

# DON'T PANIC!

Keep Calm and Digitize:

**What Approach Are German Companies Taking in the New Age?**

The trend study by Tata Consultancy Services (TCS)  
and Bitkom Research

# Table of Contents

<b>Foreword</b>	<b>4</b>
<b>1. Methodology</b>	<b>5</b>
<b>2. Key Findings</b>	<b>6</b>
<b>3. Significance of Digitization in Companies</b>	<b>12</b>
<b>4. Use of Key Digital Technologies</b>	<b>22</b>
<b>5. The Effects of Digitization on Business Functions</b>	<b>26</b>
5.1 Business Models: Products and Services	30
5.2 The Working World: Skills and New Job Profiles	32
5.3 Collaboration with External Partners	38
<b>6. Investment Intentions, Potential, and Obstacles</b>	<b>40</b>
<b>7. Findings by Industry</b>	<b>46</b>
7.1 Information and Communication Technology	50
7.2 Retail	52
7.3 Automotive	54
7.4 Banking and Insurance	56
7.5 Chemicals and Pharmaceuticals	58
7.6 Mechanical Engineering	60
<b>8. Eight Recommendations for Digital Enterprises</b>	<b>62</b>
<b>9. Contacts</b>	<b>66</b>

Discover more at  
[www.studie-digitalisierung.de/en](http://www.studie-digitalisierung.de/en)

## Foreword

In the digital age, no one is on solid ground. If you want to remain successful, you have to go further, alter your strategy, and dare to try out new things. Constant change creates uncertainty, so it is all the more important to plan before taking the necessary steps. But don't panic – this study will show you many approaches and ideas.

How digital is the German economy in 2019? At first glance, it looks positive: Companies are more open for technological transformation than in 2018 and have increased their spending on digitization by 12 percent. Cloud computing, big data analytics, and platforms are more prevalent than ever, but there is still work to be done.

Although more and more companies are coordinating digitization across business functions and establishing teams of digital experts, these initiatives do not reach all employees. Managers want to see a greater level of digital competence among their workforce. And there are few experts on the job market. As a result, there are more

and more vacant positions for IT security consultants, cloud computing experts, and social media managers. Sometimes, digital innovations fail due to a lack of acceptance from employees. In this situation, change management can help – but only one in two companies are using this methodology.

Speak to us if you have any questions or if you are looking for solutions. We will be happy to support you with our strategic approach Business 4.0™.

Until then: Keep calm.



**Sathagiri Chapalapalli**  
Vice President and Managing Director  
Tata Consultancy Services Germany

## 1. Methodology

For the fourth year running, Tata Consultancy Services (TCS) and Bitkom Research have examined the current status of digital transformation in German companies. The methodology used for the study remains largely the same as in previous years. This enables the findings to be compared with previous years and forms a clearer

picture of the strategies pursued by companies of different sizes and in different industries.

Data for the study was gathered using computer-assisted telephone interviewing (CATI). The sample comprises 953 interviews.

### Sample Composition 2016–2019

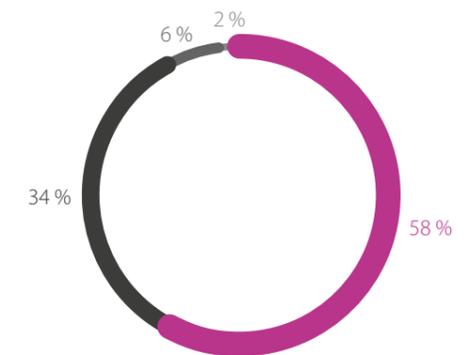
Year	Survey period	Sample size (unweighted)			
		Total	100–199 employees	200–499 employees	500+ employees
2019	June 10–July 12	n=953	n=358	n=255	n=340
2018	May 9–June 8	n=954	n=351	n=257	n=346
2017	May 29–June 27	n=905	n=335	n=237	n=333
2016	May 9–June 13	n=805	n=303	n=204	n=298

We only surveyed executives who are responsible for digitization within their organization. This includes managing directors, board members, and decision-

makers in the fields of IT, digital technology, and operational business.

### Role of survey respondents 2019 (unweighted)

- Chief information officer (CIO)
- CEO or board member
- Chief digital officer (CDO)
- Chief operating officer (COO)



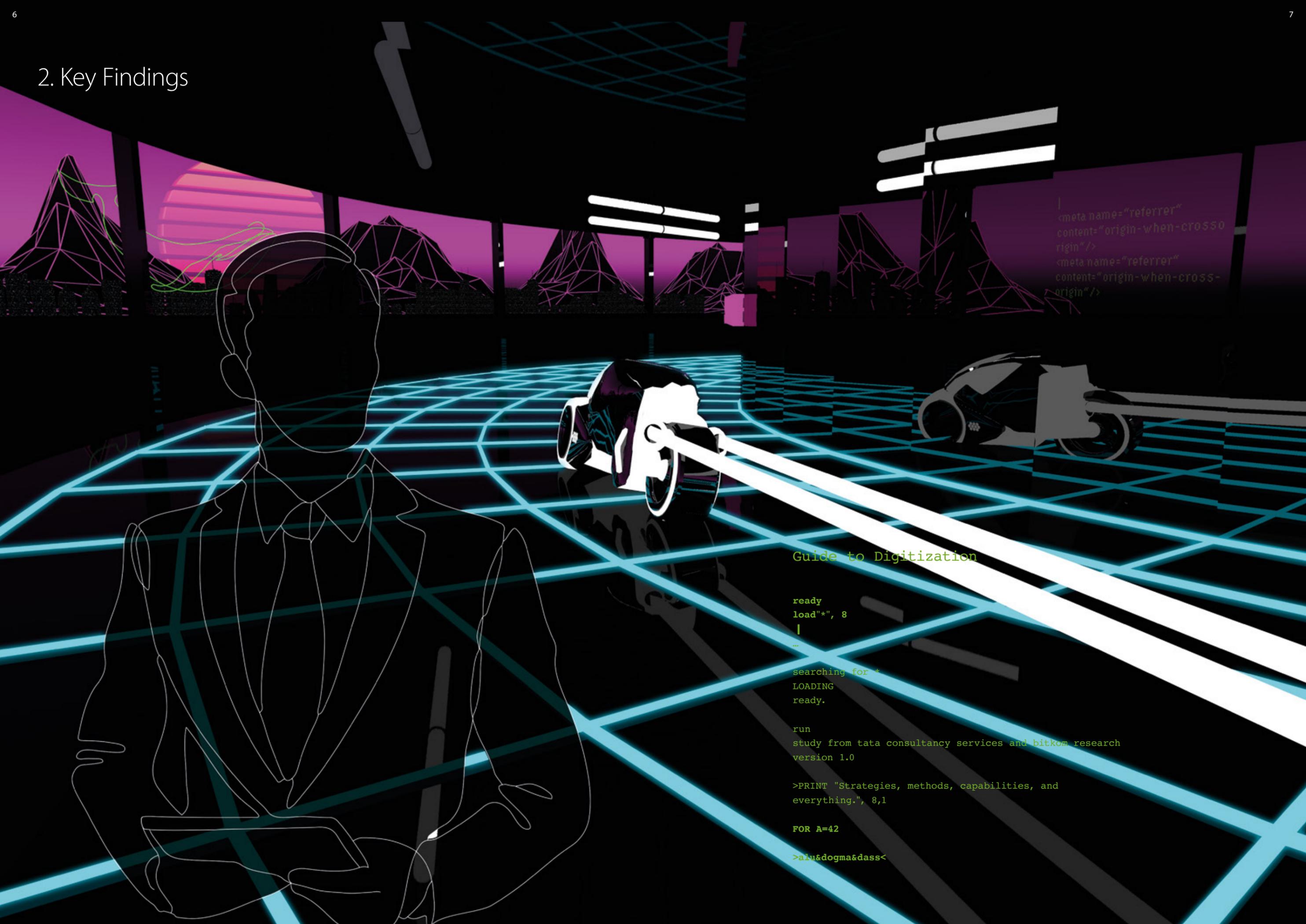
Using stratified random sampling ensures that companies of specific industries and sizes are represented in a sufficient number to allow valid evaluation. Survey responses were weighted in the analysis.

### Survey questions addressed four main topics:

- Significance of digitization in the companies
- Use of key digital technologies
- Impact of digital transformation on areas of business
- Investment intentions, potential, and obstacles

The study therefore provides a representative picture of companies in Germany with 100 employees or more in different industries and of different sizes.

## 2. Key Findings



```

<meta name="referrer"
content="origin-when-cross-
origin" />
<meta name="referrer"
content="origin-when-cross-
origin" />

```

### Guide to Digitization

```

ready
load"*, 8
|
...
searching for *
LOADING
ready.

run
study from tata consultancy services and bitkom research
version 1.0

>PRINT "Strategies, methods, capabilities, and
everything.", 8,1

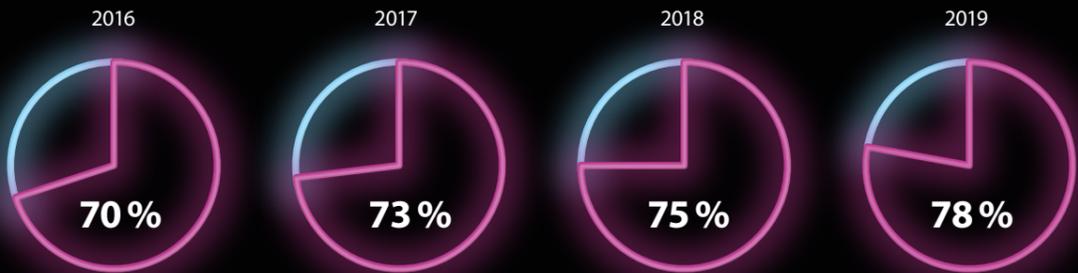
FOR A=42

>alu&dogma&dass<

```

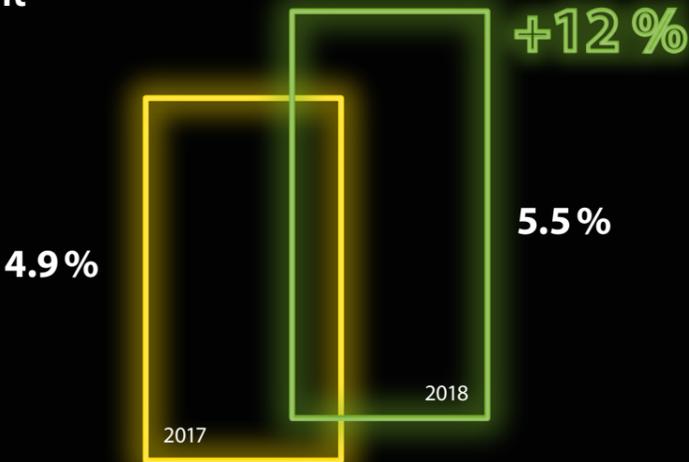
### Year-on-year rise in number of companies looking to digitize

How many companies are open to digitization?



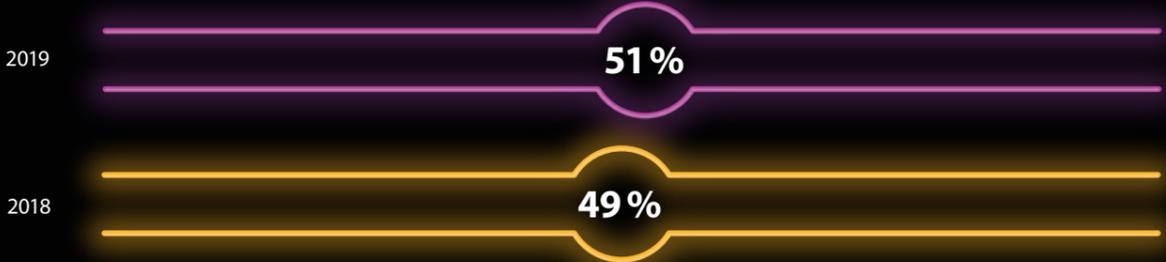
### Sharp increase in investment

What percentage of their annual revenue do companies invest in digitization?

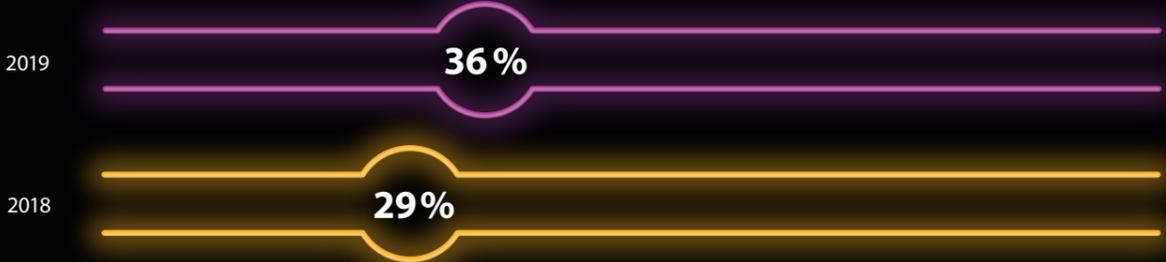


### Digitization more deeply ingrained

How many companies have a single person to coordinate digitization across functions?

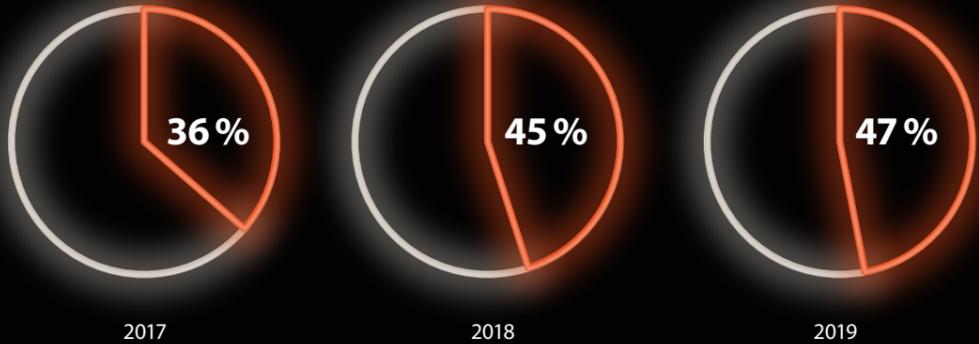


How many companies have a business unit dedicated to digitization?



### Systematic approach still growing in importance

How many companies use change management to support digitization?



### Companies are becoming more agile

How many companies always or mostly use agile methods?

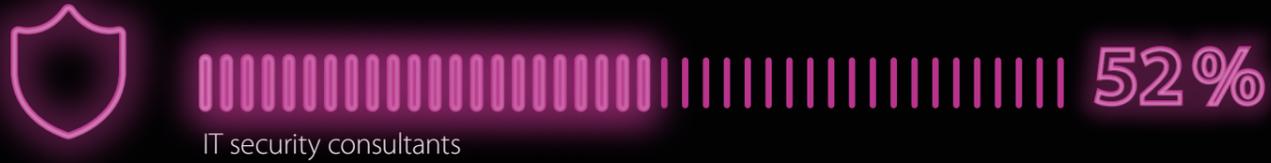


### Digital expertise in need of improvement



### Most wanted: IT security consultants

Who are employers searching for?



### How do employees perceive digital transformation?



### Money not an issue, but security is seen as a roadblock

What do companies view as obstacles to digitization?



### Employee retention an undervalued opportunity

Where do companies see the greatest potential in digitization?



### 3. Significance of Digitization in Companies

"We need answers.  
For digitization, business 4.0, and everything."

"Where do we send the fax?"

"Equipment storage, 42B."

"How do we get all the departments on board?"

"Don't panic!  
The new CDO will do it."



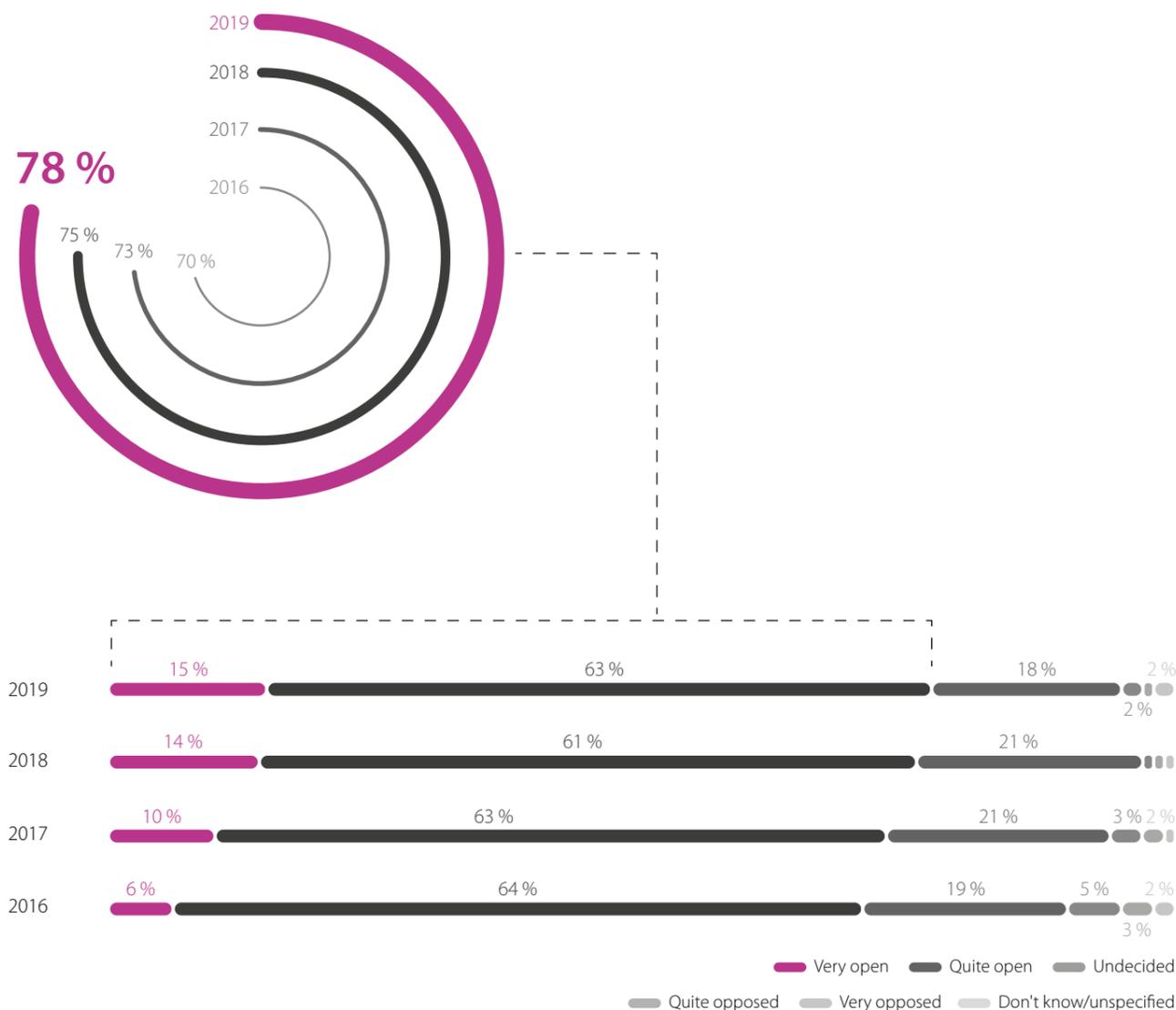
### The majority of German companies are for digitization

In Germany, more than three in four companies with 100 employees or more (78 percent) have a positive view of digitization. This represents another slight increase of three percentage points compared to the previous year. The percentage of companies that are "very open" to digitization rose continuously year on year: from 6 percent in 2016 to 15 percent this year. Companies that are more open take a more active approach to digitization, which could yield greater business success in the medium term.

Fewer and fewer companies are risking losing market share by taking a hesitant approach to digital transformation. Only 18 percent are still undecided and around 3 percent are skeptical.

### Attitude Toward Digitization

Year on year, companies are becoming more open to digital topics and innovations.



**Question:** "What is your company's general stance on digitization?"; Top two boxes ("Very open" and "Quite open") Sample: All surveyed companies; Due to rounding, percentages may not total 100%; figures ≤ 1% hidden for clarity of presentation

### Cross-functional coordination is on the rise

At one in two of the companies surveyed (51 percent), one single person coordinates digitization across functions. This is an average increase of 8 percentage points over the past two years for companies of all sizes.

A look at company sizes reveals considerable differences: Almost two thirds (64 percent) of large companies have a single person responsible for digitization, in comparison to just half of small and medium-sized companies (48 percent and 50 percent respectively).

### Responsibility for Digitization in General

It is becoming increasingly common for a single person to coordinate digitization across functions. This is especially true of companies with more than 500 employees.



