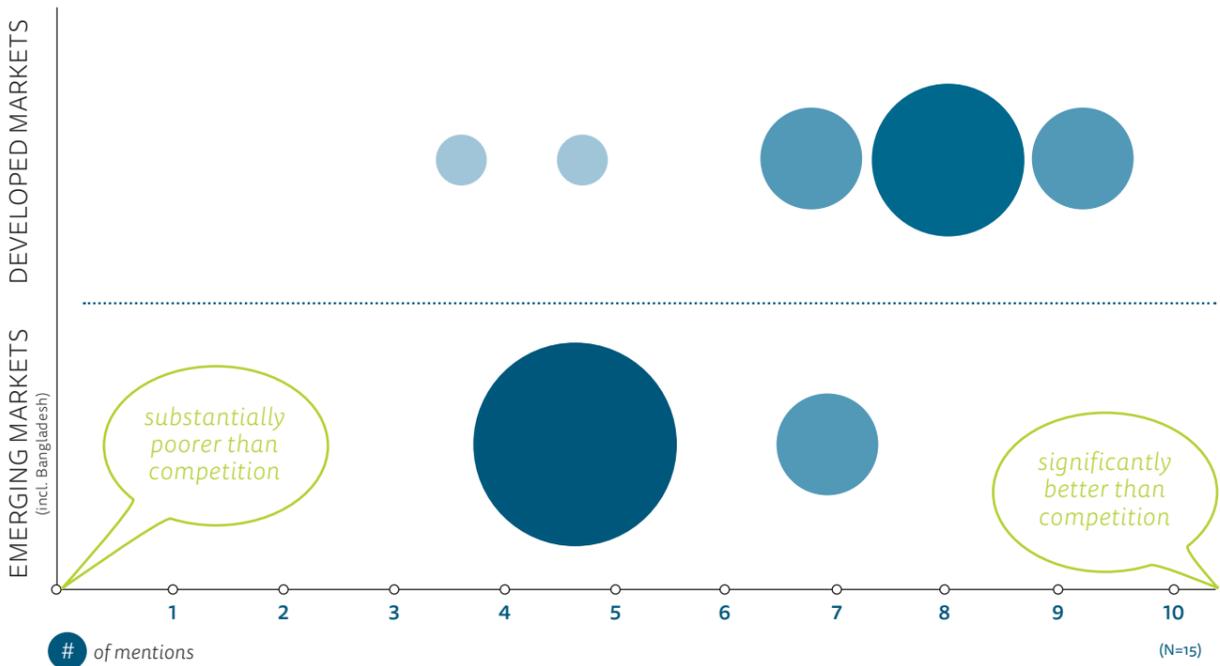
- 1 Internal development and provision of OTT services
- 2 Development and provision of OTT services through affiliates
- 3 Cooperation with providers of existing OTT services

Whether by collaborating with OTTs or by other means: Companies in the global telco industry can't avoid the fact that they must digitalize their business models and develop new ones no later than by 2020 if they want to prevail in the market.

If they do this, they are more likely to become more significant rather than less – in part because of their role as enablers of entire economies' increasing digitalization. ||

HOW TELCOS RATE THEIR INNOVATIVENESS

"If you take a look at your direct competitors - how innovative in the field of digitalization do you see your company compared to your competitors on a scale of 1 to 10? 1 means substantially poorer than competition and 10 means significantly better than competition in terms of innovation."



(N=15)

04 OVERCOME OBSTACLES, SEIZE DRIVING FORCES

However, the development of such new business models is not just a question of having the right ideas at the right time. The parameters must be right, too.

Study participants said that high market regulation is their greatest obstacle. Driving forces are trends in demand as well as continuous development of technology.

IMPEDIMENTS TO THE DEVELOPMENT OF NEW BUSINESS MODELS

REGULATORY	STRUCTURAL
Extensive security requirements, especially with respect to data privacy and consumer protection.	Customer skepticism toward business models that are based on the analysis of personal data.
Less leeway for telcos compared with the OTTs due to their different regulatory treatment and the dictate of net neutrality. OTTs do not pay any fees for using the networks, whereas the cost of investing in network expansion is borne by the telcos.	Telcos have a disadvantage compared with the OTTs, because operating the networks requires extensive resources and limits the companies' flexibility.
In part, legislation is responsible for unattractive parameters/ lack of investment incentives for infrastructure projects.	Much need for investments in the face of uncertain returns.

goetzpartners also sees the following structural impediments:

1. Consumers' declining willingness to pay, especially for communication services. According to numbers published by TeleGeography, the average revenue per user (ARPU) in wireless services (which includes all revenue of a mobile network operator) in recent years has been dropping in almost all industrialized countries. (For example, CAGR for 2011-2016 was -2% in Germany, -7% in France, and -2% in the U.S.)²⁾
2. Lack of openness toward new business models among consumers/companies, especially in Central Europe.
3. Lack of risk capital for new business models and lack of an appetite for risk.
4. Conflict with legacy systems, meaning there may be the risk that a new business model could cannibalize one's current core business. Start-ups do not have this problem, because they lack a core business.

2) Emerging markets: In India and Russia, this trend is just beginning to emerge. After several years of continuous decline, Brazil and China recorded gains (the former in 2015 and both countries in 2016) compared with the relevant previous year.

FORCES DRIVING THE DEVELOPMENT OF NEW BUSINESS MODELS

REGULATORY	STRUCTURAL	TECHNOLOGICAL
Possible relaxation of existing regulatory framework/regulation of telcos, especially with respect to net neutrality and consumer protection. This loosening is apparent in the new regulation that the European Commission has adopted, which, for example, made it possible for streaming services to operate within the EU seamlessly without any restrictions. ³⁾	Company-specific: Restructuring of intracorporate structures focusing on digital issues: Simplifying work processes, attitudes, and decision-making levels helps to make companies faster and more flexible. Innovation hubs or corporate ventures can provide the requisite leeway to this end.	Greater data allowances can be processed in real time thanks to improved methods of analysis.
Promoting investments (through subsidies or tax relief).	Demand-induced: The expectations of a new generation – the digital natives – because they are considered end customers who are less willing to pay for services, yet increasingly expect to have access to all data and apps everywhere and at all times.	High level of market penetration with smartphones and good mobile coverage drives customers' demand for new services. By 2021, 50.5% of the world's population will have a smartphone ⁴⁾ ; currently a mere 1.3 billion people do not yet have access to a broadband network. ⁵⁾
		In the cloud: positive developments with respect to data security/privacy (protection of personal data).

