

# Berlin *aktuell*

The digital sector stabilizes the economy during the pandemic

*November 2020*

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## Editorial by the Chairman of the Board of Investitionsbank Berlin



*Dr. Jürgen Allerkamp*

The Covid crisis has had a strong – albeit involuntary – catalytic effect on the digital transformation of business and society while at the same time highlighting its enormous potential. Within a very short period of time, companies have switched to working from home, something that had previously been widely rejected across the board. Companies were surprised to find that it was in fact possible to hold many business meetings online without any problems and even at much lower cost. At the same time, however, the difficult months in lockdown during the pandemic relentlessly provided an almost microscopic insight into where digitalisation is not yet working. Large parts of the public administration ground to halt while teachers, students and parents suddenly struggled with a multitude of platforms and online offers to cope with the 'school-free time'. When it came to other areas of social life, such as sport, art, culture and entertainment, the crisis quickly showed that here too we wanted to remain more traditional, i.e. analogue.

The global economic crisis of 2020 has left deep scars in Berlin's economy. While the low share of industry in Berlin's economy offered a certain degree of protection against a steep decline in growth during the last major crisis in 2008, Berlin's many service sectors have borne the brunt of this crisis. We can now expect to see a recession of about 6% in Berlin in 2020. But that does not mean that we need to despair. Since Germany was in good shape before the crisis, consistently reducing its debts, this time round, when the crisis hit, it was possible to pull out all the stops.

For many self-employed people and companies, the crisis in Berlin quickly took on dimensions that threatened their existence. However, thanks to the quick and unbureaucratic use of public funds, many of these companies have been rescued. Nevertheless, many areas, especially those close to tourism, will not be able to return to any kind of normality for a long time.

It is good that Berlin's business model was not designed to rely exclusively on tourism. Berlin is primarily also Germany's digital capital, a fact reported in regular studies conducted by IBB and all other studies on this subject. Unlike back at the turn of the millennium, the start-up community in Berlin has long been in a self-reinforcing, self-supporting cycle. The present study by IBB's economic experts, which this time was conducted in co-operation with Berliner Sparkasse, shows that the development of Berlin's digital economy has been very dynamic over the past decade. Most recently, close to 110,000 people were employed here – more than in any other major city in Germany.

IBB and its partners have also had a share in this success: In 2019 alone, IBB Ventures was used to fund 13 new investments and 43 subsequent financing rounds. IBB Ventures invested EUR 17m in first and subsequent rounds of financing. In addition, private investors have provided another EUR 76m for start-ups. I look forward to working with the stakeholders and partners in Berlin in order to demonstrate, promote, jointly finance and make use of the enormous opportunities that digitalisation has to offer for Berlin.

A handwritten signature in dark ink, appearing to read 'C. Allerkamp'.

*Dr. Jürgen Allerkamp, Chairman of the Board of Investitionsbank Berlin*

## Editorial by the Chairman of Berliner Sparkasse



*Dr. Johannes Evers*

What is the role of the digital sector in Berlin's economy? The economists of Investitionsbank Berlin and Berliner Sparkasse wanted to get to the bottom of matters. With the help of a wealth of up-to-date data, their joint study identified the biggest growth driver in our capital city, i.e. the digital economy. This shows, among other things, how the digital sector is accelerating wages to reach federal level, the considerable value added it is now generating for Berlin and how many jobs depend on digital companies.

This sector in particular is on the rise, because the trade, industry, public administration and finance sectors are also increasingly relying on digital know-how within their own ranks: Today, one in ten new IT jobs created in Germany is located in Berlin.

The digital economy is literally spreading throughout the city. Adlershof has established itself as a hotspot for founders in the tech sector. In Spandau, Siemensstadt 2.0 is creating space for industrial digitalisation, and a Smart City in Tegel has been in the starting blocks for years. And the German Internet Institute in Berlin Charlottenburg also delivers a further scientific perspective on digitalisation. Outstanding universities that include centres of learning dedicated to the digital economy are continuing to drive Berlin's development as an excellent science location – and at the same time attract the talented players of tomorrow for the digital economy.

However, this dynamism is not a foregone conclusion, and it is not just the Covid crisis that is threatening to slow it down. In an international comparison of the top places for start-ups, Berlin recently dropped a few rungs down the ladder. The number of well-educated people moving to the city to settle down and build a life for themselves is also declining. And the construction projects kicked off by big digital players have recently had to contend with considerable headwind. What's needed here is more openness towards future-orientated settlements, smooth-running infrastructure and a new construction policy that ensures more affordable housing.

The banking industry too can do its part to make the city attractive and create incentives. For us, this begins with the young entrepreneurs who we meet either at university or during our start-up consulting sessions to hone business cases and business models. This also involves providing advice on digitalisation for small and medium-sized enterprises and ultimately also applies to actual financing.

We can be proud of the many success stories written by digital companies in Berlin and of those currently writing new ones. The innovative spirit and drive of the digital economy are good for Berlin and not just for the economy. Find out for yourself!

A handwritten signature in blue ink, appearing to read 'Johannes Evers', written in a cursive style.

*Dr. Johannes Evers, Chief Executive Officer of Berliner Sparkasse*

## Results at a glance

### *The digital economy in Berlin*

- A total of 108,905 people are employed in Berlin's digital economy – more than in any other major city in Germany.
- Between 2008 and 2019, 68,096 jobs were created in this sector. This means that the digital economy has grown more than three times as fast as the rest of Berlin's economy (9.3% against 2.8% p.a.).
- Every sixth new job in Berlin is created in the digital economy.
- Sales recorded by the 10,800 digital companies in Berlin amount to EUR 13.7bn, with gross value added totalling EUR 6.4bn.
- The digital economy accounts for close to 15% of Berlin's economic growth over the past seven years.

### *Core area of the digital economy*

- In Berlin, 80,841 people are employed in the core area of the digital economy, i.e. software development and data services; that's more than in any other major German city.
- Employment in the core area of the digital economy is growing at an average annual rate of 11.1% in Berlin, twice as fast as in Germany as a whole (5.5%).

### *Start-ups and choice of location*

- In 2019, 5,169 companies were launched in Germany's digital economy; this figure totalled 509 in Berlin (9.6%).
- The number of companies set up in the digital economy in Berlin is as high as in Hamburg (291), Munich (141) and Cologne (96) combined.
- An average of one new digital company is set up every 17 hours in Berlin.
- Within Berlin, digital companies often settle in central locations and close to universities.
- There is also a growing number of start-up hotspots emerging beyond the city centre, for instance, in Adlershof.

### *Impacts of the first Covid wave*

- The rise in unemployment in ICT professions (+15%), the temporary increase in short-time work to around 18% of the workforce in April and the 15% drop in the number of new job applications by August indicate that the Covid crisis is also impacting Berlin's digital economy.
- The employment index of the services statistics shows seasonally adjusted growth of 1.0% for Berlin's digital economy in the second quarter, although services as a whole were down (by 2.5% in Berlin and by 2.6% in Germany).
- All in all, Berlin's digital economy is more resilient in the crisis than the rest of the economy.

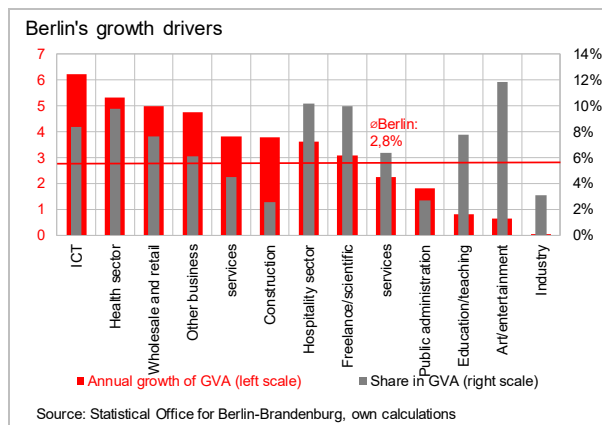
### *Labour market for IT professionals*

- Employing around 53,000 people, Berlin is one Germany's top spots for IT professionals – both within and outside the digital economy.
- However, accounting for only around a 3.5% share in total employment, IT specialists have so far not been as important in Berlin as in many other regions.
- Strong momentum: Every 10th new job for IT specialists in Germany was created in Berlin – 22,000 in total since 2013.
- The pay gap between Berlin's IT employees and the national average continues to shrink, near to closing at 1.5% for programmers.
- Around two thirds of programmers have an academic degree.
- The 14,000 students currently studying computer science in Berlin are the basis for further growth.

