INDUSTRY 4.0 INDEX

GERMAN INDUSTRY 4.0 INDEX 2019

A study by Staufen AG and Staufen Digital Neonex GmbH

STAUFEN.DIGITAL NEONEX STAUFEN.

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Editorial

It is also clear, however, that there is no way around the further digitization of industry – especially as a response to economic challenges.

Martin Haas, CEO of Staufen AG

DEAR READERS,

The "German Industry 4.0 Index," which has been conducted by Staufen AG in collaboration with Staufen Digital Neonex since 2014, rose for the fifth year in a row. According to the study, Germany's economy is on a clear digitization course. However, the number of companies that are really implementing Industry 4.0 comprehensively on an operational level is still only growing slowly. "Digital growth" is currently taking place primarily in the form of a number of individual projects. By contrast, the move from 4.0 pilot project to true smart factory is apparently still a major hurdle for most companies.

Furthermore, the last few years have been characterized not only by Industry 4.0 and related issues, but a buzzing economy as well. This boom period is now coming to an end – accompanied by political turbulence such as Brexit and international trade conflicts. So while digitization may previously have been held back by a lack of time and staff resources, the financial aspect is now coming back into focus with a vengeance.

It is also clear, however, that there is no way around the further digitization of industry – especially as a response to economic challenges. Isolated digital solutions and sleek 4.0 labs will not help here. Companies now need to make the digital factory and, most importantly, digital business models a consistent focus of their corporate strategy. There is an awareness of the importance of the pending decisions, as the numerous and very honest statements of the study participants show, with some representative statements reproduced here in this report as well.

I hope you find this report inspiring and that it helps your company to take the step toward being a true smart factory and a successful smart business.

Martin Haas,
CEO of Staufen AG

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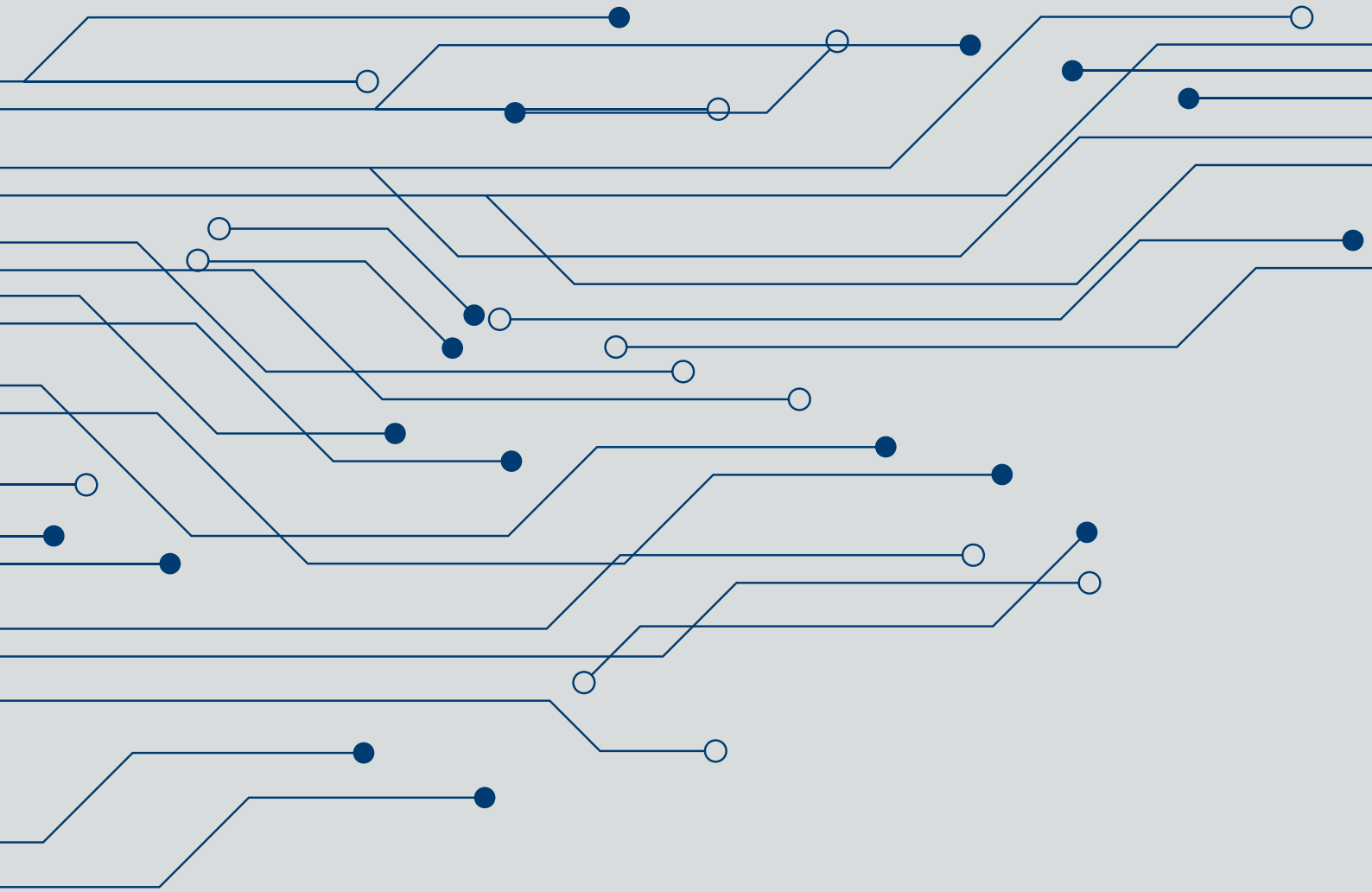
About the Study



BACKGROUND AND FRAMEWORK OF THE STUDY

As part of the German Industry 4.0 Index 2019, consulting firm Staufen AG and Staufen Digital Neonex GmbH surveyed a total of 323 companies in Germany on the topic of Industry 4.0 and digitization. The survey was conducted in July 2019. Nearly 70 percent of the companies surveyed are in the mechanical and plant engineering, electrical engineering, and automotive industries.

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German Industry 4.0 Index 2019

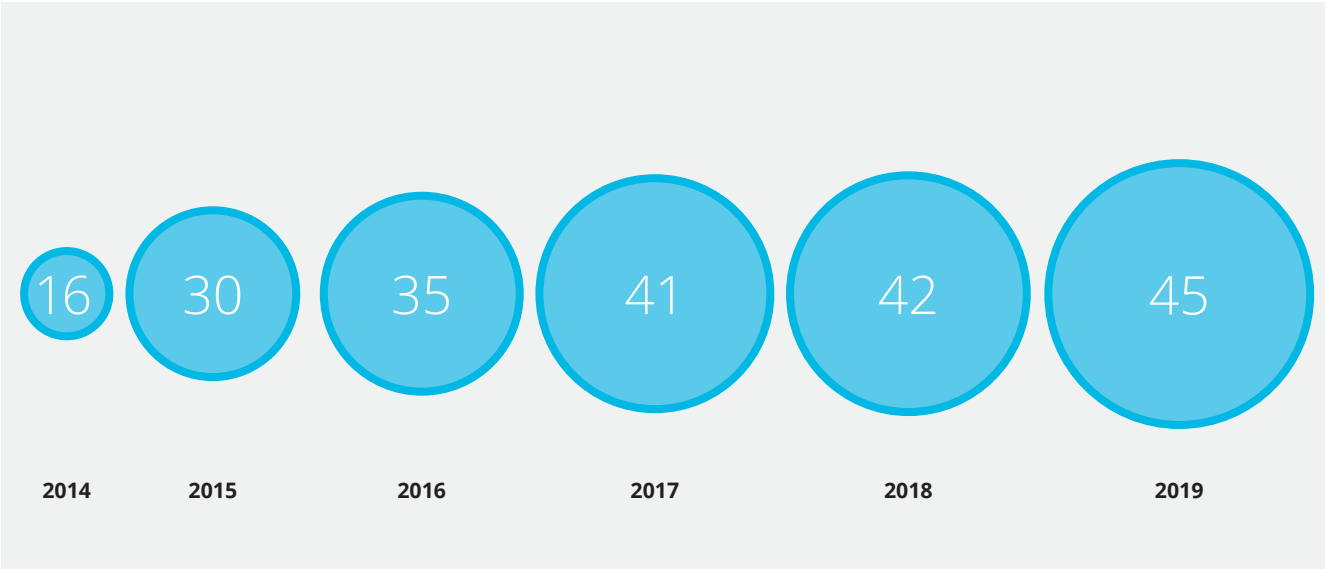
THE RESULTS AT A GLANCE

The Industry 4.0 Index has been recorded since 2014 and thus offers a unique look at the development of Industry 4.0 in Germany. As was the case last year, the Industry 4.0 Index is comprised of two subindexes: Smart Factory and Smart Business. The subindex on intelligent manufacturing was recorded for the sixth time this year and the subindex on new business models for the second time. The additional look at business models provides an important look at the maturity level of digitization in the individual sectors and companies.

3.1 THE SMART FACTORY SUBINDEX

Once again this year, the Industry 4.0 Index looked at the Smart Factory issue. An increasing number of companies are dealing with the topic of Industry 4.0 and implementing projects. The increase in the number of individual operational projects is especially striking.

