

From hype to implementation: Digitization in the food industry.

Decision-makers in the international food and beverage industry about status, challenges and prospects of digitization.



In cooperation with our media and consulting partners



Executive Summary

New competitors, new technologies, and new consumer demands: The food and beverage industry experiences a dynamic change in its market structures. Digitization offers an opportunity to master this transformation and, at the same time, to develop solutions for future challenges.

How do companies in the industry rate the digital technologies? Which digitization topics do play a role in their daily life? Are digital strategies in place to tackle the upcoming change processes? These and other questions were answered by more than 100 decision-makers of global food and beverage enterprises. We have identified five key conclusions:

Digital optimization is directed inwards

Today, the food industry is in a phase of digital optimization. The surveyed companies are dealing closely with digitization in individual, isolated solutions – primarily, in order to carry on with established business models. Digital consistency or the integration of partners and customers in digital ecosystems do not yet play an important role.

Many changes in internal processes

Digital technologies are mainly used for the flexibilization of the organization, for the optimization of management processes, and for the improvement of procedures in production and logistics. A digital transformation offering new processes, products and services or implementing new business models only has rarely taken place. It remains to be seen whether the development will follow a similar disruptive trend as in other industries.

Digital product innovations are rare

People recognize the opportunities of digitization, but do not take advantage of them. Almost 30 percent of the survey participants do not use digitization at all to create new products or services. Only 2.5 percent currently generate a sales share of 20 percent with digital products and services.

Lack of skills slows down the digitization

Missing skills and inefficient structures within the organization make the digitization process more difficult. In many places, the missing knowledge of how new technologies could be used adequately and the need for development of the employees' digital competencies are particularly large obstacles.

Existing technologies offer opportunities

In the maturity of existing technologies, the ERP system stands out as the central nervous system of digital infrastructures. Yet the potential of the business software still is substantially underutilized. For example, more than two thirds of the companies continue to use paper when working with their ERP systems.

Digitization in the food industry.

What are the major challenges in the global food industry?

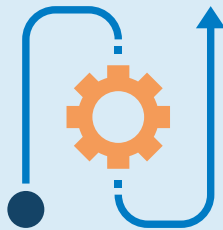
Which technologies are used in the daily operations of food companies? Which digitization strategies do the companies pursue?

For the third time now, more than 100 decision-makers in the global industry were surveyed about the state of digitization. This is a summary of the key findings.

1. In food companies, process engineers dominate

Process engineers

Relations optimizers



Ecosystem builders



Process engineers are the biggest part in the survey. They use digitization measures mainly to further improve efficient processes through new technologies.

2. The key goals of digitization in food companies



Optimization of our management processes

66%



Making our organization more flexible

62%



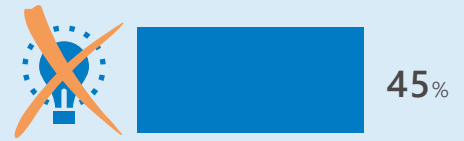
Optimization of the processes in production and logistics

60%



3. The industry is in a phase of digital optimization

The majority mainly focuses on the optimization of processes.

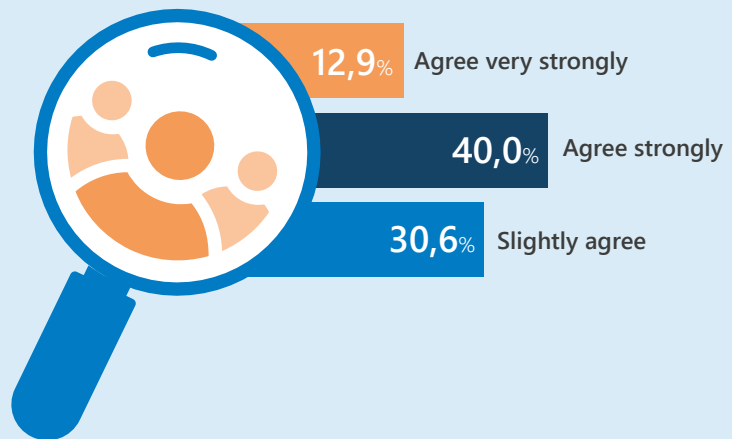


Only a few generate a substantial share of their turnover with digital products and services.