## 1. The digital economy as a whole

### **Digital sectors of the economy with strong growth momentum**

For many years now, information and communication technology (ICT) has been the strongest growth driver in Germany's capital city. Economic output in ICT rose more than in any other sector: by 6.2% p.a. between 2009 and 2018 (Berlin total: 2.8%). The ICT share in total gross value added now totals 8.4%.



### **The digital economy is an important growth driver within the ICT sector**

Within the ICT sector of the economy, which also includes publishing, media and broadcasting services, companies in the digital economy are in a particularly strong position. The introduction of new technological and digital innovations offers huge potential for growth, not only for digital companies themselves, but also for the rest of the economy.

This study is intended to enrich public debate on the topic with up-to-date figures from official statistics. The digital economy, which is in itself not listed as an independent sector in the classification of economic sectors by the Federal Statistical Office (WZ-2008), can be defined quantitatively for research purposes with the help of the relevant service and industrial sectors.

### **Breakdown of the digital economy based on the official statistical industry classification**

WZ-2008	Economic branch	
26.1	Manufacture of electronic components	ICT base infrastructure
26.3	Manufacture of devices and setting up telecom systems	
61.1	Line-based telecommunications	
61.2	Wireless telecommunications	
61.3	Satellite telecommunications	
61.9	Other telecommunications	Software and data service providers (core area)
58.2	Software publishing	
62.01	Programming activities	
62.02	Consultancy services in the field of IT	
62.03	Operation of IT facilities for third parties	
62.09	Other IT services	Consumer Electronics
63.11	Data processing, hosting and related activities (database service, data storage services)	
63.12	Web portal	
26.2	Manufacture of IT devices and peripheral devices	Hardware and infrastructure
26.4	Manufacture of consumer electronics	
26.8	Manufacture of magnetic and optical data carriers	
47.91	Internet and mail-order retail	

Source: Destatis, composed by IBB

In addition, the digital economy can be divided into the following main areas:

1. Provision of information technology infrastructure and hardware (with the two sub-areas of ICT basic infrastructure and consumer electronics)
2. Software and data service providers (core area)
3. Organisation of e-commerce

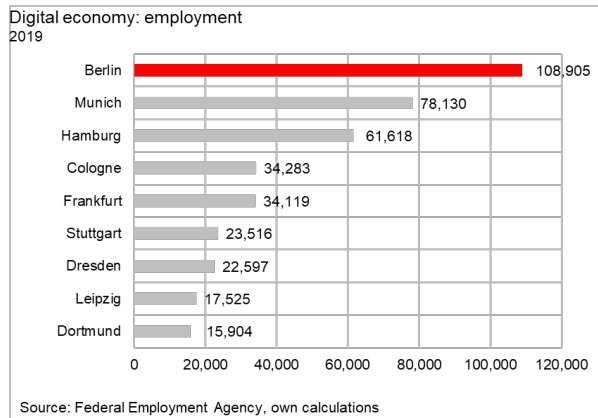
It is in the so-called 'core area of the digital economy' that the software and data services necessary for digital transformation are being created. E-commerce has become an important part of the digital economy in Berlin. With the expansion of the Internet, mail-order commerce has changed dramatically, paving the way for new, innovative companies which, to a very large extent, are setting up shop in Germany's capital city and are also operating on an international scale.

In total, 1.31 million people are employed in Germany's digital economy. Close to 400,000 or 30% of them work in the nine major cities compared, although only around 15% of the German population live in these cities. The digital economy is particularly strong in areas where digital infrastructure has been sufficiently developed and digital companies can easily find highly qualified staff.



### Berlin is Germany's biggest job location

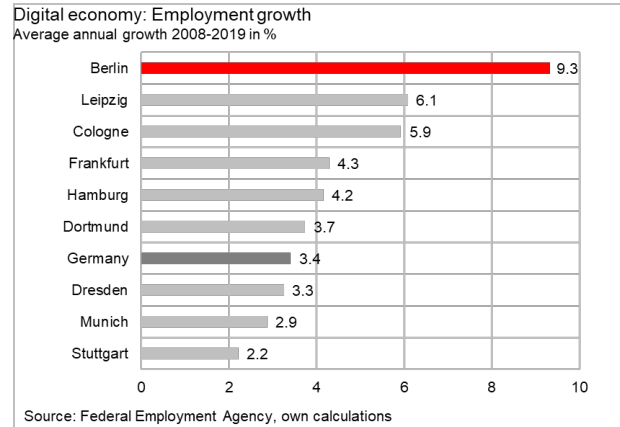
In 2019, 108,905 people were employed in Berlin's digital economy – more than in any other major German city. In Munich (78,130), Hamburg (61,618), Frankfurt (34,119) and Cologne (34,283), on the other hand, far fewer people were employed in the digital economy in absolute terms.



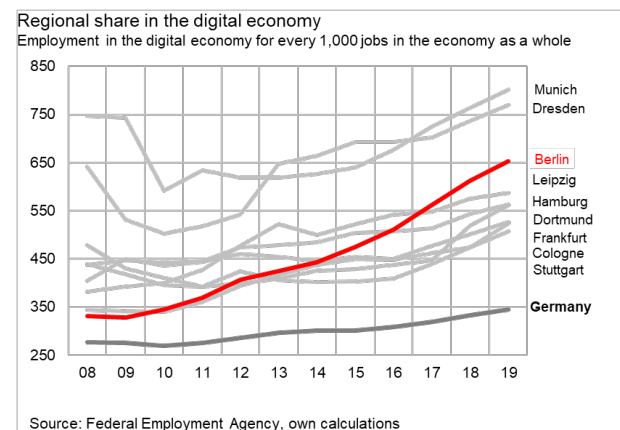
In relation to the total number of people in regular jobs, however, Berlin's digital economy only ranks third. In Munich and Dresden, for instance, the digital economy accounts for 802 and 769, respectively, out of every 10,000 jobs. Adjusted for size, this figures totals only 653 jobs in Berlin. The German average totals 344 digital jobs out of every 10,000 jobs.

### The digital economy as a job engine

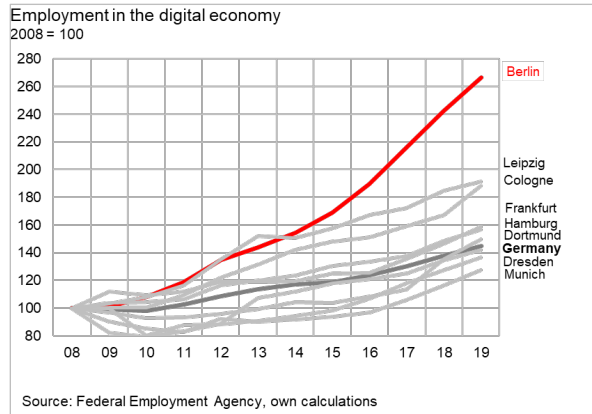
The importance of the digital economy for Berlin's overall economy has increased continuously in recent years. Between 2008 and 2019, a total of 68,096 new jobs were created in Berlin's digital economy. This corresponds to an average annual increase of 9.3% and is hence the highest annual growth in employment of all cities, followed by Leipzig and Cologne with annual increases of 6.1% and 5.9%, respectively. In 2019 alone, around 10,000 people found employment in Berlin's digital economy (+10.2%), almost as many as in Hamburg, Munich and Frankfurt combined.



The German average growth rate for jobs in the digital economy is 3.4%. By comparison, total employment in Berlin rose by an annual average of 2.8% during this period and in Germany by 1.4%.

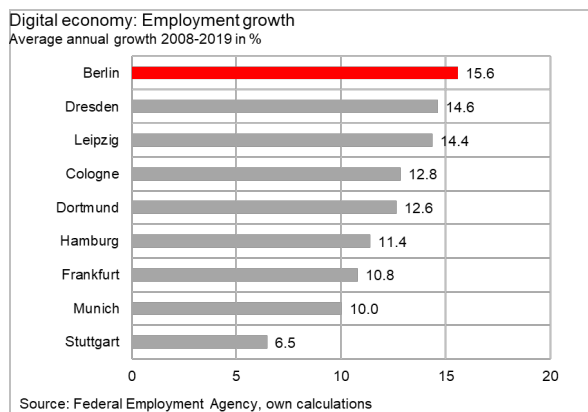


The outstanding development of Berlin's digital economy over the past decade becomes particularly clear when we look at the size-adjusted key figures: The number of jobs in the digital economy per 1,000 employees in Berlin's economy as a whole has almost doubled since 2008 and is therefore catching up considerably with long-established ICT centres like Munich (e.g. Siemens, Infineon) or Dresden, where East Germany's first 'megachip' was developed. If this trend continues, Berlin will have overtaken the former chip hubs in five years from now at the latest, not only in absolute terms but also in terms of size.