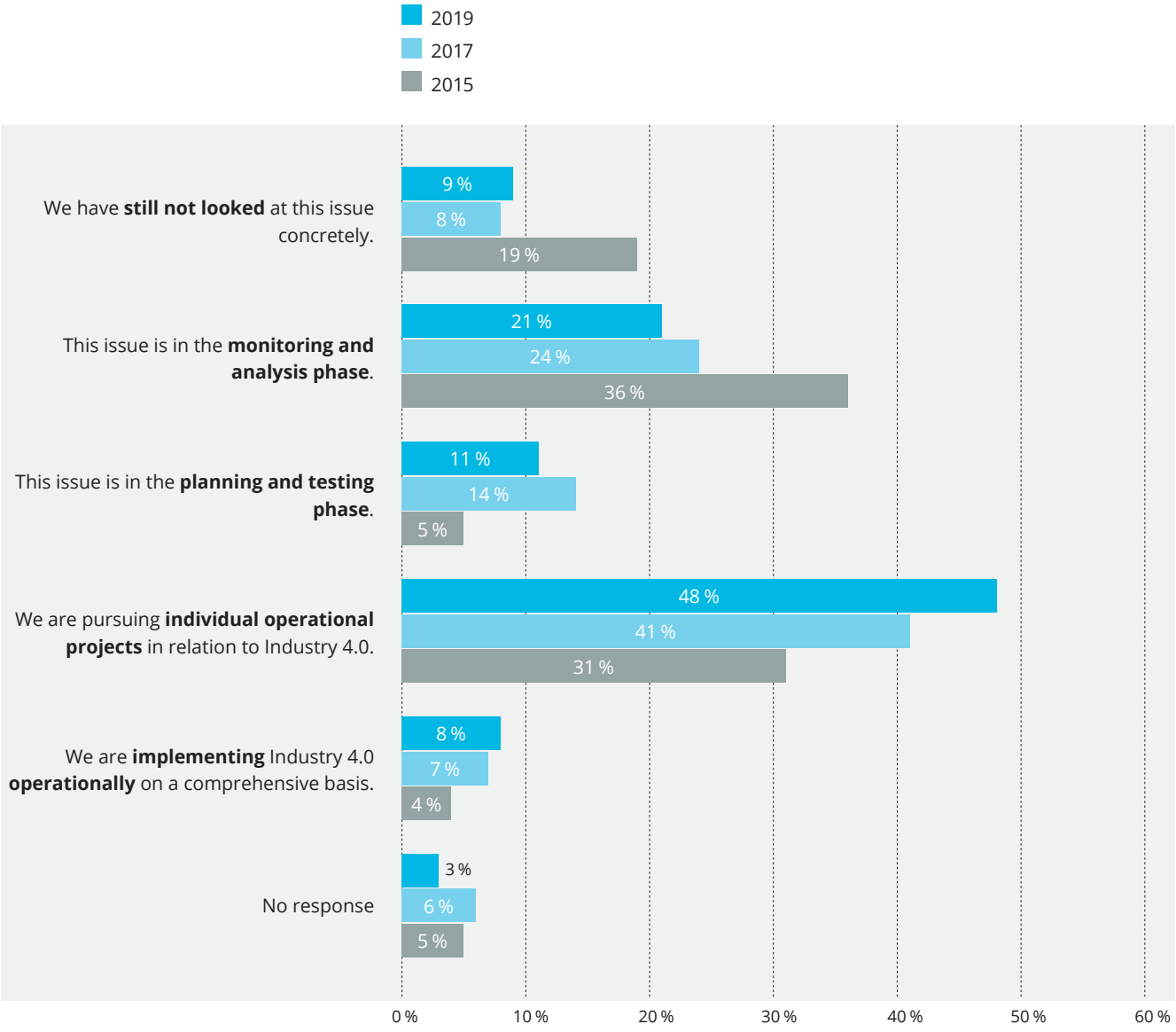
STAUFEN Industry 4.0 Index: Smart Factory



This provides a look at the details: the number of companies that are really implementing Industry 4.0 comprehensively on an operational level is still only growing modestly. By contrast, the number of implemented individual projects is growing substantially compared to previous years. One in two companies is implementing the Smart Factory via individual operational projects.

Industry 4.0 / Digitization Continues to Be a Major Issue. How Far Along Is Your Company on the Path to the "Smart Factory?"

Comparison by **survey year**



In addition, it is interesting to note that the percentage of companies not dealing with the issue at all has remained almost the same as the previous year. Around one in ten companies appear to have given no thought to modern and forward-looking industrial production in line with Industry 4.0.

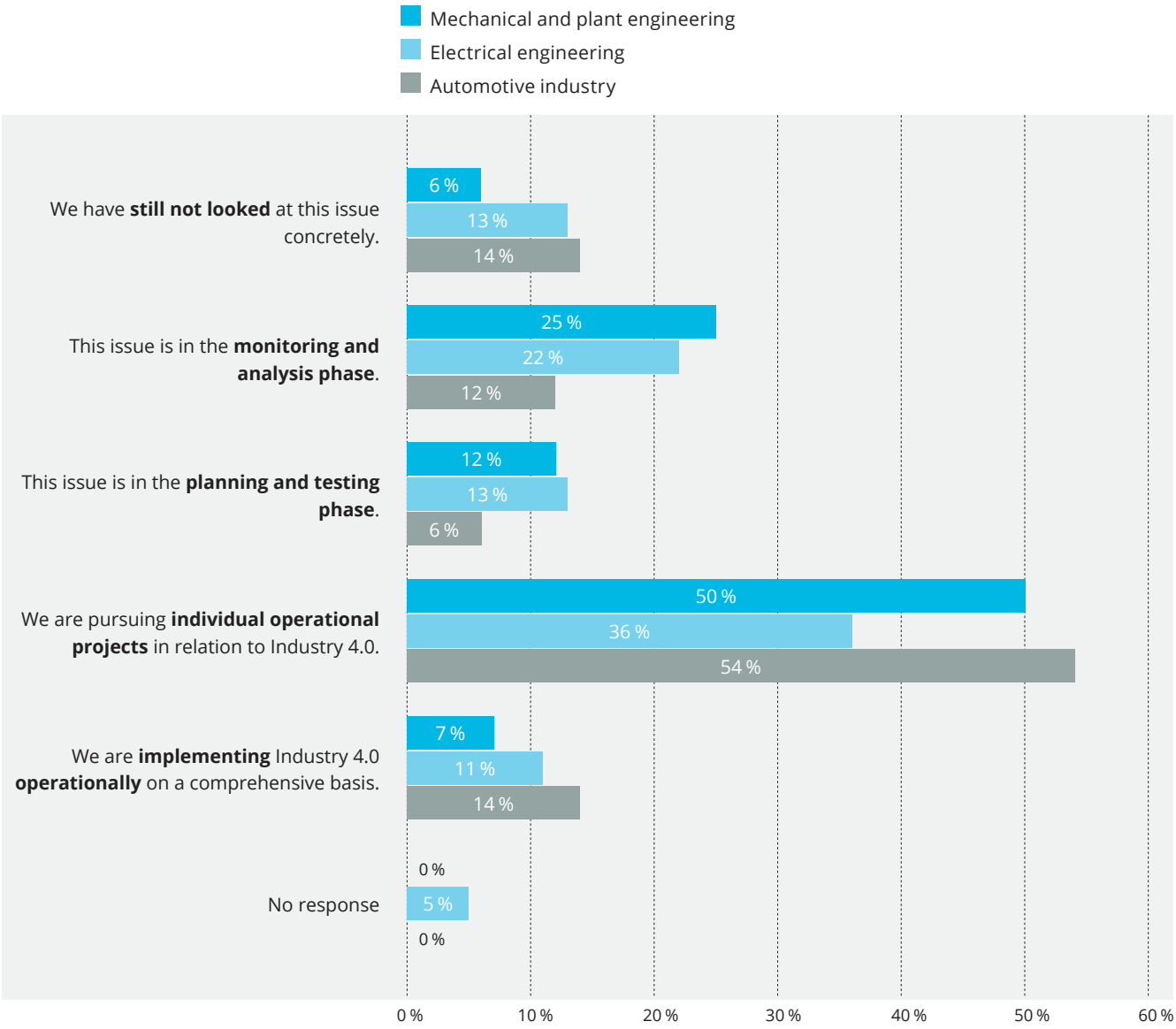
The indexes for the individual sectors provide a clear picture for 2019. The electrical engineering industry is the leader in terms of implementation. It is ahead of the other industries when it comes to both individual operational projects and comprehensive operational implementation. As well-known electrical engineering companies dealt with the Industry 4.0 issue very early, bringing the first smart products to market back at the beginning of the decade, Industry 4.0 appears to be used in this sector for production operations in in-house manufacturing processes as well. At the same time, around one in seven companies in the electrical engineering industry say that have not yet dealt with the issue. The share of companies that are monitoring and analyzing the issue is much smaller in this sector than the others. In the electrical engineering industry, Industry 4.0 is out of the monitoring phase and appears to be either being used for production or purposely not being used.

Thanks to the use of methods and resources like big data analysis and cloud technologies, we will break new ground so our customers can very quickly and sustainably improve product quality and the productivity of their plants.

Axel E. Barten, Owner, Achenbach Buschhütten

Industry 4.0 / Digitization Continues to Be a Major Issue. How Far Along Is Your Company on the Path to the "Smart Factory?"

Comparison by **sector**



THE AUTOMOTIVE INDUSTRY IS LOOKING FOR COMPREHENSIVE IMPLEMENTATION

There has been a clear negative trend among companies in the automotive industry. After reaching 46 points in last year's survey, the Smart Factory subindex in this year's survey was just 41 points. Thus, this sector posted a decline in Industry 4.0 implementation, unlike mechanical engineering (2018: 45, 2019: 46) and electrical engineering (2018: 49, 2019: 53).

This negative trend is especially clear in terms of operational implementation. In 2018, one in five companies in the automotive industry indicated that the Smart Factory was already a reality; in the current survey, only one in ten did.

There appear to be two trends at work here:

01. The Smart Factory mainly has a positive effect on cost structures when it is implemented comprehensively. An illustrative example here is Daimler's factory56 in Sindelfingen. By contrast, individual projects are often a patchwork of isolated solutions. They need a clear strategy in order to have a positive impact on the cost structures. Furthermore, it is a great challenge to move them from pilot status to company-wide rollout and thus scale the positive effects.

02. Automotive industry markets cooled in 2018 / 2019. They are under pressure as a result of the emission values of combustible engines and are in the process of implementing electromobility. This has resulted in relatively high cost pressure and is forcing traditional cost reduction measures, the reorganization of global manufacturing, and major investments in product innovation, including innovations among suppliers. This is taking the focus away from individual Smart Factory projects.

Overall, the results reveal the following: Very few companies implement the new Smart Factory concepts in a comprehensive manner that provides them with a clear competitive advantage. For leading-edge companies, the Smart Factory – in combination with the digitization megatrend – offers new organizational possibilities. They can better position the company as a whole in the market, for example through improved customer benefits or by expanding their market position. But a majority of the specialists and managers surveyed said that they viewed the Smart Factory only as a means for reducing costs. And they said this even though their companies often were not even positioned in the market as cost leaders.

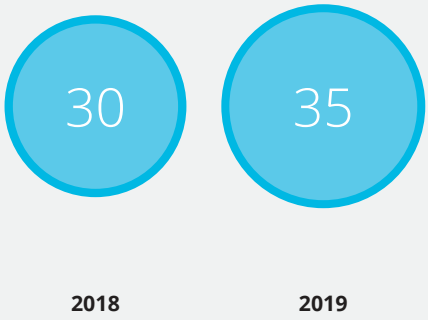
There is no company that can escape the digitization and Industry 4.0 trends. However, it is crucial to take the right steps at the right time.

Reinhard Jenne, Head of Customer Service, HF Mixing Group

3.2 THE SMART BUSINESS SUBINDEX

Smart Business was a new issue in last year's survey. As the digital transformation has reached a higher degree of maturity among a certain portion of the companies in recent years, it became clear that the survey needed to ask about issue of Smart Business and new digital business models.