**Question:** Is there a person in your company who coordinates digitization across all areas?; Answer: Yes; Sample: All surveyed companies



"Digitization is more than technology. It affects the culture and way of working in all areas of a business. It is therefore a positive sign that more and more companies are coordinating and implementing change across functions."

Sathagiri Chapalapalli, Vice President and Managing Director Tata Consultancy Services Germany

**The chief digital officer (CDO) role is becoming a staple in large companies**

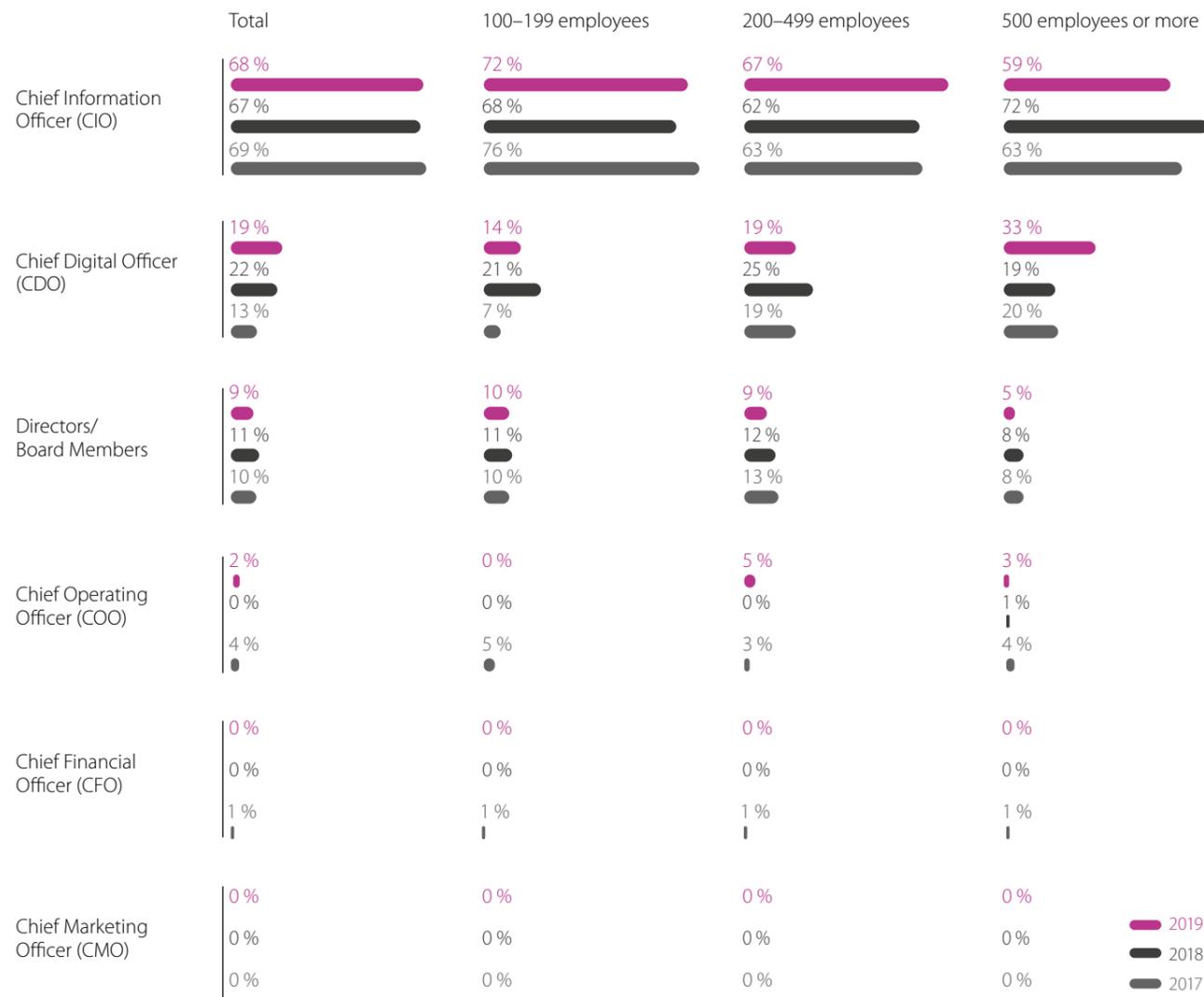
At companies where there is one person responsible for digitization, approximately two thirds of the time (68 percent) it is the chief information officer (CIO).

The comparatively new role of chief digital officer (CDO) has established itself alongside the CIO, particularly in large businesses. The CDO drives and directs digital transformation at 33 percent of large companies – a considerable increase of 14 percentage points from last year.

In contrast, directors and board members are relinquishing responsibility for digitization. The percentage sunk from 11 percent in 2018 to 9 percent this year.

**Responsibility for Digitization by Role**

CIOs still play the leading role in digitization. At large companies, however, the influence of CDOs is growing rapidly.



**Question:** Who coordinates digitization across your company's departments?; Sample: Companies with cross-functional coordination

**One in two large companies have a dedicated digitization unit**

More than a third of the companies surveyed (36 percent) have teams that deal exclusively with digital topics, trends, and strategies. Transformation is now embedded not only in the workforce, but also in the organization, mostly within IT departments.

Large companies are leading the way here too. For the first time, one in two companies with 500 or more employees (51 percent) have their own digitization team. Companies with 100 to 199 employees, on the other hand, are retaining their existing structures. In comparison to previous years, few have established a central unit (28 percent compared to 25 percent in 2018).

The advantage of dedicated units is that they can drive progress in digitization projects without the constraints of daily business and existing structures. Nevertheless, a single unit cannot handle digital transformation alone. All departments and employees are called upon to drive transformation forward.

**Digitization Units**

More and more companies are forming their own digitization teams. Most of the time, they are part of the existing IT department.



**Question:** Does your company have a team or its own organizational unit that deals exclusively with digitization?; Sample: All surveyed businesses; Due to rounding, percentages may not total 100%

### Change management methods support culture shift

Digitization involves more than implementing new technologies. Roles, processes, structures, and work resources change. New products, services, and fields of business emerge, requiring the workforce to learn new skills.

As a result, almost half of the companies surveyed (47 percent) now use change management methods. For large businesses, this figure has risen as high as 57 percent, compared to 49 percent in 2017 and 2018. Even small and medium-sized enterprises (44 and 48 percent respectively) are now working with change management methods. This represents an increase of 11 and 13 percentage points respectively compared to 2017, when a third of SMEs used change management.

### Use of Change Management Methods

Larger companies are more likely to use change management methods to support digital transformation.



**Question:** Does your company use change management methods to deal with digital transformation?; Answer: Yes; Sample: All surveyed companies



“Fundamental change requires a clear vision, a good strategy, and people who bring it to life. Change management helps in implementing digital culture change across business functions.”

**Dr. Kay Müller-Jones, Head of Consulting & Services Integration, Tata Consultancy Services Germany**

### Change management is centralized

There are three functions that are most frequently responsible for change management. At 35 percent of companies that use change management, it is led by the digitization unit, the CDO, or another comparable digital managerial role. Roughly one in four companies give the responsibility to directors and board members (26 percent) or internal communication functions (23 percent).

### Responsibility for Change Management

Digitization units, company management, or internal company communications are mainly responsible for change management.



**Question:** Who is responsible for change management at your company?; Sample: Companies that use change management methods; multiple answers;

<sup>1</sup> Head of IT or IT department

### Companies are becoming much more agile

Agile methods such as scrum, DevOps, Kanban, and design thinking help companies keep pace with the rapid development of the digital business world. The goal is to achieve highly flexible structures, processes, and leadership styles. Operational processes should become faster, more creative, and more customer-oriented.

Companies use agile methods significantly more often than they used to: 43 percent of all enterprises with 100 employees or more use agile methods, at least in some projects. That is an increase of 8 percentage points from 2018. Among large enterprises, the percentage rose from 42 to 52 percent. The proportion of larger medium-sized companies using agile methods rose by as much as 11 percentage points to 41 percent.

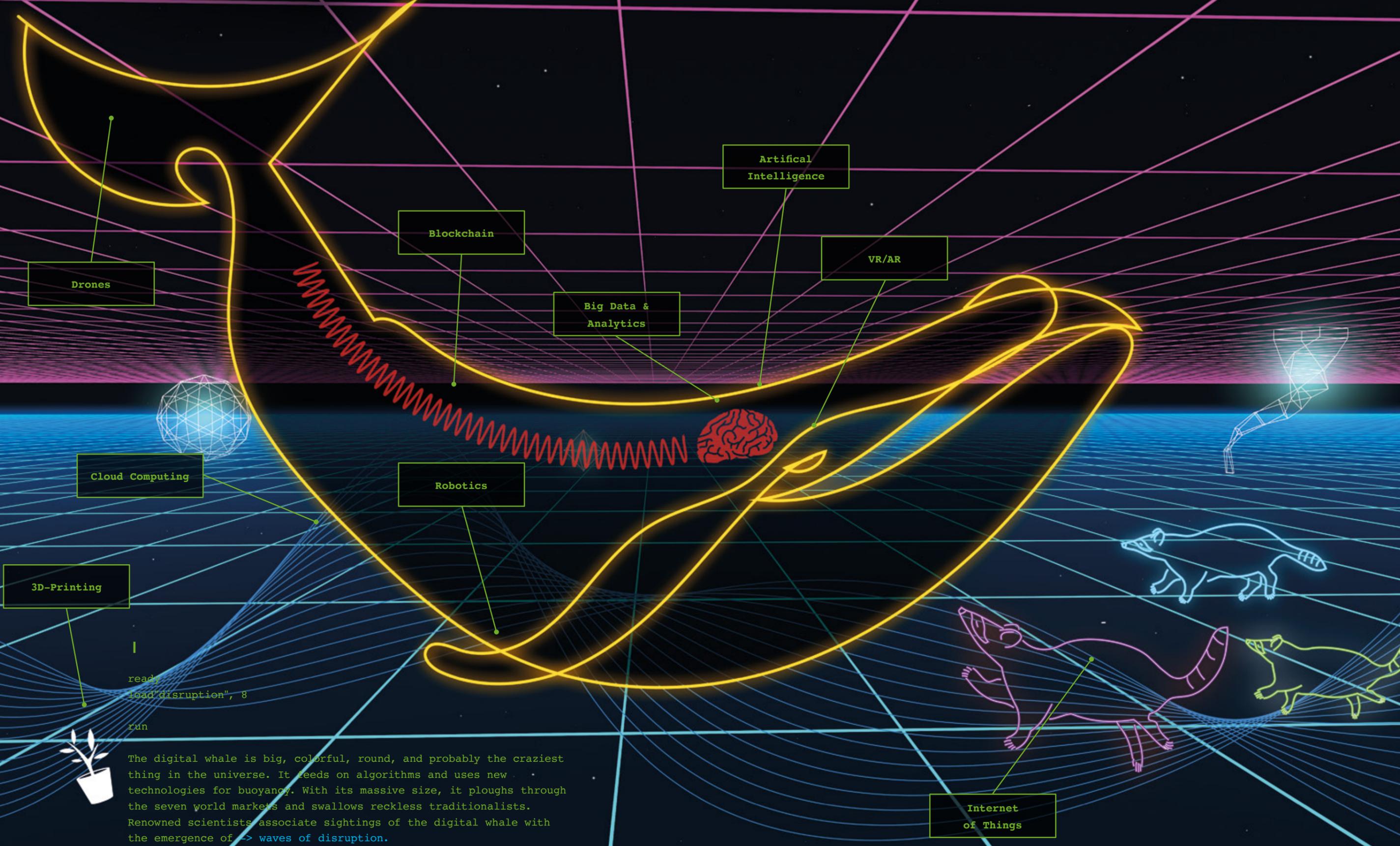
### Use of Agile Methods in Projects

A clear trend: Agile working is becoming increasingly common at both large and small companies.



Question: How often does your company use agile methods in projects?; Sample: All surveyed companies; Due to rounding, percentages may not total 100%

# 4. Use of Key Digital Technologies



I  
ready  
load "disruption", 8  
run

The digital whale is big, colorful, round, and probably the craziest thing in the universe. It feeds on algorithms and uses new technologies for buoyancy. With its massive size, it ploughs through the seven world markets and swallows reckless traditionalists. Renowned scientists associate sightings of the digital whale with the emergence of -> waves of disruption.

end



### Cloud is standard; AI is just getting started

It often takes several years for a new technology to unleash its full potential. Cloud computing, for example, has existed since the 1990s. But it only became a key technology after constant development and integration with various other IT services. Today, cloud technology is truly established as standard and it is used by 78 percent of the companies surveyed.

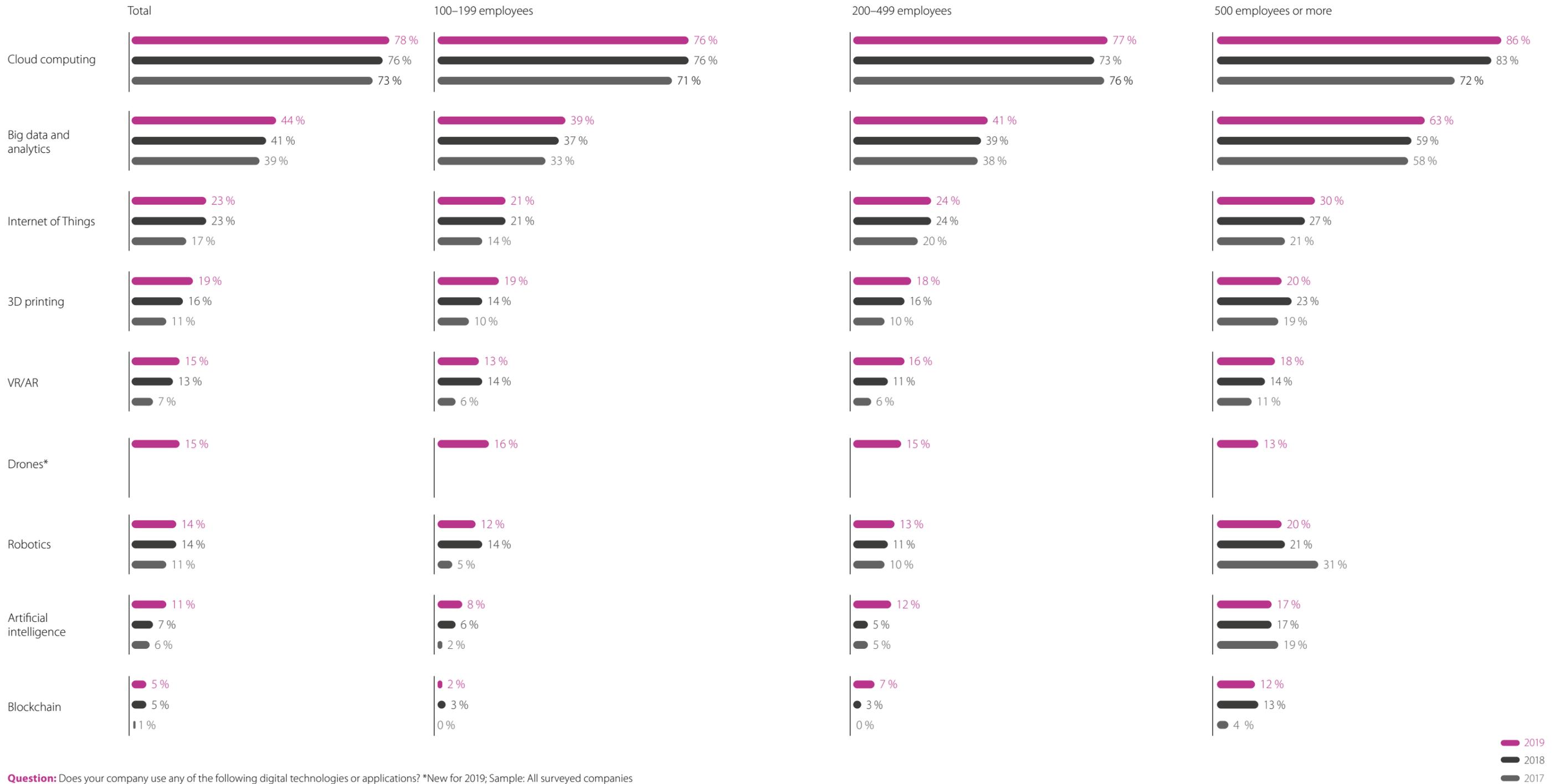
Other core technologies are used less frequently. 44 percent of companies use big data analytics. 23 percent connect devices, machines, and objects to the Internet of Things. And 15 percent use virtual or augmented reality.

Only 11 percent of companies are using artificial intelligence (AI), even though the technology shows great potential. AI can automatically answer complex questions in many areas of business. Self-learning systems help optimize processes and applications and improve understanding of customer needs.

Blockchain technology is still a rarity in 2019 and, as in 2018, is used by only 5 percent of companies. However, it opens up opportunities. For example, blockchain enables decentralized data storage on multiple devices, making manipulation extremely difficult. Blockchain also increases transparency throughout the value chain: from the manufacturer, through processing and transport, to retailers and end customers.

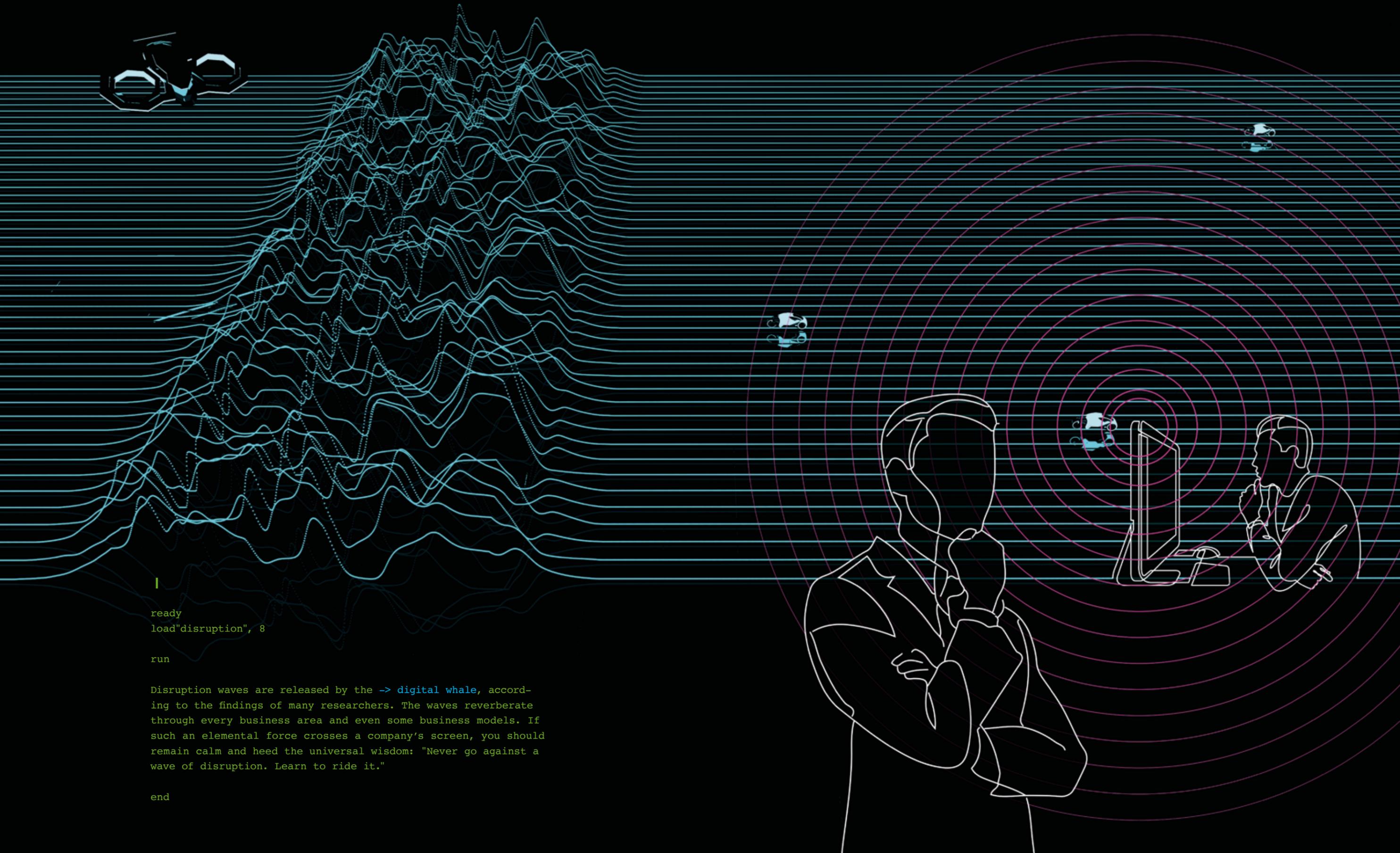
### Current Use of New Technologies

Companies of all sizes are implementing new technologies. The process continues relentlessly, but at a gradual pace.