### Every 6th new job in Berlin is created in the digital economy

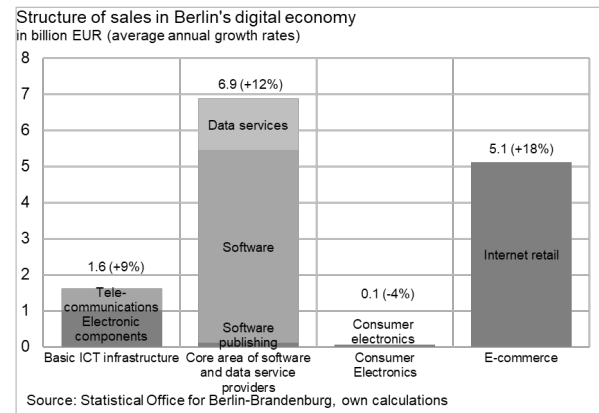
Since 2008, every 6th new job in Berlin has in fact been created at a company working in the digital economy, corresponding to 15.6% of all new jobs. With this contribution to job creation, the digital economy has become comparatively important for Berlin's economy and is more important as a regional growth driver than in all other cities. More than three decades after German reunification and the invention of the World Wide Web, the digital economy is only of comparable importance as a job driver in the cities of Dresden (14.6%) and Leipzig (14.4%).



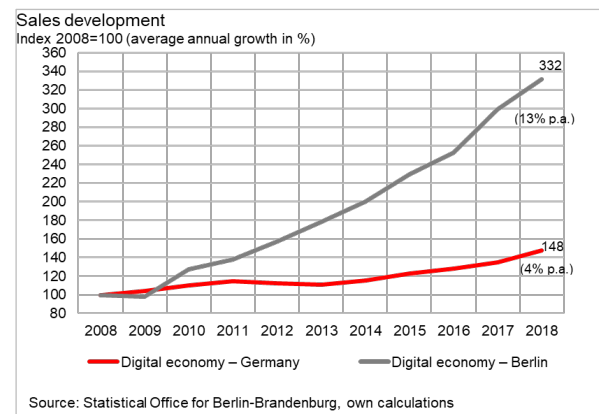
### Internet companies generate sales of almost EUR 14bn

In 2018 (latest available figures), the 10,800 Internet companies in Berlin together generate sales of around EUR 13.7bn. This means that sales have tripled since 2008, corresponding to an annual increase of 12.7%. Sales recorded in the digital economy now exceed that of the construction industry (EUR

11.7bn). Compared to the previous year alone, sales in the digital economy were up once again by 10.8%.

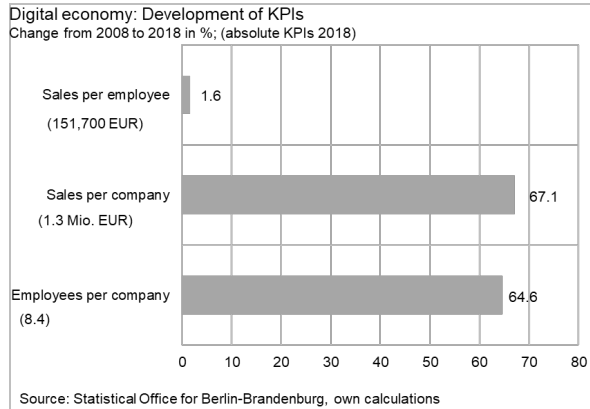


In the core area of the digital economy (software and data services), where the number of companies most recently totalled 8,700, sales since 2008 have risen from EUR 2.3bn to around EUR 6.9bn. This corresponded to an annual average increase of 12%. The positive development in this core area is even surpassed by sales developments in e-commerce, i.e. 18% annually, accounting now for around one third of Berlin's retail sales.



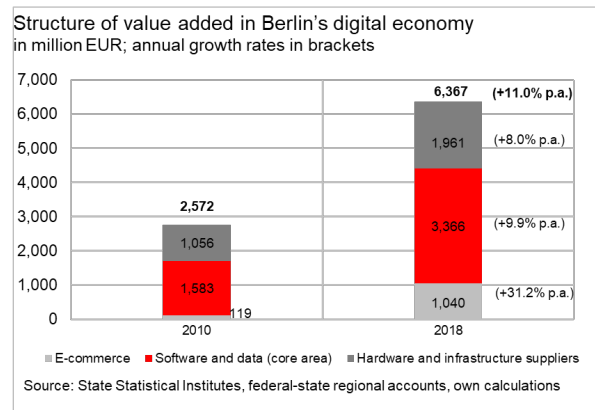
The rate at which sales are rising in Berlin is remarkable compared to the rest of Germany where the average increase since 2008 has been only about 4% per year. The rapid rate of growth in Berlin's digital economy is also reflected in other key figures. The number of employees per company has also increased over the last 10 years by 54% to an average of 8.4 employees. Looking at all industries, this figure is only 7.7 employees per company. From an entrepreneurial perspective,

this high number of employees is needed because sales per company since 2008 have also risen by 67% to EUR 1.27m which is slightly higher than the average figure for Berlin (EUR 1.22 million). The shortage of skilled workers in the digital economy is increasingly proving to be a brake, especially since qualified skilled workers often have to move to Berlin.



### ***The digital economy is responsible for 15% of Berlin's economic growth***

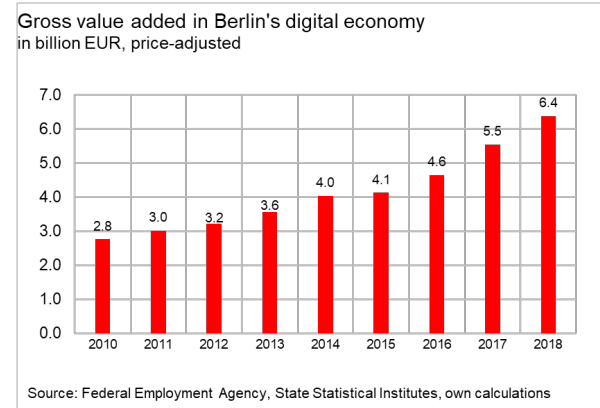
Since 2010, gross value added in Berlin's digital economy, expressed in 2015 prices, has more than doubled to around EUR 6.4bn (last official figures available from 2018). Around 53% of gross value added is generated in the core area of software and data services (EUR 3.4bn). Hardware and infrastructure account for EUR 1.9bn and e-commerce with its dynamic growth for EUR 1bn.



Between 2010 and 2018, around 15% of Berlin's total economic growth can be attributed to the digital economy. The reason for this is that in 2010 price-adjusted gross value added generated by Berlin's digital economy grew

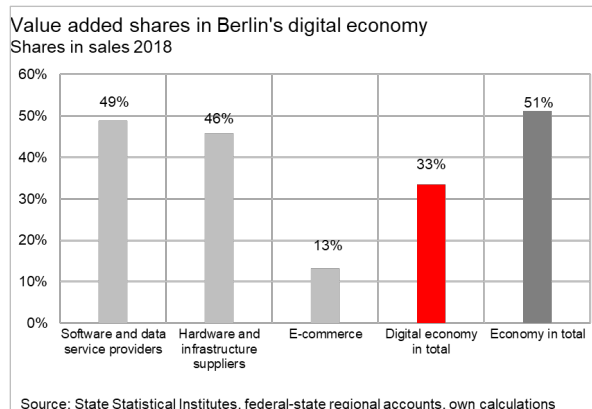
by EUR 3.6bn, corresponding to an average annual increase of close to 11.0%. By comparison, the price-adjusted increase recorded for Berlin's economy as a whole totalled EUR 24.3bn, corresponding to average growth of 2.7% over the same period.

When compared with the development recorded for Germany as a whole, Berlin once again proves itself to be a driver for digital structural change. In Germany, for instance, gross value added in the digital economy rose sharply over the same period from EUR 86bn to EUR 146bn. However, on an annual average level, this corresponded to an annual growth rate of only 6.8%.



In addition to the considerable increases in employment and value added, it also makes sense to take a look at how much value added is actually being generated in Berlin. Value added is, after all, what fuels wages, salaries, profit distributions and dividends. Higher demand for goods and labour indirectly creates new jobs in the region. In Berlin's digital economy, gross value added totals around 35% of sales generated.