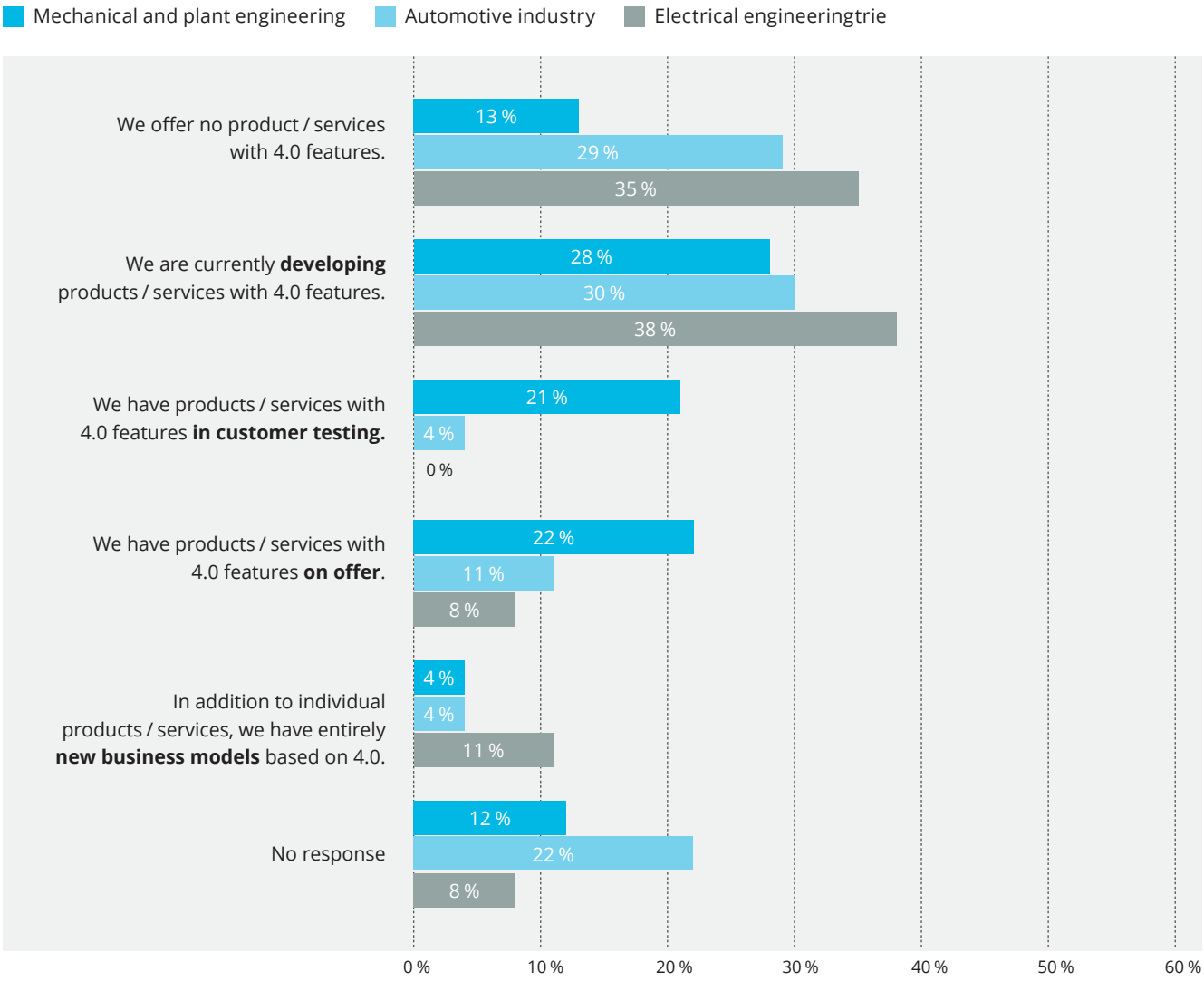
STAUFEN Industry 4.0 Index: Smart Business



Last year's survey revealed that a good fourth of all companies already had digital business models in their offering. The figure is the same in this year's survey. Correspondingly, the Smart Business Index has not risen; in fact, it fell slightly. The main reason for this negative development: Companies across all sectors have fewer products in development or in customer testing, and in turn the number of companies that offer no smart products or services rose – clearly some of the new developments were unable to fulfill their promises and had to be withdrawn or reworked.

In Addition to Boosting Their Own Efficiency through Industry 4.0, an Increasing Number of Companies Are Also Digitizing Their Products and Services or Even Developing Entire 4.0 Business Models. How Do Things Stand at Your Company?

Comparison by sector; only participants who are dealing concretely **with Industry 4.0**



There are two bright spots when taking a sector-oriented look at Smart Business: the electrical engineering industry is the leader in development, and mechanical engineers have the most products or services in customer testing or in their offering already.

This is due to the timing advantage enjoyed by the two sectors: Companies began investing in the development of networked products and the expedient use of horizontal networking in automation technology at the beginning of the decade. These efforts slowly appear to be paying off.

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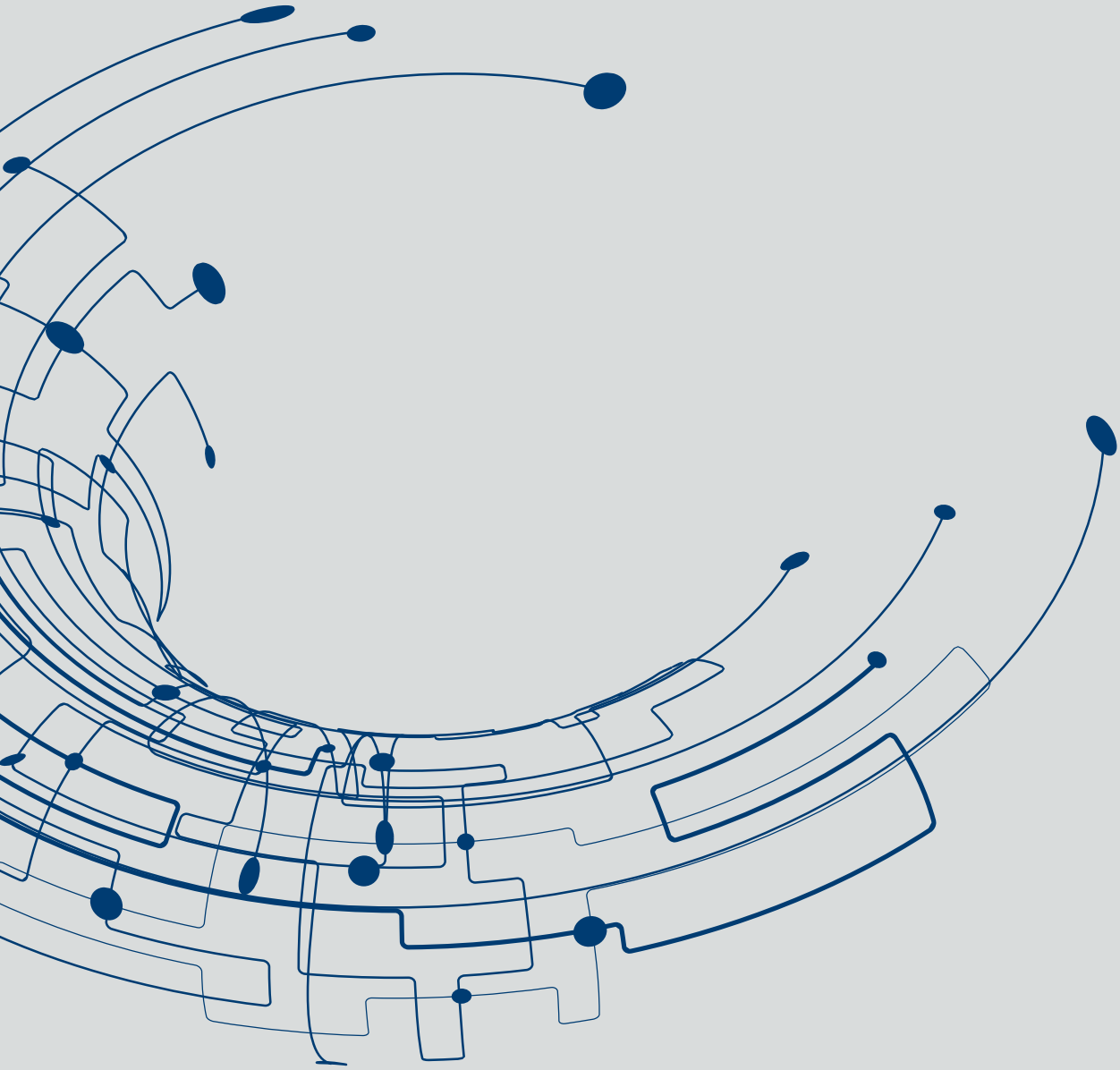
The Results



4.1 EXPERIENCES WITH INDUSTRY 4.0

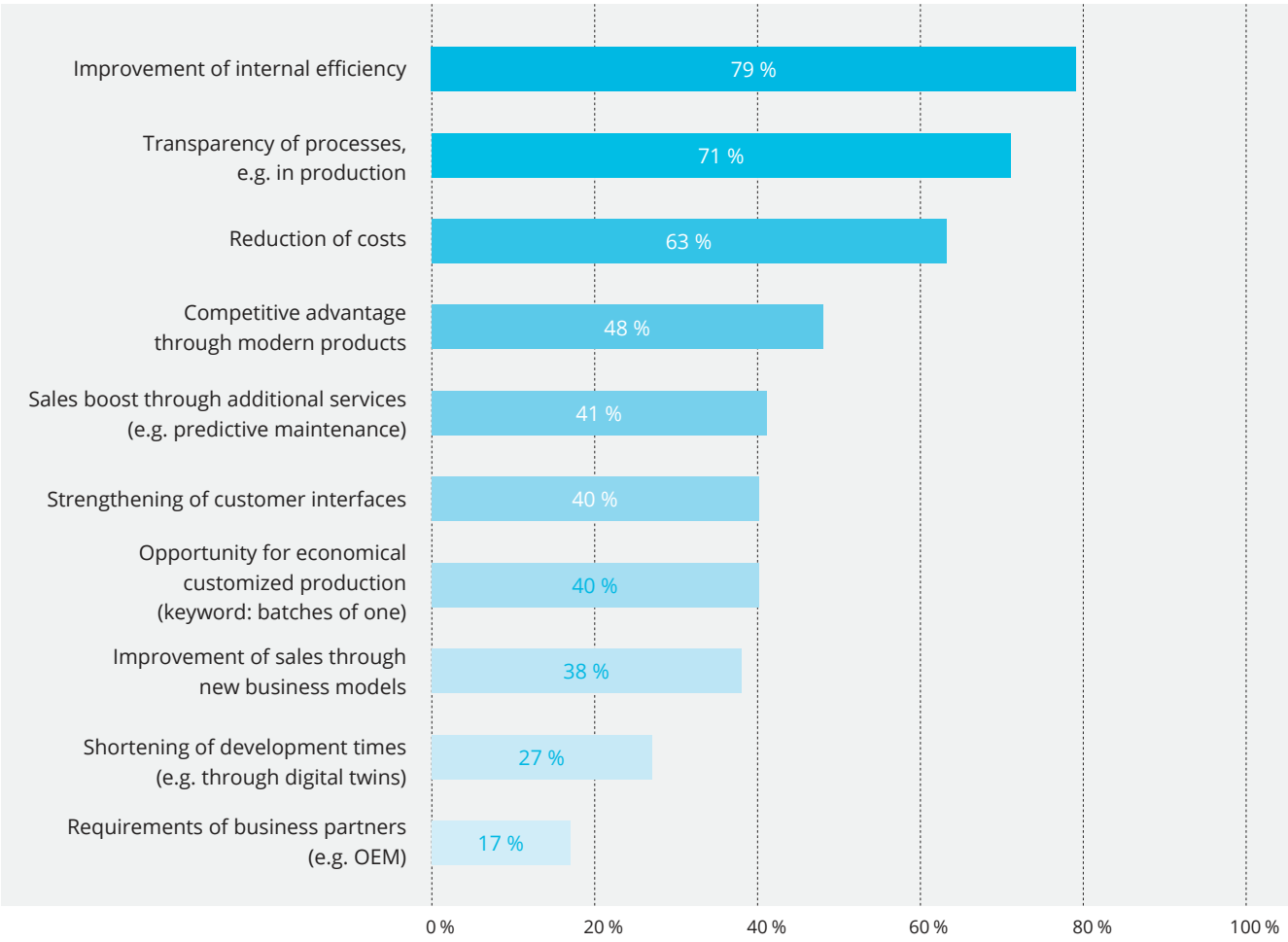
Industry 4.0 and, in particular, the Smart Factory, continue to be a megatrend. A third of companies have begun testing Industry 4.0. Half of companies have even implemented individual projects. But a closer look shows that development has stagnated. The number of holdouts has remained stuck at around ten percent for some time now, and there has been almost no change in the number of companies that have implemented Industry 4.0 comprehensively on an operational level. On the whole, there is a sense that companies have become caught up in their individual projects and have only managed to shift all of their processes and their entire product portfolio to Industry 4.0 to a small extent.