Question: Does your company use any of the following digital technologies or applications? \*New for 2019; Sample: All surveyed companies

## 5. The Effects of Digitization on Business Functions



```

|
ready
load"disruption", 8

```

```
run
```

Disruption waves are released by the -> digital whale, according to the findings of many researchers. The waves reverberate through every business area and even some business models. If such an elemental force crosses a company's screen, you should remain calm and heed the universal wisdom: "Never go against a wave of disruption. Learn to ride it."

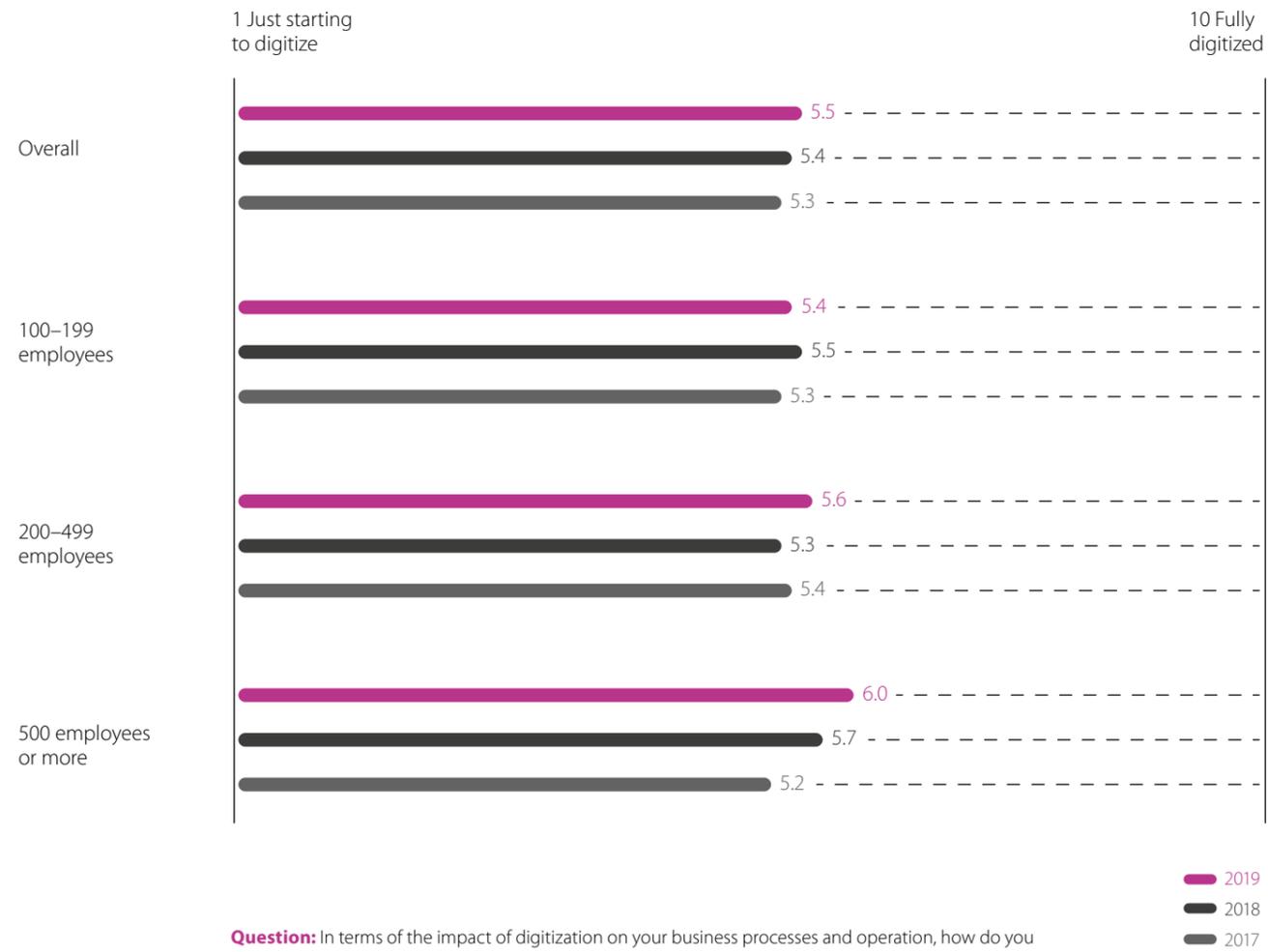
```
end
```

**Critical self-assessment and major leaders**

How do companies rate their own digital maturity? Rather modestly. On a scale of 1 (just starting to digitize) to 10 (fully digitized), small and medium-sized enterprises (SMEs) continue to rank themselves at around 5.5. Large companies are more confident, with their self-assessment rising from 5.2 to 6.0 over the past two years.

**Impact of Digitization on Companies**

Progress in digitization is reflected in the cautious self-assessment of the companies surveyed.



**Question:** In terms of the impact of digitization on your business processes and operation, how do you rate the following company functions on a scale of 1 to 10?; Sample: All surveyed companies

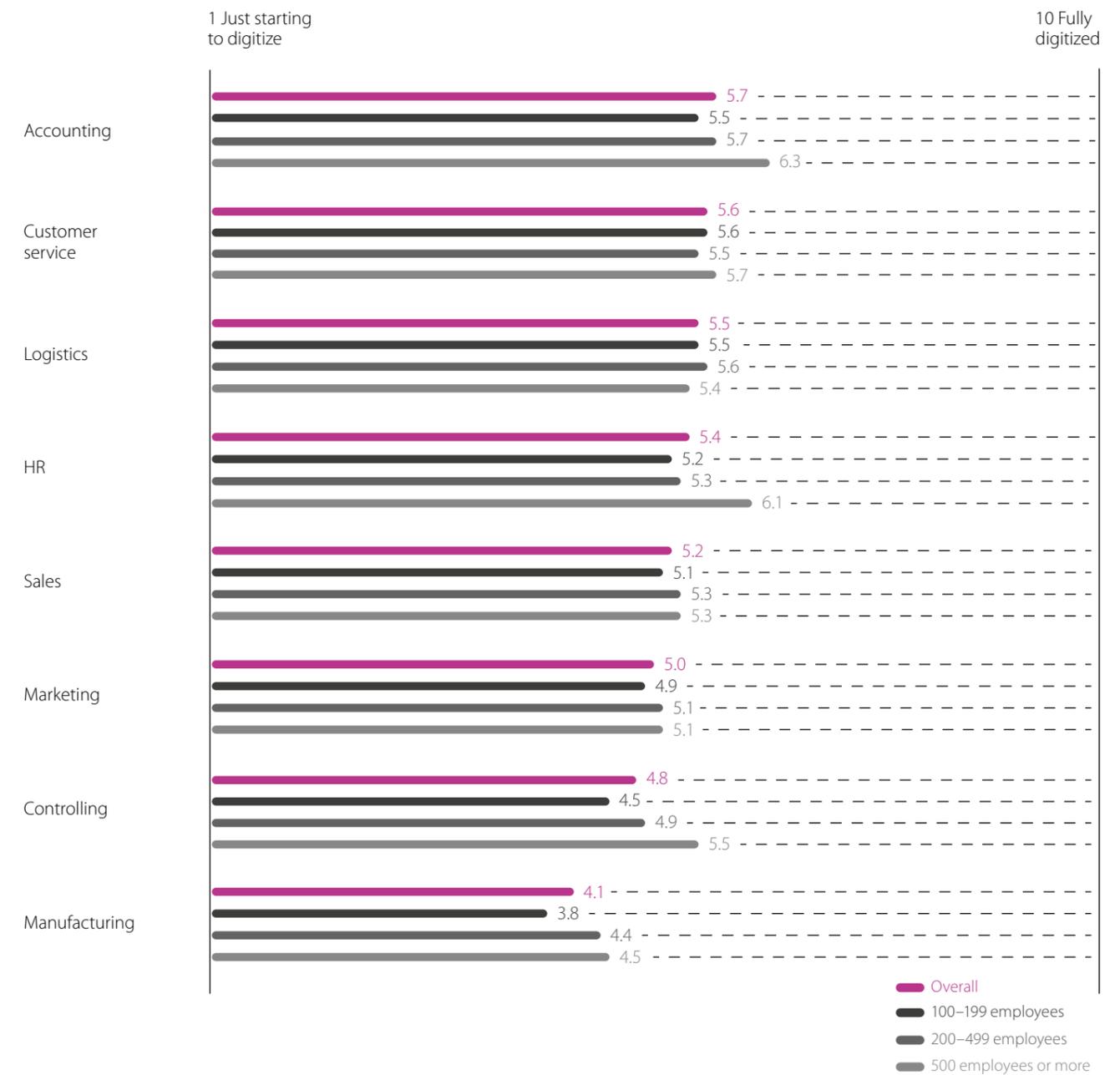
**Innovative accounting, outdated manufacturing**

How digitized are individual business processes and operations? Accounting is leading the way with a rating of 5.7. It also takes the top spot at large enterprises with an average rating of 6.3. In general, large companies view their administrative processes slightly more positively than SMEs.

Companies of all sizes have some catching up to do in the manufacturing process. On average, decision-makers rated their progress in digitization at just 4.1 points.

**Impact of Digitization on Business Processes**

Accounting is very advanced in digitization. Large companies in particular have made considerable progress in digitizing administrative processes.



**Question:** In terms of the impact of digitization on your business processes and operation, how do you rate the following company functions on a scale of 1 to 10?; Sample: All surveyed companies

## 5.1 Business Models: Products and Services

### The growing importance of platforms and individualization

Digital solutions help companies learn more about internal resource allocation and processes, but also about their business partners and customers. Analysis translates into new offers: 58 percent of companies have already made changes to their products or services as a result of digitization. Around two thirds (67 percent) of those companies offer individualized products and services, and nearly half (49 percent) offer digital services.

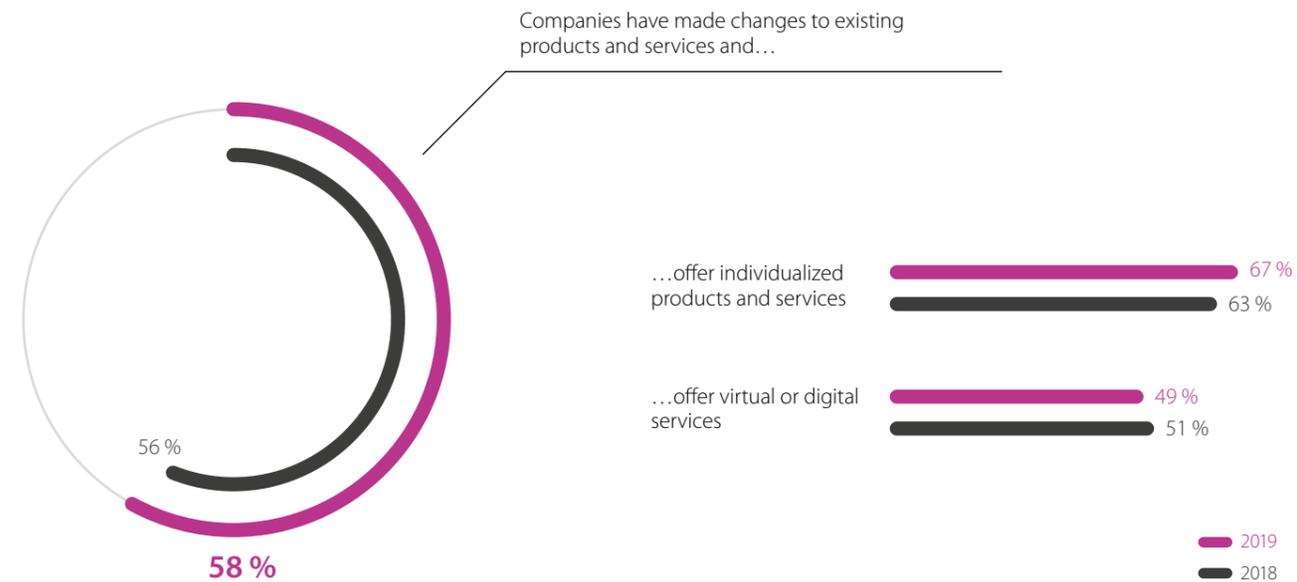
Big data analytics, artificial intelligence, the Internet of Things, and other technologies enable tailored products and services. These include solutions for end customers, such as virtual advice for buyers, 3D-printed custom prototypes and products, and personalized advertising and offers on online stores and social networks. There is considerable change in the business-to-business environment, too. B2B platforms provide one place for companies to find the right manufacturers and materials for their specific requirements.

More than four in ten companies (42 percent) have developed new products or services as part of their digitization. Almost one in three companies (32 percent) offer their products and services on digital platforms. This figure has grown by 10 percentage points since 2016, showing that digital platforms are rapidly growing in importance.

Companies that have not used digital technology to expand or alter their product and service portfolio are not only missing out on new profit opportunities. They also risk losing their existing customers to more advanced competitors. Even so, 16 percent still believe that digitization will not affect their products and services.

### Changes to Existing Products and Services

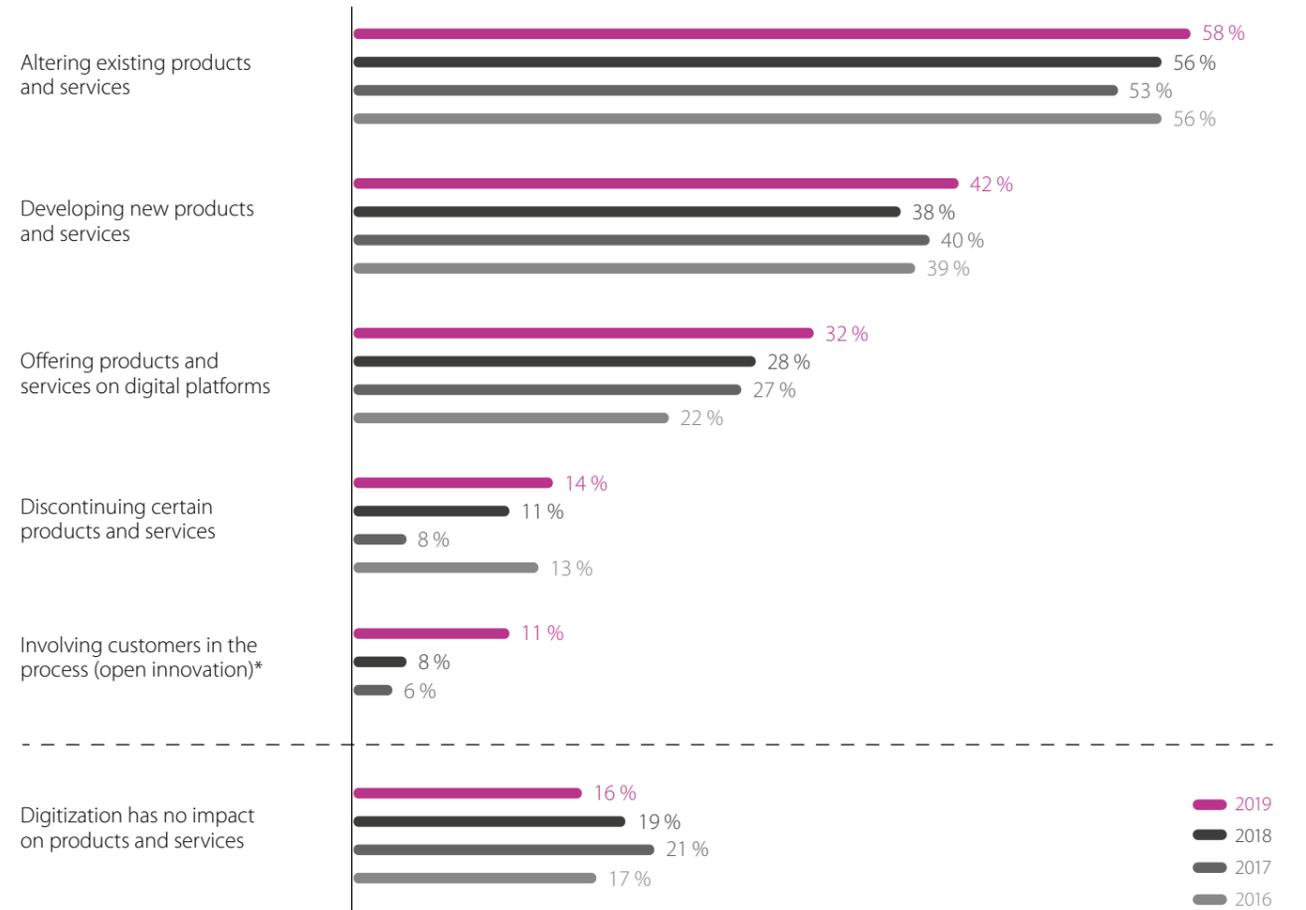
Companies see individualized products and services as the greatest opportunity of digitally altering their offerings.



**Question:** What changes are you making to products and/or services as a result of digitization? Statements have been shortened; Sample: All surveyed companies; Multiple answers possible

### Impact of Digitization on Products and Services

Making changes to existing products and services? Offering new products? Selling on platforms? All these activities are becoming more common.



**Question:** In terms of the impact of digitization on your company's products and services, which of these statements apply to your company?; \*New in 2017; Sample: All surveyed companies; Multiple answers possible

## 5.2 The Working World: Skills and New Job Profiles

### Digital work environments – supporting employees

In addition to business models, the digital age also impacts working environments. Working hours are just one example. On May 14, 2019, the European Court of Justice (ECJ) in Luxembourg ruled that EU member states must require employers to record the daily working hours of their employees. 96 percent of employers in Germany with 100 employees or more already meet this requirement by using digital time tracking systems.

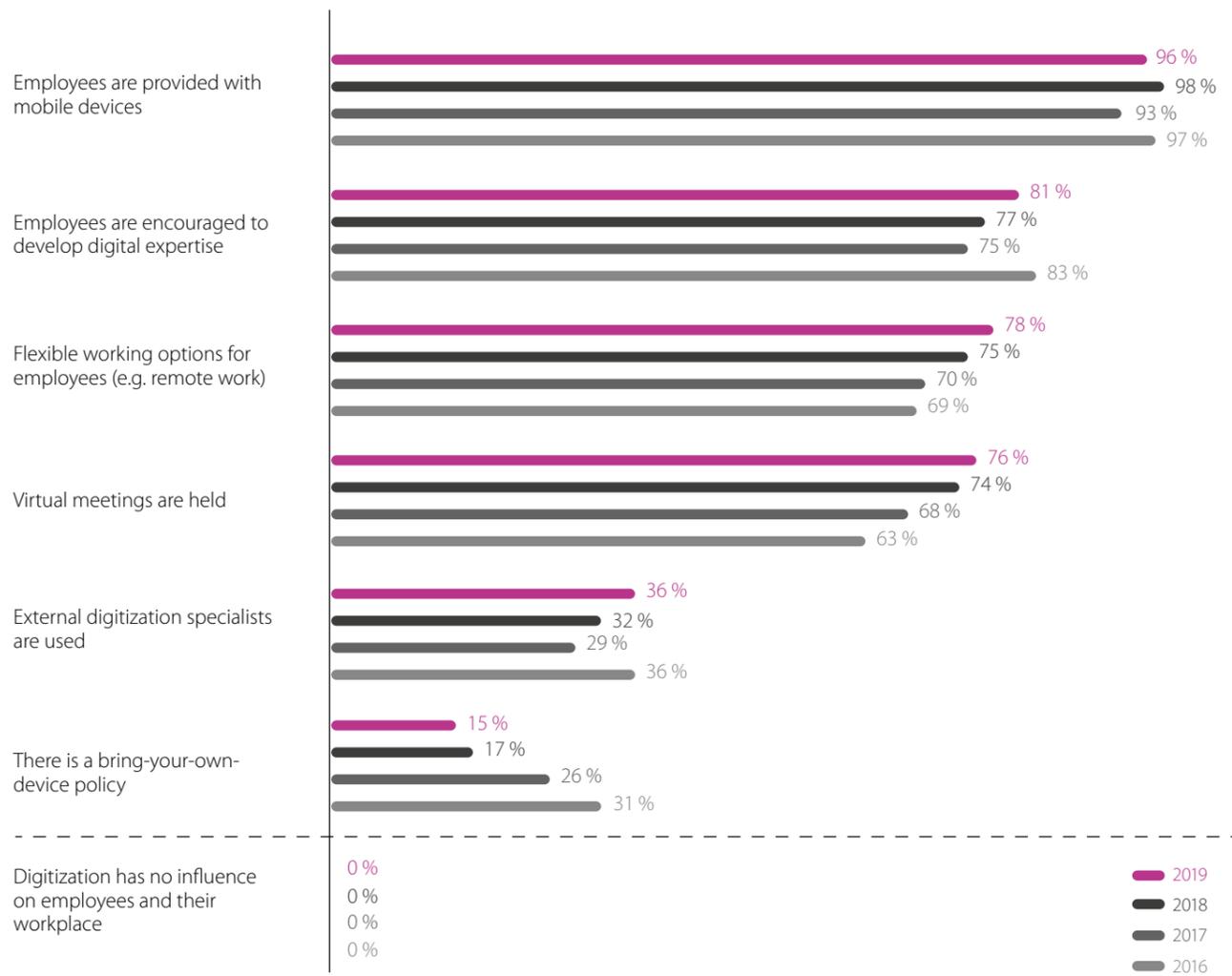
Mobile devices such as notebooks, smartphones, and tablets are now standard at 96 percent of companies. As a result, the use of personal electronic devices at work (bring your own device) has dropped from 31 percent in 2016 to 15 percent in 2019. A new working culture is also

establishing itself: 78 percent of companies offer their employees flexible working hours or the opportunity to work from home. Virtual meetings are becoming more common (76 percent). Colleagues, business partners, and customers use this technology to communicate face-to-face over long distances. Expensive and time-consuming business trips could soon become much less frequent.