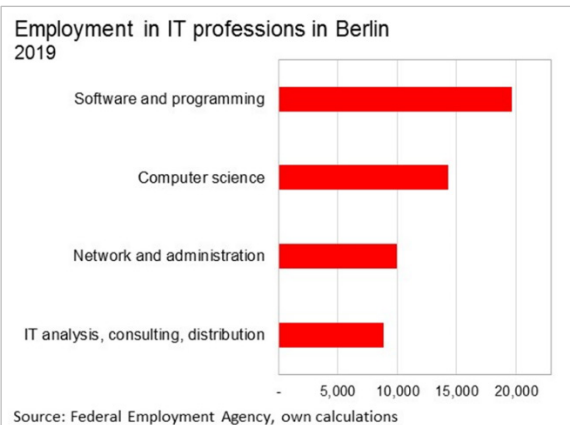


There are, however, enormous differences in the individual sub-sectors of Berlin's digital economy when it comes to their shares in value added. Providers of software and data services reach 49% and are almost on par with the value added share of Berlin's overall economy (51%). However, hardware and infrastructure suppliers (46%) along with e-commerce (13%) have only below-average shares in value added because these sectors require a particularly high level of input from other regions.

The digital transformation will lead to a loss of jobs in Berlin too. This will be felt particularly in those sectors where the automation of simple tasks will lead to greater efficiency and cost savings. But even if simple jobs are lost, new, high-quality jobs will be created to steer digitised processes. What's more, a growing number of jobs will be created in the digital economy and this will ultimately benefit private consumption and government revenues. Public investment and public services will be stepped up and this too will create new jobs.

### **Labour market for IT professionals**

Although companies in the digital economy need many employees with different qualifications, IT employees from the core area of the digital economy are of outstanding importance for the industry. According to a survey by industry association Bitkom, demand for software developers is particularly high.



Therefore, the lion's share of people working in IT in Berlin are employed in software development and programming (37% of all IT employees) and computer science (27%). The latter also includes specialisations in information systems, bioinformatics, medical computing, geoinformatics, media information technology and computer engineering. Administrators (19%) and IT consultants and salespeople (17%) are also included in the number of IT employees.

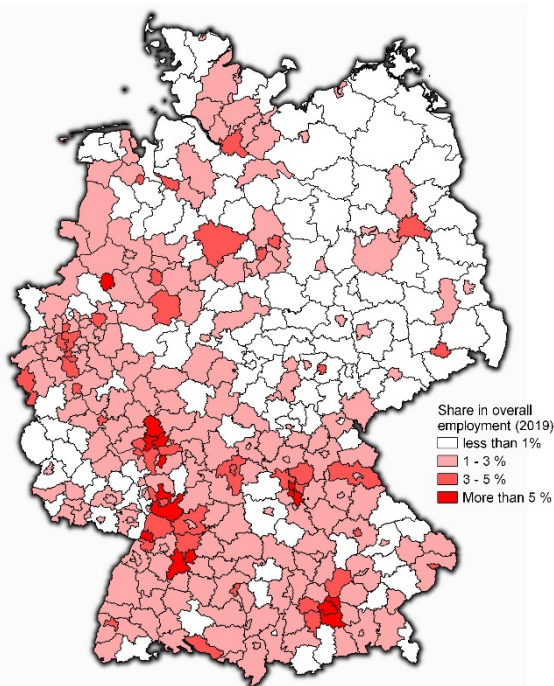
In Berlin, a total of around 53,000 people<sup>1</sup> are employed in IT professions. Munich, with its around 58,000 employees, is the only German district with more IT employees. In terms of size, however, Berlin is more in the upper midfield. Around 3.5% of all people in jobs in Berlin are employed in an IT profession. This share is higher in 35 of Germany's other 400 urban and rural districts than in Berlin. However, the federal capital remains undefeated when it comes to the rate at which jobs are being created. Around 22,000 jobs in IT professions have been created in Berlin since 2013. This means that every 10th new IT job in Germany was created in Berlin.

The overwhelming majority (86%) of people working in IT in Berlin have full-time jobs. More than half (56%) of IT employees have an academic degree – in the case of programmers and software developers, this figure is as high as 64%. The around 14,000 students studying computer science at universities in Berlin are therefore of outstanding importance for future development. The share of

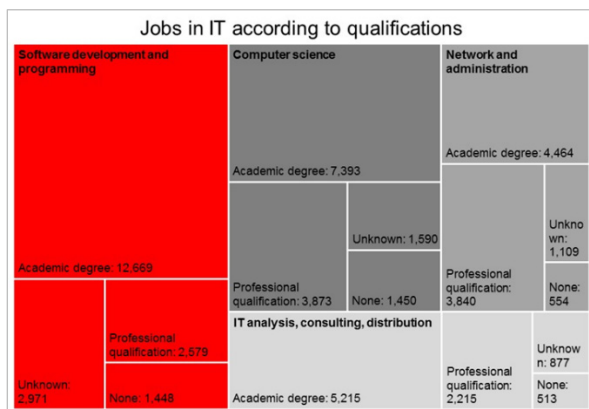
<sup>1</sup> As the number of exclusively marginal jobs for IT specialists is relatively small at 630 in total, they are excluded from further analysis.

women is relatively low at only around 14%, especially among programmers, whereas the share of female students is still around a quarter. The IT sector also has an above-average international orientation. Foreign nationals account for around a third (34%) of people working as software developers and programmers – a share that is significantly higher than in other IT professions (23%) and the economy as a whole (15%). A good quarter of young IT professionals also come from abroad. The majority of foreign computer science students in Berlin are from India, Turkey and Syria.

### Employment in IT professions



Own representation  
Map data: © GeoBasis-DE / BKG 2019



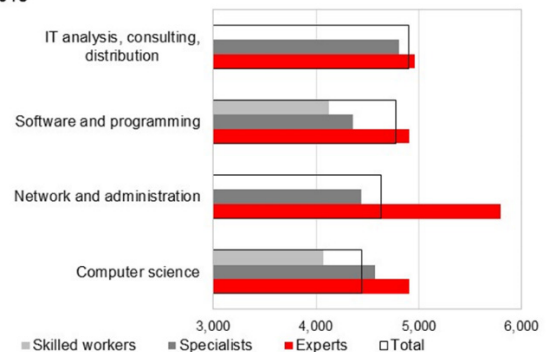
Source: Federal Employment Agency, own presentation

### Salaries

Due to strong growth in the digital economy, companies are continuously on the lookout for programmers, database specialists and web designers. In recent years, the sector has benefited particularly from the influx of young career starters from all over the world who are happy to come to Berlin. But even this international influx was not sufficient to satisfy Berlin's demand for qualified specialists in the digital economy. Good working conditions and high salaries await potential applicants. Compared to other sectors in Berlin, the average gross monthly salary in this sector, including special payments, totalled around EUR 4,800 in 2019 and was already well above average (Berlin: around EUR 3,480).

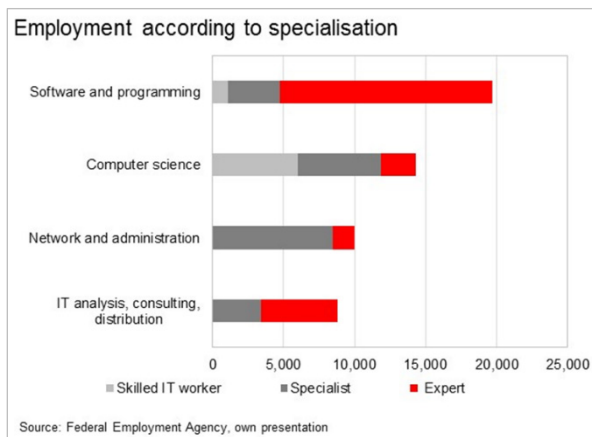
Asked about the biggest obstacle in the recruitment of IT staff, companies cited salary expectations of applicants. The average monthly salaries in IT professions in the core area of the digital economy in Berlin range from EUR 4,589 for computer scientists to EUR 4,997 for software developers and programmers. These salaries increase again depending on specialisation. The lowest job category of 'helper' is not relevant for these professions. 'Skilled workers' receive between EUR 4,200 (computer scientists) and EUR 4,400 (programmers). The top earners in the next higher skill category, i.e. 'specialists', are consultants and salespersons (EUR 4,800). In the 'expert' category, administrators, earning more than EUR 6,000, are far ahead of the other professional groups (around EUR 5,000).