DIGITIZATION – MOTIVATION AND SUCCESS

One of the reasons for this stagnation could lie in the motivation to implement digitization measures. For example, there has been very little incentive over the last three years to consider boosting sales through additional services and new business models. Such motives only came to the fore in 2019, but they are still only important to slightly more than a third of companies.

What Are the Motives for Adopting Industry 4.0/ Digitization Measures at Your Company?

Only participants who already deal concretely **with Industry 4.0**



The three top reasons for digitization have remained almost unchanged for years. Companies cite the following factors in this order:

- Improvement of internal efficiency
- Increase in transparency of processes
- Reduction of costs

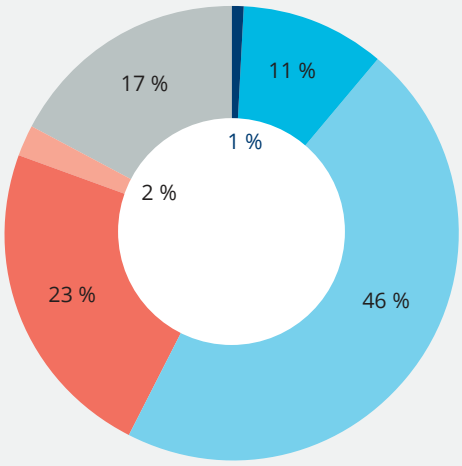
INDUSTRY 4.0 SUCCESS STRATEGIES

Nevertheless, companies that are already dealing concretely with Industry 4.0 are sharing some success stories. For example, well over half of companies (58%) have posted positive results with individual digitization activities. The projects were only below expectations at a fourth of companies.

> With Industry 4.0 and the digitization of all business processes it is possible to develop, produce, and sell products in a cost-optimized manner at all locations around the world, and to provide direct service to customers.
>
> Helmut Klemm, Head of Production, Siemens Healthcare GmbH

How Successful Have Your Industry 4.0/ Digitization Activities Been to Date?

Only participants who already deal concretely **with Industry 4.0**



Positive (∑ 58 %)

Results ...

- ... are well above expectations
- ... are above expectations
- ... are as expected

Negative (∑ 25 %)

Results ...

- ... are below expectations
- ... are well below expectations

Neutral (∑ 17 %)

- I cannot judge

The relatively high number of neutral responses, where the respondent could not say whether there was success or failure, is interesting. Around a sixth of companies cannot make a statement in this area. This points to a shortcoming in the calculation of key performance indicators. It seems that companies either do not collect KPIs, or they do not communicate them company-wide. As a result, those surveyed as part of this study – owners, members of the board of directors, CEOs and senior managers – are either often not aware of the results of individual projects, or the impact on key performance indicators played no role.

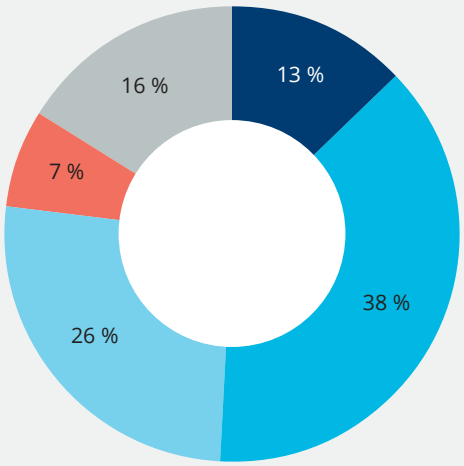
The targeted use of technologies allows our company to make substantial improvements in performance given the conflicting requirements related to time, transparency, responsiveness, quality, and costs.

Dr. Alexander Schubel, Director of Lean Management, Schaltbau GmbH

The financial results of Industry 4.0 are a key aspect of success. Among companies with positive experiences, half say that Smart Factory investments pay off financially as well. Here, too, a similar number of respondents (16%) says they cannot provide exact information.

Do Your Investments in the Smart Factory Pay Off Financially As Well?

Only participants who already **deal** concretely **with Industry 4.0** and assess Industry 4.0 / digitization activities **positively**



Positive (∑ 77 %)

Results ...

- ... are well above expectations
- ... are above expectations
- ... are as expected

Negative (∑ 7 %)

Results ...

- ... are below expectations
- ... are well below expectations

Neutral (∑ 16 %)

- I cannot judge

The companies with positive results mainly attribute their success to a structured approach with clear processes (70%) and the targeted development of expertise (68%) in the area of Industry 4.0 and digitization. By contrast, modern management methods, a high level of acceptance of the measures among employees, and the development of additional capacities are less important.

In conjunction with the sharp increase in individual projects, it seems that many of these individual projects are more feasibility or conceptual studies that are not based primarily on the above-listed reasons. This, too, is an indication that German industry is still looking for an overall concept for using digitization in an advantageous and holistic manner.

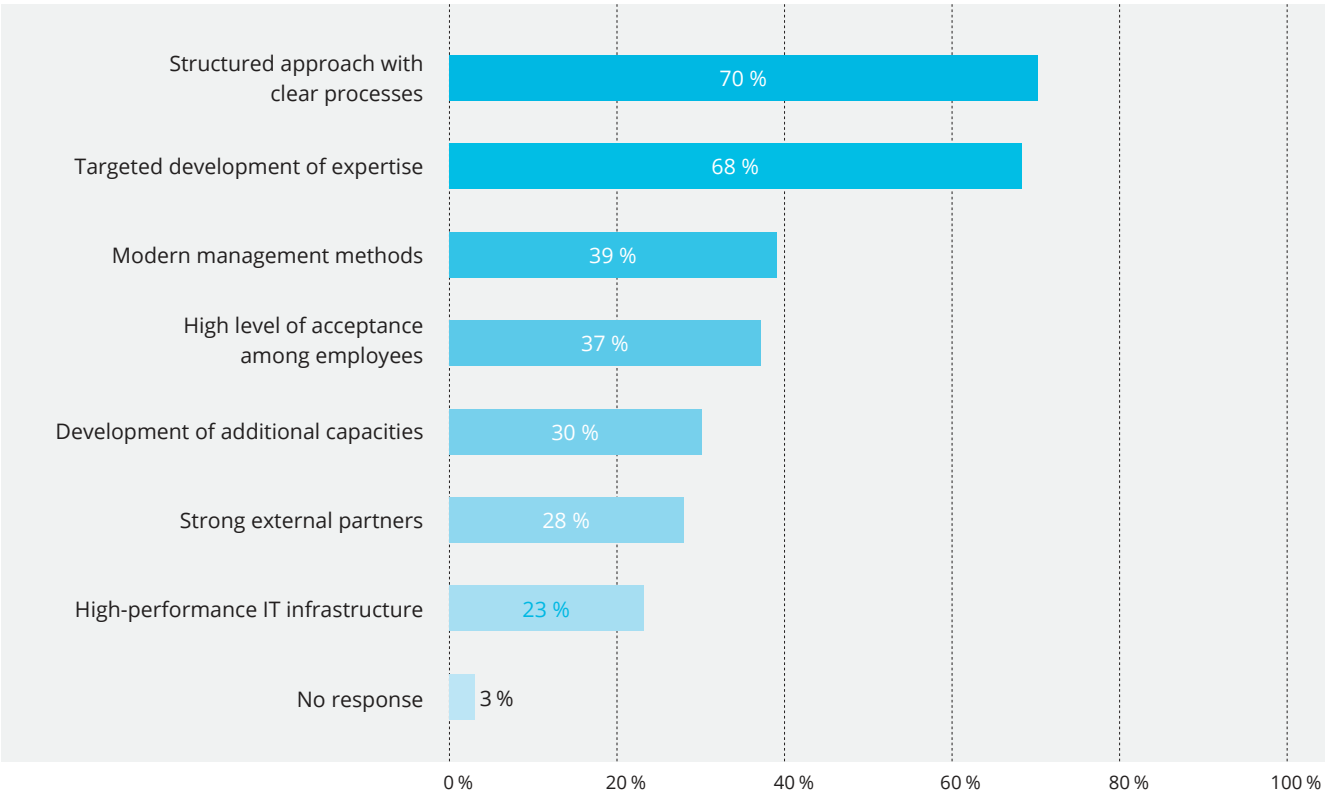
> Without digitization and the implementation of disruptive technologies we will no longer be able to ensure product optimization and the level of quality expected by our customers over the long term.
>
> Prof. Gerald Huber, Executive Advisor, Digital Health Systems GmbH

Employees continue to be fairly skeptical when it comes to digital transformation as well. Slightly more than a third have a high level of acceptance. Far-reaching changes generally result in uncertainty on the part of staff, especially when there is widespread anxiety about a potential loss of jobs. In this respect, it is up to management to demonstrate the opportunities presented by digital change to the company – and to make employees aware that it will not succeed without a change in thinking. In the near future those companies that put off Industry 4.0 will find it very difficult to compete.

But managers still have more work to do themselves. Only slightly more than a third of companies use contemporary management methods when it comes to digital transformation. But the volatile and complex changes that Industry 4.0 involves cannot be met by a single decision maker in the CEO's office. Instead, all employees, with their expertise, ideas and commitment, must be involved in the process. Thus, a traditional hierarchical view will quickly lead a company to fall behind.

In Your View, What Are the Reasons You Achieved or Exceeded Your Goals?

Only participants who already **deal** concretely **with Industry 4.0** and assess Industry 4.0 / digitization activities **positively**



A total of 30 percent of companies have developed additional capacities and were successful as a result; nearly as many looked for a strong external partner for the development of products and services for Industry 4.0. A high-performance IT infrastructure is another important success factor. But the sharp increase in importance of partner companies compared to 2018 shows that advice and operational support from digitization experts are key elements of success.

