B 6-1 Digital change and new business models

Digital change is currently happening at impressive – some would say frightening – speed. There are many driving forces behind this transformation. The performance of digital technologies continues to increase, enabling fast processing of even large amounts of data. Cost-effective and easily scalable access to IT infrastructure in the cloud[318] is lowering the barriers to market entry for young companies (start-ups). Networking and personalized communication devices are making it possible to merge previously unconnected data and to apply machine learning. The processing of data collected in the Internet of Things is supporting new applications, for example in the fields of health, sport, logistics, production and sales.

With internet-based technologies, intermediary economic activities can be almost entirely replaced by platforms. This opens up new sources of efficiency in the so-called 'sharing economy', e.g., Uber and AirBnB. On the other hand, potential sources of abuse have emerged, with political decision-makers responding – and in some cases overreacting. The use of Artificial Intelligence and autonomous systems is making it commercially reasonable to automate even activities requiring specific qualifications. Platforms allow orders (e.g., for tradespeople) to be passed on cost-effectively to freelancers on virtual marketplaces. The employment model of traditional labour contracts is coming under pressure. The changes are affecting all areas of the economy and life. In addition to the world of work, citizens' private lives are also changing profoundly. For example, voice recognition is bringing digital assistant systems into the personal sphere.

The state, businesses, and civil society face the immense task of shaping this change in a way that is in line with cultural and societal values, as well as ethical principles.

The digital economy in international comparison

The term digital economy is used to cover the classic ICT sector and the internet economy.[319] The chart at the beginning of this chapter shows the rapid development – and the great potential for value creation – of the internet economy and the ICT sector by international comparison over the last ten years, based on the market capitalization of companies in these two fields. In this period, the market capitalization of the internet economy has grown much faster than that of the 'classic' ICT industry in all the countries compared,[320] although the latter currently still dominates in terms of the absolute level of capitalization. The growth of the ICT industry is mainly driven by rising value creation in the service sector.[321]

The dominant position of US-based companies throughout the entire digital economy is remarkable, as is the strong growth of the internet economy: the market capitalization of US companies in 2016 (1,686 billion euros) was about 20 times the size of the entire internet economy in Germany (35 billion euros), Sweden (4 billion euros), and South Korea (43 billion euros) put together. Since 2005, the market capitalization of US companies has risen to seven times their original value; in South Korea and Sweden it has nearly quadrupled.

Young internet companies such as Facebook, Alphabet, Twitter or LinkedIn have shown very rapid growth over the last fifteen years, and in many cases have surpassed the market capitalization of well-established ICT corporations. The three financially strongest companies in Germany with (in some cases) important business activities in the ICT sector are Siemens, SAP, and Deutsche Telekom. Their growth was weak compared to the dynamics of the new internet companies in the US.

Expansion of the digital economy

Due to the increasing networking, more and more new lines of business and areas of activity are emerging in the digital economy. These are no longer limited to the initial application areas of data processing, telecommunications, and transmission technologies. Many of the transactions in the market for corporate acquisitions and disposals in the period from 2013 to 2015 indicate that new areas of application are currently being opened up which, up to now, have not been among the core activities of the digital economy.[322]

At the same time, most of these new activities are at present being driven by the financially strong corporations of the internet economy, above all by US and Asian companies. They have already acquired a number of companies from other industries.[323]

Start-ups as key actors

Digital economy business models frequently provide a starting point for innovative start-ups. About four out of five digital start-ups operate in the internet economy. In this context, it is remarkable that notably Berlin– a region that does not stand out as having a strong base of industrial companies – is benefitting from start-ups in the internet economy.[324] Due to the special role of start-ups, Germany's digital economy benefits directly from improved framework conditions for business start-ups and venture capital (cf. Chapters B 4-1 and B 4-2).

The growing importance of users

The importance of data-driven services continues to grow. Personal data from customers or users of digital services are important resources, since they secure long-term access to end customers.[325] At the same time, users are an important source of innovation for companies in the digital economy, since they create user-generated content. Takeovers and evaluations of companies with large numbers of users show that investors still consider the generation and use of personal data to be of great value.[326]

New business models in the digital economy

A key driver of digital change is the implementation of new digital business models. The 2016 Report of the Commission of Experts for Research and Innovation introduces new business models of the digital economy, for example in healthcare, banking, and the energy sector.[327] Established companies in these and other sectors must expect new intermediaries such as platform providers to occupy interfaces with end customers. [328]

As networking increases, the service sector in general will become even more important, while production alone is likely to lose some of its share of value added.[329] However, services are also of great importance for industrial companies.[330] For example, established car manufacturers increasingly define themselves as providers of mobility services. However, business models in the digital economy have drastically reduced the barriers of entry for new competitors in the service sector. Established companies must therefore now anticipate to be challenged faster and more frequently by such innovators.[331]

Digitization deficit among SMEs

Many businesspeople in Germany are aware that, in the course of digital change, they will have to reckon with fresh competition from increasingly important companies that play a key role in the value-creation network – for example with platform services.[332] Large companies have the resources to catch up by hiring business consultants and taking internal measures.

German SMEs, however, seem to have particular difficulties with implementing new digital business models. Surveys show that the smaller the business, the less frequently internet-based technologies and new business models are used.[333] The Commission of Experts currently believes that a large proportion of SMEs face significant problems as a result of digital change.[334]

Strengths in research and in specific areas of technology

In the view of the Commission of Experts, Germany's need to catch up in the field of digital technologies lies not so much in technologically oriented research as in the transfer and application of scientific results. In some technological fields – such as driver-assistance systems[335] – German companies can even be said to play a leading role. This is not the case in internet-related research and applications; independent studies did not determine any particular strengths among German companies in these areas.[336] As a general rule, production-related information technology in Germany is highly developed and represents a specific strength, which also finds international recognition. However, in view of the fact that the digital transition affects all industries and areas of life, this positioning is inadequate to enable Germany to assume a leading position in the innovation competition in the medium and long term, or to master digital change successfully.

Infrastructure for the digital economy

Digitization causes steadily increasing demands on the availability and performance of internet connections. Therefore, a continuous enhancement of the digital infrastructure has the effect of a key growth determinant for modern economies.[337] Compared to other countries, Germany is lagging behind according to almost all indicators of high-performance broadband development faster than 50 Mbit/s.[338] At the same time, it can be assumed that broadband speeds of 50 Mbit/s will no longer be fast enough in the foreseeable future.[339] Network operators expect an average private demand for internet speeds of 400 Mbit/s for downloads and 200 Mbit/s for uploads by 2025. Against this background, the Commission of Experts is of the opinion that the targets for improving the broadband infrastructure formulated by the Federal Government have long since ceased to be adequate.