### Monthly salaries in IT professions 2018

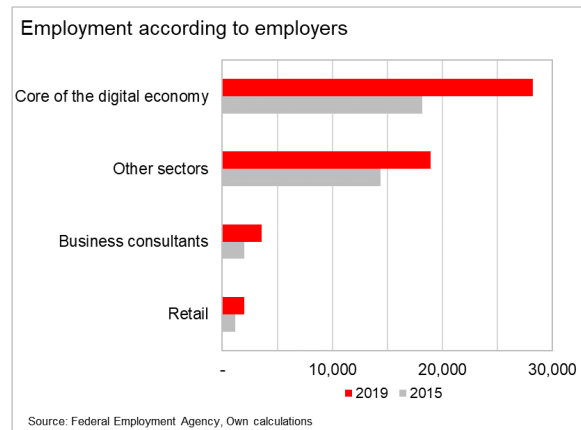


Source: Federal Employment Agency, own calculations

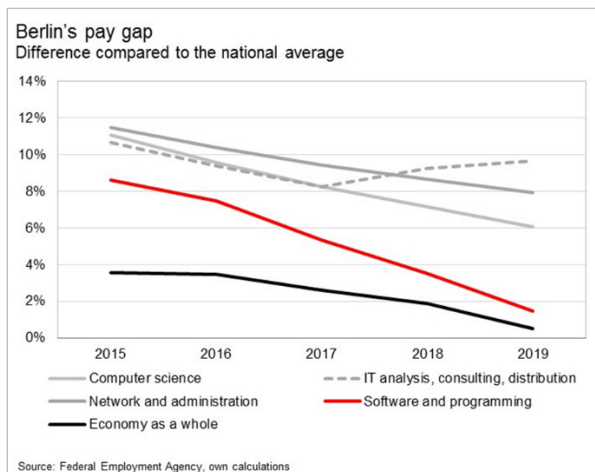
The share of 'experts' among programmers as well as in consulting and sales is particularly high (around 60%). Administrators, on the other hand, are mostly specialists (85%). Computer science is largely made up of skilled workers and specialists (about 40% in each case) and only a few experts.



The software and data services sector is not just the backbone of Berlin's digital economy, it has also become extremely important for many other sectors in Berlin. This is where the technological know-how of the much-publicised digital transformation can be found, a transformation that is moving ahead rapidly in industry and in many areas of the economy.



Just like in many other professions, the IT sector in Berlin still lags behind the national average in terms of salaries. This is also due to demographic factors, such as a high proportion of young people entering the profession. However, this salary gap is gradually closing, especially for software developers. In 2019, salaries earned by programmers in Berlin were only about 1.5% below the national average. When it comes to IT specialists and administrators, the pay gap between Berlin and the rest of the country has also shrunk. IT consulting and sales were the only areas where pay levels stagnated compared to the national level.

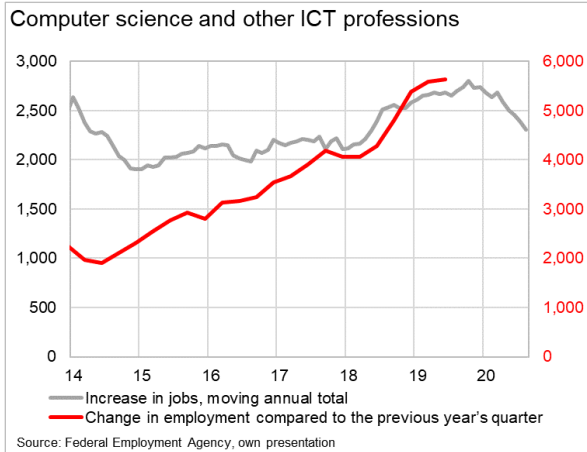


As a result, IT specialists are increasingly finding employment in sectors outside the digital economy. More than half of people working in IT (28,000) are employed at a company operating at the core of the digital economy. Recently, however, IT specialists have also been increasingly recruited in the retail sector (2,000 employees) and by business consultancies (3,600 employees).

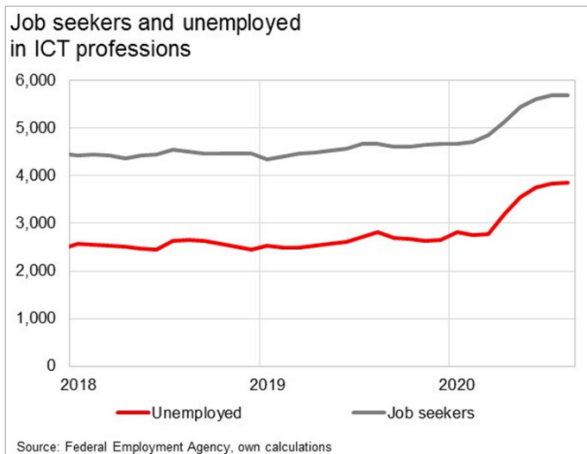
### **Development during the Covid crisis**

In recent years, demand for IT specialists has been high accompanied by a strong increase in employment in these professions in Berlin. This can be seen in the official employment figures currently available until 2019. In light of the Covid crisis, however, the present development is also of particular interest.

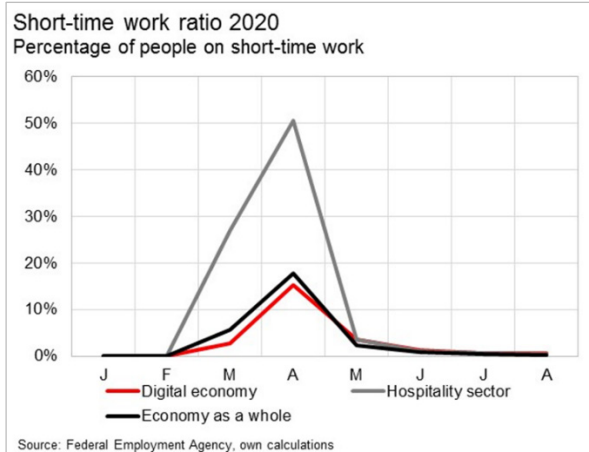
In the current year, the number of jobs for ICT workers in Berlin registered with the Federal Employment Agency has declined. By August 2020, the indicator for job vacancies had decreased by 15% compared to the previous year. Although this indicator does not include all job vacancies, this trend is a first indication of how demand for ICT workers is developing.



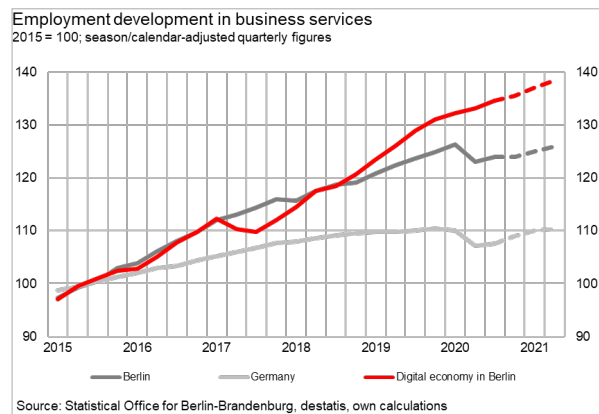
Since April 2020, the number of unemployed ICT workers has risen by over 1,000. Although the number of people in jobs in these professions has stabilised since July, there are still no signs of a return to pre-crisis levels. The number of jobseekers, including employees whose fixed-term contracts are about to expire, also continues to rise. The number of short-time work registrations in the digital economy rose sharply in April to almost 18% of the workforce.



However, compared to other sectors, the proportion of short-time work in the digital economy was low – the hospitality sector, for instance, filed applications for around half of all employees in regular jobs during this period. Nevertheless, the short-time work figures indicate that the digital economy was affected by the first Covid-related cutbacks in spring 2020 to a similar extent as the overall economy. Compared to the spring, however, the number of people listed in the monthly short-time work filings has fallen sharply.



The development of unemployment in ICT professions and the declining number of job vacancies are an indication that the Covid crisis is indeed affecting Berlin's digital economy and its skilled workers.



That being said, however, employment in the digital economy is proving to be more resilient to the crisis than in comparable economic sectors. Seasonally adjusted, employment in business services in Berlin fell by 2.5% in the second quarter compared to the previous quarter (Germany: -2.6%). In Berlin's digital economy, the momentum of the past quarters has also slowed down considerably. However, according to the service statistics of the Statistical Office for Berlin-Brandenburg, employment in this sector increased by at least 1.0% according to seasonally adjusted calculations. The core area of the digital economy, i.e. programming and digital services, even reported a 1.3% increase in employment during the first Covid wave. The digital economy has traditionally been better at working from

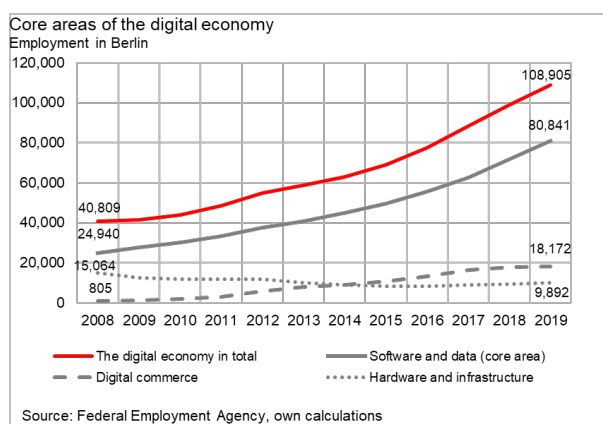


home than other sectors, which is why the industry was well-prepared when the pandemic set in.