In the future, companies that are capable of interpreting their process parameters will be the ones who are successful.

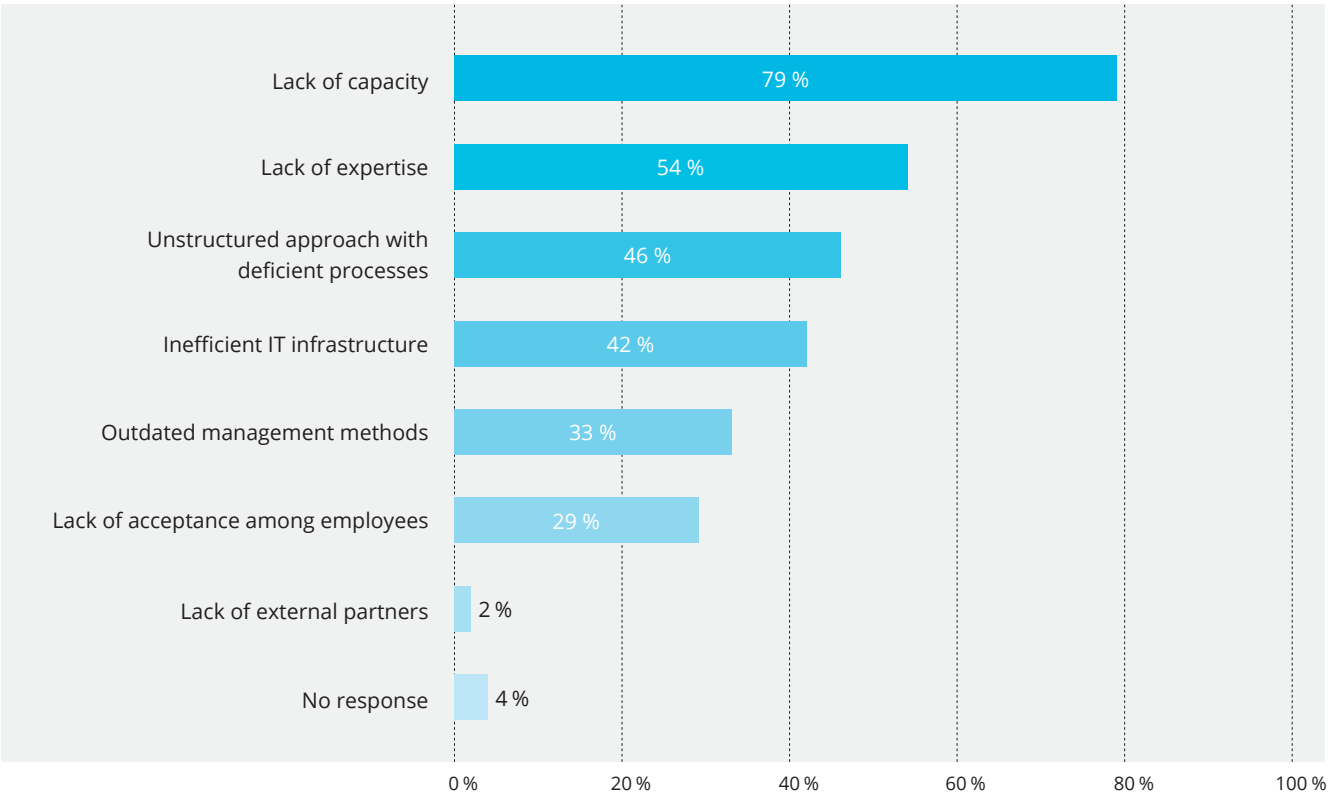
Martin Eisenbraun, Head of Plant Engineering, Handtmann Group

REASONS WHY SOME COMPANIES ARE NOT SUCCESSFUL

If success occurs on the basis of clear processes and the targeted development of expertise, then the lack of these factors will result in failure. However, this is only true for about half of the companies that assess their own activities in the area of Industry 4.0 negatively. Problems with the company's IT infrastructure as well as outdated management methods and low employee acceptance are only cited as the reasons for negative results at about a third of companies.

In Your View, What Are the Reasons You Have Not Yet Achieved Your Goals?

Only participants who already **deal** concretely **with Industry 4.0** and assess Industry 4.0 / digitization activities **negatively**



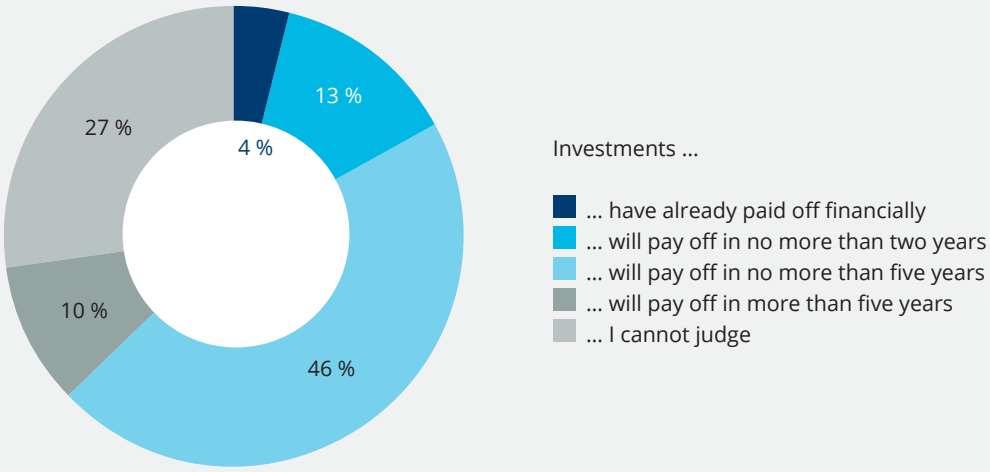
At eight out of ten companies, the key reason for failure is a lack of capacity. This is a clear indicator that too many companies (still) make the mistake of providing insufficient resources for innovation projects. This is understandable if orders have been good to date, as doing so ties up resources. But a lack of staff and financial resources hinders digitization. Ultimately, they lead to a lack of expertise, which is cited by half of companies as the reason for failure. Often, the IT infrastructure has not been adapted to the digitization projects, with a quarter of companies attesting to a substantial need to catch up in this area.

In my view, Industry 4.0 is focused too much on production. But that's simply not enough!

Dr. Thomas Buchholz, business consultant

When Will Your Smart Factory Investments Pay Off Financially?

Only participants who already **deal** concretely with **Industry 4.0** and assess Industry 4.0 / digitization activities **negatively**



The consequences at many companies are that Smart Factory initiatives proceed slowly, and the break-even point remains far off. More than half of the companies that have already grappled with Industry 4.0 projects say that the Smart Factory investments will likely pay off in five or more years. What they are saying, in other words, is that we don't know whether our investments will ever pay off, but we hope for the best.

Industry 4.0 is an essential factor for making Germany a competitive location internationally. In addition, the wide range of data obtained as a result of Industry 4.0 will provide enormous transparency regarding disruptions and the potential for optimization in business processes. If, at the same time, there is a corresponding level of cultural change at companies, there will be a substantial amount of potential.

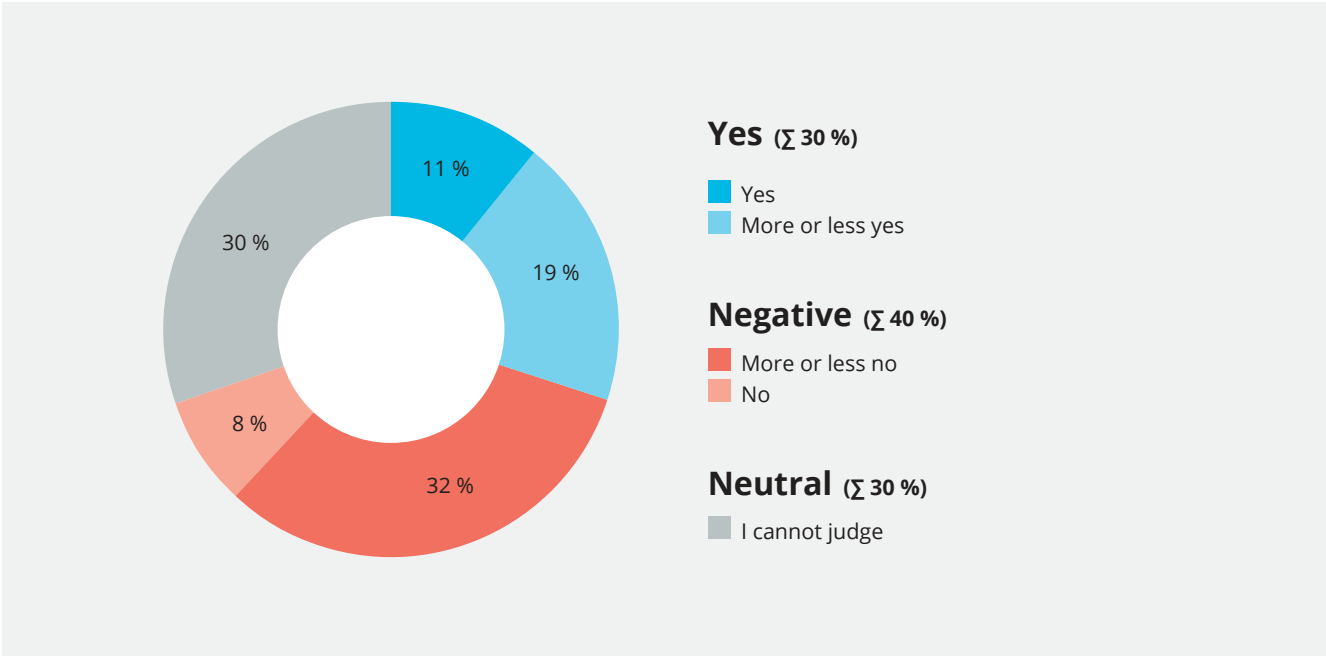
Manuel Soder, Head of Time Management, PFW Aerospace GmbH

INDUSTRY 4.0 IS NOT YET A GUARANTEE OF PROFITS

However, the financial situation of companies in the Industry 4.0 vanguard is not significantly better. Just under a third are in the black with their smart products, services, or business models. Here, too, there is once again evidence of insufficient or a lack of communication structures, with almost a third saying they cannot judge the financial situation of their own Smart Business initiatives.

Are Your Industry 4.0 Business Models or Products and / or Services with Industry 4.0 Features Already in the Black?

Only participants that are already **dealing** concretely **with Industry 4.0** and have 4.0 products / services and / or **Industry 4.0 business models**



EFFICIENCY AND TRANSPARENCY ALONE ARE NOT ENOUGH

While digitization holdouts in German industry are still a minority, their numbers have remained stable. Companies that have successfully switched their entire core business to the digital economy are likewise a minority.

While the vast majority of companies view the Smart Factory as a major opportunity and are experimenting with various digitization activities, Industry 4.0 is in many places focused heavily on individual projects, which are also primarily intended to boost the transparency and efficiency of processes. Both of these are a good start, but companies cannot stop there. This is because innovations do not, unfortunately, occur as a result of processes, no matter how efficient and transparent they are. Instead, they usually entail high costs that frequently only result in small, incremental improvements.

