

## Talking point

### Start-ups inspire markets with digital technologies (Fintech #7)

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**Breathtaking. No other word really does justice to the profound changes unleashed by digitalisation and the accelerating pace at which new technologies are appearing. Of course, many of these technologies are still in their infancy and in some cases still have a rather visionary character, but they nevertheless hold unforeseen and lucrative potential. The race for digital technologies and successful monetisation strategies has been on for some time, especially among the large, well-known internet platforms. However, start-ups are increasingly throwing their hat into the ring and causing quite a stir among the business models of established companies. As a result, many innovation-stimulating digital technologies are gradually finding their way into traditional companies where they are evolving into a comparative competitive advantage (not only) for Germany as a business location.**

Cognitive systems, self-learning algorithms and peer-to-peer-mechanisms, these are just a few examples of digital technologies that are already being experimented with to differing degrees in different sectors. In the face of the mass of data generated today, human intelligence and processing capacity frequently reach their limits. One possible scenario would therefore be increased support from cognitive and smart machines in all areas of our lives. A milestone in the development of artificial intelligence is the deep learning method, in which the intelligent, multi-layer learning algorithm is permanently trained with a vast amount of data, ultimately enabling it to filter new findings from combined raw data sources (the big data debate).

#### **Drivers of digital structural change**

The digital revolution is undoubtedly being driven by the ongoing exponential rise in data volumes, the use of microsensors and biometric recognition software, the significant increase in memory capacity and the fact that, true to Moore's Law, processing power is (still) continuing to double at frequent intervals while prices come tumbling down. Economic network effects, economies of scale and the increasing importance of peer-to-peer mechanisms play an equally fundamental role in the viral penetration of digital technologies. At present, billions of dollars of investments and participations are being used to fund the simulation of numerous web technologies worldwide. This is also spurring progress across the Internet of Things (IoT). According to estimates, approximately 50 billion objects will be connected with each other and the internet by 2020.

A large number of these digital technologies have already reached the mass markets. We are using many of them in a multitude of everyday applications, probably without even realising it. For example, when we ask a search engine for advice or use the voice-activated digital assistants from Apple or Google (Siri and Google Now) or activate Amazon's recommendation algorithms to support our purchase choices. The learning effect of the algorithms is relatively efficient. For example, as more people feed the digital assistant "Siri" with questions, the faster it responds and the better its answers become. Increasingly complex questions also become possible.

#### **More and more start-ups are entering the technology markets**

Alongside the internet giants that dominate the market, an increasing number of start-ups are joining the competition for digital technologies. In Europe, for instance, Germany in particular has positioned itself as an attractive location for start-ups. According to figures from Ernst & Young and in terms of the volume of venture capital investments, creative milieus in the German capital overtook London in 2014. Berlin's investment volume in that year was EUR 882 million, which was slightly higher than that of London (EUR 833 million). With a perceptible rise in venture capital investments in mid-2015 to EUR 1,445 million, Berlin extended its lead on London (EUR 1,066 million). Moreover, two other German cities, Munich and Hamburg, secured a place among the top six European locations. Most start-ups in Germany are focused on technology-driven sectors, software (34%), e-commerce (24%), advertising and marketing (9%) as well as finance and payment (7%).

In general, start-ups tend to be more agile and are able to move faster than large, established corporate groups. They are ahead of the game in many markets because the conception, implementation and expansion of their business models tend to be almost entirely digital from the outset. Their value networks, which are based on a digital platform, enable them to optimally scale their business model. This in turn allows them to offer compatible (programming) interfaces along their value chain and give customers the new technologies they are demanding. It also enables them to collaborate strategically with competitors, often at declining marginal costs, without having to drastically restructure their business. These two factors allow them to respond swiftly and flexibly to accelerating technology market dynamics and, in general, also make their products and services more attractive to us consumers. The result is a win-win situation for providers and consumers alike.

### **Fintech scene is backing artificial intelligence**

One example from the financial sector is the increasing use of robo-advisors in investment business. Cognitive systems are either used to support financial advisors in their work, or they may operate completely autonomously. Thanks to algorithms, the customer's risk propensity, financial situation and investment needs can be identified with just a few questions and without human interaction so that complex investment strategies with different financial products can be configured.

The example from the financial sector also reveals another interesting feature. Young, risk-tolerant entrepreneurs from the fintech scene have an additional, valuable, competitive advantage. It is not unusual for founders to have acquired specific experience, skills and abilities in the financial sector. They may have worked for a number of years in the banking industry itself, acquiring expertise in products, strategy or infrastructure, or they may have worked as consultants, specialising in banking. Their valuable experience and expertise gained in different areas of traditional banking give them the foundation for them to set up on their own, and also lend a certain weight to their projects, which the market takes seriously.