This explains why the number of people working in this industry can also be expected to rise in 2020, albeit at a slower pace than in previous years. While the number of people in ICT rose by around 4,000 at the end of 2019, the increase is expected to be somewhat weaker in 2020 with around 3,000 new jobs. In the years that follow, the digital economy could again benefit from the digitalisation drive triggered by the Covid crisis and create more jobs.

## 2. Sub-sectors of the digital economy

The individual sub-sectors of the digital economy, i.e. the core area (software and data), hardware and infrastructure as well as e-commerce, show very different development trends.

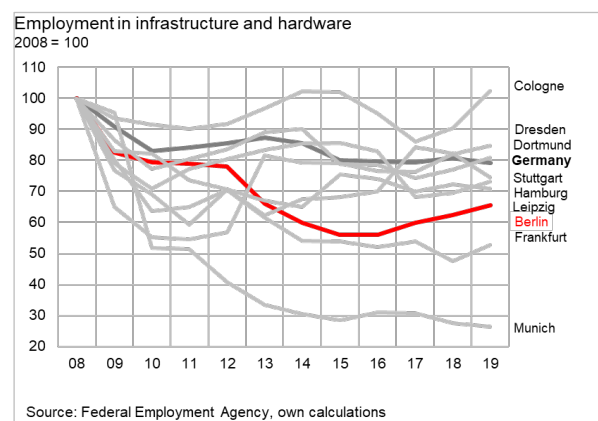


### 2.1. Decline in infrastructure and hardware

The sub-sector of hardware and infrastructure suppliers includes all those companies that provide the infrastructure needed to transmit (basic ICT infrastructure) and display (consumer electronics) the content and services generated in the core area of the digital economy. In this more industry-orientated sector of the digital economy, employment has been declining for years due to the migration of production to more low-cost regions of the world, but also primarily due to growing automation. Thanks to higher productivity, the remaining

companies are still making a significant contribution to regional economic growth.

Since 2008, employment in this sub-sector in Berlin has fallen from a good 15,000 to most recently 9,900 jobs, corresponding to an overall decline of 34%. Since 2017 however, this sector in Berlin has seen employment figures rise once again. Compared to the employment low in 2016, 1,500 more people are now employed here. However, employment in this sector has declined throughout Germany, where today's 288,000 jobs are 76,000 below the figure for 2008 (-21%). Especially in Munich where employment fell by 74% to only 8,148. Cologne was the only city able to record a weak 2.4% increase in employment in this period to 5,174.

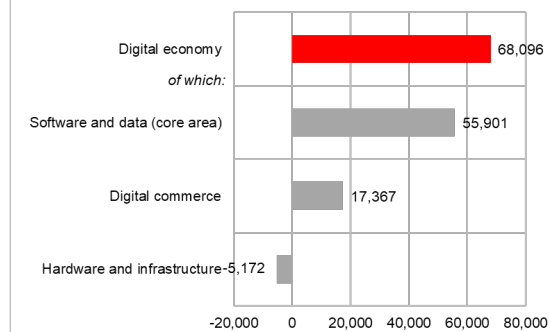


### 2.2. The core area accounts for the strongest growth in Berlin

Software and data services, the so-called core area of the digital economy, have proven to be particularly important for Berlin, and not just for Berlin. The services provided by these industries are required by many companies worldwide as part of the digital transformation of work processes. In absolute terms, more than three times as many jobs have been created in this sector in Berlin since 2008 (+55,901) than in the much more dynamic e-commerce sector (+17,367).

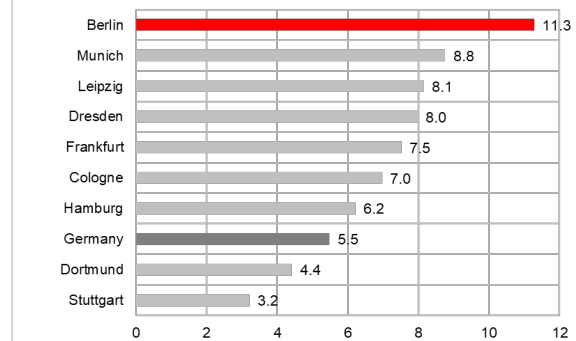


Digital economy: Employment  
2019; absolute change compared to 2008



Source: Federal Employment Agency, own calculations

Core area of software and data: Employment growth  
Average annual employment growth since 2008 in %



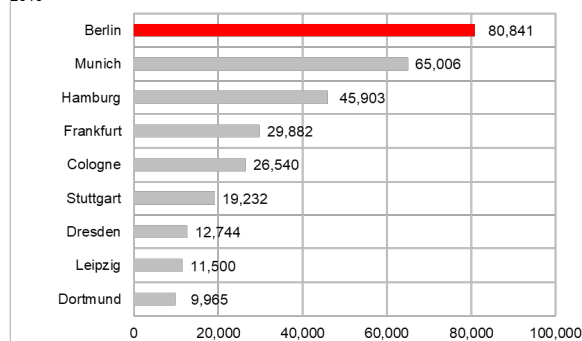
Source: Federal Employment Agency, own calculations

In Germany, 866,944 people are currently employed as software developers and service providers in the core area of the digital economy. Especially when compared to Germany's most important digital cities, the development of this sub-market has been particularly dynamic in Berlin which accounts for the highest number of jobs in this sub-sector (80,841). This represents 9.3% of all software programmers employed in Germany. A good one third of all German software developers (around 300,000) work in the nine major cities surveyed. By comparison, these nine major cities account for only close to 17% of overall employment in Germany.

### 2.3. E-commerce concentrated in Berlin and Leipzig

Over the last decade, Berlin has undergone structural change. Although the number of people employed in the hardware and infrastructure sub-sector in Berlin has fallen by almost 5,200 since 2008, the decline in this sub-sector has been more than compensated for by strong growth in e-commerce, where three times as many new jobs were created in the same period. The around 1,000 e-commerce companies in Berlin currently employ 18,172 people. In Germany as a whole, this sub-sector employs around 155,000 people. From a national perspective, this means that every 8th job in e-commerce is based in Berlin (12%).

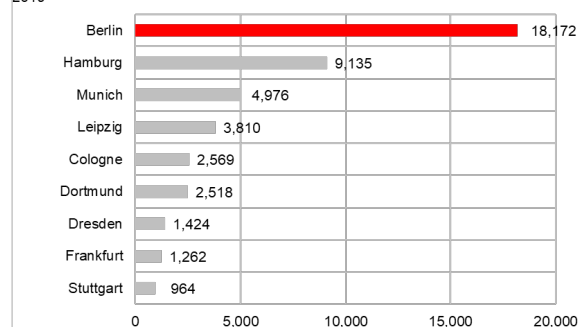
Core area of software and data: Employment  
2019



Source: Federal Employment Agency, own calculations

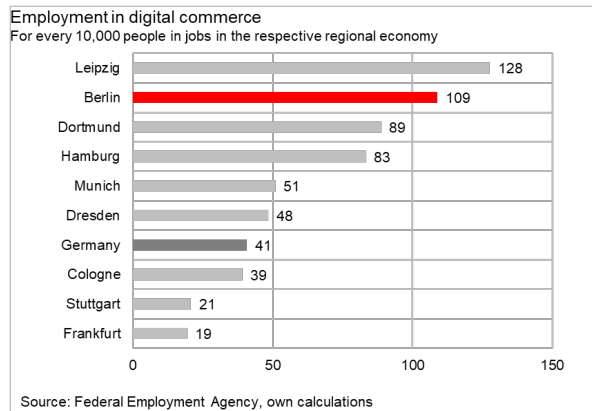
The number of employees in the core area of the digital economy in the capital city is increasing at an average rate of 11.3% annually. Neither Munich (+8.8%), Dresden (+8.0%) nor Leipzig (+8.2%) recorded such high growth in employment. The average increase in employment for the country as a whole is only 5.5%.

Digital commerce: Employment  
2019

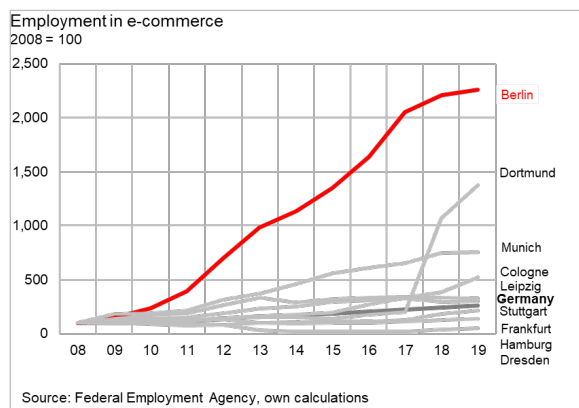


Source: Federal Employment Agency, own calculations

Today, more people work in e-commerce in Berlin than in Hamburg (9,135), Munich (4,976) and Cologne (2,569) combined.