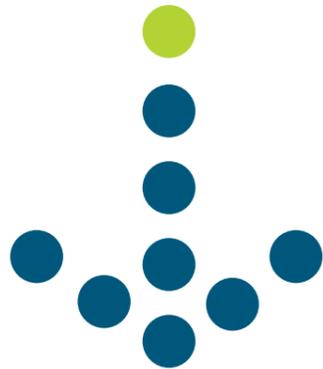
goetzpartners also sees the following drivers at work:

Many sectors recognize the potential of IoT applications (e.g. industry, healthcare).	Powerful network technologies, advanced end user devices (smartphones, tablets) as well as new device categories (wearables, voice assistants).
	Low consumption of energy and established security standards make services attractive for broader customer groups.
	B2B: standardized network technologies (e.g. NarrowBand IoT, LTE-M, 5G) and economical hardware (sensors, actuators) enable more efficient IoT solutions.

3) European Commission (2017). Digital Single Market: EU negotiators agree on new rules allowing Europeans to travel and enjoy online content services across borders. Retrieved from http://europa.eu/rapid/press-release_IP-17-225_en.htm

4) Statista (2017). Digital Economy Compass.

5) GSMA (2017): The Mobile Economy 2017.



In particular, the regulatory environment is decisive to the success or failure of new business models. This is also where differences between geographical regions have the greatest impact. In the United States, the main goal of regulating the telco industry is to ensure that it generates adequate returns on investment. In the Asia-Pacific region, by contrast, the availability of high-performance connections (e.g. using fiber optics) for everyone is an element of industrial policy and services in the public's interest.

And in Europe, regulation is directed more intensely at ensuring competition and consumer protection – with the attendant transparency obligations and clear caps on fees, such as for international roaming. One thing that becomes clear from these differences is the competitive edge that Asian countries have in areas such as broadband speeds.

The ability that the telcos themselves have to influence such matters is limited. However, they ought to make legislators aware of their concerns regarding the unequal playing field and push for fair competition with the OTTs.

There are different content players entering the market and they are not investing in the infrastructure. Regulatory obligations have to intervene and make them pay for the networks as well.

Top executive,
Regulatory Commercial, du, UAE

Structurally speaking, on the other hand, telcos have few concerns and did not mention any technological hurdles regarding the development of new business models.

So, the question is not whether there will be any new business models. Instead, it is who will succeed in implementing them – the telcos or the OTTs?

To prevail in this competition, the telcos should increasingly shift their focus to issues of flexibility within their organizations. And even if the technology is perceived more as a driver than as an impediment: Investments in the expansion of fiber-optic networks and the 5G standard for cell phones are crucial for the success of new business models. ||

In a European comparison, fiber optic coverage is lagging, because [amongst others] investments have not always paid off in the past.

Top executive,
Marketing & Strategy, Vodafone, Germany

(the comment refers to the German market)

05 ONLY WITH MY PARTNER

5.1. ESCAPING THE COMMODITY TRAP

In the long term, however, keeping up with the latest technology and expanding one's portfolio incrementally will not suffice to successfully meet the challenge that arises from the commoditization of voice and data transmission. What telcos must do instead is to realign themselves in order to develop new sources of revenue.

This is because existing business models based on usage or subscription fees for consumers are facing mounting pressure, unless they offer the customer pronounced added value. Retail customers are showing greater willingness to pay for value-added services, meaning content and services for entertainment, information and transactions.⁶⁾ Unlike pure voice and data transmission, such services can also achieve pull effects and improve customer loyalty.

But a fundamental shift in the telcos' outlook is much more important than this expansion of their existing lines of business.

Instead of focusing exclusively on consumers, as they have done in the past, telcos are opening up new lines of business through partnerships with other companies.

New monetization models such as white-label services, revenue sharing, platform fees and advertising offer potential for the future here. In just a few years, these revenue models based on B2B partnerships will surpass the pro rata share of the B2C business models in total sales.



A B2B partnership is a business model based on an agreement involving two or more companies to share resources (e.g. financial, capabilities) to reach a common goal (e.g. joint product development).

It is very important to have good B2B partnerships. B2B is important because you get good scale effects rather than reaching out to single customers, since the companies want to exploit their network capacities.

Top executive,
COAI, India

It will not work without partnerships.

Top executive,
Technology & Innovation,
Deutsche Telekom, Germany

There was almost unanimous agreement among the study participants with this assessment of the shift in significance.

94% of the study participants believe that, at minimum, B2B partnerships are important for their companies.

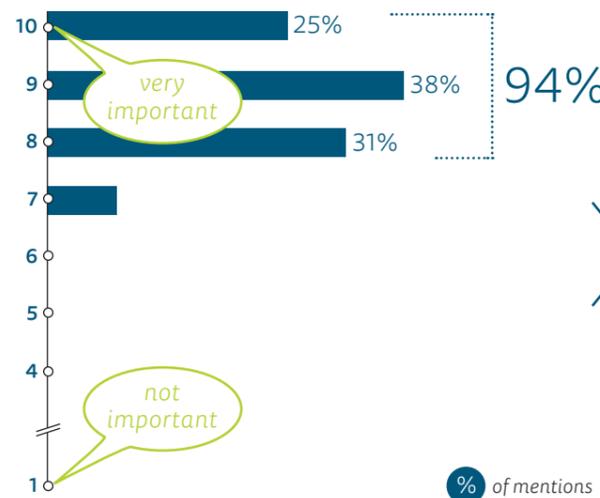
With respect to the future, those surveyed also say that B2B partnerships will play a decisive role for a company's positioning in the market. 69% of the interviewees expect

the significance of such partnerships to continue to grow, and 31% believe that they will remain as significant as they are now.