How do companies guide their employees in this new working world? As many as 81 percent of companies actively cultivate digital expertise – and therefore invest in the future. Around one in three companies (36 percent) call on the knowledge and skills of external specialists.

### Influence of Digitization on Employees and Working Environment

Almost all companies provide employees with mobile devices. "Bring your own device" is becoming less common



**Question:** What influence does digitization have on employees and working environments? Which of these statements apply to your company? Statements have been shortened; Sample: All surveyed companies; Multiple answers possible

### Digital transformation requires general digital competence

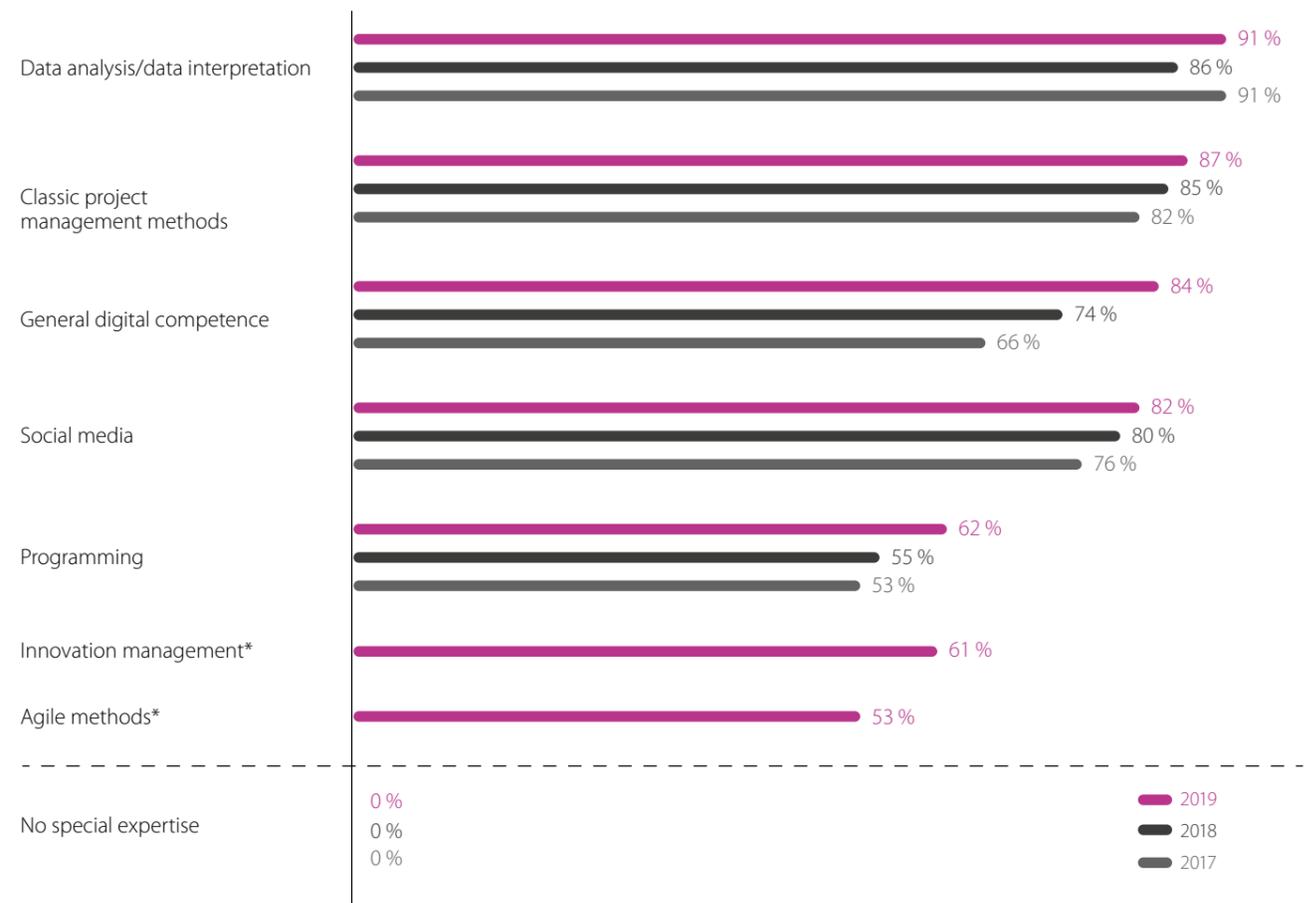
Since 2017, data analysis and interpretation (91 percent) and conventional project management (87 percent) topped the list of professional skills for a successful digital transformation. These are now joined by two new core competencies. Roughly four out of five (84 percent) recognize that employees also need basic skills in dealing with digital technologies and applications. Compared to the previous year, this figure has risen by 10 percentage points, and by 18 percentage points

since 2017. Social media knowledge is similarly relevant (82 percent). As many as 53 percent of companies believe mastering agile methodology to be an important skill for digital transformation.

Companies of all sizes agree that employees with specific professional skills are essential for organizations in the digital age.

### Relevant Expertise for Digital Transformation

Only employees with specific skills can effectively drive digitization. Figures for all specialist skills are rising.



**Question:** In your opinion, which professional skills should employees possess, in order to drive the digital transformation of your company?; \*New in 2019; Sample: All surveyed companies; Multiple answers possible

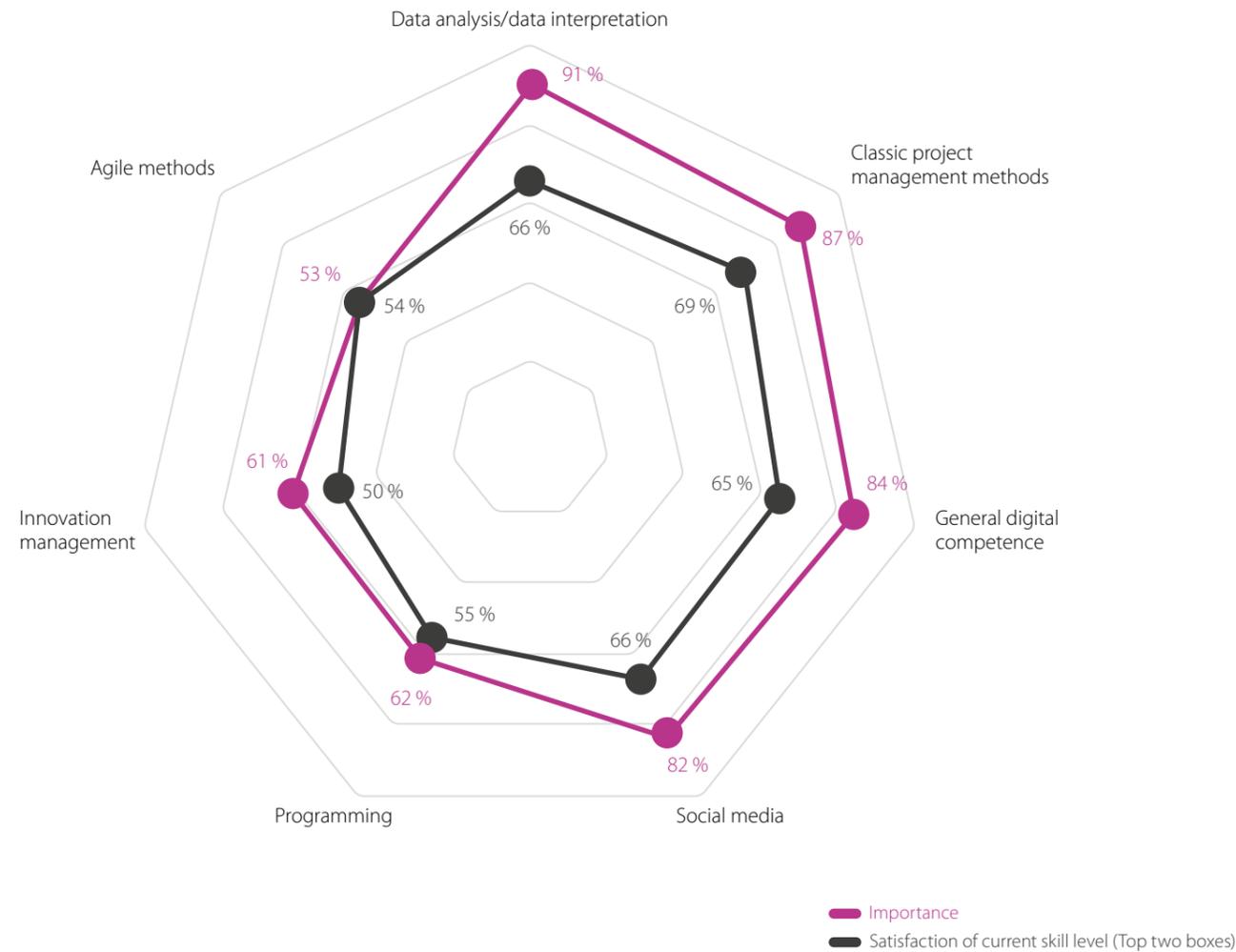
**The skills gap: Expectation versus reality**

Not every company has employees with the right digital skill set. This is most evident in the field of data analytics and interpretation. 91 percent of companies see these skills as important – but only 66 percent believe their employees possess these skills to a satisfactory degree. Despite the growing importance of general digital competence and efforts by the majority of companies to cultivate it, only 65 percent of executives and department heads are satisfied. For agile skills, there is barely a difference between expectations and reality.

To balance supply and demand, companies must invest not only in developing innovative business models and technologies, but also in cultivating their employees' digital skills.

**Expertise for Digital Transformation: In Action vs. In Demand**

When it comes to specialist skills, there is often a wide gap between demand and reality.



**Question:** In your opinion, which professional skills should employees possess, in order to drive your company's digital transformation?; Multiple answers possible | In general, how satisfied are you with your employees expertise in these areas?; Top two boxes ("Very satisfied" and "quite satisfied"); Sample: All surveyed companies



"With new job descriptions, advanced automation, and more flexible working models, the new working world raises many questions that directly concern us HR decision-makers. We need to become more involved in discussions about the digital direction of our companies."

Frank Karcher, Regional HR Manager Central Europe, Tata Consultancy Services

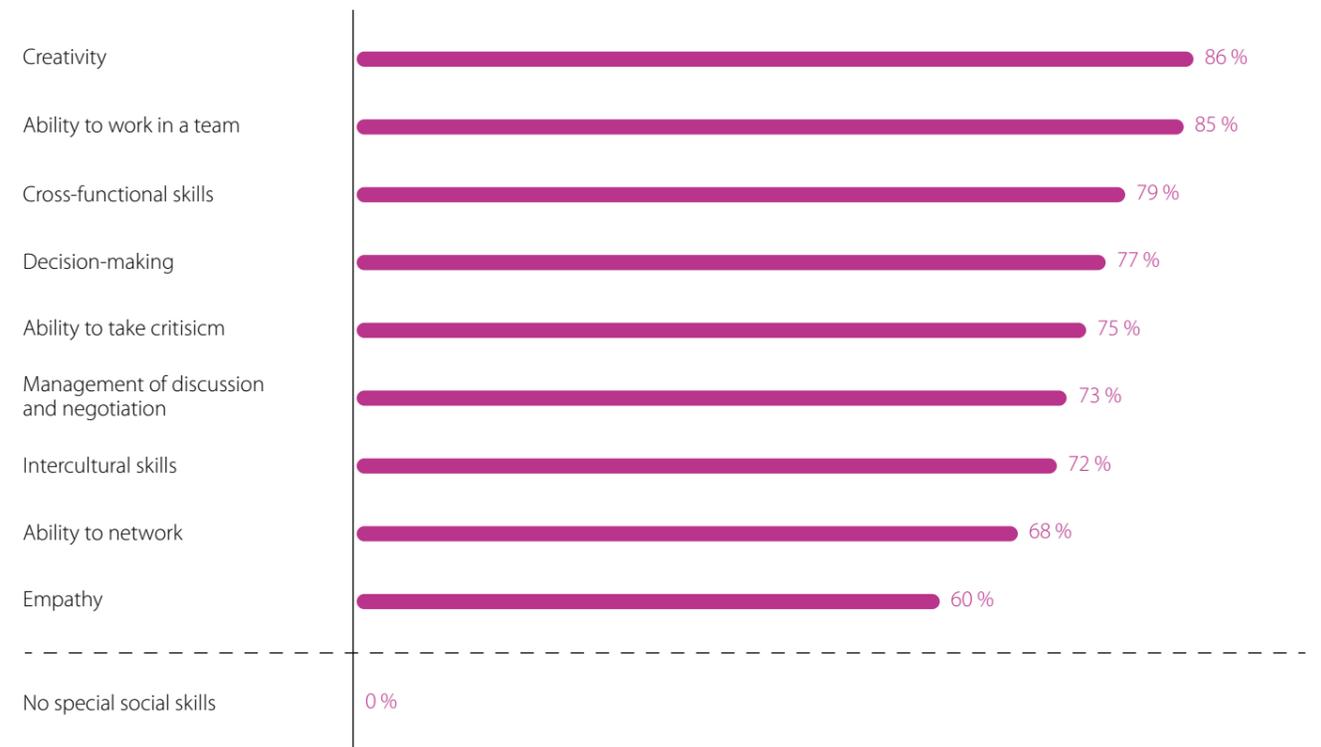
**Digitization requires social skills**

Today, employees are expected to develop new solutions for customer demands, innovative ideas, and business models, while working in global, digitally connected teams and thinking of the big picture. And they are expected to do all of this faster than ever before.

Hard skills were the focus for many years. But now, soft skills are just as important. Companies see social skills as an important drive in digital transformation, particularly creativity (86 percent), teamwork (85 percent), and the ability to think and work across functions (79 percent).

**Social Skills for Digital Transformation**

Creativity and the ability to work in a team are particularly popular among companies.



**Question:** In your opinion, which social skills should employees possess, in order to drive your company's digital transformation?; Sample: All surveyed companies; Multiple answers possible

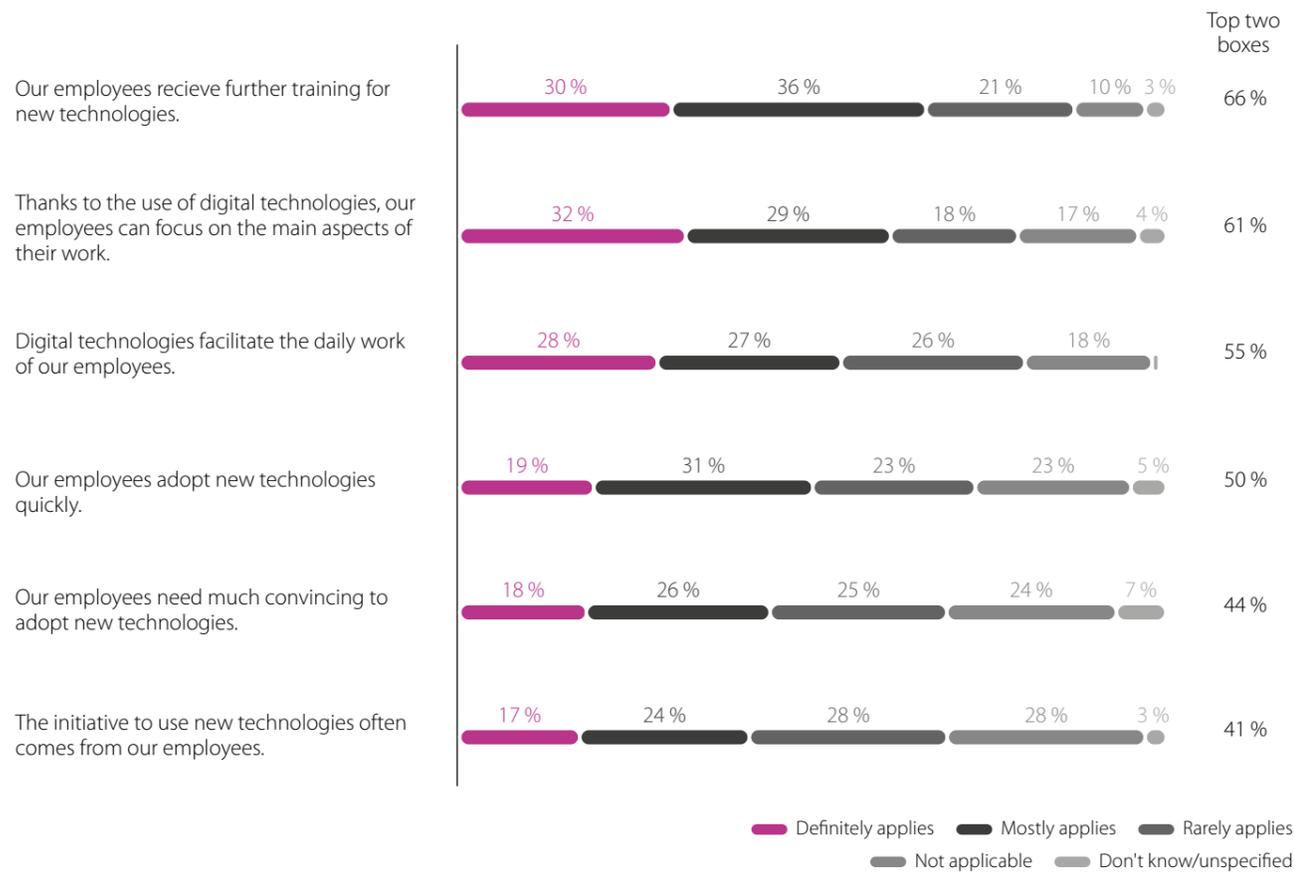
**Change management is costly, but essential**

Major changes require good change management. Employees need to understand the added value of the new technology and be involved in change processes right from the start. Two thirds of companies (66 percent) encourage acceptance of digital technologies through targeted training courses. This involves a considerable investment of time and money, according to 44 percent of companies. But this does pay off in the medium to long term.

At around four out of ten companies (41 percent), employees themselves provide the initiative to deploy new technologies. That comes as little surprise, as it is mostly the employees who benefit from new technologies. Their daily work is simplified (55 percent) and they can focus more on their actual tasks (61 percent).

**Employees and New Technologies**

Employees are showing little willingness to change. Only 50 percent quickly adopt new technologies.