Even when adjusted for size, e-commerce can still be seen to be concentrated in Berlin, ranking second after Leipzig. For every 10,000 people employed in Berlin, 109 work in e-commerce. Only Leipzig records a significantly higher figure of 128. In absolute numbers, Leipzig with a figure of 3,810 employs just one fifth of the number of people working in e-commerce in Berlin (18,000). The steep increase in sales – additionally driven by the Covid crisis – and plans by major mail order companies to locate here ensure that this industry will continue to grow in Berlin in the future.

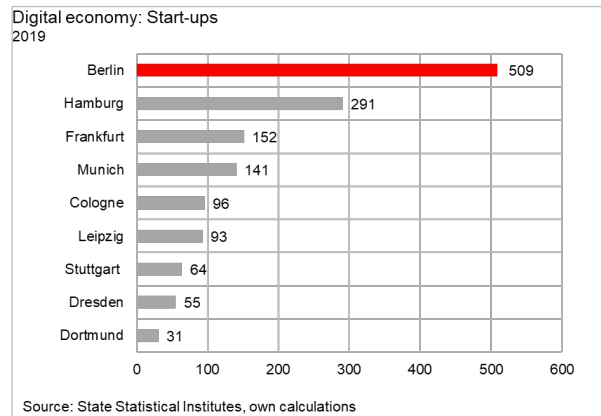


### 3. Start-ups and hubs

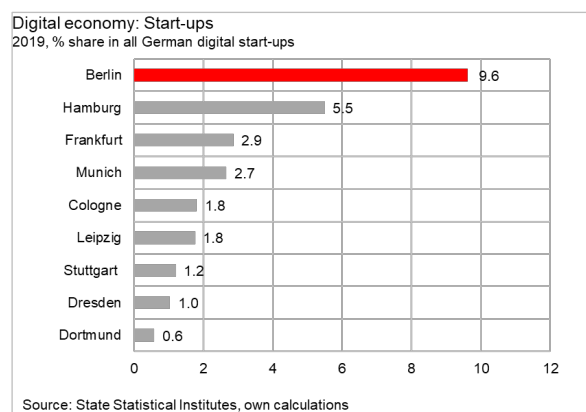
#### *One new digital company every 17 hours*

Just under 123,000 business start-ups in total were registered in Germany in 2019 with 5,292 of these setting up shop in the digital economy. These start-ups are corporations, such as limited liability companies, stock corporations or limited partnerships. Unlike simple business registrations, companies like

these can be assumed to be of greater economic importance as soon as they are set up due to the high costs involved in their registration. The nine benchmark cities accounted for a total of around one quarter of all start-ups in the digital economy.

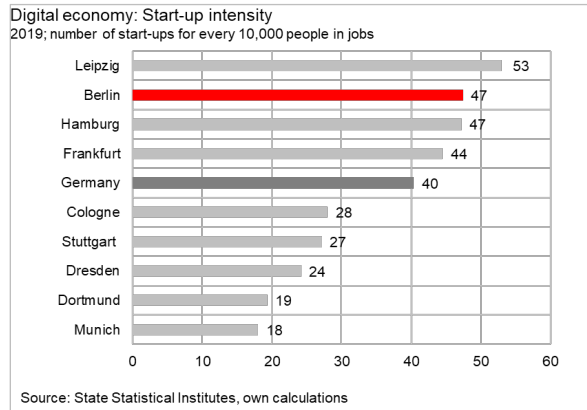


In 2019, 509 new digital companies were launched in Berlin. This means that on average one new digital company is set up every 17 hours in the German capital. The new companies being set up in Berlin's digital economy are largely headquarters, just 21% of these are branches. When adjusted for size, Leipzig is the only remaining city with 53 start-ups per 10,000 digital workers, ahead of Berlin and Hamburg with 47 each. The national average is 40.



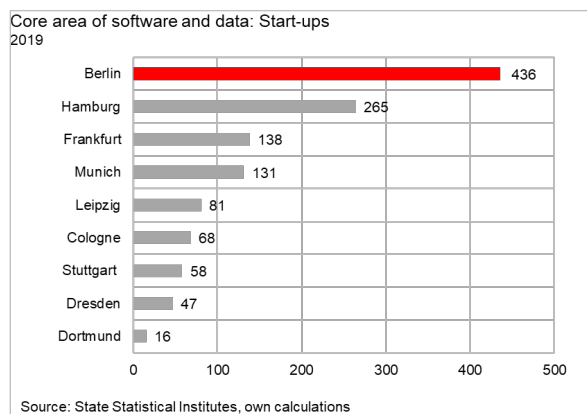
Berlin's ecosystem of investors, banks, business angels, universities and entrepreneurs has made a name for itself internationally, with a particularly high number of start-ups in the digital economy. In a comparison of cities across Germany, digital start-ups in Berlin come out on top with almost every 10th digital

start-up in Germany now being launched in Berlin (9.6% of all start-ups). The number of new companies being set up in the capital city is as high as in Munich, Hamburg and Cologne combined. In Munich, the number of start-ups is significantly lower at 141 (2.7%).



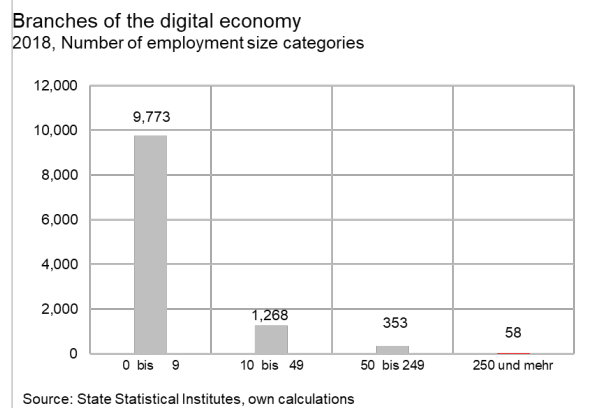
With 436 start-ups, Berlin is – in absolute terms – also the leading major German city when it comes to the technologically innovative core area of software and data services – far ahead of Hamburg (265 start-ups), Frankfurt (138) and Cologne (68).

However, when the number of digital start-ups is compared to the number of people working in this sector, Berlin only comes second after Hamburg.



### Branches in the digital economy

According to the latest available figures from 2018, 10,800 companies currently operate in the digital economy in Berlin. However, since some of these digital economy companies use several locations, the number of digital economy branches, i.e. 11,500, is even slightly higher than the number of companies. DAX newcomer Delivery Hero, for instance, needs additional office space in Berlin's Mitte district for its current 2,000 employees in the city, in addition to its headquarters on Oranienburger Straße.



Most of the digital economy offices (85%) employ fewer than 10 people. Another 11% of these employ between 10 and 50 people. Just over 400 locations (3.6%) in the city employ 50 people or more. Around 58 branches have a workforce of more than 250. These particularly large locations belong to the core area of the digital economy (36 branches) but also to online retail business (10 branches).

### **Core area of the digital economy concentrated in the inner city**

Companies from the core area of the digital economy have a total of 9,200 branches spread across the entire Berlin city area. As in many major cities, digital companies are concentrated at central locations. Around two thirds of the companies at the core of the digital economy are located within the inner S-Bahn circle line, which is also known as the 'dog's head' due to its striking shape. The focus on inner city locations becomes even clearer when we look at larger digital companies: More than 80% of the branches with more than 50 employees are located in and around the S-Bahn circular line.