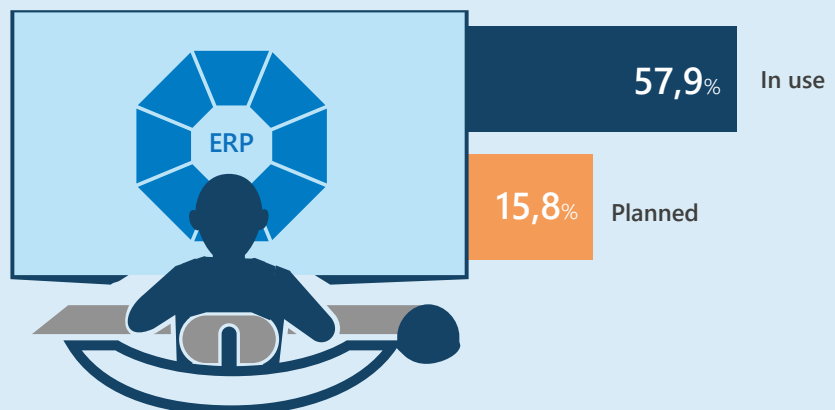
4. Lack of digitization competencies

Missing skills and lack of skilled workers hamper digitization, many of the respondents stated.



5. The ERP system has a high degree of maturity in the food industry

Many enterprises already use ERP systems.



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I. Introduction: Strategies in a changing world

Today, the food and beverage industry is at the center of attention in discussions about our future. On the one hand, food manufacturers have a significant influence on how we will live in the future. Will we be able to feed almost 8 billion people despite the climate change? Will we find a balance between quality and price, and between animal welfare and supply security? How can we improve sustainability, traceability and transparency in the supply chain? These are just a few of the questions that companies in the food and beverage industry need to answer.

On the other hand, digitization opens up entirely new opportunities in the industry. In fact, this is urgently needed. The high complexity of supply networks, fierce competition and pricing pressure, ever-stricter regulations and unpredictable markets call for new approaches to increase efficiency and quality. This is exactly what makes the “Smart Factory” concept a highly strategic issue for the industry.

In this year’s study, we have again surveyed decision-makers from Africa, Asia, Australia, Europe, South and North America about these challenges. The results from more than 100 replies paint a differentiated picture of the most important strategic challenges and opportunities, of the central strategies for action and operational tools as well as of the potential and concrete scenarios for the use of information technology.

Frank Braun

Head of Global Marketing, CSB-System AG

We have conducted the CSB digitization study in the food and beverage industry for the third time now. We have collected many data on the state of digitization. We present the key findings of this year’s study in the form of this survey compendium. Furthermore, the studies of the previous years and additional details are available on www.csb.com.

We are interested in technological megatrends like artificial intelligence, blockchain, and the internet of things. Yet, this survey primarily aims to be a practice-oriented guide for decision-makers in enterprises. It gives them an idea of the state of their industry and helps them to benchmark their company against its competitors so they can take the right next steps in the digitization of their business.

We thank all survey participants who gave us insight into their strategy, and who shared their findings and experiences with us. We also thank our media partners Lebensmitteltechnik (Germany), Food Processing (Great Britain), Tecnifood (Spain) and ProdIndustry (Russia) who supported us in drawing up this study, as well as our consulting partner WYZE Projects.

Timo Schaffrath

Manager PR, CSB-System AG

II. About the study

With this study, CSB would like to analyze the current state of digitization in the food and beverage industry and gain new insights compared to the results of 2017 and 2018.

In the first part, we will summarize the basic data regarding the background of the respondents. This includes information like industry, annual turnover, number of employees in the company.

The second part concentrates on the current challenges, strategies and business strengths of the industry. In the evaluating questions, the participants were asked to assess,

amongst others, the uncertainties and challenges for their business: for example, challenges due to changed consumer behavior, aspects of compliance or sustainability. In addition, we asked them about their strategies to meet these challenges.

The concrete digital initiatives are in the focus of the third part of the study. This part primarily deals with the interest in digital technologies and their implementation, for example in the context of ERP and IT infrastructure. Furthermore, we summarize this in a hype graph and describe which new ways in digitization are important for the respondents.

III. Survey participants

Almost every second of the 102 study participants (46 percent) is a member of executive management; every fifth (21 percent) is among the extended circle of executive management and has a leading function. Other groups that are strongly represented are the heads of IT with 17 percent, and production management with 10 percent.