Businesses have not grown tired in recent years of making their processes more and more efficient. Modern, digital technologies mainly offer fine-tuning in this area, rather than major advances. True progress will only come through comprehensive business model innovations that do not stop at a company's core business.

Industry 4.0 and digitization are key strategic initiatives for achieving both added value for customers and thus more business, and for continuously developing internal processes.

Michael Klohr, Operations Director, Howden Turbo GmbH

4.2 TECHNOLOGIES FOR INDUSTRY 4.0

At its core, Industry 4.0 involves a number of different technologies – big data, artificial intelligence, predictive maintenance, industrial platforms, and customized production with batches of one. A majority of the companies surveyed recognized its importance. But not every digital technology that has been publicized has been put into practice. For example, the significance of augmented / virtual reality and blockchain is still quite low. They are only used in niche areas as experiments. Their actual suitability for the Smart Factory and Smart Business still needs to be proven.

4.3 AI AND BIG DATA

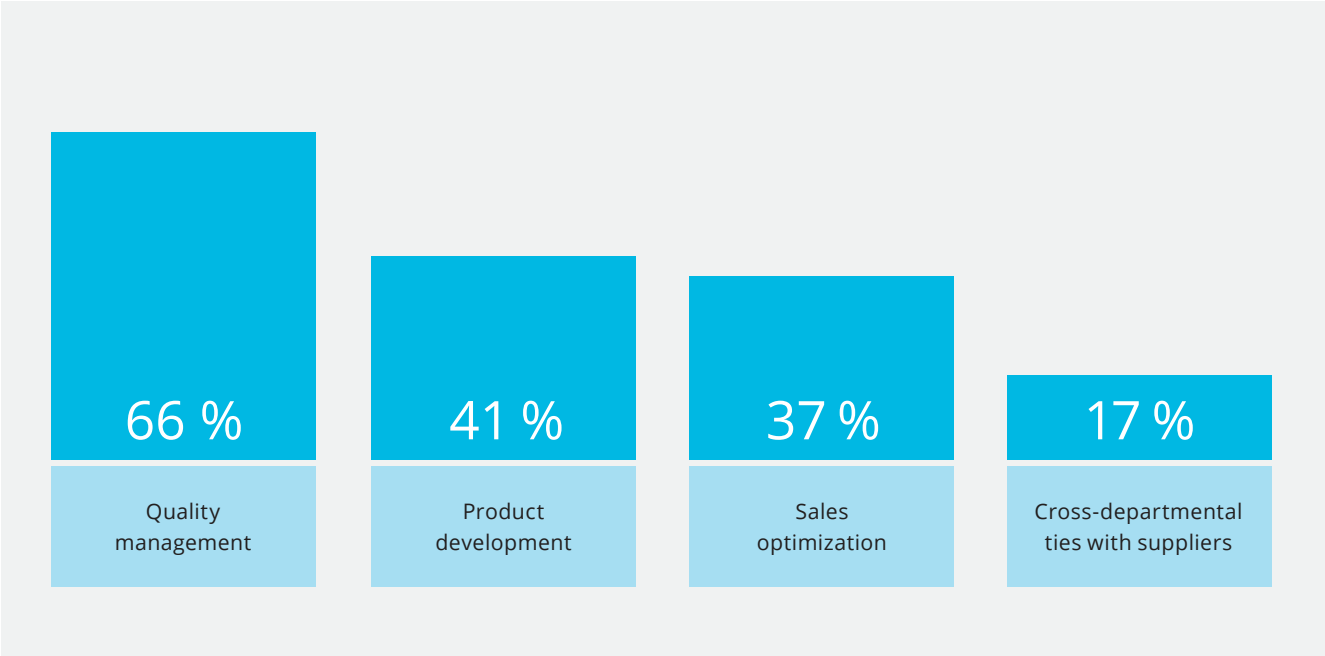
Predictive analytics and smart data on the one hand, and artificial intelligence (AI) and machine learning on the other continue to be very important for companies. The two themes are closely related, as AI applications are based on analyses and assessments of large volumes of data.

The digital transformation, especially in conjunction with our lean concept, is very important for our company. We believe there will be further improvements in productivity and quality, particularly in the area of data management.

Michael Hitz, authorized representative, Rota Yokogawa GmbH & Co. KG

What Do You Use Assessments of Big Data for at Your Company?

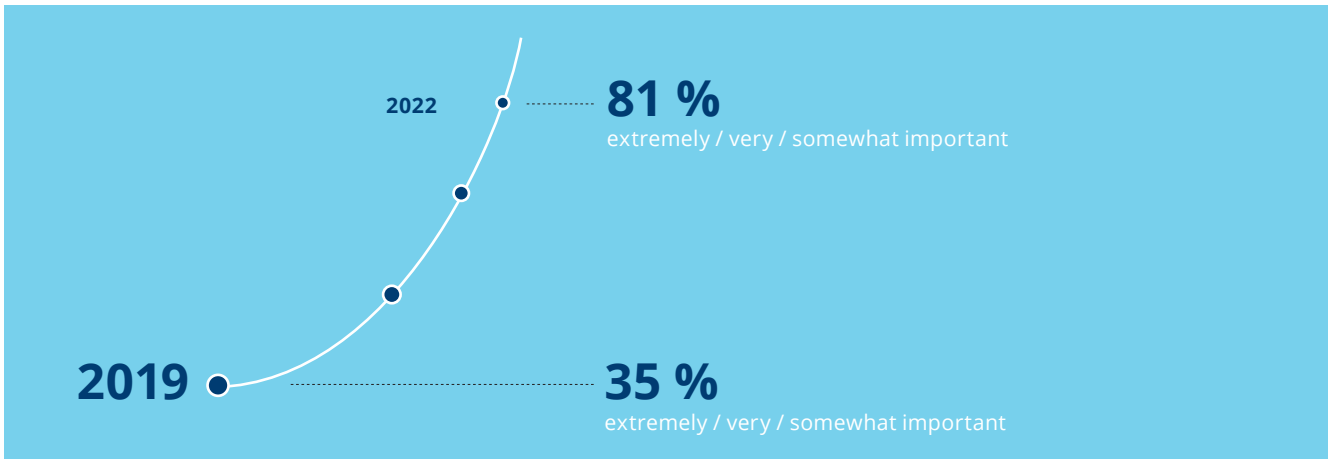
Only participants who already deal concretely **with Industry 4.0**



Preference is given here to big data, which is also the case in practice: The vast majority of companies already use corresponding applications. Two-thirds of companies with Industry 4.0 experience use the technology for quality management. Many companies optimize their production or their offerings with smart data solutions and predictive analytics. This option is a natural one because it can be implemented relatively easily and integrated in ongoing operations. By contrast, only 41 percent use big data analyses in product development, 37 percent use such analyses to optimize sales, and 17 percent use them to improve ties with suppliers.

How Important Is Artificial Intelligence for Industry – Now and in Three Years?

Only participants who already deal concretely **with Industry 4.0**



Big data analyses are capable not only of simultaneously processing very large data sets quickly, but also enabling an analysis of various types of information. Important tools here include artificial intelligence and machine learning. While only around a third of companies currently believe that AI technologies are extremely important, respondents say their impact is growing: For 2022, eight out of ten companies believe they will be either very or extremely important.

Over the next several years, it will not be necessary to store ever greater amounts of data in ever larger clouds. Instead, it will be crucial to extract the necessary information from the available data in an automated manner, to provide this data transparently and to use it for optimal value creation.

Dr. Christian Hinsel, Head of Tool Making, Hirschvogel Automotive Group

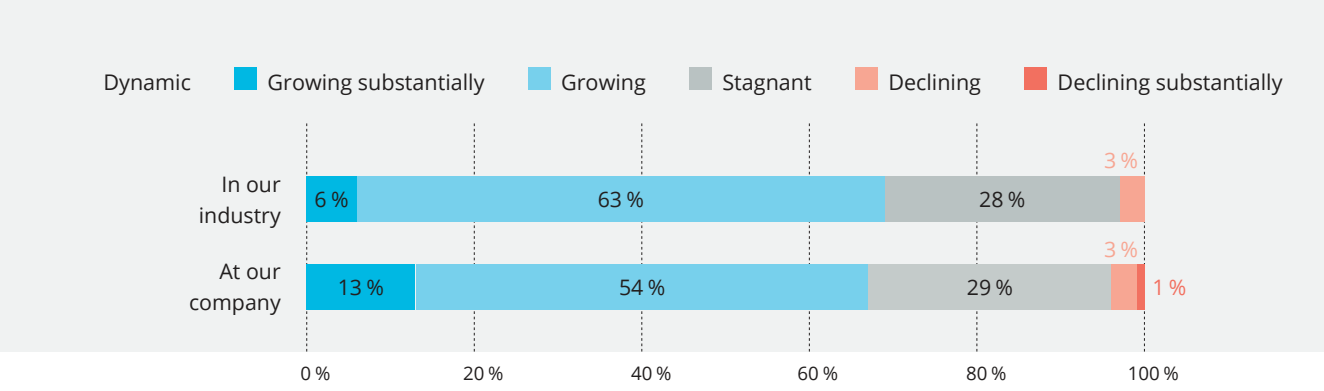
4.4 INDUSTRIAL PLATFORMS

There has been a gap in terms of hype and reality when it comes to industrial platforms. For years, the "platform economy" has been billed as the future of the economy and platforms the "new operating system of industry." As a result, there are now a number of basic platforms to choose from. Some are just simple machine portals that manage devices. Some are mature management platforms that are gradually taking on the traditional functions of an SPS. This shift has resulted in the advantages typical of a cloud technology, including for industrial companies: The platforms are easier to use, new functions can be rolled out more quickly and are therefore available in practice without any time-consuming updates or even any changes to hardware.

Despite the continuous enhancements made by major providers, industrial platforms are still not used by the companies. Eight out of ten companies say their IT infrastructure is a traditional ERP system. Platforms are currently only used by a minority to manage production, with just six percent of respondents saying they have practical experience.

How Dynamic Are the Developments in Relation to Industrial Internet Platforms in Your Industry / at Your Company at the Moment?