**Question:** To what extent do the following statements apply to your company?; Top two boxes ("Definitely applies" and "Mostly applies"); Sample: All surveyed companies; Due to rounding, percentages may not total 100%; Figures ≤ 1% hidden for clarity of presentation

**Companies of all sizes are seeking experts**

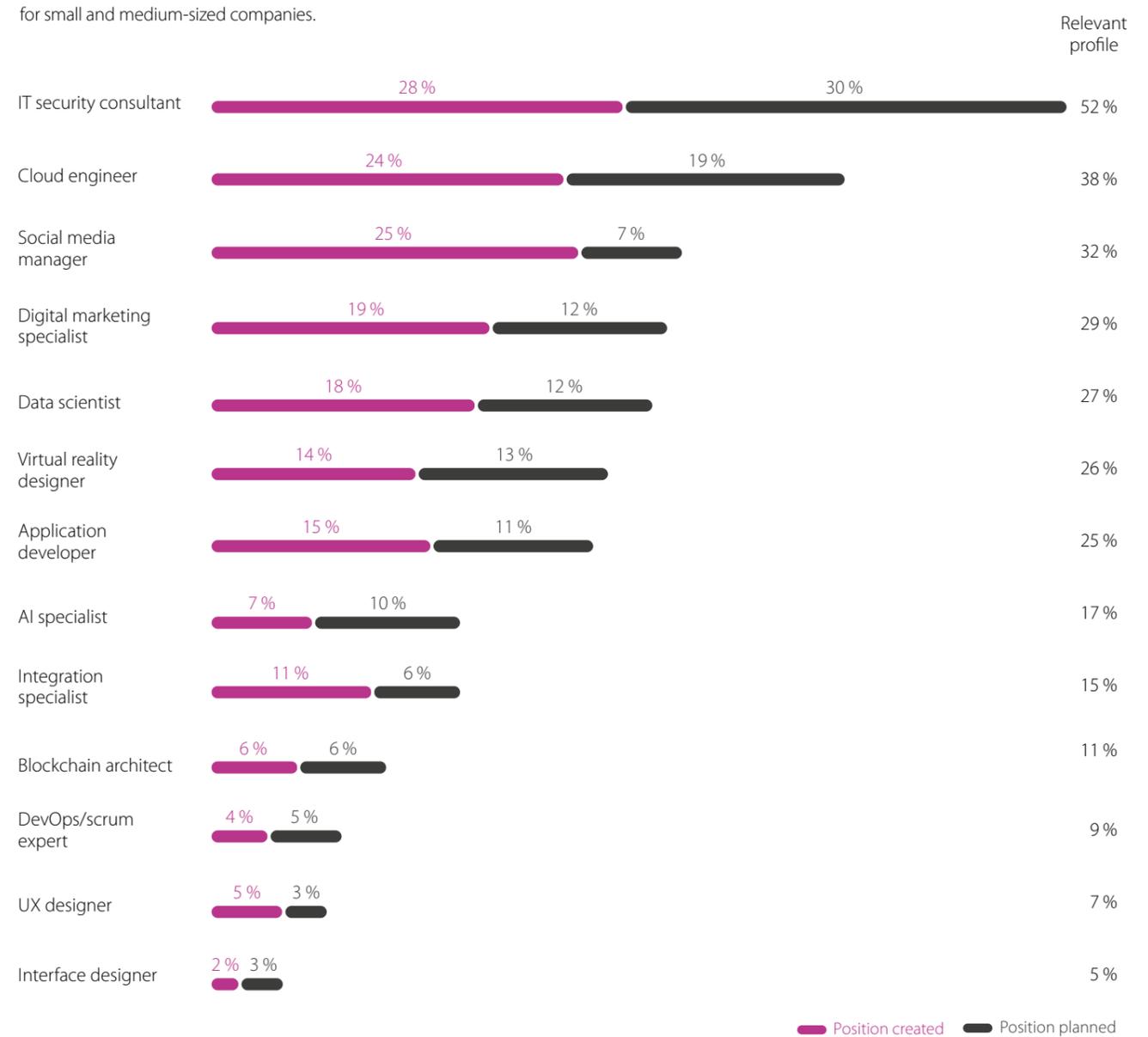
IT security is a key topic in digitization. More than half of the companies surveyed (51 percent) are searching for IT security consultants and have already created positions or plan to do so. Among large companies, this figure is even higher at 73 percent. As cloud computing is a key technology in almost all companies, cloud experts are also in high demand (38 percent). Large enterprises have a significantly higher demand for application developers (38 percent) and integration managers (30 percent) than SMEs. Companies with 500 or more

employees need experts in agile methodology: 16 percent of these companies have already created positions for them or plan to do so.

The digitization of the economy gives rise to new job profiles and creates new jobs. Large enterprises and larger SMEs in particular want to build up their internal skills as comprehensively as possible. They aim to keep key skills, product knowledge, and technology development within their organization.

**Relevant Job Profiles for Companies**

Large companies in particular are creating positions for new job profiles. IT experts are also in high demand for small and medium-sized companies.



**Question:** Please specify for each job profile whether your company has already created that position or is planning to create that position in the future; Sample: All surveyed companies; Multiple answers possible. Relevant profile: Position already created and/or position planned.

### 5.3 Collaboration with External Partners

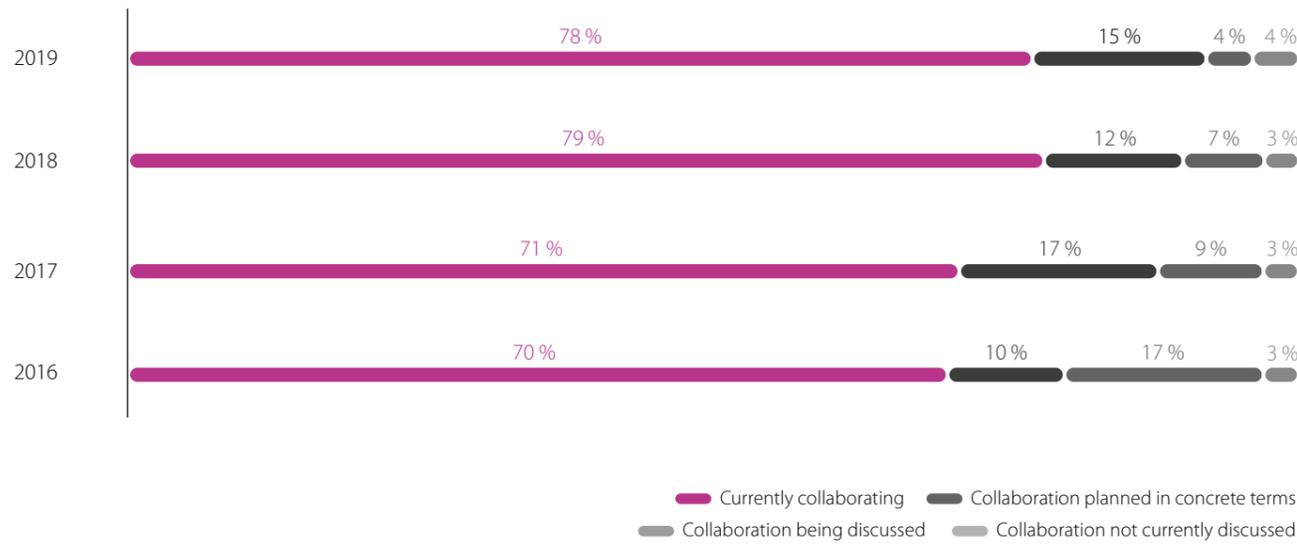
#### IT consultants and associations are still popular collaboration partners

Many companies continue to obtain digital expertise from external partners (78 percent). There has been a particularly large increase in collaborations with IT consulting firms. Two years ago, only one in four SMEs sought their support. Now this has risen to one in three. The specialist knowledge of HR consultants is also in higher demand than it was two years ago (plus 9 percentage points). In addition, companies continue to seek advice and support from industry associations and interest groups (36 percent).

The proportion of companies willing to collaborate with competitors has sunk to just 3 percent. A comparison across industries reveals clear differences. For finance companies, collaborating with competitors is evidently not an option. In contrast, automotive companies have an above-average likelihood to work with others in their industry (see "Industry Findings").

#### General Collaboration with External Partners

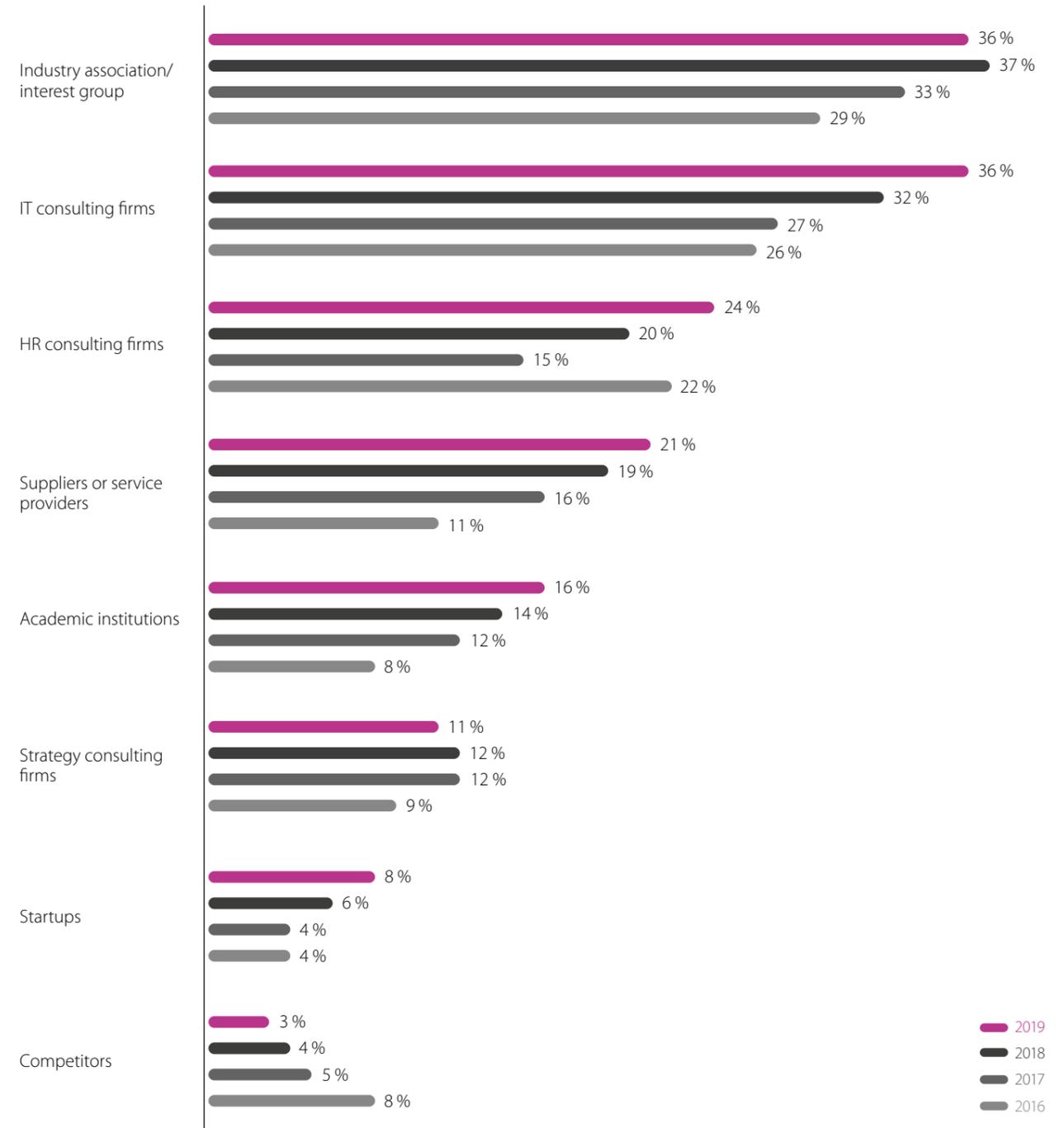
As was the case in 2018, almost eight out of ten companies collaborate with associations, consultants, service providers, competitors, or startups for support with digitization.



**Question:** Has your company already collaborated with the following external partners on digitization-related matters, or is it planning or discussing the possibility of doing so? Sample: All surveyed companies; Due to rounding, percentages may not total 100%.

#### Current Collaboration with External Partners

In addition to suppliers, service providers, and scientific institutions, demand is rising for HR and IT consultants.



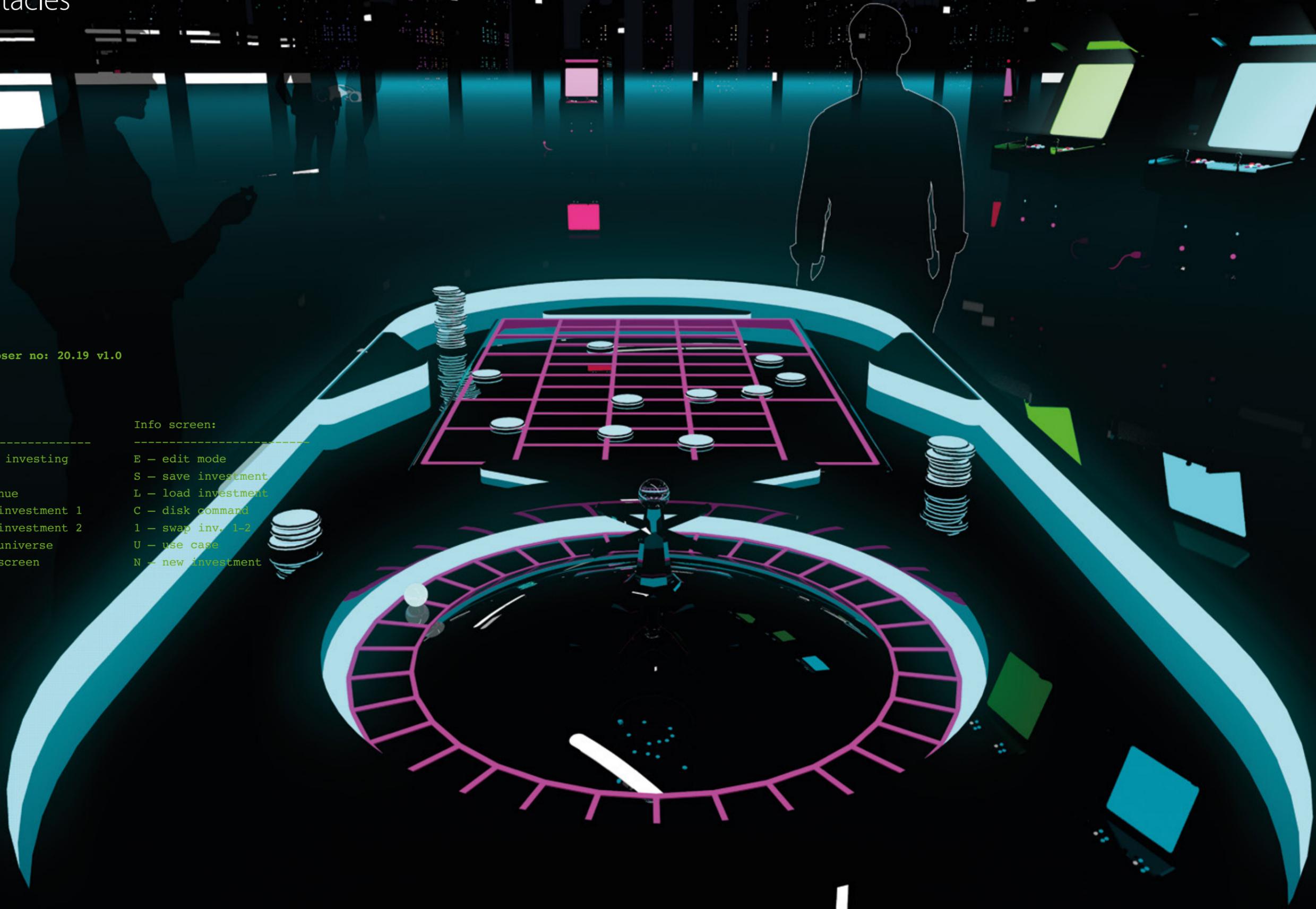
**Question:** Has your company already collaborated with the following external partners on digitization-related matters?; Answer: Current collaboration; Sample: All surveyed companies

# 6. Investment Intentions, Potential, and Obstacles

Future Composer no: 20.19 v1.0  
Info Screen

Edit mode:  
-----  
F1 start investing  
F3 stop  
F5 continue  
ctrl-1 edit investment 1  
ctrl-2 edit investment 2  
ctrl-\* edit universe  
I info screen

Info screen:  
-----  
E - edit mode  
S - save investment  
L - load investment  
C - disk command  
1 - swap inv. 1-2  
U - use case  
N - new investment



### Companies are investing more in digitization

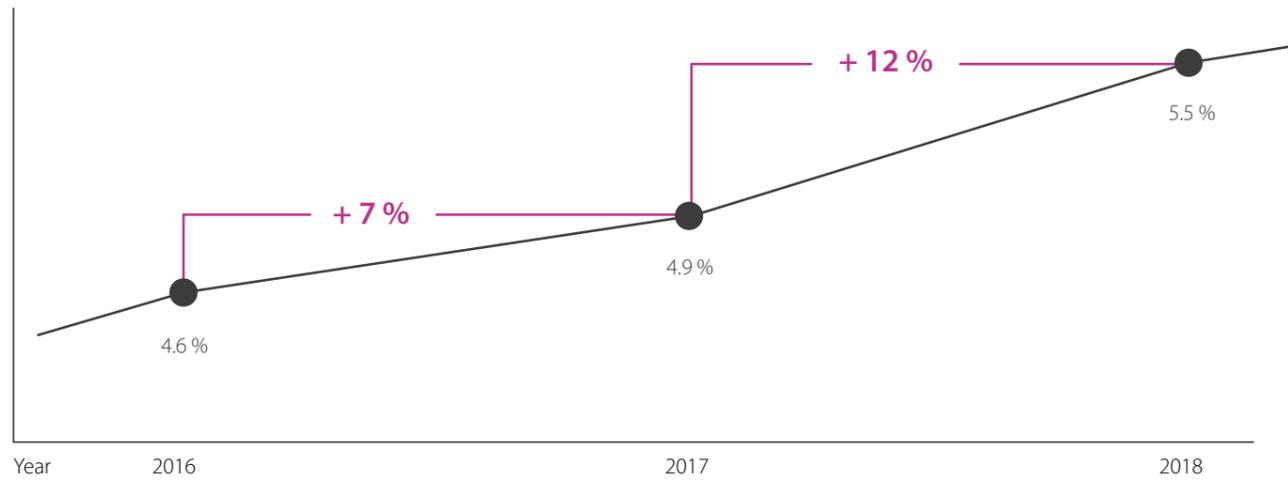
The more open companies are to digitization, the more they invest in it. The surveyed executives and decision-makers from IT, digital technology, business operations, and finance departments estimated that their companies spent around 5.5 percent of their total annual revenue on digitization in 2018. This is up from 4.9 percent in 2017 – an

increase in investment of around 12 percent. Expenditure on digital solutions and technologies is also rising in the current year. IT security teams have the most reason to be pleased: Two thirds of companies (66 percent) are increasing investment in this area.

### Investment in Digitization

In 2018, companies again increased their investment in digitization.