With an overall 44 percent, companies with 250 to 2000 employees constitute the main part of the respondent group. This time, however, small and medium-size companies are strongly represented: 54 percent of the study participants employ between 10 and 250 people.

Food production strongly represented

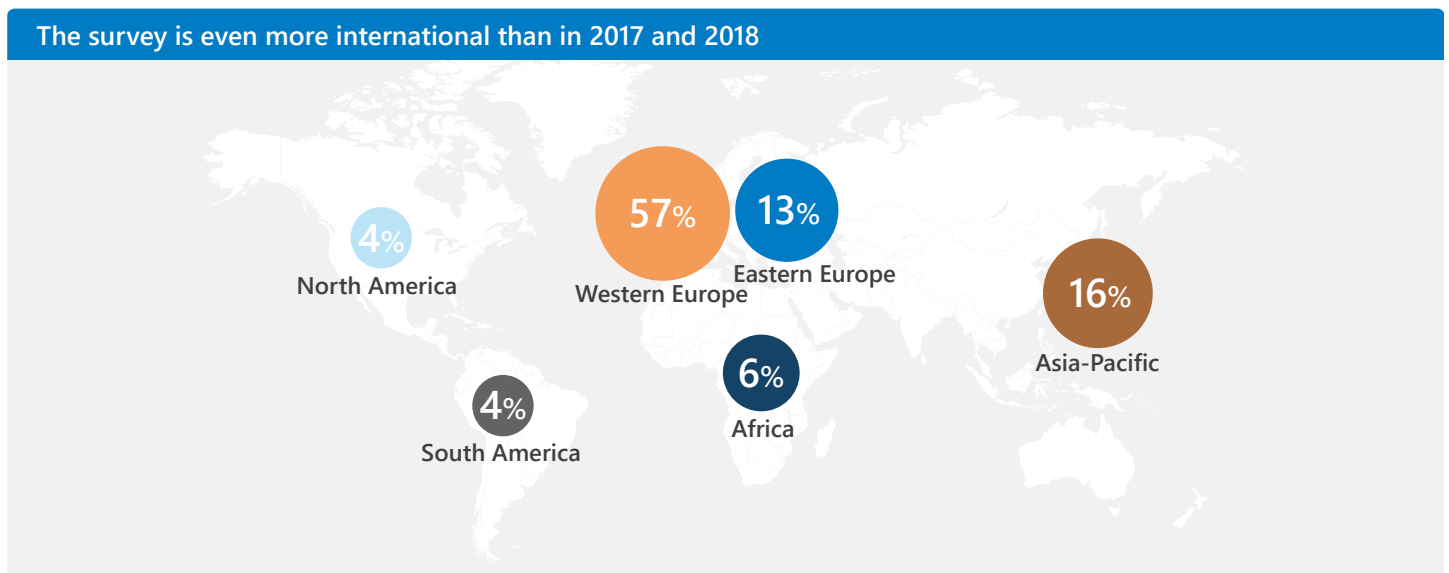
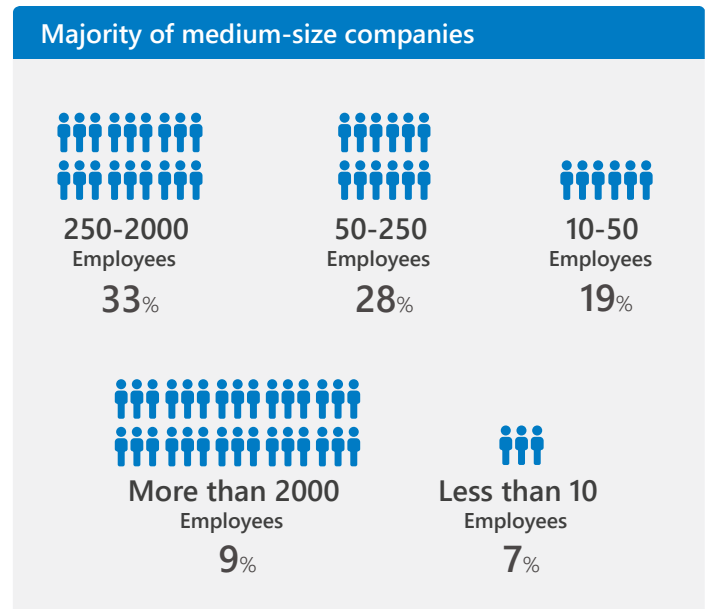
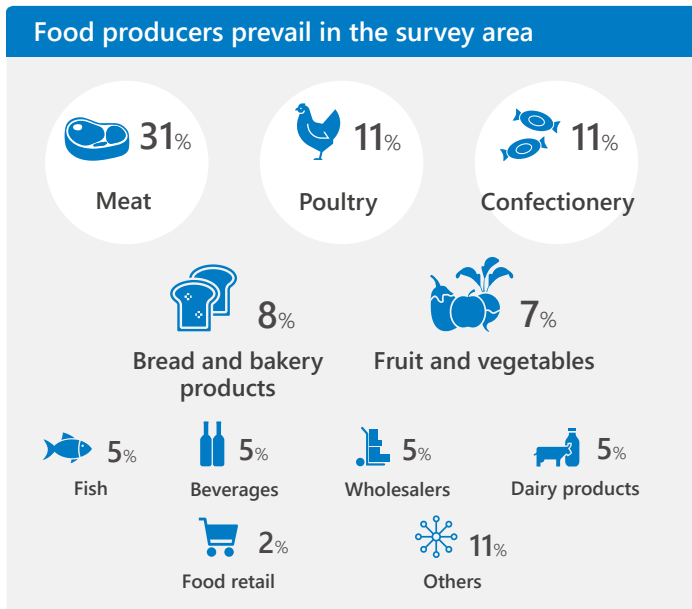
With almost 75 percent, food producers dominate the study field. Just like in the studies of 2017 and 2018, companies of the meat and poultry industry are most strongly represented