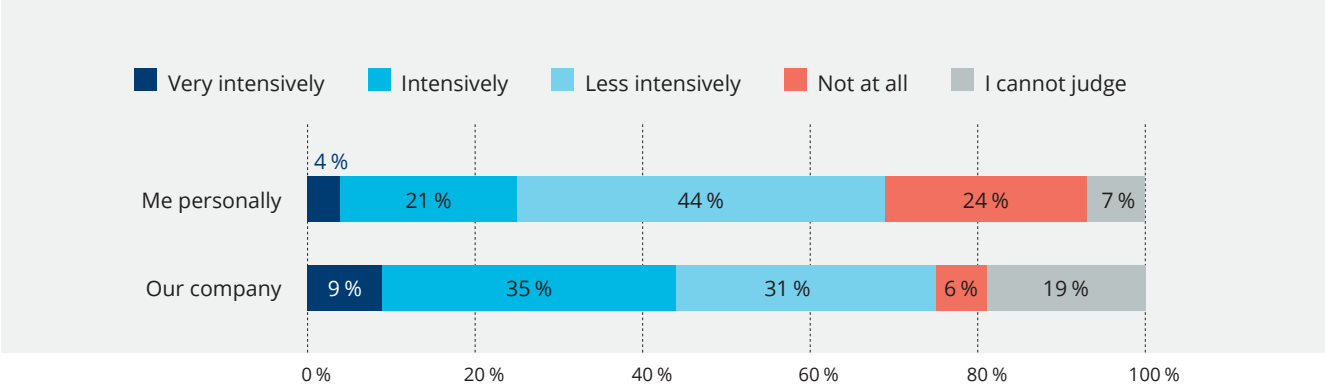
Only participants who already deal concretely **with Industry 4.0**



However, this figure may rise over the next several years, as nearly three-fourths of the companies say that the importance of industrial platforms is growing for their company and their industry. But this does not mean that every company is monitoring the market closely – clearly many companies believe they still have sufficient time and that they can jump on the bandwagon at short notice as well.

How Intensively Do You / Your Company Follow the Market for Providers of Industrial Internet Platforms?

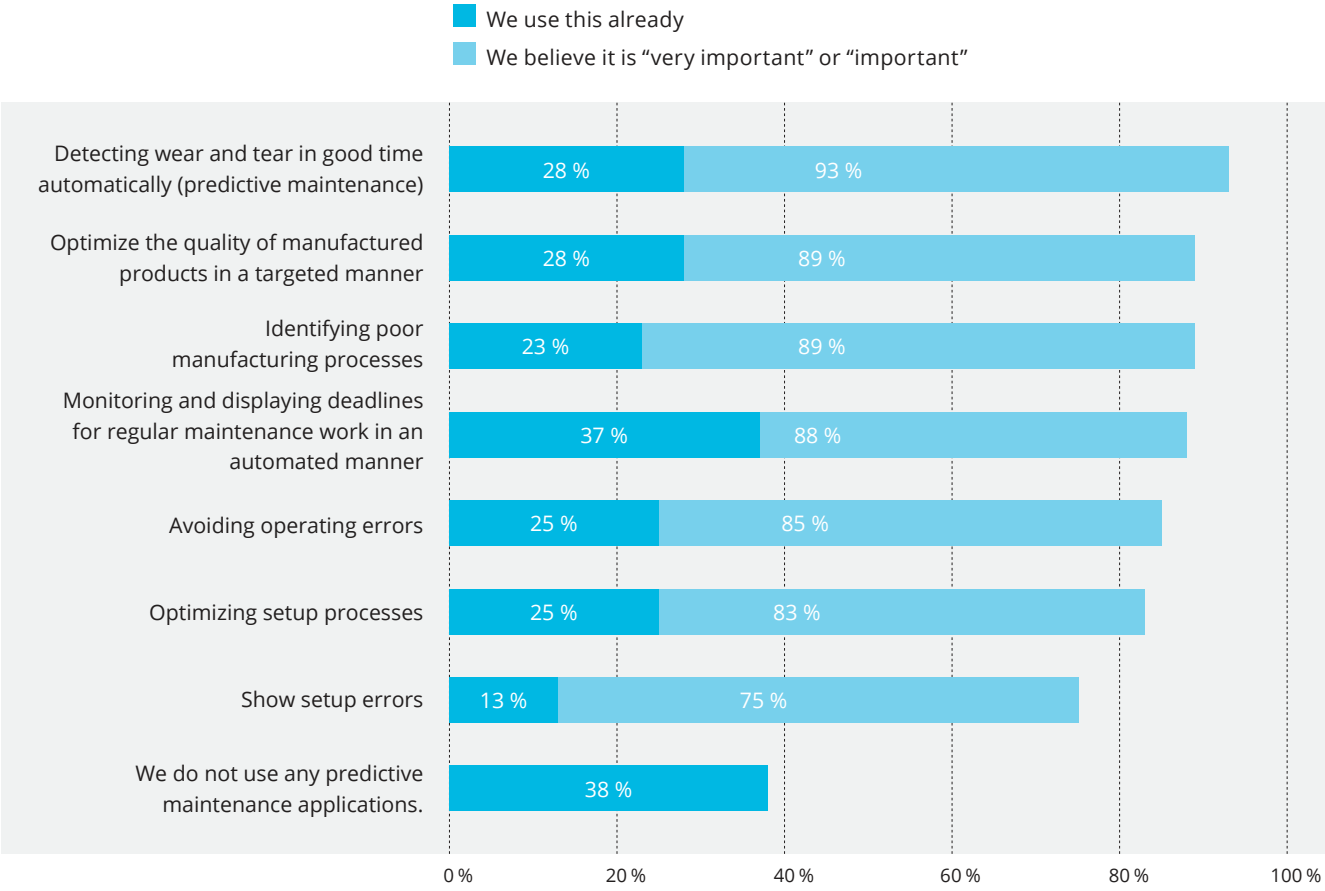
Who are the new providers? Which providers have disappeared from the market?
Which platform has gained which company as a customer?
Only participants who already deal concretely **with Industry 4.0**



4.5 PREDICTIVE MAINTENANCE

Predictive maintenance as an intelligent machine function is one of the most frequently cited concrete Industry 4.0 applications. Nearly every company understands this to mean the timely and automated detection of wear and tear. Typical variants of intelligent machine management, such as quality assurance, process optimization and automated notification of maintenance work are also among the most frequently cited options.

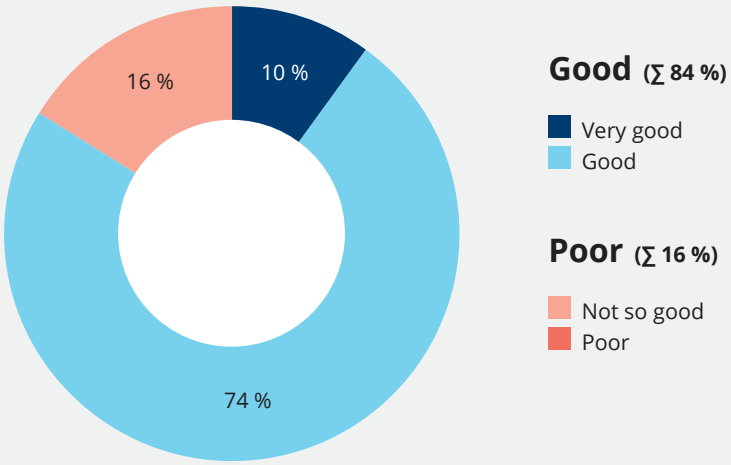
How Important Do You Think the Following Predictive Maintenance Applications Are and Which Do You Currently Use?



In practice, however, predictive maintenance is still not widespread. For example, between a fourth and a third of companies use the various options in their current operations. Interestingly, relatively simple applications, such as showing setup errors, are only used by a minority of companies, and are also only offered by a minority of machine manufacturers. The more complex application areas of wear and tear detection and maintenance automation are used somewhat more frequently.

What Have Your Previous Experiences Been with Intelligent Machine Functions, Such as Predictive Maintenance?

Only participants who use **predictive maintenance applications**



On the whole, this shows that the use of intelligent machine functions is still in the initial stages. However, users of predictive maintenance and other processes are largely satisfied: more than eight out of ten companies have had good experiences with them. This shows that, at least on the provider side, a certain level of maturity has been reached that has led to positive results in daily operations.

There are likely several reasons for the reticence of many companies to date. First, much production downtime is still often the result of operating errors that maintenance systems are unable to prevent. Second, companies have extensive experience with wear and tear on their machines as well as suitable on-site maintenance intervals, making the added value of predictive maintenance lower than is often asserted.

By contrast, activities currently focus too seldom on features that go beyond predictive maintenance. This includes, for example, combining the features with assistance programs for operators that can simultaneously reduce application errors, or solutions that simultaneously optimize the basis of machine data.

4.6 CUSTOMIZED PRODUCTION

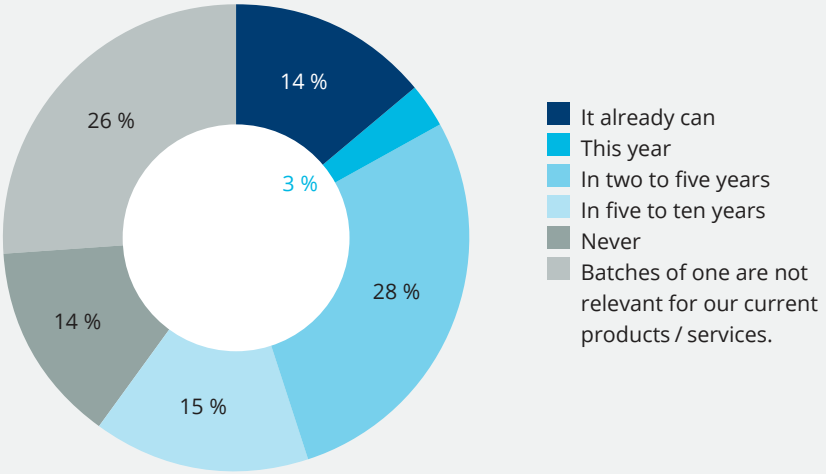
A key aspect of Industry 4.0 is customized production with batches of one. This refers to the production of individual units at the same cost as series production. This is made possible by closely interlinking procurement, sales, logistics, and production processes, which are carried out as autonomously as possible and provide the company with a high degree of flexibility.

The market is thinking in increasingly shorter terms and delivery quantities are becoming smaller and smaller.

Gerhard Hohmann, Head of Temperature Sensor Manufacturing, Jumo GmbH & Co. KG

Currently, 14 percent of companies are able to manufacture products in batch sizes of one. This figure has not changed substantially since the 2018 survey.

Companies Are Already Manufacturing Products in Batches of One at the Same Cost as Series Production. When Will Your Company Be Capable of Doing So?

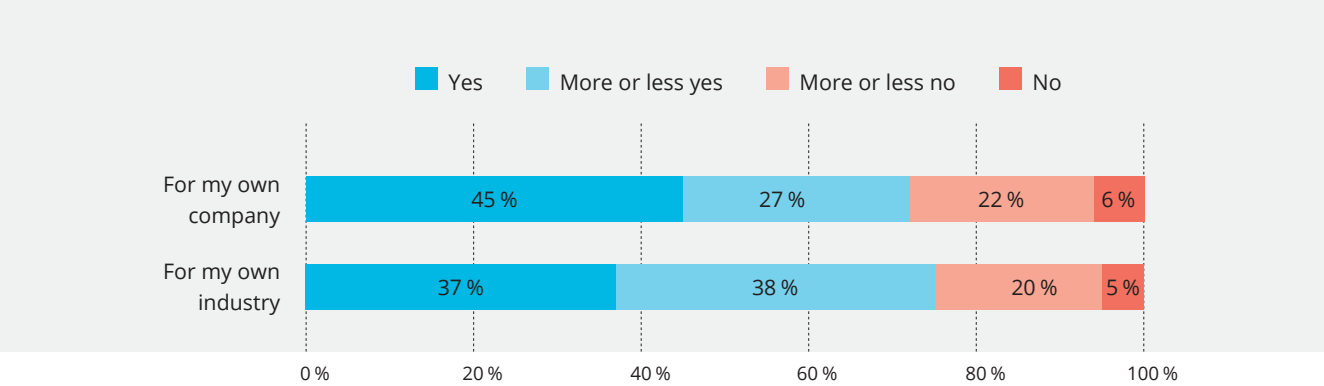


Around a fourth of companies say that batches of one are not relevant for their current products. These companies are mainly suppliers of simple parts and components. For example, when manufacturing screws, metal pins or simple electrical components like switches and lamp sockets mass production continues to be the core business in static production lines.
Conversely, however, nearly three-fourths of industrial companies are convinced that their portfolio would benefit from the enormous flexibility of customized production. Seven out of ten companies say that customized production is an important strategic issue both for them and for their entire industry.