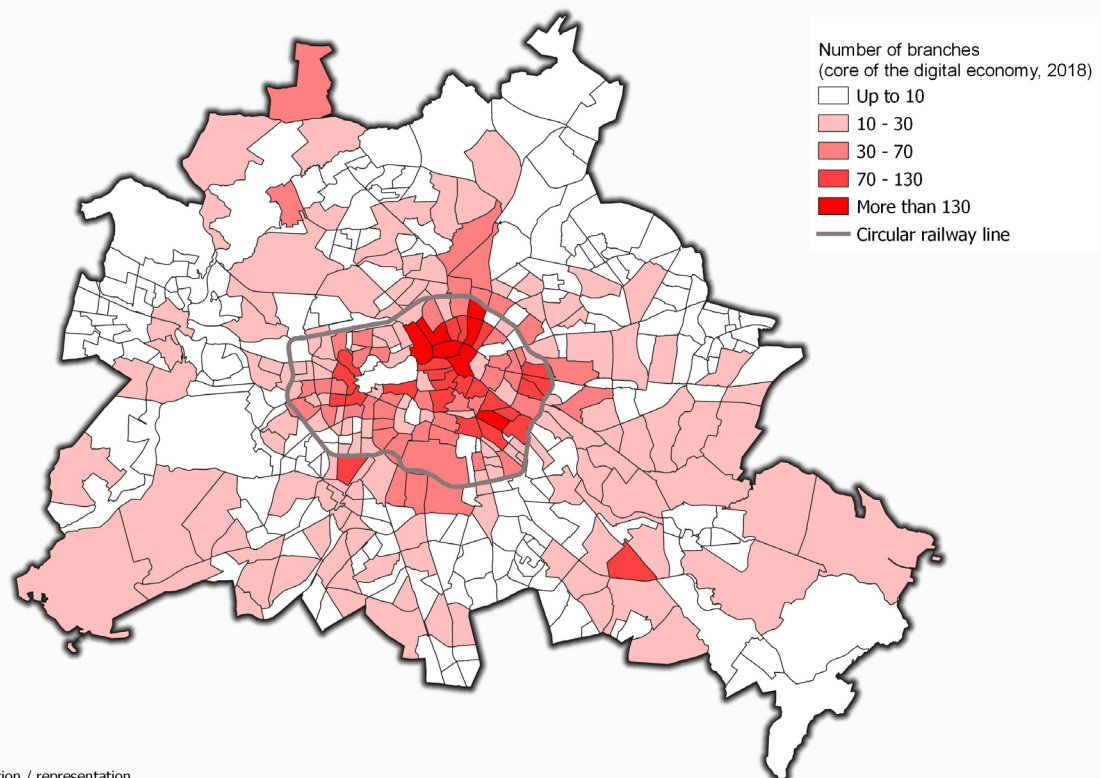
However, the fact that the digital economy in Berlin is not limited to the city's central hotspots is made clear by an example from Treptow-Köpenick: Nearly 100 companies from the digital economy have now settled in Adlershof-West – around a quarter of them only after 2016.

### **Science and research are a driving force – also outside the city centre**

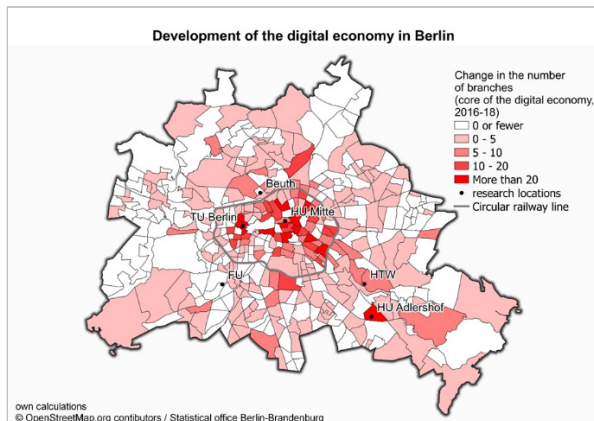
Since 2013, the number of branches being set up within the S-Bahn circular line has been higher (+14%) than outside the city centre (+10%). Most of the new digital economy branches that opened between 2013 and 2018 were set up in Berlin's old city centre close to Stadtmitte underground station. That being said, however, some shifts within the city can also be seen. Most recently, for instance, there has been an increase in the number of branches being set up in the newly built residential and business area along Heidestraße and around the main railway station.

Science and research are also having a positive impact on start-up and establishment activities. With more than 50 publicly and privately sponsored universities and colleges and almost 200,000 students (including 14,000 studying computer science), Berlin is an outstanding science location, and is also home to numerous non-university research institutions.

**Digital economy in Berlin**



Source: own calculation / representation  
© OpenStreetMap.org contributors / Statistical Office Berlin-Brandenburg

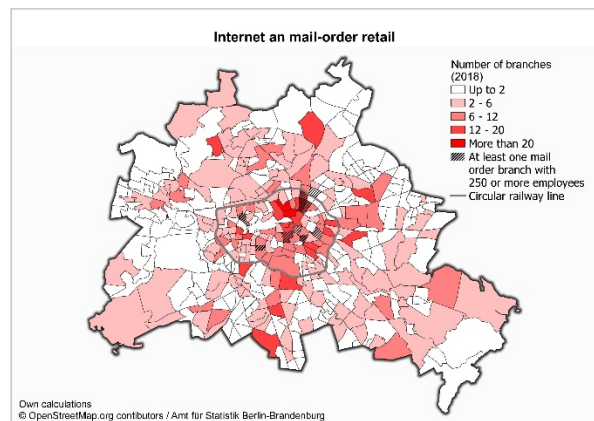


Many new digital economy companies are emerging close to university locations. Since 2013, for instance, 52 new digital companies have been founded in the immediate vicinity of Technische Universität Berlin at Ernst-Reuter-Platz and in the Spreestadt Charlottenburg quarter. At the Adlershof location, the proximity to the Institute of Computer Science which belongs to Humboldt-Universität zu Berlin, also had a positive impact on start-up activities.

In the years to come, other locations will emerge in the city that are particularly attractive for digital economy companies. These include not just the former Tegel airport site, but also the area around the University of Applied Science (HTW) in Schöneeweide.

### ***Mail order business: Big players move to Berlin's centre***

In terms of branch numbers, online mail order, with its many delivery and warehouse workers, is less centred around the more expensive city-centre locations than companies in the core area of the digital economy. In the latter area, programmers, administrators, web designers and sales staff prefer to work in a stimulating and representative environment.



Looking at the few large branch offices with more than 250 employees, the clear preference for locations within the S-Bahn circular line becomes apparent. Fashion mail-order company Zalando, for instance, has built a 100,000 square metre campus for its around 6,000 employees at Ostbahnhof, one of the top addresses on the Spree River. In the immediate vicinity, Amazon is planning to expand its development site, currently located in the city centre, to cater for another 3,400 employees.



## Conclusion

Working from home, digital learning, conferences and trade fairs via video platforms, shopping on the net instead of at the shopping mall – there is literally no end to the list of examples of platforms and digital tools that are being used much more due to the Covid crisis. Many of these tools had been available for years. However, once developed, these digital tools also have to be made known, disseminated and accepted by users, not only by individuals, but also by businesses, schools and administrations. In addition to clever and user-orientated developers and programmers, capable intermediaries and marketers are also needed, as well as openness to new ideas on the part of decision-makers and users. As the need to use digital tools has increased dramatically with the exponential rise in infections, the pandemic has acted as a catalyst, taking the digitalisation of society to an entirely new level.

Soon, 110,000 people will be employed in the digital economy in Berlin, making the city not just an important location in Germany for this sector, but also a national experimental platform where research, development and marketing of new digital tools go hand in hand. At the capital city's universities and research institutions, technical foundations are being laid and the IT specialists of tomorrow are being trained. The gap between academia and industry is being successfully bridged, for instance, through university spin-offs which can avail of a wide range of support from the city's start-up ecosystem. This is also proof of the high level of start-up activity in the university environment. Building on this, new applications, services and products are being developed and marketed by the approximately 81,000 people currently employed in the core area of the digital economy. However, the transfer from development to innovative user application is often hampered by entrenched structures. The fact that digital products and services are the foundation for future growth has long since been acknowledged by many

renowned companies from industry throughout Germany. It comes therefore as no surprise that entire company divisions, as well as digital or innovation hubs are being set up in the capital city to absorb the spirit of the start-up culture and digital economy. However, having a branch office in Berlin does not automatically guarantee the digital transformation of antiquated business models. After all, even within companies, digital transformation processes must be painstakingly planned and implemented. In order to cope with the often long and complex introduction of new digital systems, many companies increasingly need support from external consultants. All the more often, it is companies from Berlin working in an advisory capacity that are accompanying these transformation processes. This can be seen in the growing number of IT specialists employed by business consultancies in Berlin. These business-related service providers act like transmission belts for the digital economy, introducing new digital products and working methods at private companies, public administrations and institutions.

The pandemic is leading to irreversible structural changes in many areas, which companies must now face up to. It has suddenly upped the latent pressure to digitalise and innovate that many industries have resisted until now. Digitalisation offers companies opportunities to deal with crises of this kind, permanently changing entire sectors of the economy in the process. The digital economy has created a nexus in Berlin for the digitalisation of other industries. There has rarely been such a good opportunity to push this digital transformation forward and create better conditions for the good future economic development of the wider economy.

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*Authors:*

Claus Pretzell, IBB  
Tel. +49 (0) 30 2125-4752  
Florian Seyfert, Berliner Sparkasse  
Tel. +49 (0) 30 869-57066

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