HIGH IMPORTANCE OF B2B PARTNERSHIPS

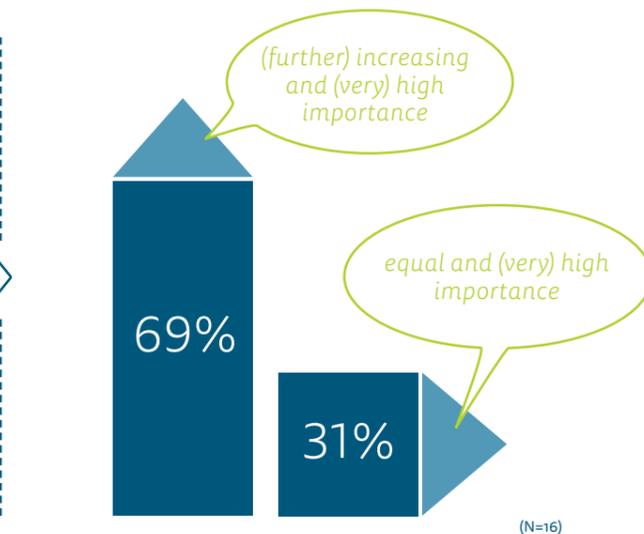
TODAY

“On a scale of 1 to 10: How important are B2B partnerships for your company today? 1 means not important and 10 means very important.”



FUTURE

“What role will B2B partnerships play for the market positioning of your company in the next five years?”



We must definitely switch to partnering if we want to be competitive in the future.

Top executive,
Online Shop Management, 1&1, Germany

5.2. MORE SPEED, MORE DIFFERENTIATION, MORE DIGITALIZATION

An ever-increasing time to market and ensuring that the telco company is established as a digital brand are the priority goals for study participants who bank on B2B partnerships. With the support of their cooperation partners, telcos want to obtain access to skills that they lack and that are difficult to establish – and leverage them to unlock new markets and accelerate their entry into them. Specifically, B2B partnerships can help solve technical problems such as how to handle growing data streams and cut down on trial-and-error phases in new business segments.



A B2B platform creates value by facilitating exchanges of services / products between two or more companies. In the telco sector, new B2B platform services leverage telco's voice, messaging, and data connectivity assets to help other organizations to interact more effectively and efficiently in the following areas: Identity, Authentication and Security, Marketing and Advertising, Digital Content Distribution, Offline Logistics, Transactions (billing and payments), Customer Care.

Initial examples of B2B partnerships show how they can pave the way for telcos with respect to new lines of business. Telco/OTT partnerships are particularly popular in the field of entertainment (video and music),⁷⁾ where partnerships with OTTs currently predominate. Add to this partnerships like Google's for its Rich Communication Services (RCS) with telcos such as Deutsche Telekom or America Movil.

Particularly with respect to the Internet of Things, telcos are already working intensively with technology providers in order to make solutions available to customers through intelligent devices, connectivity, and the associated apps. Partners are available along the entire value-added chain here – from connectivity management (e.g. Ericsson, Cisco), to data & device management (e.g. HPE), to application management (e.g. Cumulocity or PTC).

Platform models will evolve into a strategic success factor for telcos over the next five years.

5.3. FROM PARTNERSHIP TO PLATFORM

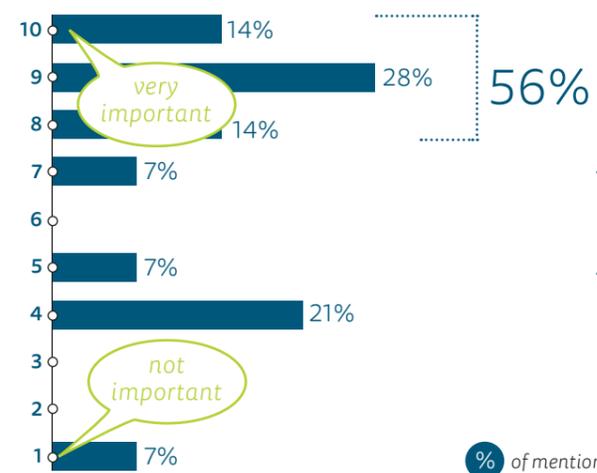
As the examples already show, B2B platforms are considered particularly promising possibilities for efficiently implementing partnerships, especially wherever the expertise and services of several entities must be brought together to create a value-added solution for customers.

93% of the study participants agreed: For them, B2B platforms will play an important to very important role in their own company's positioning in the market. This points to an enormous surge in importance in the near future. This is because currently a mere 56% of the study participants already assign a role to platforms that is at least important (values of at least 8 on a scale of 1 to 10, with 1 = unimportant and 10 = very important):

INCREASING IMPORTANCE OF B2B PLATFORMS

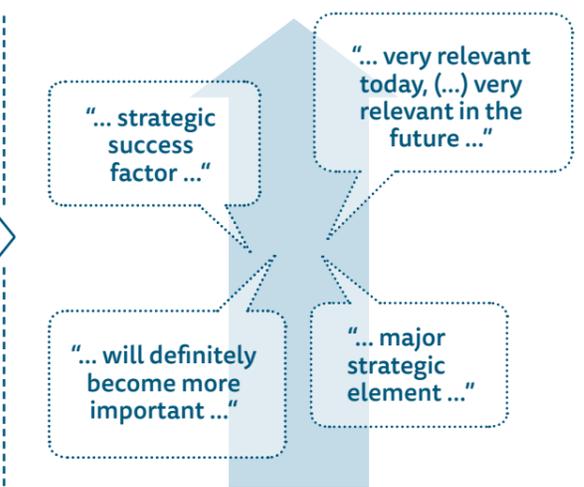
TODAY

“On a scale of 1 to 10: How important are platforms as a new business model for your company today? 1 means not important and 10 means very important.”



FUTURE

“What role will platforms play for the market positioning of your company in the next five years?”



⁷⁾ Ovum (2017). Tighter operator-OTT partnerships bring monetization opportunities. Retrieved from <https://www.ovum.com/tighter-operator-ott-partnerships-bring-monetization-opportunities/>

The starting point for the telcos in this respect is good. Thanks to their large customer base and comprehensive, often highly reliable network infrastructure, they are well positioned to implement platforms and make them successful.

Identifying the right platforms and investing in new platforms and thereby getting into new industries improves the user experience.

Top executive,
Technology, AT&T, USA

But this also requires the capacity to innovate digitally. The telcos must be close to both the market and customers' needs, must develop and test digital approaches, and must either discard them or continue to refine them iteratively – all while working in close collaboration with potential partners. The established structures of many telcos are currently not designed for such an approach, and often enough the requisite flexible structures and methods must first be introduced and established in a company. One avenue in this direction is to collaborate with and integrate innovative start-ups. Many telcos are already investing in such entities through corporate venturing or incubators, or are promoting the associated practices in their own innovation hubs. It remains a challenge, however, to integrate the ideas, business models, and culture of the start-ups and innovation hubs into the entirety of a telecommunications company.