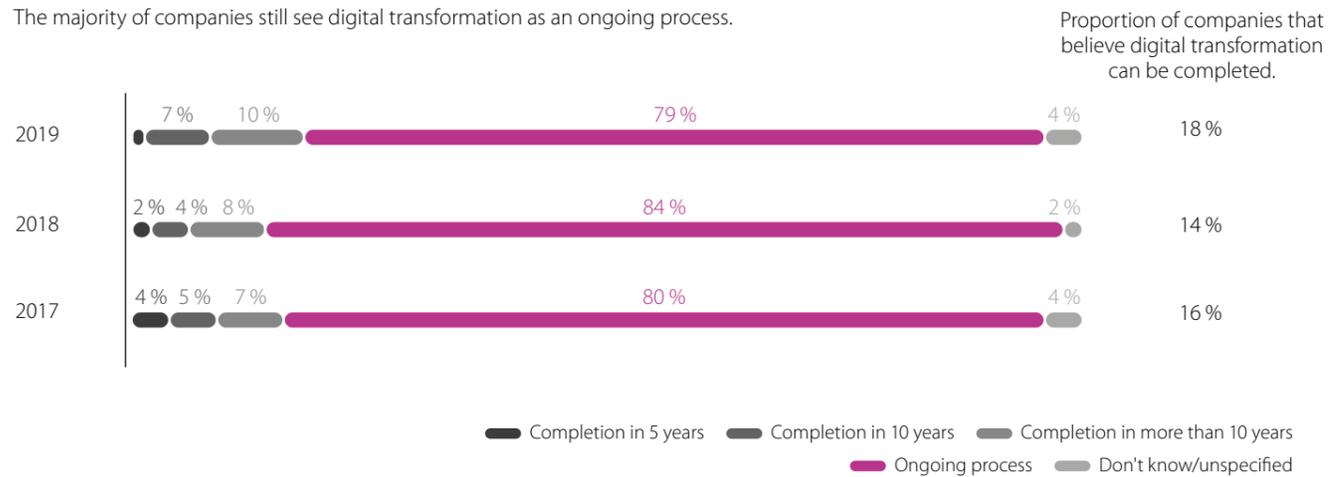
Average proportion of total revenue spent on digitization



**Question:** What percentage of total annual revenue did your company spend on digitization in 2018?; Sample: All surveyed companies

### Progress of Digital Transformation

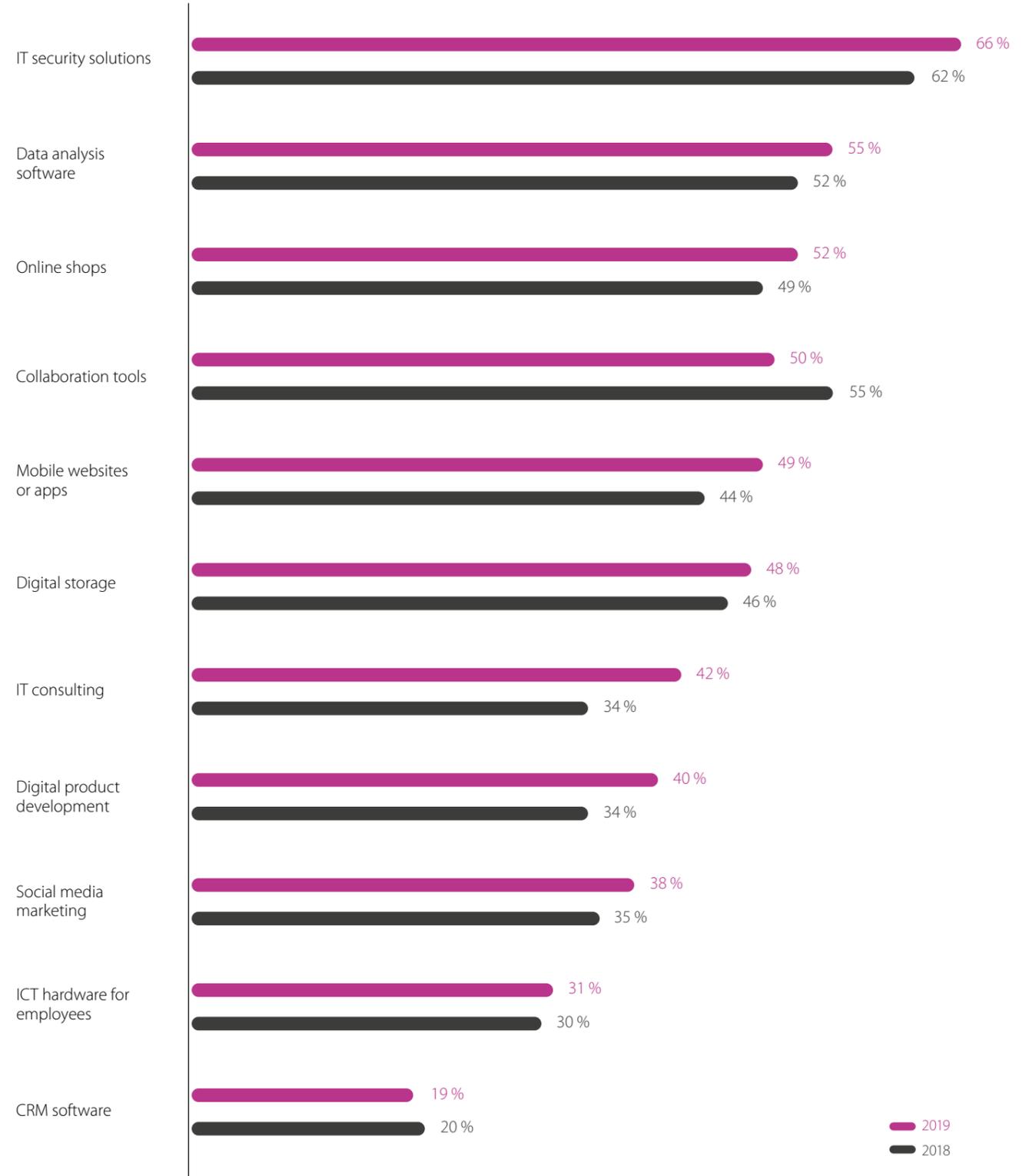
The majority of companies still see digital transformation as an ongoing process.



**Question:** By when do you believe your company's digital transformation will be completed? Sample: All surveyed companies (2019: n=953; 2018: n=954; 2017: n=905); Due to rounding, percentages may not total 100%; Figures ≤ 1% hidden for clarity of presentation

### Investment Trends in Specific Business Areas

Investment in mobile websites, online shops, and social media indicates that companies are focusing on customer-relevant areas.



**Question:** How do you predict your company's investment in the following areas will develop this year in comparison to the previous year?; Statements have been shortened; Answer given: "Will increase significantly" or "Will increase slightly"; Sample: All surveyed companies

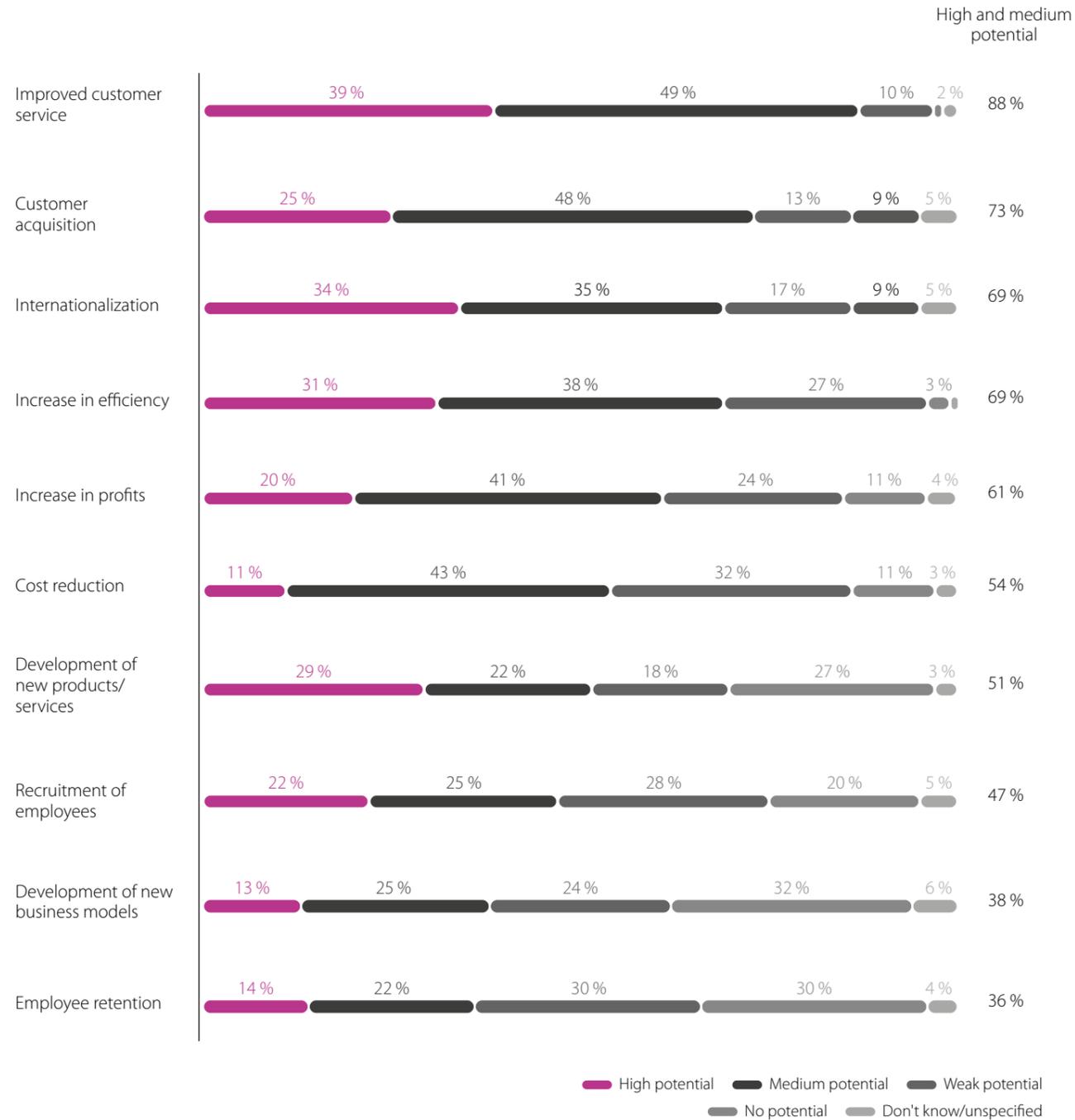
**Not all potential benefits are clear**

Digitization helps companies achieve a number of goals, particularly optimized customer service. Digital channels also make it easier to acquire customers and to address international markets.

Surprisingly few companies (36 percent) see potential to strengthen employee retention. However, digital technologies can provide motivation and increase satisfaction through more transparency, flexibility, and participation.

**Potential of Digitization**

There's a reason why companies are investing in digital customer solutions: The majority see potential for customer service and acquisition.



**Question:** In your opinion, does digitization have a high, medium, low, or no potential for the following corporate goals?; Sample: All surveyed companies; Due to rounding, percentages may not total 100%; Figures ≤ 1% hidden for clarity of presentation

**Data protection and IT security are hindering innovation**

Increasingly complex requirements for data protection (53 percent) and IT security (52 percent) are still the biggest obstacles to digitization. In response to these challenges, companies are investing more in IT security systems and seeking experts in this field. However, these experts are difficult to find as the shortage of skilled workers has reached a new high. It affects more companies than ever, with 35 percent (plus 10 percentage points since 2017) saying they find it difficult to obtain the experts they need.

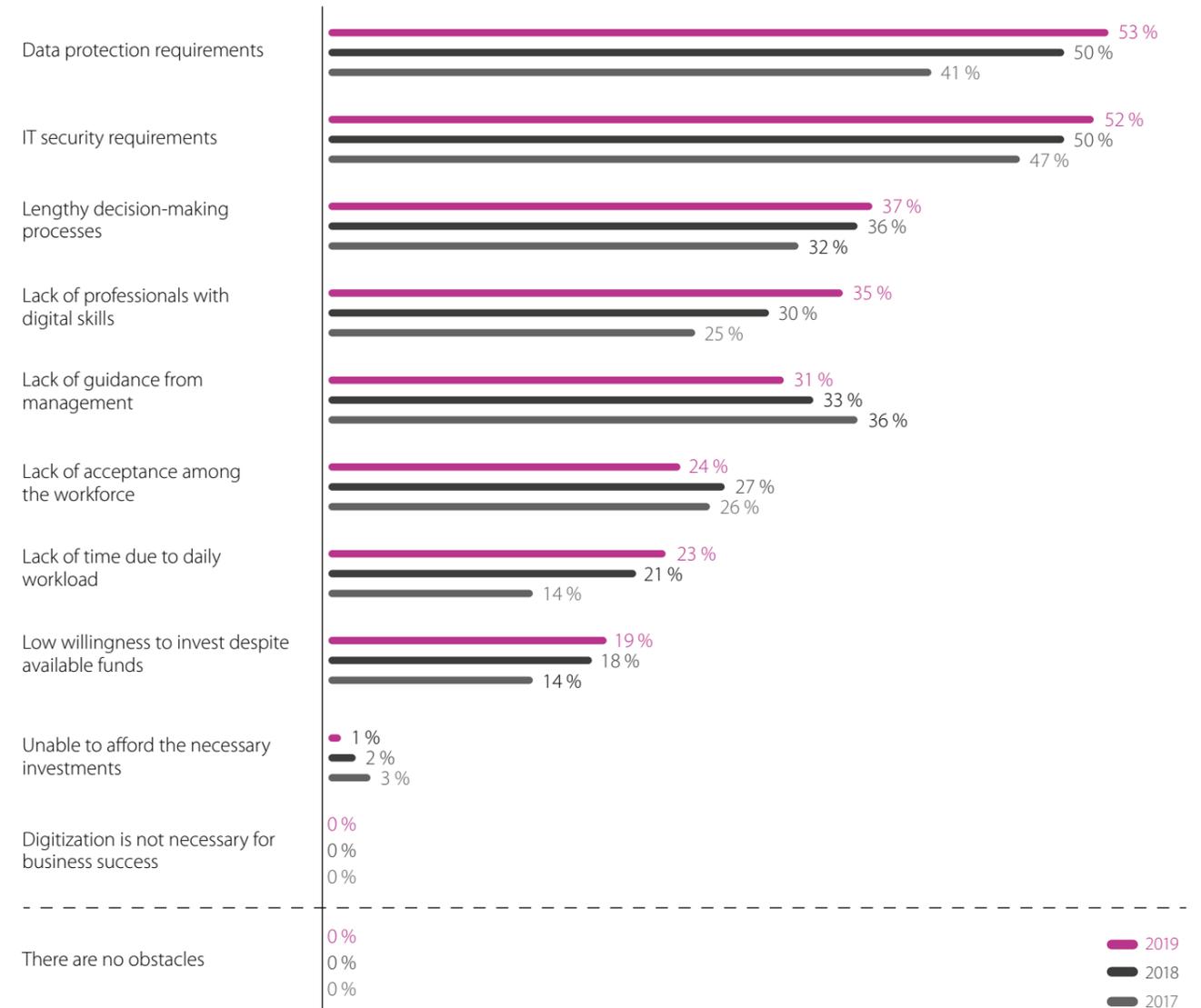
transformation is on the rise, although 31 percent of companies complain of a lack of clear guidance. Around a quarter of companies (24 percent) say that a lack of acceptance among the workforce is hindering their digitization.

To overcome these obstacles, companies need a clear digital vision supported and driven by senior management. Employees must be involved in decision-making processes and company transformation from the outset.

Lengthy decision-making processes (37 percent) pose an obstacle for a similar number of respondents. Leadership support for digital

**Obstacles to Digitization**

Safety first: Privacy and security remain the biggest obstacles to digital transformation. The shortage of skilled workers is a growing challenge.



**Question:** In your opinion, which of the following are obstacles to digital transformation at your company?; Sample: All surveyed companies; Multiple answers possible

# 7. Findings by Industry



In general, the German economy appears open to digitization (78 percent). Individual industries, however, reveal a different picture – one of leaders and laggards. Organization, technology, and requirements also vary greatly, as shown by six key industries in Germany: information and communication technology (ICT), retail, automotive, banking and insurance, chemicals and pharmaceuticals, and mechanical engineering.

At 84 percent, IT companies are the most open to digitization. But what is surprising is the new openness of retail – an industry that used to be much more reluctant. 83 percent of retailers are open to digitization. That is a whole 20 percentage points higher than two years ago when retail was still bottom of the standings with 63 percent. The mechanical engineering sector is open-minded, but comparatively hesitant with a result of 77 percent.

**Openness Toward Digitization**

Service providers are more open-minded than industrial companies. Retail is particularly open.



**Question:** What is the general opinion of your company on the subject of digitization?; Sample: All surveyed companies; Top two boxes: "Very open" and "Quite open"

Very open Quite open

## 7.1 Information and Communication Technology

Companies in the ICT industry play a central role in digital transformation: Their products and services are what makes transformation possible in other industries. It therefore comes as no surprise that this sector is particularly open to digitization (6 percentage points more than the overall average).

Almost three out of four ICT companies (73 percent) recognize that digitization affects all company departments and functions. Because of this, they appoint one person to coordinate it across functions. This clearly sets the sector apart from other industries (plus 22 percentage points). 43 percent of ICT companies have created their own digitization unit, and over one third (34 percent) established that unit within the IT department.

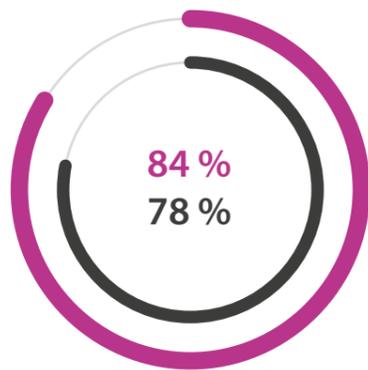
ICT companies use cloud computing (83 percent) and big data and analytics (51 percent) more often than the average (78 percent and

44 percent respectively). Two years ago, the ICT industry was under pressure to act as software providers switched their offerings to the cloud. This transition has now been accomplished.

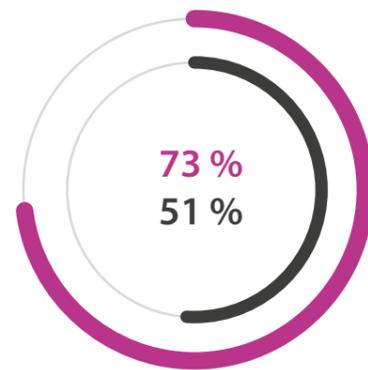
ICT companies are highly dependent on their employees' general digital competence (92 percent), knowledge of social media (93 percent), and the ability to analyze and interpret data (92 percent). These skills are necessary in order for ICT employees to understand their customers' challenges and needs and to offer them the right solutions. As a result, the industry has created many jobs and continues to do so.

ICT companies have a higher demand for IT security consultants (59 percent) and social media managers (38 percent) than the cross-industry average (52 percent and 32 percent respectively). Furthermore, 21 percent plan to employ data scientists.

### Attitude to digitization results for "very open" and "quite open"



### Cross-departmental individual to coordinate digitization



The ICT sector is no more open to digitization than other sectors. However, by utilizing cross-functional coordination and specialized digitization units, they are accelerating the process.

### Digitization team or digitization unit (multiple answers possible)

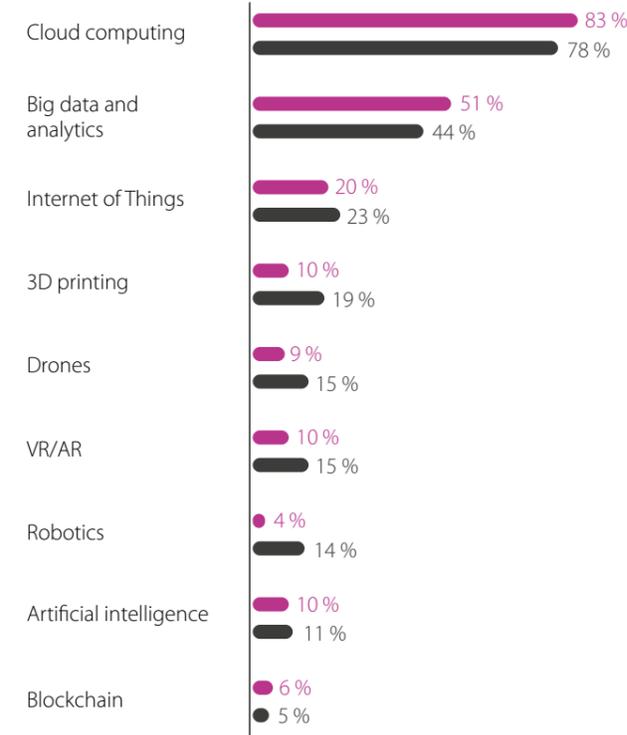
Dedicated digitization unit	43 %	36 %
■ Independent unit outside of the IT department	13 %	8 %
■ Digitization unit within the IT department	34 %	28 %

Industry results Overall results

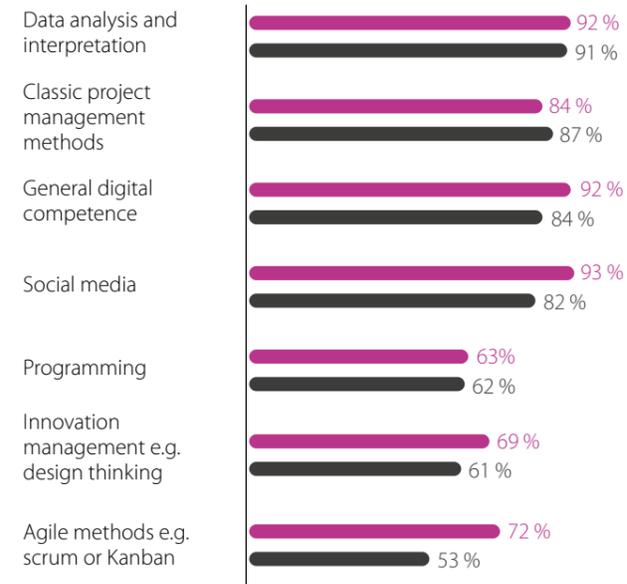
For information and communication companies, digitization is second nature. The sector knows how important it is to centrally coordinate digitization across all areas of the business. Agile methodology is practically standard.

IT companies require employees to have general digital competence and particularly strong skills in social media and data analytics and interpretation.