Nearly half of the companies surveyed want to transition to customized production over the next several years: 28 percent want to do so in the next two to five years, and another 15 percent want to do so in five to ten years. Only 14 percent believe they will never be able to achieve this goal.

Customization in accordance with customer requirements has traditionally played a very big role in both mechanical and plant engineering and in the automotive industry. Still, the end customer market has a very high level of personal identification with automobile models. The diversity of customer process requirements is reflected in the diversity of specified machines and systems in the mechanical and plant engineering industry as well.

Is the Issue of Customized Production Already an Important Strategic Issue for Your Company or in Your Industry?

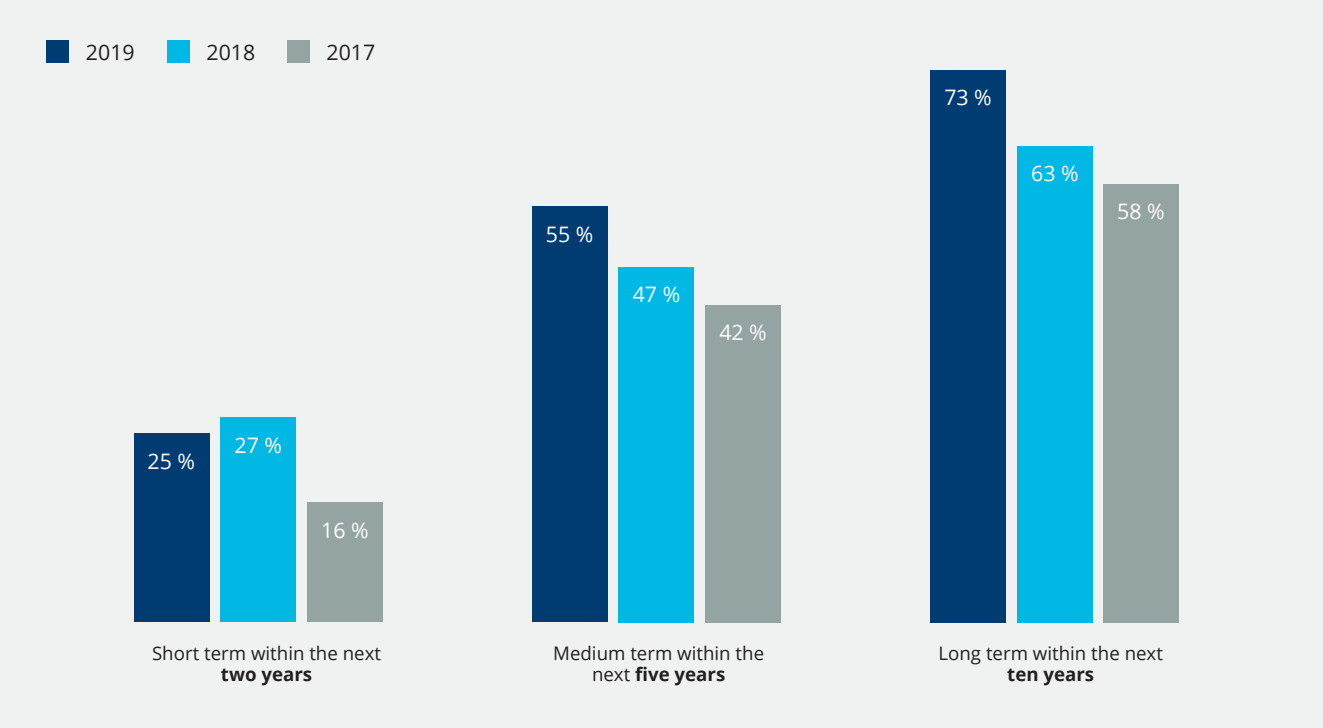


4.7 THE DANGER OF DISRUPTIVE CHALLENGERS

Technical disruptions such as Industry 4.0 and digitization can also turn into a threat and produce losers. Often, these are established companies in an industry that have held on to traditional procedures and previously successful business models for too long. There are many examples of this, in both traditional and seemingly futureproof industries.

Keyword Disruption: What Impact Do You Think New Competitors with Industry 4.0/Digitization Innovations Will Have on Your Business?

Comparison by **survey year**; those answering "great" + "somewhat great"*

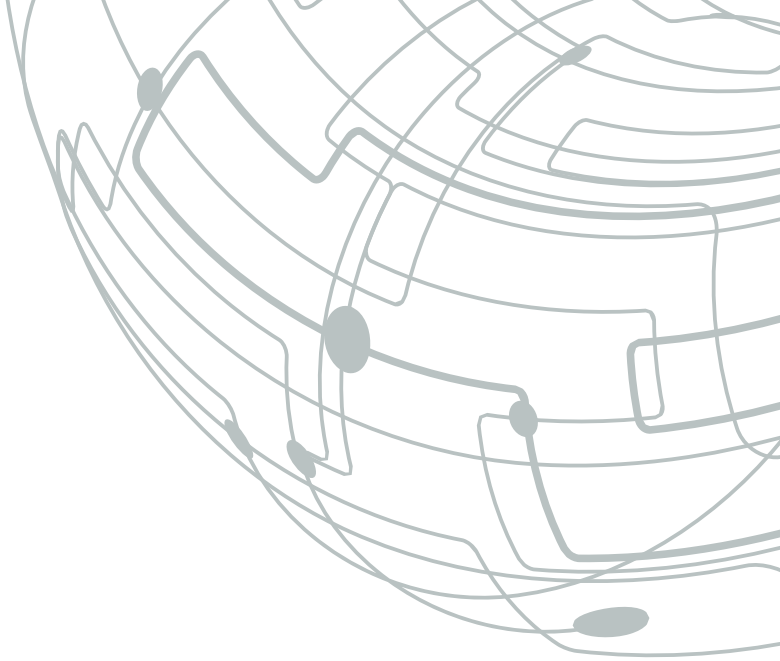


* On a four-point scale from "great" to "low"

The fear of short-term disruption is motivating many companies. In the 2016 study, only about one in ten companies believed that new, disruptive companies would penetrate their market in the short term. In the new study, this figure is one in four of all companies surveyed. At the same time, three-fourths of companies say the threat posed by disruptive newcomers is far off in the future.

> We believe that we would have no chance of surviving with our products over the long term if we did not implement an Industry 4.0 strategy and take advantage of digitization.
>
> Horst Maywald, Senior Advisor, Elabo GmbH

Instead, the vast majority believe that challengers will come from within their own industry. This assessment may be too biased if one looks at disruptive changes in the past. One striking example: cars were not manufactured 130 years ago by established coach makers, but by companies outside the industry without traditional processes, products, or business models.



5

Conclusion

Digitization, as the logical next step of lean thinking, is the basis for future competition.

Ralf Zajewski, Vice President Digital Factory, Osram GmbH

The vast majority of companies have identified the Smart Factory as a major opportunity and are increasingly implementing individual projects. Most of these are driven by the desire for transparency and are intended to boost efficiency. However, while digitization mainly entails a culture of horizontal networking, German industry appears to be stuck in silo thinking. It focuses on verticals and optimizes within the system boundaries that have grown up between different corporate areas. As a result, many companies squander the opportunity to implement company-wide digitization initiatives to increase their competitiveness.

From a technological perspective, German companies are on a good path. Artificial intelligence, big data and industrial platforms are largely considered key elements of digitization. However, the transition into practice is difficult for too many companies. There is a lack of staff and expertise. The substantial need for training can be seen in two ways. Managers appear to lack the imagination required to develop a strong vision, while employees lack the implementation expertise. People with the right skills are needed initially at the higher levels of management. Only here can comprehensive digitization initiatives be developed. The need for training starts at the executive level. Next come employees.

On the whole, German industry appears to be cautious with respect to digitization, with the expectation that technological and economic disruption will occur in the future. Companies have still not reached their goal, and there are still few true smart enterprises. Such smart enterprises will only arise on the basis of a digitally-driven optimization of their current business model that expands the core business on the top line as well and creates new markets, distribution channels, and customer benefits. A focus solely on transparency, efficiency, and costs is too short-sighted.

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We Believe That inside Every Company Is an Even Better One.

Staufen AG is a lean management consulting firm and academy. We have been advising and training companies and employees for more than 25 years. Around the world. Our goal is to make every company better and to help clients move forward. Our unique approach involves quickly setting the right changes into motion and establishing a long-term culture of change.

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Staufen Digital Neonex GmbH is the Staufen AG subsidiary responsible for the digital transformation of the industrial value chain. Our focus: Smart Factory. Working together, we strengthen the competitiveness of companies by using the opportunities presented by the Smart Factory. Collaboratively. Pragmatically. Professionally.

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Figures. Dates. Facts.

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65
million € in revenue

50
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320
employees

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> 5,000
Seminarparticipants p.a.

17
languages

> 100
active trainers and coaching experts

> 70
bestpractice partners

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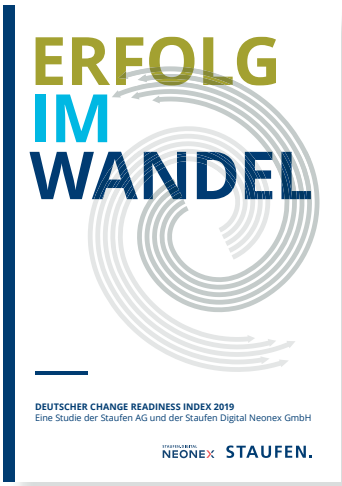
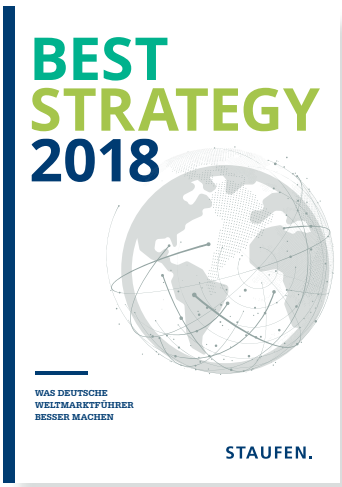
All Staufen AG studies can also be accessed online at **www.staufen.ag/studies.**





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