The same applies to open and collaborative innovation in the context of platforms. Open interfaces and joint standards are the basis for successful platform models and accelerate the dissemination of innovations, yet they also require telcos to abandon long-standing business practices, to become more transparent and to open up.

By 2022, B2B partnerships and particularly platforms will become increasingly important for telcos. The telcos' advantageous starting position in this respect will help them successfully reinvent their business and revenue models. However, they will also have to deal with a fundamental shift in their approach. ||

Scenario 2020: Content & entertainment

Start binge watching the new season of a series in the living room and continue on the train? Have customized news sent to your smartphone? Quickly check traffic reports before going for a drive? The customers of a telco company can do all of that now through a centralized dashboard that their provider makes available to them in accordance with their interests and needs. This is because the provider makes proprietary content formats available, buys others through partnerships with media companies and integrates OTT services seamlessly into its own offerings.

Accordingly, the customer's invoice no longer specifies data packages, not to mention voice minutes or individual text messages. The customer buys a content and entertainment package instead – from premium offers with the ability to select from among hundreds of content channels including cloud photo archiving and blazing fast down- and uploads, all the way to economical yet limited options for students. The advantage for the customer? As the telco provider is the general contractor for the customer in all matters related to content & entertainment, it also has an overview of all of the costs. At the same time, the offer is extremely attractive, because it is tailored to the customer's preferences.

06 BIG DATA, BIG BUSINESS

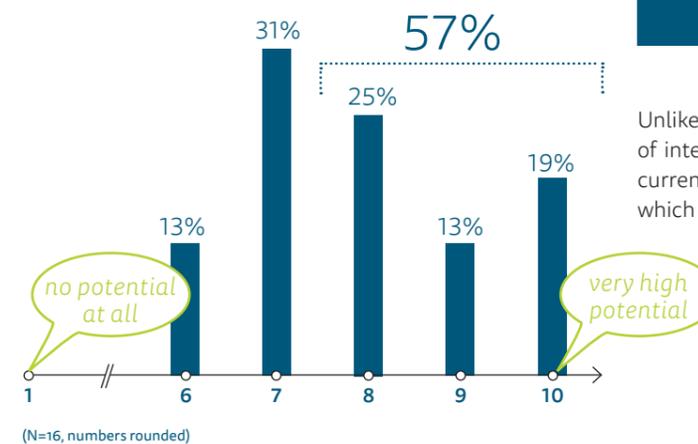
6.1. BIG DATA IN THE TELCO INDUSTRY

The second major opportunity for telcos is rooted in their customer structure and traditional business model, but it links it to state-of-the-art technology. Telecommunications companies have been in possession of large quantities of customer data for years – an excellent point of departure for using Big Data as the basis for new business models.

57% of the study participants believe that Big Data has great to very great potential of becoming a successful new business model.

COMMERCIAL POTENTIAL FOR BIG DATA

“Do you think big data has the potential to become a successful new business model? On a scale from 1 to 10, how big do you think is the potential with 1 = no potential at all and 10 = very high potential.”



Big Data is the driving force of the future. At the moment, the customer journey isn't fully exploited. But everyone wants to have all the information: Which apps are used? What's happening in social media? You have to fully understand the lifestyle of your customers.

Top executive,
Digital Marketing, Bangalink, Bangladesh

Unlike other B2B partnerships, however, a significant number of interviewees are skeptical or uncertain. It is obvious that currently it is difficult for the telcos to categorize the extent to which Big Data will affect their revenue models.

You could sell the data, but the question is whether you should do that. For one, doing so undermines customers' trust, and Google has already managed to do it quite well. Anyone else doesn't really stand a chance against the major providers.

Top executive,
Online Shop Management, 1&1, Germany

M2M will also play a big role. What will be decisive here is analyzing how to combine data from different data sources. But the question of whether this will actually be a market for telcos is still a long way off.

Top executive,
Marketing & Strategy, Vodafone, Germany

Examples from real life point the way for future applications of Big Data services. For instance, Telefónica NEXT and a partner are making databases and analyses available to Munich's traffic planners. To do this they use anonymized cell phone data from the network of Telefónica Germany to plot movement streams that provide a comprehensive supplement to existing traffic analyses. Telefónica NEXT is collaborating in similar fashion on a project that aims to optimize local traffic in Berlin and Brandenburg.

Cisco, the technology company, is going even further. In a pilot project involving the City and Port of Hamburg, Cisco is making data from the Internet of Things – from track sensors, parking garages, etc. – available with the aim of analyzing traffic flows, informing drivers of available parking spaces and the traffic situation, as well as establishing integrated traffic management. In the brick-and-mortar retail trade and the travel industry, the beacon technology is already being utilized at Frankfurt Airport and at Lord & Taylor (a luxury U.S. department store) with the aim of addressing customers individually through location-based marketing and as part of an enhanced customer experience.

These examples show that the range of applications for Big Data Analytics is large and that almost all applications require "things" that are linked through the Internet: devices, machinery, traffic participants, etc. Connecting these things constitutes the classic core business of the telcos: the collection, processing, and analysis of the valuable data that are created in this connection could become a core business of the future.

6.2. THE CRUX OF THE MATTER: DATA PRIVACY AND PROTECTION

A number of objections must, however, be overcome before telcos can monetize the wealth of data in their possession and turn them into revenue and business models. Almost all study participants stated that the issue of data privacy and protection is the biggest challenge. This starts with the statutory requirements, encompasses the technical challenges associated with ensuring data privacy and protection, and goes all the way to end customers' concerns over the telcos' handling of their data.

But these regulatory challenges should not be an impediment to establishing Big Data services, not even in countries with sophisticated data privacy and protection laws. It goes without saying that the telcos must clarify the legal framework for handling anonymous customer data before they establish such services and must incorporate the respective mechanisms from the start. Besides the statutory opt-in possibilities, transparency is key here. In order to win customers' trust, telcos should inform their customers, plainly and comprehensively, as to what data are collected, for what reason, and how and for what purpose they are being used – and tell them as well how this translates into added value for the customer.

Some telcos also mention that establishing the technical know-how required for handling large data volumes as well as creating interfaces for collecting anonymous data are additional challenges, whereas other telcos believe that they are already properly equipped in this respect.