### Use of digital technologies



### Expertise for digital transformation (multiple answers possible)



Industry results Overall results

### IT companies have a particularly high demand for social media managers and data scientists.

	Position created	Position planned
IT security consultant	30 %	28 %
Social media manager	31 %	25 %
Cloud engineer	22 %	24 %
Digital marketer	21 %	19 %
Data scientist	21 %	18 %
Application developer	15 %	15 %
VR designer	11 %	14 %
Integration specialist	8 %	11 %
AI specialist	4 %	7 %
Blockchain architect	7 %	6 %
UX designer	3 %	5 %
DevOps/scrums expert	7 %	4 %
Interface designer	2 %	2 %

### Relevance of profiles

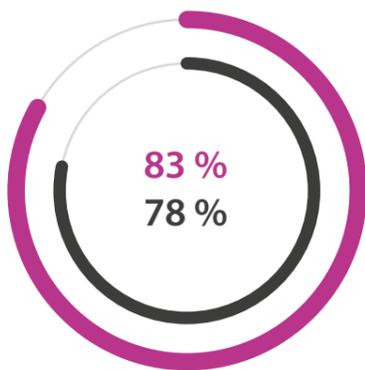
IT security consultant	59 %	52 %
Social media manager	38 %	32 %

## 7.2 Retail

In the past, retail tended to be relatively reluctant to digitize. This year, however, the industry ranks second in terms of openness with 83 percent of retailers displaying an open attitude to digitization. That is five percentage points higher than the average across industries. More than one in two retail companies (52 percent) have a single person in charge of digitization. Around one in three (36 percent) have a dedicated digitization unit to transform their business models. However, the retail industry's increased openness has yet to manifest itself in a greater willingness to invest in new technologies. Retailers are slow to adopt technology like cloud computing and big data analytics.

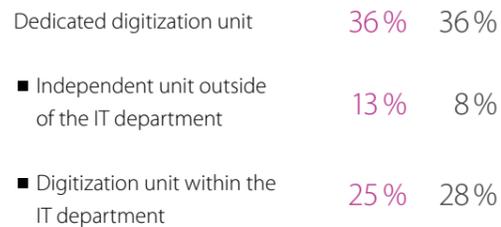
Customer centricity is a key consideration in developing new products and services. Individualization and personalization play an

### Attitude to digitization Results for "very open" and "quite open"



Most retailers are open to digitization. But only half organize it centrally in one function.

### Digitization team or digitization unit (multiple answers possible)

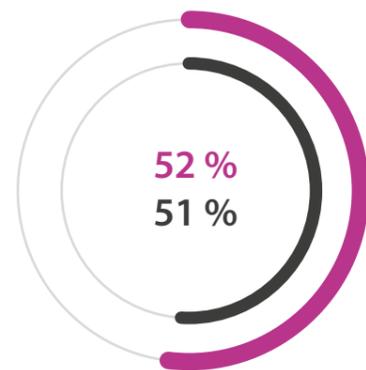


Industry results Overall results

important role for retailers. To improve the collection and use of customer and product data, the retail industry relies on knowledge of data analysis and interpretation (94 percent) and social media (91 percent). As a result, the demand for social media managers (40 percent) and digital marketing specialists (36 percent) is high in comparison to the cross-industry average (32 percent and 29 percent respectively). Retailers have an above-average willingness to invest in data analytics software. 65 percent expect higher investment in 2019 compared to 2018. The overall average is just 55 percent.

In terms of cooperating with external partners, such as IT and HR consultants, the retail industry is relatively reluctant. Here, there is potential to be tapped: Through collaboration, retailers can use the expertise to overcome challenges and draw a profit from new technologies.

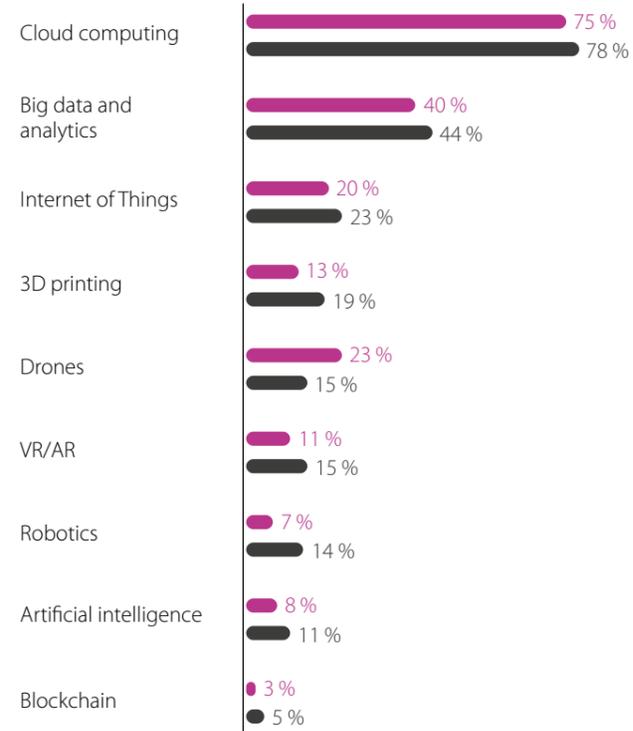
### Cross-departmental individual to coordinate digitization



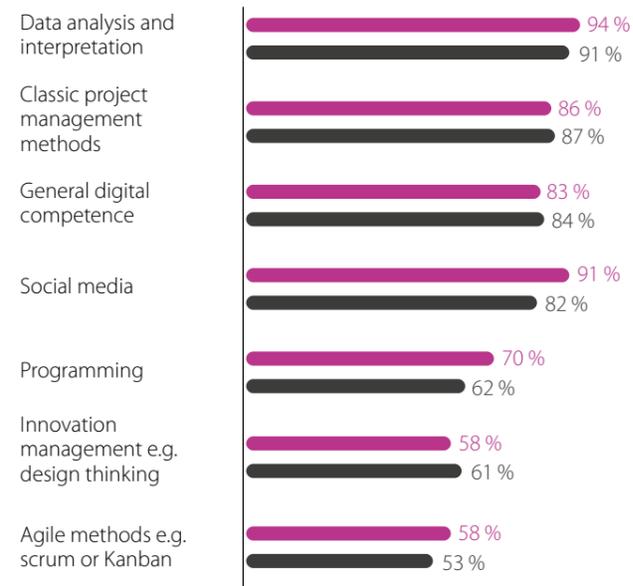
With an open-minded attitude, but a low level of organization and a hesitance toward digital technologies, retail is full of contradictions. Will the industry launch a digital offensive in the coming year?

Retail businesses are still reluctant to use digital technologies.

### Use of digital technologies



### Expertise for digital transformation (multiple answers possible)



### Digital marketing experts required: Retail is creating many jobs for social media managers, digital marketers, and data scientists.

	Position created	Position planned
IT security consultant	25 %	28 %
Social media manager	35 %	25 %
Cloud engineer	27 %	24 %
Digital marketer	24 %	19 %
Data scientist	21 %	18 %
Application developer	14 %	15 %
VR designer	12 %	14 %
Integration specialist	16 %	11 %
AI specialist	3 %	7 %
Blockchain architect	6 %	6 %
UX designer	7 %	5 %
DevOps/scrum expert	3 %	4 %
Interface designer	2 %	2 %

### Relevance of profiles

Social media manager	40 %	32 %
Digital marketer	36 %	29 %

Industry results Overall results

### 7.3 Automotive

The skeptics are making a U-turn. This year, at 81 percent, the automotive industry shows an above-average openness to digitization. This value has risen by 12 percentage points in two years.

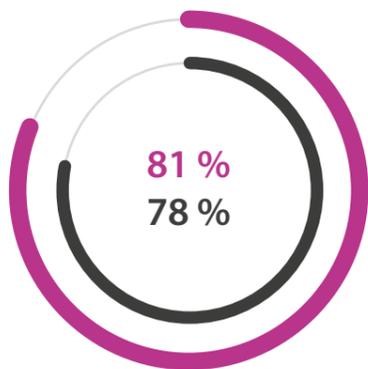
But even though automotive companies perceive digitization positively, they need time to readjust their organizational structures and workforce. Currently, only 49 percent employ a person solely responsible for digitization. One in three (36 percent) have a dedicated digitization unit. This aligns with the overall cross-industry average.

In terms of technology, the automotive industry leads the way: 51 percent (average: 44 percent) use big data analytics, and 22 percent (average: 11 percent) use artificial intelligence. 41 percent of automotive

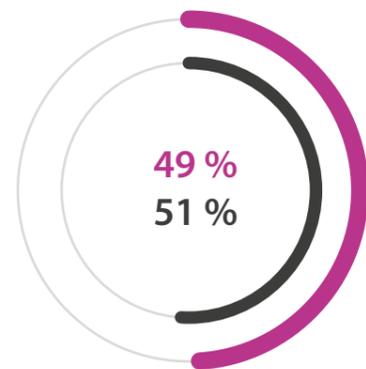
companies use additive manufacturing on the production line (average: 19 percent). Additive manufacturing enables companies to manufacture vehicle components and spare parts with 3D printing, optimize molds, and develop prototypes cost-effectively. 32 percent (average: 14 percent) use robotics.

For employees, disruptive technologies are highly demanding. Companies are searching for skills in data analysis, project and innovation management, and general competence with digital technology and social media. Three out of ten companies are seeking specialists in integration management (average: 15 percent) and artificial intelligence (average: 17 percent).

#### Attitude to digitization Results for "very open" and "quite open"



#### Cross-departmental individual to coordinate digitization



Automotive companies are open to digitization, but more than half of them do not have an independent digitization unit or central coordination.

#### Digitization team or digitization unit (multiple answers possible)

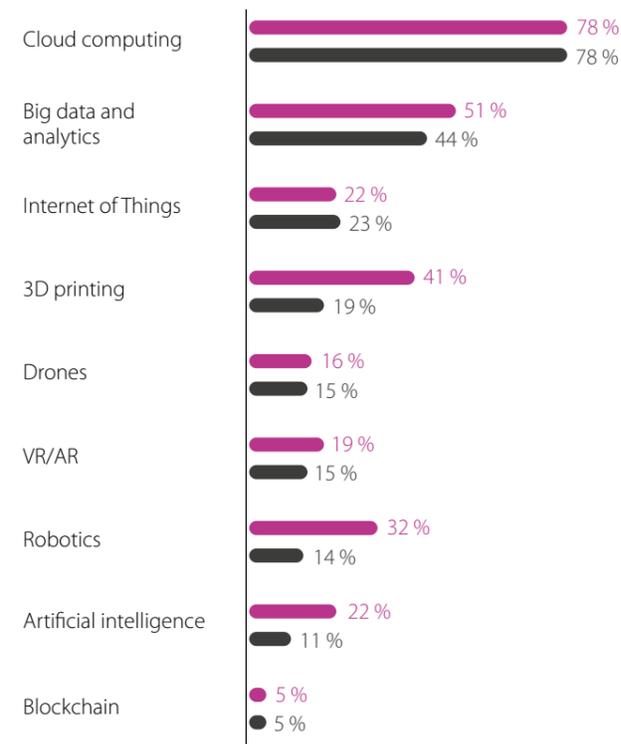
Dedicated digitization unit	36 %	36 %
■ Independent unit outside of the IT department	6 %	8 %
■ Digitization unit within the IT department	30 %	28 %

Germany's proud automotive industry is taking a resolute approach to digitization. Automotive companies are leading the way, particularly in adopting technological innovations. But there remains potential to improve coordination across functions.

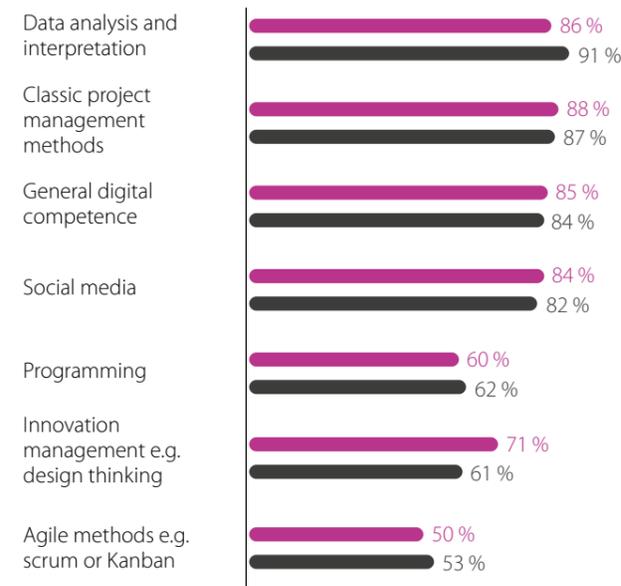
Industry results Overall results

When it comes to the use of digital technologies, the automotive industry leads the way in numerous respects, including big data and analytics, 3D printing, robotics, and AI.

#### Use of digital technologies



#### Expertise for digital transformation (multiple answers possible)



To be able to use digital technologies, you need people who know how to use them. Automotive companies are creating more and more jobs for integration and AI specialists.

	Position created	Position planned
IT security consultant	27 %	28 %
Social media manager	38 %	25 %
Cloud engineer	25 %	24 %
Digital marketer	20 %	19 %
Data scientist	23 %	18 %
Application developer	24 %	15 %
VR designer	15 %	14 %
Integration specialist	20 %	11 %
AI specialist	12 %	7 %
Blockchain architect	8 %	6 %
UX designer	5 %	5 %
DevOps/scrum expert	6 %	4 %
Interface designer	6 %	2 %

#### Relevance of profiles

Integration specialist	30 %	15 %
AI specialist	29 %	17 %

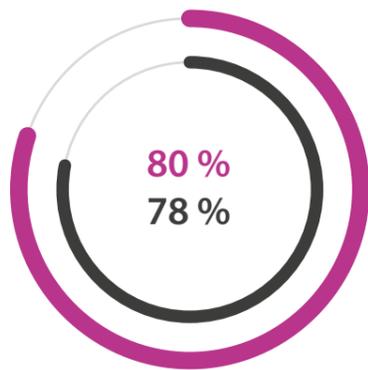
Industry results Overall results

## 7.4 Banking and Insurance

At 80 percent, the banking and insurance sector is more open to digitization than the cross-industry average of 78 percent. This was not always the case: An increase of 11 percentage points from last year shows the industry's new open-minded attitude. Almost six out of ten companies (57 percent) have one person in charge of coordinating digitization across functions, which is higher than the average (51 percent). At 37 percent, however, the proportion of companies with a dedicated digitization unit roughly matches the cross-industry average.

In terms of using new technologies, it is clear that not every innovation suits the primary requirements and challenges of all industries. 3D printing, for example, is not relevant for banking and insurance companies. In contrast, 12 percent use blockchain technology, compared to the average of 5 percent. Many people associate blockchain with cryptocurrencies. However, companies can also use the technology to optimize internal and external processes, to better handle sensitive data, and to clearly define ownership.

### Attitude to digitization Results for "very open" and "quite open"



Eight out of ten banking and insurance companies are open to digitization. Compared to companies in other industries, they are more likely to coordinate digitization across functions.

### Digitization team or digitization unit (multiple answers possible)

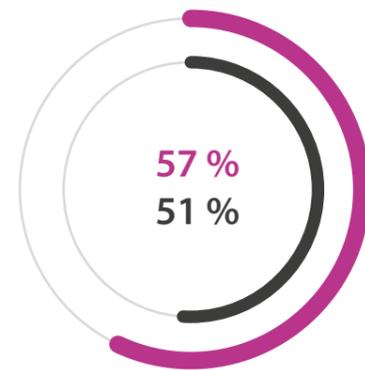
Dedicated digitization unit	37 %	36 %
■ Independent unit outside of the IT department	10 %	8 %
■ Digitization unit within the IT department	28 %	28 %

Industry results Overall results

Using new technologies increases the demand for relevant experts. Banks and insurance companies are creating an above-average number of jobs for these experts. One in four companies (25 percent) are searching for blockchain experts. Across all other industries, the average is around 11 percent. IT security experts are also in high demand. Over two thirds of banking and insurance companies (68 percent) have already created jobs in this field or plan to do so, compared to just 52 percent on average.

Few banking and insurance companies collaborate with startups to generate ideas for new technologies and services (9 percent). Instead, they place their trust in strategy consultants. 19 percent of banking and insurance companies turn to strategy consultants for their digitization projects – a considerably higher proportion than in other industries (average: 11 percent).

### Cross-departmental individual to coordinate digitization

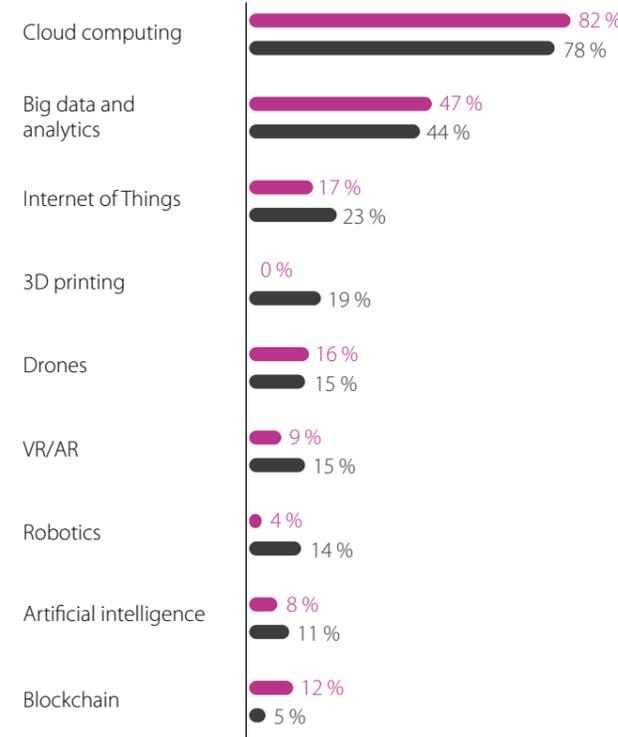


More and more banks and insurers are using blockchain. In coming years, the technology could fundamentally transform processes and strategies in the industry.

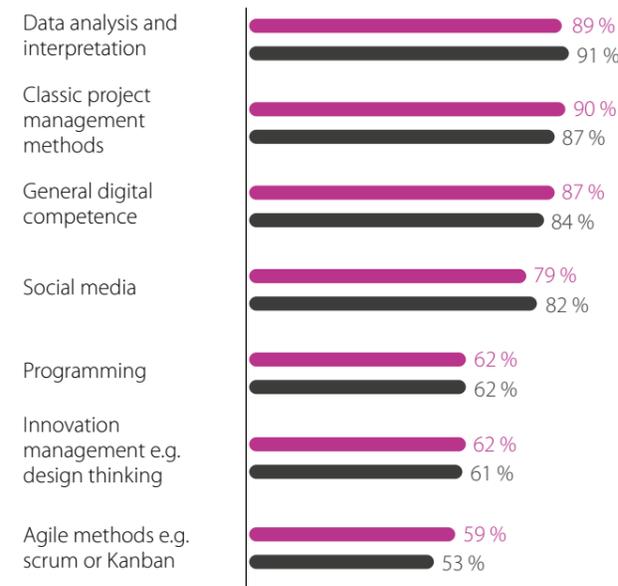
Banking and insurance companies are Germany's blockchain champions. One in nine companies are already using the technology.

**The banking industry continues to push blockchain technology. Nine percent have created corresponding jobs and 17 percent are planning it – a new record.**

### Use of digital technologies



### Expertise for digital transformation (multiple answers possible)



Position created Position planned

IT security consultant	41 %	28 %	36 %	30 %
Social media manager	30 %	25 %	11 %	7 %
Cloud engineer	26 %	24 %	21 %	19 %
Digital marketer	18 %	19 %	16 %	12 %
Data scientist	17 %	18 %	14 %	12 %
Application developer	16 %	15 %	12 %	11 %
VR designer	5 %	14 %	10 %	13 %
Integration specialist	7 %	11 %	5 %	6 %
AI specialist	0 %	7 %	6 %	10 %
Blockchain architect	9 %	6 %	17 %	6 %
UX designer	2 %	5 %	2 %	3 %
DevOps/scrum expert	8 %	4 %	7 %	5 %
Interface designer	1 %	2 %	2 %	3 %

### Relevance of profiles

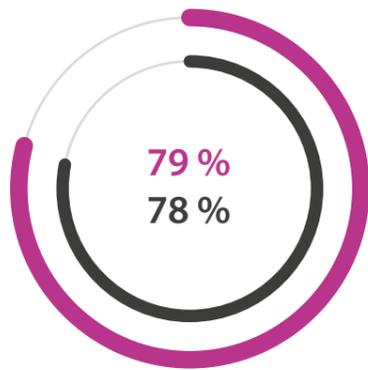
IT security consultant	68 %	52 %
Blockchain architect	25 %	11 %

Industry results Overall results

## 7.5 Chemicals and Pharmaceuticals

Eight out of ten chemical and pharmaceutical companies (79 percent) are open to digitization – roughly average compared to other industries. Over half (53 percent) put the responsibility for digitization in the hands of one person. As much as a third (32 percent) have established a team of experts for digitization. In terms of using new technologies, the industry shows similarities to other sectors. In addition to cloud computing (75 percent) and big data and analytics (42 percent), 3D printing is becoming more common in the industry (38 percent). 3D printing opens up many new opportunities: Medications can be produced according to demand, and dosages can be highly individualized. 22 percent (average: 14 percent) of companies use robotics. 23 percent (average: 15 percent) use VR/AR technologies to observe chemical reactions. For example, for employee training, the periodic table of elements can be visualized and atoms can be bonded before the user's eyes.