with 42 percent. With 11 and 10 percent, the producers of confectionery as well as food and luxury food follow. The beverage industry has a share of 5 percent.

International perspective

This year's study has a much more international character. More than every second company is located in Western Europe (57 percent). With 16 percent, the share of companies from Asia is particularly high, followed by companies from Eastern Europe with 13 percent. Africa and South and North America are represented for the first time with few participants.

The study thus offers again a well-founded overview of the status quo and the perspectives of digitization in the global food and beverage industry.



IV. Strategy models

Based on the results of the study, we can identify three groups among the participants, each with one strategy, which pursue different priorities with their digitization measures. What is most striking is that these three groups accept the challenges of the digital future and invest correspondingly in IT.

Overall, 46 participants, i.e. almost half of the participants, could be clearly allocated to a group. In the study, we refer to them as:

- Relations optimizers
- Ecosystem builders
- Process engineers

Three groups and three digitization strategies can be distinguished

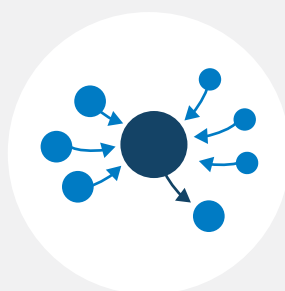
Relations optimizers



Personalization

Strength:
Customer relations

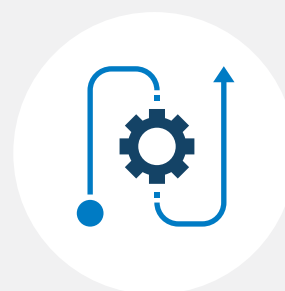
Ecosystem builders



Establishment of new partnerships

Strength:
Product and customer relations

Process engineers



Optimization of management processes,
flexibilization of the organization

Strength:
Product

Relations optimizers

The strategy of this group mainly consists in good customer relations – ten of the companies we interviewed see their basic strength here. The existing relations network should be strengthened and continually optimized through personalization. This requires excellent product properties and a good image. In addition, the communication with the customers and the awareness of their needs play an important role for this group.

Ecosystem builders

This group of 16 respondents favors a strategy of new partnerships. Similar to the relations optimizers, it sees its strategic strength in a mix of an excellent product and good customer relations. However, much more than the other participants, it prefers new cooperation models

and partnerships. Lacking know-how for the upcoming digitization topics can thus be compensated faster or insourced if necessary. Members of this group think about integrated digitization and accept that they would need partnerships to digitize their own business model.

Process engineers

With 20 companies, they represent the biggest group. Their strategy is based on their competence and expertise around the product and the manufacturing processes. They use digitization measures primarily to further improve efficient processes through new structures. Production, logistics, management processes and process flows are paramount. In contrast to the other study participants, they use innovations particularly for products and in the context of process optimization.