6.3. POTENTIAL NOT YET FULLY TAPPED

The study clearly shows that telcos have largely identified the potential of Big Data services, but are not yet utilizing it sufficiently for themselves. In fact, only 44% of the study participants stated that their company already monetizes data internally or externally (see p. 22 for examples); this does not yet apply to 56% of the companies. In fact, most of the companies that are already engaged in Big Data management and analyses do not engage consistently in these activities.

Three out of five companies that do not yet monetize data do plan, however, to change this in the near future.

Furthermore, 85% of the interviewees say that their companies are currently making investments – especially in creating specific, intra-company organizational units, in technical systems as well as in the expansion of relevant know-how – so that they will be able to better utilize Big Data in the future.

Handling data privacy and protection correctly and with sensitivity is a huge topic. Big Data as a set of insights into individual customers differs completely from the combination of various M2M communications.

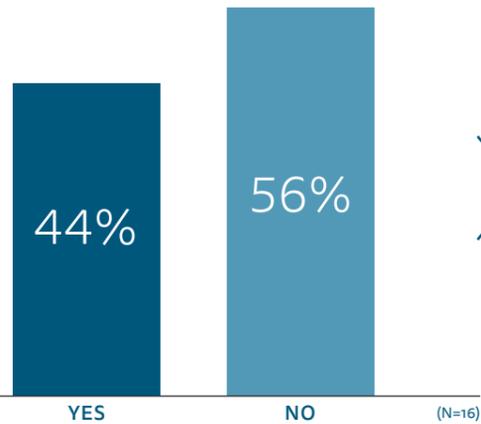
There is potential for the external use of the data. But the question is: Who will do what? For example, does selling abstract movement profiles constitute a business model? It is conceivable, but it is not clear. You end up in grey areas of German data privacy and protection laws very quickly.

Top executive,
Marketing & Strategy, Vodafone, Germany

RELEVANCE OF BIG DATA MONETIZATION

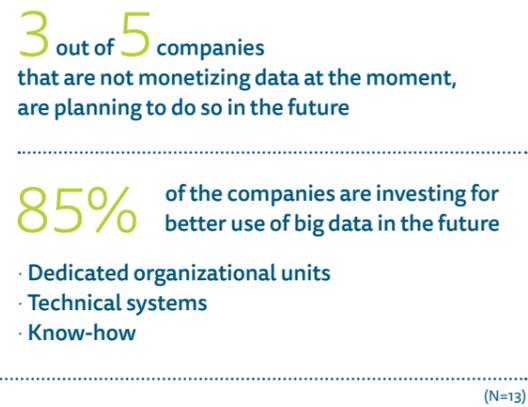
TODAY

“Is your company already monetizing data at the moment?”



FUTURE

“Is your company currently investing to improve conditions for monetizing big data (e.g. systems, capabilities, M&A)?”



The focus here is still mostly on in-house uses of Big Data.

56% of the study participants believe that in-house uses offer the greatest commercial potential in Big Data management.

The study participants plan to use Big Data to improve interactions with their customers and to make their marketing more efficient. Above all, they believe that customized products offer an opportunity to improve their approach and services to customers. To this end, they also want to utilize data from cooperation partners – e.g. social networks – to capture customers’ needs in as much detail as possible. Some companies also expect to optimize their cross-selling and up-selling based on customer analytics.

The internal utilization of data is considered an enabler of better products. In the short and medium term, it is crucial to immediately improve the "things" with the help of Big Data. This will require creating a completely different organizational structure as well as understanding, securing and organizing the quality of the data [...]. Selling data comes at the very end of the chain.

Top executive, Marketing, Unitymedia, Germany

Digitalization is a huge, magical key for the big, magical lock named ‘make it more pleasant and customized for the customer’.

In and of itself, Big Data is not a business model. Instead, it’s analytics, nothing you could earn money with. But it’s possible to implement business models based on Big Data, and the potential of these business models is huge.

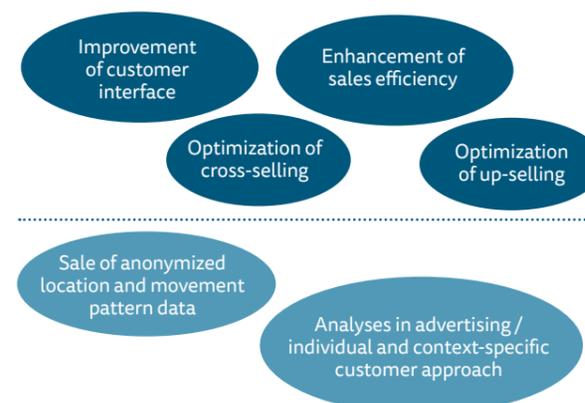
Top executive, Marketing, Unitymedia, Germany

A full 44% of the study participants also expect the external use of Big Data services to be potentially lucrative. Specifically, the telcos surveyed believe that selling customers’ anonymous location and movement pattern data to third parties has potential for monetization. Three German automotive manufacturers collaborated to acquire the map service "Here", showing how big the potential of such applications actually is. But it will be necessary to comply with data privacy and protection requirements to the letter when setting up suitable business models. For example, some telcos mention that selling such data to retailers, banks, or automotive firms is one possibility of monetizing them, but it is forbidden under current data privacy and protection regulations. They also believe that using Big Data for advertising purposes, specifically making it possible to provide customers with individualized and context-driven approaches ("customized advertising"), offers potential.

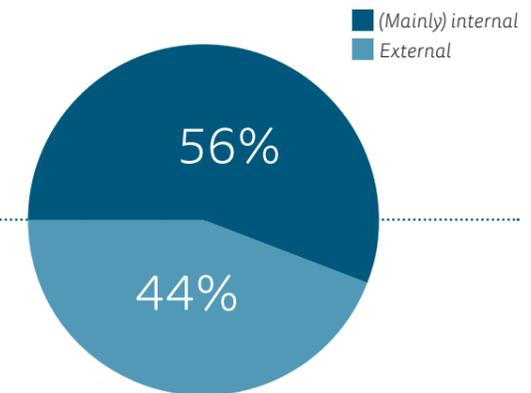
MAINLY INTERNAL BIG DATA OPPORTUNITIES

“In general: Which specific offerings or monetization opportunities built around big data management and analysis have the greatest commercial potential?”