### Attitude to digitization Results for "very open" and "quite open"



Chemical and pharmaceutical companies are open-minded in comparison to other industries. One in three companies have a digitization unit, either within or outside the IT department.

### Digitization team or digitization unit (multiple answers possible)

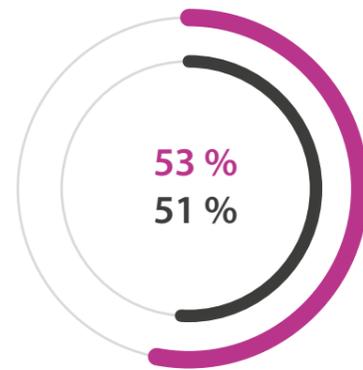
Dedicated digitization unit	32%	36%
■ Independent unit outside of the IT department	4%	8%
■ Digitization unit within the IT department	28%	28%

Industry results Overall results

In the life sciences industry, social media is an important instrument to reach the end user. 89 percent (average: 82 percent) believe using networks such as Facebook to be a relevant skill in driving digitization. But social media – as well as data analysis and agile methodology – pose greater challenges for life sciences compared to other industries. This can be attributed to the particularly strict rules and regulations that chemical and pharmaceutical companies must comply with. As a result, relevant experts are in high demand, with 46 percent (average: 32 percent) of companies seeking social media managers.

The industry is especially cooperative. 48 percent (average: 36 percent) collaborate with associations, 15 percent (average: 8 percent) with startups, and 10 percent (average: 3 percent) with competitors.

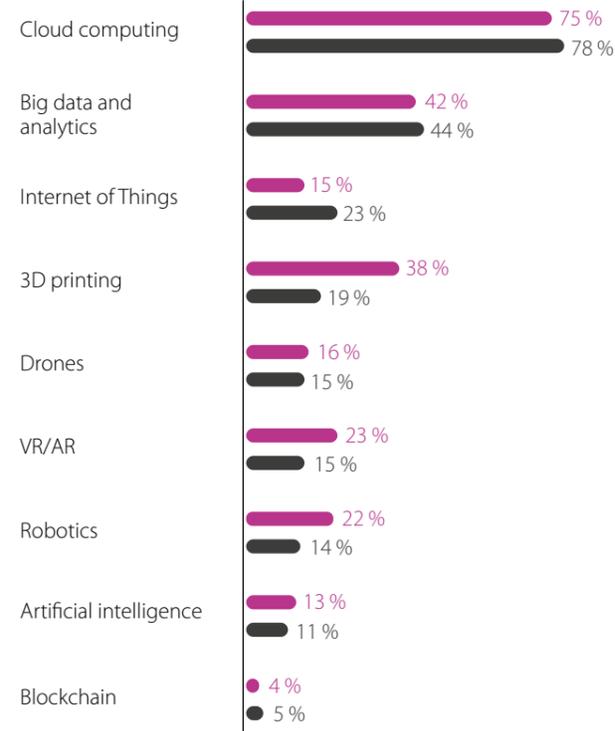
### Cross-departmental individual to coordinate digitization



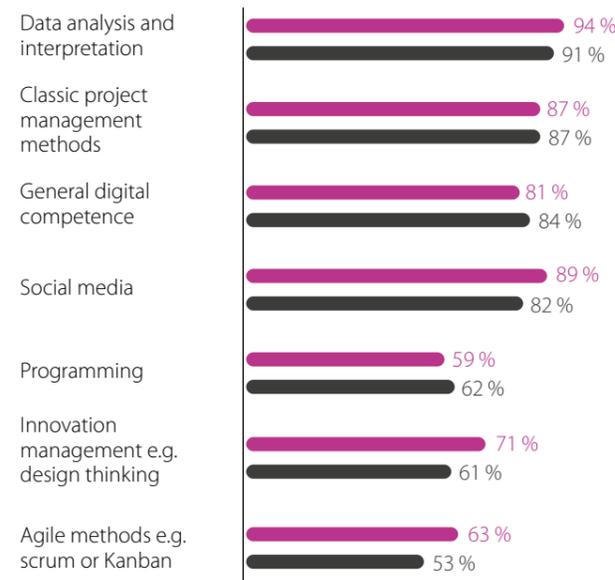
When it comes to digitization, chemical and pharmaceutical companies are in excellent form. They are increasingly adopting innovation management approaches and agile methods from the digital world.

The use of technologies shows parallels with other sectors. However, chemical and pharmaceutical companies use 3D printing, VR/AR, and robotics more frequently than other industries.

### Use of digital technologies



### Expertise for digital transformation (multiple answers possible)



Industry results Overall results

Many chemical and pharmaceutical companies are creating jobs for VR designers, AI specialists, data scientists, social media managers, and IT security consultants.

	Position created	Position planned
IT security consultant	32%	28%
Social media manager	39%	25%
Cloud engineer	28%	24%
Digital marketer	20%	19%
Data scientist	25%	18%
Application developer	21%	15%
VR designer	24%	14%
Integration specialist	10%	11%
AI specialist	10%	7%
Blockchain architect	5%	6%
UX designer	6%	5%
DevOps/scrum expert	7%	4%
Interface designer	3%	2%

### Relevance of profiles

Social media manager	46%	32%
----------------------	-----	-----

## 7.6 Mechanical Engineering

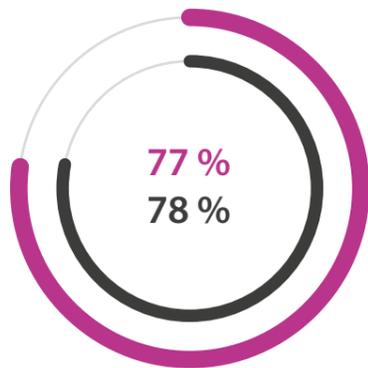
Little has happened in the mechanical engineering industry over the past two years. 77 percent of companies are open to digitization, of which 15 percent of respondents even expressed a "very open" attitude. As in other industries, about half of the companies surveyed have one person to coordinate digitization across departments. The proportion of companies with their own independent digitization unit (32 percent) is below the average of 36 percent.

However, the use of disruptive technologies is much more prevalent in the mechanical engineering industry. 38 percent use 3D printers (average: 19 percent), and 23 percent use robotics (average: 14 percent). As many as 34 percent use virtual and augmented reality – a figure that clearly stands out when compared with the average in other

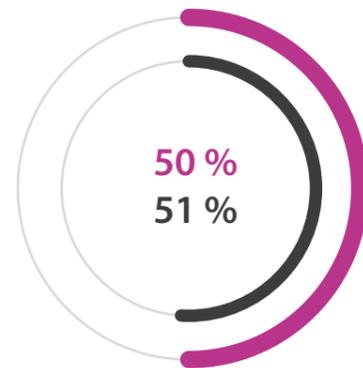
industries (15 percent). VR and AR support workers in many areas, including process engineering, energy, utilities, manufacturing, and electrical engineering. Typical applications include visual guidance for training and education, assembly, animation, simulation, and developing prototypes. In the future, there will be VR designers at around half (51 percent) of mechanical engineering companies. This is a significantly higher proportion than in other industries, where the average is roughly 26 percent.

At first glance, mechanical engineering companies seem less open to digitization. In practice, however, they are leveraging potential in many areas better than other industries.

### Attitude to digitization Results for "very open" and "quite open"



### Cross-departmental individual to coordinate digitization



In terms of open-mindedness, mechanical engineering companies are almost exactly in line with the overall average.

### Digitization team or digitization unit (multiple answers possible)

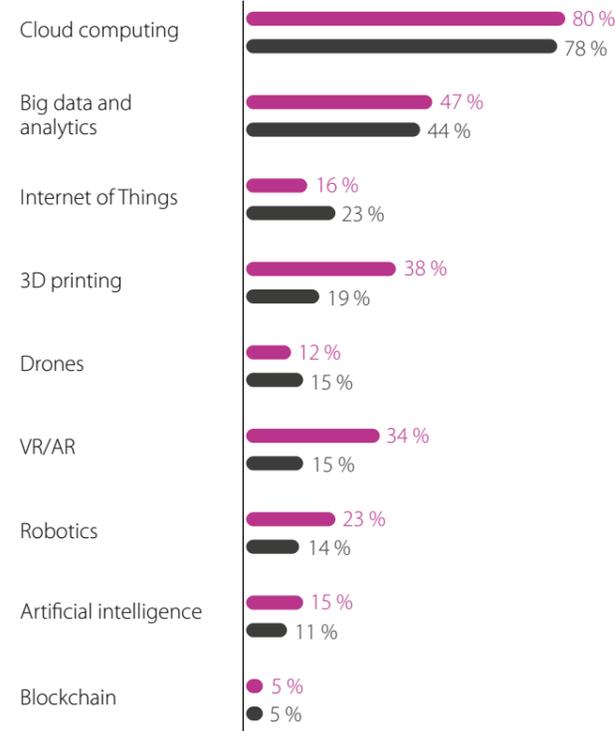
Dedicated digitization unit	32%	36%
■ Independent unit outside of the IT department	2%	8%
■ Digitization unit within the IT department	31%	28%

Mechanical engineering companies remain technological pioneers, even in the digital world. They are particularly likely to adopt innovations.

Industry results Overall results

This industry is leading the way in 3D printing, VR/AR, and robotics. But there is still some catching up to do, especially with regard to IoT applications.

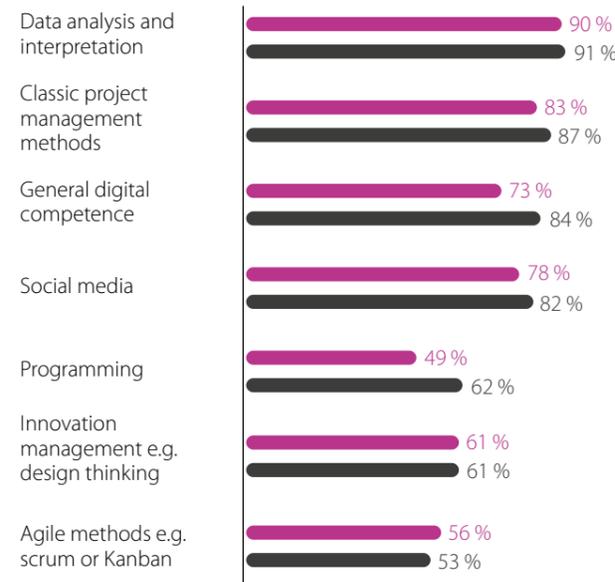
### Use of digital technologies



The frequent use of virtual and augmented reality is reflected in the number of planned and created jobs.

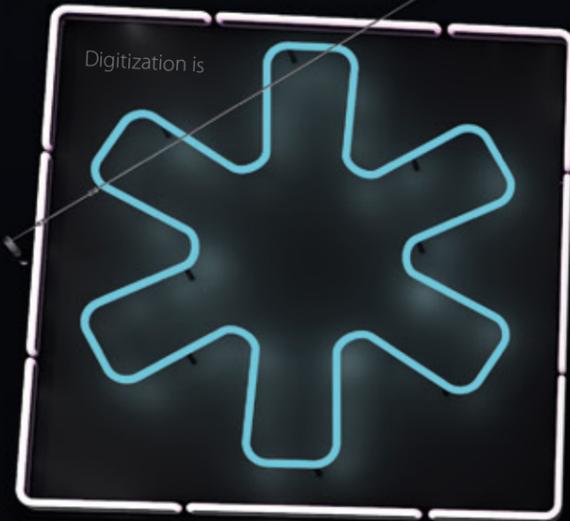
	Position created	Position planned
IT security consultant	23%	37%
Social media manager	18%	7%
Cloud engineer	27%	23%
Digital marketer	13%	14%
Data scientist	26%	11%
Application developer	26%	6%
VR designer	32%	21%
Integration specialist	12%	10%
AI specialist	7%	18%
Blockchain architect	7%	8%
UX designer	3%	2%
DevOps/scrum expert	3%	5%
Interface designer	0%	8%

### Expertise for digital transformation (multiple answers possible)



Industry results Overall results

# 8. Eight Recommendations for Digital Enterprises



ready

load"\*", 8

1. Coordinate digitization
2. Embrace cultural change
3. Show a pioneering spirit
4. Develop skills
5. Retain experts
6. Leverage partnerships
7. Invest in the right areas
8. Focus on people

run



## Digitization Calls for Composure

In 2019, the German economy finds itself in the middle of digital transformation. Business models, processes, and requirements are changing rapidly and relentlessly. If established companies reject new technologies, then new players will fill the gaps and seize market share. The past decade has clearly shown this dynamic. It has also shown how difficult many organizations are finding the transformation.

### Business 4.0™: The Digital Guide



#### Driving mass personalization:

Provide personalized, scalable products and services tailored to individual customers.



#### Leveraging ecosystems:

Collaborate with partners inside and outside the supply chain to develop new products and services.

## What Companies Can Learn from the Digitization Study

### 1. Coordinate digitization

To a large extent, companies have identified the potential and opportunities of digitization. Now they have to act by adapting and optimizing their internal processes. This is only possible if all departments pull together – which is sometimes a difficult task. Large enterprises are increasingly turning to chief digital officers (CDOs) to bridge the gap between IT and business.

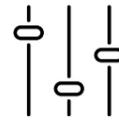
However, in most cases (68 percent), the CIO is responsible for coordination across departments. Specially created digitization units are often part of the IT department. However, placing digitization solely in the hands of IT is a misguided approach. Business 4.0 is about more than technology. In addition to technical knowledge, it also requires entrepreneurial and strategic skill, empathy, and the ability to manage initiatives across all business areas. And that applies to large companies as well as small and medium-sized enterprises.

But that is no reason to despair. What companies need now is planned and decisive action. Under no circumstances should decision-makers panic and plunge blindly into digital adventures. So what now? TCS experts have developed a practical digital guide named Business 4.0™.



#### Creating exponential value:

Establish business models that facilitate access to new markets and enable monetization of data.



#### Embracing risk:

Overcome rigid planning and operational barriers with an agile strategic approach.

Learn more about Business 4.0 at [www.business4.tcs.com](http://www.business4.tcs.com).

### 2. Embrace cultural change

Innovation requires each and every employee to have a positive attitude to digitization. Corporate culture is changing dramatically as meetings take place virtually, data replaces gut feeling, products are tailored to individual customers, and agile teams replace old hierarchies

Almost half of the companies surveyed use change management methods to support this culture shift. Large companies set a good example here. Small and medium-sized enterprises are lagging behind, but external experts can support them if they lack the necessary knowledge.

Medium-sized companies have some catching up to do. If there is a lack of know-how among their own ranks, external experts can support them.

### 3. Show a pioneering spirit

Innovation also requires companies to believe that they can constantly improve their existing portfolio. Today, businesses need to bring better products and services to market faster than ever before and rethink their internal processes. Mechanical engineering companies are particularly strong in this regard, and they leverage many new technologies. In other industries, there is still room for improvement. Not every technology is suitable for every company and every industry. But thinking outside of the box can provide inspiration and offer completely new perspectives.

Cloud computing (78 percent) and big data and analytics (44 percent) are already in use at many companies. These technologies form the foundation for becoming more customer-centric and offering individualized products and services. So most companies are on the right path. But, in comparison, truly groundbreaking innovations are rare. The German economy could benefit from adopting a pioneering spirit and having more courage to try out new things.

### 4. Develop skills

Despite growing openness, the relatively low self-assessment of many companies shows that there is more progress to be made. On a scale of 1 (just starting to digitize) to 10 (fully digitized), the average rating is only 5.5. This is hardly ever due to cost limitations. Data protection, IT security, and a lack of knowledge are causing more pressing issues.

The study also shows that digital expertise is lacking. Training and education are needed. Four out of five companies are already addressing this by strengthening the digital skills of their workforce. Two thirds of companies offer relevant training. It is especially important for SMEs to train their existing employees because, in the war for talent, they are at a clear disadvantage against large, reputable companies.

### 5. Retain experts

The shortage of skilled professionals is becoming an urgent issue for more and more companies. The employment market has been depleted, while new jobs are created in digital fields. Digital solutions can help companies acquire talent and retain existing employees in the long term. A culture shift toward more transparency, flexibility, and involvement can have a very positive impact on motivation and help ensure satisfied, loyal employees.

### 6. Leverage partnerships

As in previous years, many digital transformation initiatives in 2019 rely on collaboration with external partners. Eight out of ten companies operate in an extended ecosystem of associations, external consultants, service providers, and competitors. In addition to suppliers, service providers, and scientific institutions, demand for HR and IT consultants is rising.

In these times of rapid global change, it is advisable to establish a wide network of partners and stakeholders. This includes working with startups. After all, it is important to question the status quo and break new ground. In spite of this, only eight percent of companies tap into the creativity of young companies.

### 7. Invest in the right areas

As companies become more open to digitization, they also become more willing to invest in it. On average, German businesses spent around 5.5 percent of their total annual revenue on digital products and digital consulting in 2018. The larger the company, the higher the investment. Expenditure on IT security solutions is particularly high. But businesses are also increasing their investment in areas such as online shops, collaboration tools, and mobile websites and apps.

The upward trend seen in recent years suggests that investment will continue to rise, especially in IT security and customer-focused solutions. Depending on size, industry, and their current situation, companies have set different priorities. It is not about implementing as many technologies as possible. Successful companies identify exactly which technologies and services will bring them the best results.

### 8. Focus on people

Four out of ten companies see optimizing customer service as the greatest opportunity in digitization. SMEs in particular see great potential here (44 percent). At the same time, more than half of the companies surveyed agree that digital technology simplifies daily work and enables employees to focus on their core tasks.

People play a central role in digitization. This may have been said many times before, but it is true. Unfortunately, many companies forget this in their daily work. It takes determination and a little courage to make a company more sustainable and more human.

## 9. Contacts

This study was conducted by Bitkom Research GmbH on behalf of Tata Consultancy Services.

### Tata Consultancy Services Deutschland GmbH

Tata Consultancy Services (TCS) has been supporting companies globally for over 50 years with IT services, consulting, and business solutions. TCS offers a consulting-led, cognitive powered, integrated portfolio of IT, business & technology services, and engineering. This is delivered through its unique Location Independent Agile delivery model, recognized as a benchmark of excellence in software development.

TCS is part of the Tata Group, India's largest industrial conglomerate, and employs around 450,000 people in 46 countries. In the previous fiscal year (ending March 31, 2019), TCS generated a total revenue of \$20.9 billion. The company is listed on the National Stock Exchange and the Bombay Stock Exchange in India. For more information, visit: [www.tcs.com](http://www.tcs.com)

#### Contacts:

Dr. Kay Müller-Jones  
Head of Consulting & Services Integration  
Phone: +49 69 78 70 22-0  
Email: [germany.info@tcs.com](mailto:germany.info@tcs.com)

Doreen Schulze  
Marketing Manager  
Phone: +49 69 78 70 22-0  
Email: [doreen.schulze@tcs.com](mailto:doreen.schulze@tcs.com)

### Bitkom Research GmbH

Bitkom Research offers a comprehensive range of market research services – from consulting and concept creation to conducting field studies and marketing and publicizing the results. We provide data and analyses that support IT vendors and users to make business-relevant decisions and execute marketing and PR activities. Bitkom Research GmbH is a wholly owned subsidiary of Bitkom e.V. and has many years of experience in issues related to digital economy. Our customers include small and medium-sized companies as well as global players and public sector clients.

#### Contacts:

Bettina Lange  
Senior Research Consultant  
Phone: +49 30 27 576-547  
Email: [b.lange@bitkom-research.de](mailto:b.lange@bitkom-research.de)

Lukas Gentemann  
Senior Research Consultant  
Phone: +49 30 27 576-545  
Email: [l.gentemann@bitkom-research.de](mailto:l.gentemann@bitkom-research.de)

More information: [www.bitkom-research.de/en](http://www.bitkom-research.de/en)



```
ready
load"∞", 8
```

... to be continued.

**TATA CONSULTANCY SERVICES**

Experience certainty.

[www.studie-digitalisierung.de/en](http://www.studie-digitalisierung.de/en)

IT Services  
Business Solutions  
Consulting

All content / information present here is the exclusive property of Tata Consultancy Services Limited (TCS). The content / information contained here is correct at the time of publishing. No material from here may be copied, modified, reproduced, republished, uploaded, transmitted, posted or distributed in any form without prior written permission from TCS. Unauthorized use of the content / information appearing here may violate copyright, trademark and other applicable laws, and could result in criminal or civil penalties. **Copyright © 2019 Tata Consultancy Services Limited**