V. Market situation and positioning

Current and future economic situation:

Even more optimistic than in 2017 and 2018

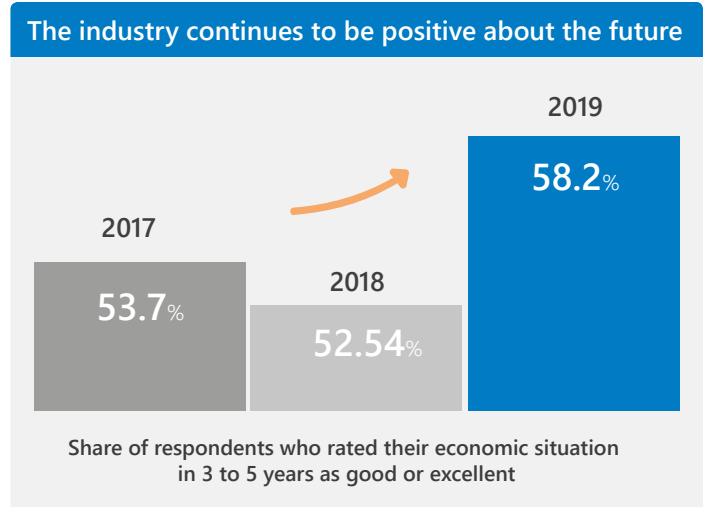
More than half of the decision-makers from the food and beverage industry we interviewed assessed their current economic situation positively; 54 percent even rated it as good to excellent.

To date, the optimistic forecast of future market developments in the surveys of the preceding years appears to be fulfilled. Moreover, there are no signs for a reversal of the trend: While in 2017 and 2018, about 53 percent of the respondents anticipated their current situation to become good or excellent in the future, this share has now increased to 58 percent.

The “relations optimizers” (60 percent) and “ecosystem builders” (50 percent) evaluate their future prospects as good, which is above average.

Significance of the products

Out of the respondents, 84 percent see their most important strength in the quality of their products and the image of their brand. The confidence of the consumers in the product plays a central role here. Whether organic, fair trade, or animal welfare labels for appropriate animal rearing conditions: Health, environment and ethics topics become increasingly important. The majority is confident and open-minded in meeting the customers’ demand for transparency



and sustained production. This is precisely where the food industry scores with the improved traceability of its products. More than one in two respondents (58 percent) describe this as an essential strength of their company.

Product quality, price and sustainability continue to be decisive criteria for the industry. If the customers are able to trace the desired quality of the product or its origin, they are willing to pay the price for it. The price remains important. As many as 40 percent of the companies consider the price to be decisive in order to persist in the market.

Quality and image are the most important product features



Quality and image of the product

84%



Traceability and transparency

58%



Product as an experience

45%



Regionality of the product

42%



Price of the product

40%



Health and performance optimization

35%



Sustainability (organic, fair trade, animal welfare)

35%



Product and packaging innovation

31%

Customer relations

The customer is king – at least two-thirds (66 percent) of the respondents are of the opinion that a good customer relation consists in meeting the customers’ needs. However, to do so, the communication must be optimal: 71 percent of the companies consider this a decisive aspect of customer contact. Besides the classic solutions, they increasingly utilize digital services such as own online shops.

What is striking is that only 33 percent of the respondents think that the digital possibilities for the customers in online ordering – for example in order to receive individual prices, discounts or conditions – are relevant for the customer relation. There is also potential in the personalized customer relations, for example by evaluating the relevant CRM data. Less than one third thinks this to be important. An exception is the group of the relations optimizers, who consider this point with 100 percent as enormously important.