SPECIFIC OFFERINGS / MONETIZATION OPPORTUNITIES



FOCUS OF MONETIZATION POTENTIAL



Answers clustered by goetzpartners (N=16)

It is striking, however, that other options for using Big Data internally and externally were not mentioned in the interviews. This makes it clear that, with respect to Big Data services, telcos are still in the start-up phase – they frequently lack the know-how, and initial services are still being tested. But the companies should first decide in this respect whether they want to pursue a bottom-up or a top-down approach. In contrast to what is frequently recommended, it is a good idea to adopt the bottom-up approach when first launching Big Data projects. Top-down approaches that start with the definition of a specific problem frequently fail, because not all of the data required for solving a particular problem are available or because the company simply lacks the experience to know exactly what data are necessary. The more exploratory bottom-up approach, by contrast, offers the opportunity to use the analysis of existing data to generate insights that open up interesting options internally or externally. In that case, Big Data offers the following options above and beyond the items mentioned in the study:

BIG DATA APPLICATIONS

INTERNALLY

- **Insights for product development:** Analyses of patterns in purchasing behavior as well as the popularity of certain products and/or brands offer high-level insights for the development of successful products.
- **Customer experience management:** Prediction of customer needs based on predictive analytics before the customer even expresses them. In this way, telcos can approach customers early on and offer them suggestions for products or solutions with the aim of boosting customer loyalty (e.g. increasing the volume of free data included in their contract). **Customer approach:** Bottom-up utilization of contractual and use-based data with the aim of improving one's customer approach and boosting the ARPU.
- **Event-based churn management:** Predictions regarding imminent termination requests based on particular events enable companies to react early on and thus prevent customers from leaving. **Customer approach:** Utilization of bottom-up analyses of demographic client data for advertising campaigns.
- **Network capacity planning:** Faster and more accurate forecasts regarding the demand for particular services and the respective network capacities provide the basis for value-based capacity planning.

EXTERNALLY

- **Traffic management:** Optimization of traffic flows based on aggregated movement patterns, e.g. for mass transit, traffic light management, directing traffic flows, drawbridges, ports, parking guidance systems, etc. **Sale of data to government agencies:** Analyses of tourist and/or visitor flows at popular sites.
- **Advertising and promotions:** Individual and context-driven approaches to customers and product offers based on data analyses, including in real time.
- **Customer experience:** Analyses of traffic patterns and online user data provide the basis for optimizing e-commerce platforms or other online offerings.
- **Security:** Improvement of security in connection with credit card payments, particularly in emerging markets. Big Data analyses can be used to identify anomalies in credit card usage that may point to fraud.

On the whole, monetizing Big Data is considered an important aspect of competition – companies that consider themselves innovative with respect to Big Data in particular expect to achieve a competitive edge with it. Telecommunications companies should tackle the issue of how to monetize data as quickly and as intensively as possible.

Every industry wants to know what you did in the past 48 hours and/or what your smartphone did. For example, data on people's movements are interesting for banks, insurance companies, and the automotive industry.

Top executive,
Technology & Innovation,
Deutsche Telekom, Germany

First and foremost, this includes investing in employees' digital training – and having the courage to invest in areas that are still uncertain. According to the study participants, successfully linking data from numerous sources is the key to success in the development of Big Data services. As telcos' services involve them in many areas – from TV usage all the way to the Connected Car – they are in an especially suitable position to develop such offerings and business models. While the potential number of data sets may be sufficiently large for each telco, success may also be contingent on the size of the customer base – the larger the customer base, the more meaningful and more attractive the data for future partners. ||

Scenario 2020: Smart City

Hamburg, Singapore, Detroit – commuters, visitors, recreational athletes and people on walks move around in the big city. Many of them have agreed via opt-ins to have their movement data aggregated and used on an anonymous basis – because, in return, their telecommunications providers are making free Wi-Fi available within the mass transit system and at important locations in collaboration with city authorities.

The telco uses the data to analyze, based on heat maps, where traffic jams or overloads occur frequently and, where things quiet down at particular times. These data are made available to city authorities – in real time and organized into clearly structured dashboards. Because traffic lights, street lights, and parking signs are controlled centrally by an IoT system, they can be adjusted to current traffic conditions. Citizens can be redirected to public transportation alternatives during rush hours and incentivized to do so to avoid further traffic jams or air pollution.

This lowers costs and improves the city's infrastructure in ways that have a positive effect on the city's residents and visitors: fewer traffic jams, less pollution, faster access to available parking spots, improved traffic flows for commuters, more and better mobile connectivity without added costs.

In Nanjing, a major city in East China, the future has already begun – city authorities are successfully pioneering as a fully integrated smart city already today.

07 GROWING BEYOND CONNECTIVITY

7.1. POTENTIAL IN VALUE-ADDED SERVICES

Most companies in the industry know that they will eventually need to offer value-added services above and beyond pure connectivity – whether through B2B partnerships or the monetization of data. But the question is, what markets should the telcos invest in?

The companies surveyed expect the strongest growth between now and 2022 to occur almost exclusively in B2B markets.

Specifically, the following four are considered the areas with the largest growth potential:

1 THE INTERNET OF THINGS

The linking of things, devices and machines is considered a clear growth market worldwide and across all industries. Specifically, the study participants mentioned applications – so-called verticals – in healthcare (e.g. health monitoring), Smart Cities, transportation and traffic as well as the smart home. With respect to emerging markets in particular, telcos also consider applications in agriculture and in e-commerce to be growth markets.

2 ARTIFICIAL INTELLIGENCE

The use of artificial intelligence (AI) in digital communications systems or voice assistants is also considered a growth area. Chatbots are also deemed an interesting avenue for customer communications here.

3 CONTENT

The entertainment industry with its content offerings for consumers and the associated combinations of telecommunications and entertainment services are also considered a rapidly and substantially growing market.

4 TRANSACTIONAL

As regards the future, this is understood to mean the basis of value-added services, whether in IoT, software-as-a-service and cloud offerings including ID management, or blockchain-based applications such as Bitcoin. The telcos see themselves as enablers here that can develop such applications for major companies, but also and in particular for smaller entities. Other applications are, for example, carrier-driven payments (mobile money services, carrier billing). According to the estimates of Ovum, the research and consulting firm, by 2020 these applications might account for up to 11% of global m-commerce sales.⁸⁾ Mobile payment is used in emerging markets in particular, where, according to a Deloitte study, 47% of the consumers will pay for their purchases on their cell phones, while only 20% will do so in the industrialized countries.⁹⁾ End customer security concerns are the main reason for this reticence.