Ultimately, many fintech start-ups are familiar with the infrastructure problems and weaknesses of traditional banks. These weaknesses are explored and transformed into a modern, digital business model. Fintechs and their digital business ideas are increasingly exploiting lucrative niches between the customer and the established bank. The wide variety of products, services and processes along traditional banks' value chains means there is enormous niche potential not only in the business-to-consumer segment (B2C), but also, and above all, in the fiercely competitive business-to-business (B2B) segment. Fractures in the complex infrastructure of traditional banks – whether historically entrenched or the result of internal silo mentalities – mean that digitalisation offers great optimisation potential. This is not only the case in the financial sector. It applies to traditional companies in all sectors that are coming under pressure in a changing competitive environment, as large internet platforms and young technology-driven firms enter the market in the digital revolution.

Start-ups tend to focus on a single process, service or product along the value chain of traditional companies and markets. Thanks to their digital infrastructure, they are able to position themselves as attractive partners for collaboration at all possible levels of different markets. They are thus signalling their willingness to collaborate with large internet platforms, but are also an increasingly interesting prospect for traditional businesses.

Gone are the days in which digital integration generated innovation in individual, isolated fields and sectors. Today, it is also increasingly a source of innovation at the (programming) interfaces of the respective value networks. In the future, whether an individual player has the necessary expertise and wealth of experience in protected markets will cease to be relevant. The important factor will be the smart links between the diverse infrastructures, skills and abilities of various market participants. The attractive advantages offered by the major players in the market, such as branding, customer reach or internationality can offset the deficits of new start-ups entering the market. The real key to success lies in combining the respective strengths.

### **Self-learning algorithms offer competitive and geographical advantages**

The professional use of self-learning algorithms will offer a clear competitive advantage in the future. A better understanding of how to handle real-time data combined with strategic use of the results hold the lure of lucrative profits while, at the same time, increasing customer satisfaction. Furthermore, sources of human error will be reduced, productivity increased and, ultimately, overheads cut. However, it is unlikely that many traditional companies will be fast to implement these technologies. Typical challenges include the machine-readability of data, the associated incompatibility of many IT systems across all business areas and, in general, restructuring away from traditional towards fully automated and digital processes.

In addition, new management skills will be needed and the usual silo approach will not work with future innovation processes. The focus will be on the in-house integration of human skills and abilities and also IT structures, as well as external networking with partners and technologies via (programming) interfaces. Research-driven start-ups in the ICT sector should prove especially well-equipped to meet these challenges. Not only are the technical requirements right, the financial conditions for such start-ups are also better today. Major investors are making huge sums available for equity funding or are buying entire companies to integrate them into their own value networks. In particular, large internet platforms such as Google, Facebook, Alibaba, Uber, Airbnb, Amazon, Apple, but also many start-ups, are helping to drive progress in smart technologies, thus contributing to economic growth.

### **Limits to algorithms**

In view of the network effects and economies of scale mentioned above, smart technologies hold enormous development potential. Smart machines will certainly not replace humans entirely, rather they will support us in many areas and help us to increase productivity. For instance, our “colleague” the algorithm is not able to question itself or use self-reflection to adapt its own processes where necessary. Human skills and experience will still be needed here and in many other situations. Nor will we be able to simply let the figures speak for themselves to produce automated recommendations. While this may lead to increased sales of consumer goods, the use of self-learning algorithms in the healthcare sector, for example to produce medical diagnoses without human interpretation, is controversial. In some cases, where there is a strong mathematical correlation, we will still have to query apparent relationships as, ultimately, they may be devoid of meaning.

### **The regulator also has a role to play**

We now have the opportunity to positively influence technological development by taking deliberate steps to create an adequate framework. Above all, this will be about preparing the less tech-savvy for tomorrow's digital working environment. Considerable potential can also be unleashed by promoting Germany's and Europe's attractiveness as a location for international specialists and executives, but also by integrating the migrant population into the labour market and maintaining a high-quality education system. Furthermore, in a digital single market, for instance, the German seal of quality for data protection and security could provide a competitive, image-boosting edge for Europe. The increasing number of complex, autonomously operating digital systems is also creating new legal issues. Fundamental questions that will need to be answered are: who is actually the operator and who can be held liable for the activity on connected systems? Case law needs to provide prompt and reliable guidance on this. The more internationally binding open technology standards are, the greater the interoperability and compatibility options will be for users and partners. This will facilitate exchange of knowledge and information.

In this context, start-ups perform an important economic task. They create jobs and take on entrepreneurial risk, contributing to a country's capacity for innovation and competitiveness. Simplifying the regulatory framework, offering comprehensive advice for start-ups, providing regional networks and greater access to risk capital are further steps that will undoubtedly promote innovation.

Link to the series of fintech articles:

Fintech #6  
Fintech #5  
Fintech #4  
Fintech #3  
Fintech #2  
Fintech #1

Details about the opportunities and risks of "Big Data" can be found here.

[Click here for more background on the Fintech movement.](#)

[Fintech reloaded maps out a strategy showing how traditional banks should become a digital platform.](#)



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