7.2. EXPLOIT GROWTH MARKETS FOR ONE'S OWN STRATEGY

Note that while growth is expected in these markets, they are not automatically considered markets that have potential for the telecommunications industry.

Individual interviewees believe that connectivity as such will continue to offer opportunities for growth.

Customers' overall connectivity needs (B2B and B2C) have not yet been met. There are still blank areas in customers' lives that can be filled with connectivity.

Top executive,
Technology & Innovation,
Deutsche Telekom, Germany

At the same time, however, as previously mentioned, the focus on connectivity puts companies at risk of running into the commoditization trap. In the future connectivity as such is only likely to be viable when it is linked to value-added services.

Who will come out on top in the market for content – telcos or OTTs – has not yet been decided. A strong movement on the part of the telcos toward integrated content offerings can be observed in the United States in particular. AT&T is probably the company that is taking it the furthest, in that it wants to use its planned acquisition of Time Warner to make content production an integral part of its core business. Others are placing their bets on providing attractive content offerings to their customers through partnerships and thus to enhance the value of their own services. Even outside of the U.S., some telcos are actively working on expanding their content business. For example, Bell Canada has acquired a number of TV stations and is now offering its own TV and radio broadcasts via satellite and IPTV as part of its packages. And British Telecom has developed its own BT Sports Package. This entails not just buying transmission rights for many sporting events, but also the production of its own proprietary content. To win the race for content, telcos will have to be prepared to invest a lot of money and develop a lot of insight into a market they don't know that well to date. As a result, more likely than not this market will be covered by alliances and partnerships in the future.

As far as the Internet of Things is concerned, some telcos expect that they will merely provide the infrastructure – specifically, the data connections – for the requisite applications to certain sectors, such as the healthcare industry. In doing so, however, they will miss out on the opportunity to underscore their strategic significance for the given customer.

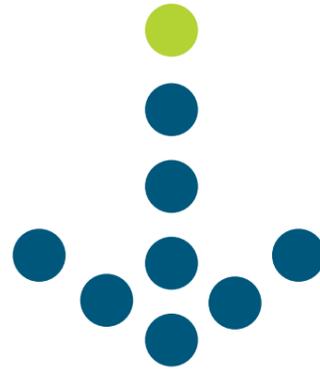
8) Ovum (2016). Carriers could capture \$142bn in m-commerce revenue by 2020 if they push aside barriers.

9) Deloitte TMT Practice (2016). Global Mobile Consumer Trends Report: 1st edition

This can succeed only if, in addition to offering pure connectivity, they also offer the attendant software and services. In mechanical engineering, for example, this would entail a complete predictive maintenance package. While such comprehensive solutions increase the complexity of developing and maintaining the services in question, aside from greater customer loyalty, they also create the basis for new revenue models. For instance, a telecommunications company that also develops the software for controlling a fleet of machines as part of a comprehensive package, will be able to charge license fees for this on an ongoing basis. Usage- or transaction-based billing models are suitable to this end, depending on whether the telco company makes just the collected data available to the customer or an analysis thereof based on Big Data Analytics. Generally speaking, there are a number of interesting examples of how telcos are already getting a foothold in IoT. In collaboration with partners, Vodafone, for instance, is already relatively active in the automotive industry, where it is exploring vehicle-to-vehicle communication and geo-messaging solutions on a section of a German highway. In addition, the company has also linked 4,000 Zemo brand electric bicycles with the Internet of Things in order to improve theft protection.

Remarkably, the telcos mention artificial intelligence and the associated voice recognition technologies only in passing. This matches the level of their engagement. To date, solely IT or Internet companies such as Google, Microsoft, Samsung, Apple, or Amazon have brought forth marketable products. However, the potential for platform strategies in this area is particularly huge, especially when the technologies and corresponding platforms are utilized as a refinement of the smart home. This trend is likely to accelerate further in the coming years, including through the creation of uniform connection standards. According to experts, the number of linked devices in a household will rise from nine today to about 500 by 2022.¹⁰⁾ It will be possible in the future to control appliances, garage doors, heating systems, security systems, and other appliances using voice assistants that possess artificial intelligence and are linked to the corresponding platforms. A cooperation agreement between Amazon Alexa and BMW is already paving the way for such applications in the automotive industry. In purely mathematical terms, the potential arising from connectivity as such for this new infrastructure will be worth billions, and operators of platforms in particular will be able to reap substantial profits. However, competing with Amazon and Google in this area will require significant capabilities. Telcos that have not yet begun to engage in this area are at a competitive disadvantage. Deutsche Telekom is a positive exception, because it has developed an AI assistant named "Djingo" in cooperation with Orange.

Telco companies are therefore expected to be most active in the area of content and in the Internet of Things. ||



08 CONCLUSION

The study shows that there is an urgent need for action in the entire telecommunications industry and that there has been a dramatic increase in the pressure from both the commoditization of their traditional business and OTTs.

To escape this pressure and continue to prevail in the market, telcos will have to digitalize their business models by 2020 or develop new ones. In particular, they will have to increasingly shift their focus to B2B business models (platforms, IoT solutions, Big Data analytics, etc.) and bank on partnerships with specialized companies. Both approaches will allow for new revenue models, where the telcos will no longer monetize only connectivity as such, but also generate their revenue from value-added services, where the willingness to pay is greater.

The uncertainties in the industry with respect to Big Data are even greater. While some telcos already recognize the potential of this area, most of them have not yet understood how enabling IoT solutions and Big Data can provide the basis for a revenue model, and what role the telcos will play in such a scenario. As with partnerships, the development and marketing of value-added services also offers the greatest potential here. This means not just collecting and selling anonymous raw data, but also offering Big Data analytics and services based on them. Telco companies will need specialized know-how to do so – in the form of employees or the acquisition of smaller corporate units that possess the required expertise. Specialists will have a key role to play. They must develop a networked approach that encompasses not just the technical analytics solution, but also the design of a data architecture that is comprised of the most diverse sources of both internal and external data points. This may include existing user and movement data, as well as data to then be integrated from IoT solutions, with which the telcos

act as enablers and ensure connectivity. The sum of all these data and their intelligent linking will make it possible to generate new data that are relevant at other places and for other players (both B2B and B2C customers).

The study also shows quite clearly that the digitalization of the telco business has much to do with existing capabilities and competencies. The companies must now shift their focus to recruiting employees who possess "digital competence". They must also develop structures, processes and a corporate culture that fosters innovation. Corporate ventures or innovation hubs can serve as examples for creating such an environment outside of conventional corporate and project structures, where mental barriers and actual impediments do not exist and creativity is given free rein. If innovative ideas are to be generated from the "inside", telcos should first put in place individual areas with flexible structures and establish generally flatter hierarchies that foster digital communications and the exchange of knowledge within the company and have the courage to invest in new ideas – even if it entails the risk of failure. In the final analysis, these are the key questions: How can a telco company re-align itself internally in a way that enables it to push digital business models, establish a digital mindset and position itself as an attractive employer with a digital brand for a new type of employee? It will also be paramount to include existing employees in this far-reaching overhaul and to support them through comprehensive change management. This is where goetzpartners can provide support based on its many years of expertise in the areas of transformation, organization & change.

The telcos' traditional business puts them in a good position with respect to the development of new business models. What matters right now is that this opportunity be used quickly. If they succeed, the telcos will play a central role in numerous growth areas. The Internet of Things along with applications ranging from healthcare to agriculture and particularly the smart cities of tomorrow and other mobile solutions are the largest growth area here. Beyond pure connectivity, the telecommunications industry can play an important role as an enabler for such growth areas through value-added services – and at the same time ensure the viability of their own business in the future. ||

¹⁰⁾ dpa (2016). Smart home: Telekom wants to use an open platform to capture the intelligent home. Retrieved from <https://www.heise.de/newsticker/meldung/Smart-Home-Telekom-will-mit-offener-Plattform-das-intelligente-Zuhause-erobern-3161821.html>

09 THE AUTHORS



DR. ALEXANDER HENSCHEL

Alexander Henschel is a Managing Director in the Munich office of goetzpartners and is heading the Telecommunications, Media and Technology (TMT) Practice and Business Services sectors.

Alexander Henschel has in-depth consulting experience in the cable, media and telecommunications industries. Within these industries he advised numerous large Telco and Media companies in setting up and implementing large transformation programs, as well as efficient and sustainable sales and marketing strategies. He has also played a key advisory role in the consolidation of the German cable market. Alexander Henschel is the author of various studies, including the goetzpartners IPTV, Cable and Publishing study. Before joining goetzpartners he worked for Accenture, formerly known as Andersen Consulting, for several years.

Alexander Henschel studied Industrial Engineering and Management at the University of Karlsruhe and received a P.h.D from the University of St. Gallen.



MARKUS SCHMID

Markus Schmid is a Managing Director at the Munich office of goetzpartners and is heading the office in New York City.

Markus Schmid draws on ten years' experience in management board and managing director positions at companies such as SKY, TeleColumbus and PrimaCom. Previous to these tenures, he spent eight years in management positions at corporate consulting firms, five of which at Accenture. In addition to restructuring and post-merger integration, his areas of speciality also include change and innovation management. Numerous projects have been successfully implemented under Schmid's responsibility across a range of different sectors, such as the telecommunications and media industry, the consumer goods industry, retailing and the automotive sector.

Before making the move to goetzpartners, Markus Schmid was working on an entrepreneurial basis. In his roles as founder and managing partner of CAMP-S GmbH, a consulting and interim management company, as well as management board member and joint owner of PACT AG, an international communications agency, he has supported numerous, renowned companies as part of restructuring, due diligence, marketing and sales projects.

Markus Schmid studied mechanical engineering in Ulm and business administration in Würzburg.



SUSANNE KINDLER

Susanne Kindler is a partner at the Munich office of goetzpartners and co-heading the Telecommunications, Media and Technology (TMT) Practice

During her long consulting career, Susanne Kindler has advised leading companies in the telecommunications, media and information technology industries. She specializes in operational excellence programs, Digitalization, large transformations and customer-care optimizations.

Before resuming her consulting work at goetzpartners, Susanne Kindler worked in several corporate positions. She held a high-ranking management position at Cisco Systems in Paris. In this role, she oversaw the operational business activities of the User Experience Division and international projects related to TV and entertainment solutions. At the start of her career, she also served as head of credit checks at Sixt.

Susanne Kindler majored in business administration at the European Business School in Oestrich-Winkel, Germany. She also attended the Universidad Argentina de la Empresa in Argentina and Unitec in New Zealand.

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METHODOLOGY

Together with the market research firm Statista, goetzpartners interviewed 16 top executives and C-level executives from the telecommunications industry in Europe, the Middle East, Asia and the United States: AT&T, Banglalink, COAI, Deutsche Telekom, du, Ericsson, Mobilink, Mobily, Olivetti, Telefónica, TransTelekom, Unitymedia, Veon, Vodafone (Germany/USA), 1&1. The expert interviews were conducted by phone following a comprehensive, structured interview script. The survey findings were supplemented by the comprehensive desk research of goetzpartners' telecommunications industry experts.

Drawing on these elements, goetzpartners compiled the study in the previous pages to present current trends in the telecommunications industry, provide assessments of the market's future development, and develop recommendations as to possible actions for companies in the industry.

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CONTACT

DR. ALEXANDER HENSCHEL
 Managing Director
 T +49 – 89 – 29 07 25 - 115
alexander.henschel@goetzpartners.com

MARKUS SCHMID
 Managing Director
 T +49 – 89 – 29 07 25 - 809
markus.schmid@goetzpartners.com

SUSANNE KINDLER
 Partner
 T +49 – 89 – 29 07 25 - 370
susanne.kindler@goetzpartners.com

Edited by: Text100, Munich, Germany
 Design: milk & honey advertising, Munich, Germany
 Translation and proofreading: Leinhäuser Language Services GmbH, Munich, Germany
 Illustrations: Serge Bloch, Paris, France
 Photography goetzpartners: Esther Neuman, Munich, Germany
 Printing: DruckStreich, Taufkirchen, Germany



goetzpartners
Prinzregentenstr. 56
80538 Munich, Germany
T +49 - 89 - 29 07 25 - 0
info@goetzpartners.com

www.goetzpartners.com