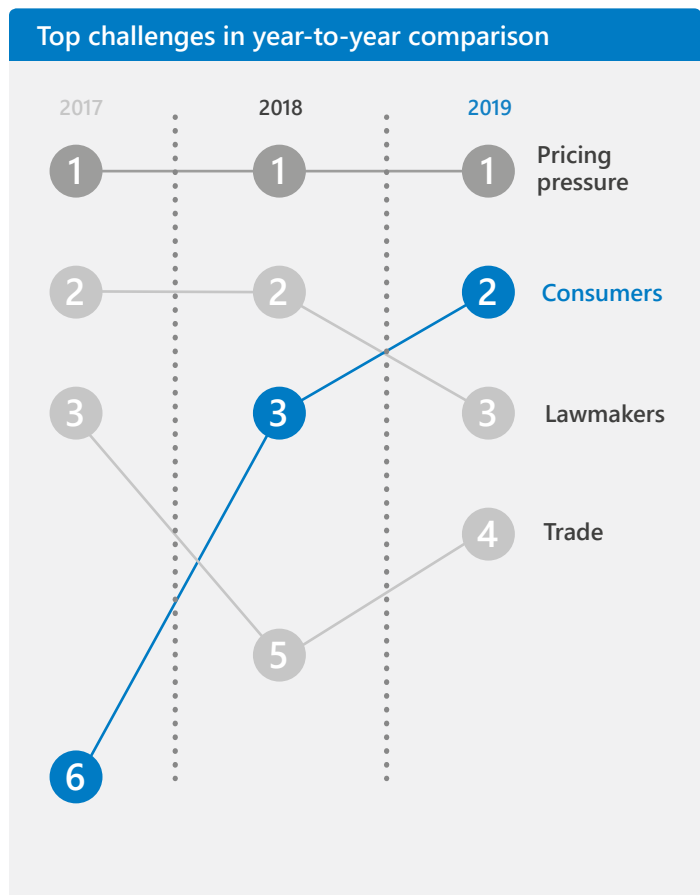
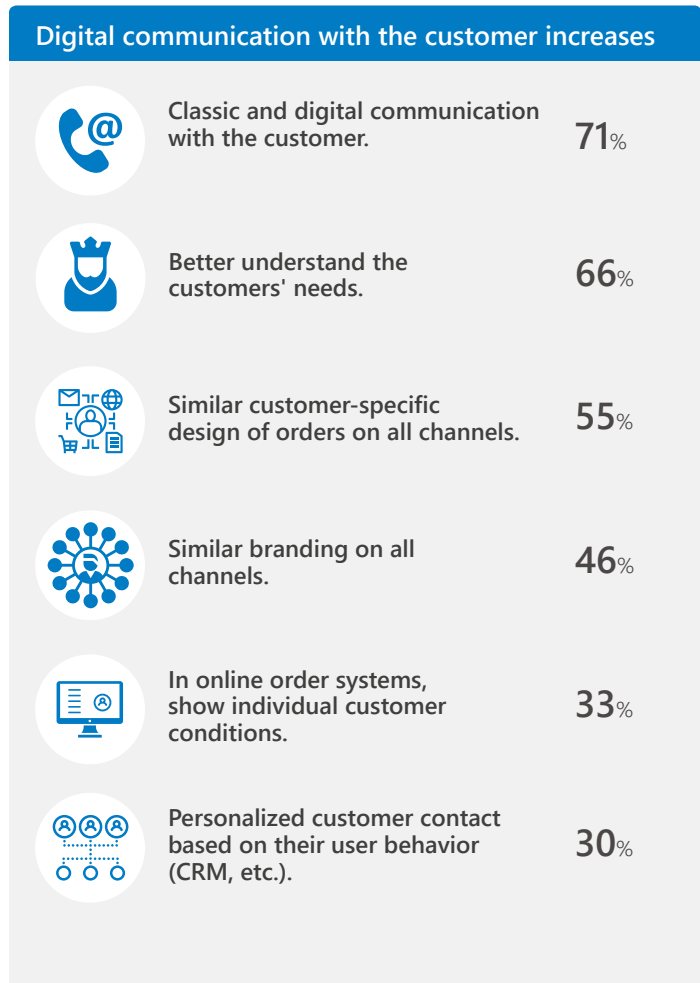
Uncertainties and challenges

The pricing pressure remains a major challenge for the enterprises in the food industry. Most companies position themselves via the quality and the image of their products – so most likely, they need to stand out in terms of pricing.

Quite remarkably, the focus is increasingly shifting towards the consumers. In terms of challenges, their demands outranked those of the trade, slightly below the legal requirements. In our opinion, this has to be considered in the context of the growing end customer business, also via the web, and the increased availability of market data. By understanding better the end consumers, food producers enhance their competitive edge over their competitors as well as their bargaining position with the trade.

Little fear of trade wars

The known unknown is part of the daily routines in the food industry and thus has become “business as usual”. The majority of the study participants is not preoccupied by the Brexit, the trade dispute between China and the USA, and possible recession scenarios: less than one-fourth (23 percent) thinks this is a serious challenge. Neither do they see a major risk and threat potential in the interruption of supply chains and the availability of raw materials.



VI. Strategies for action

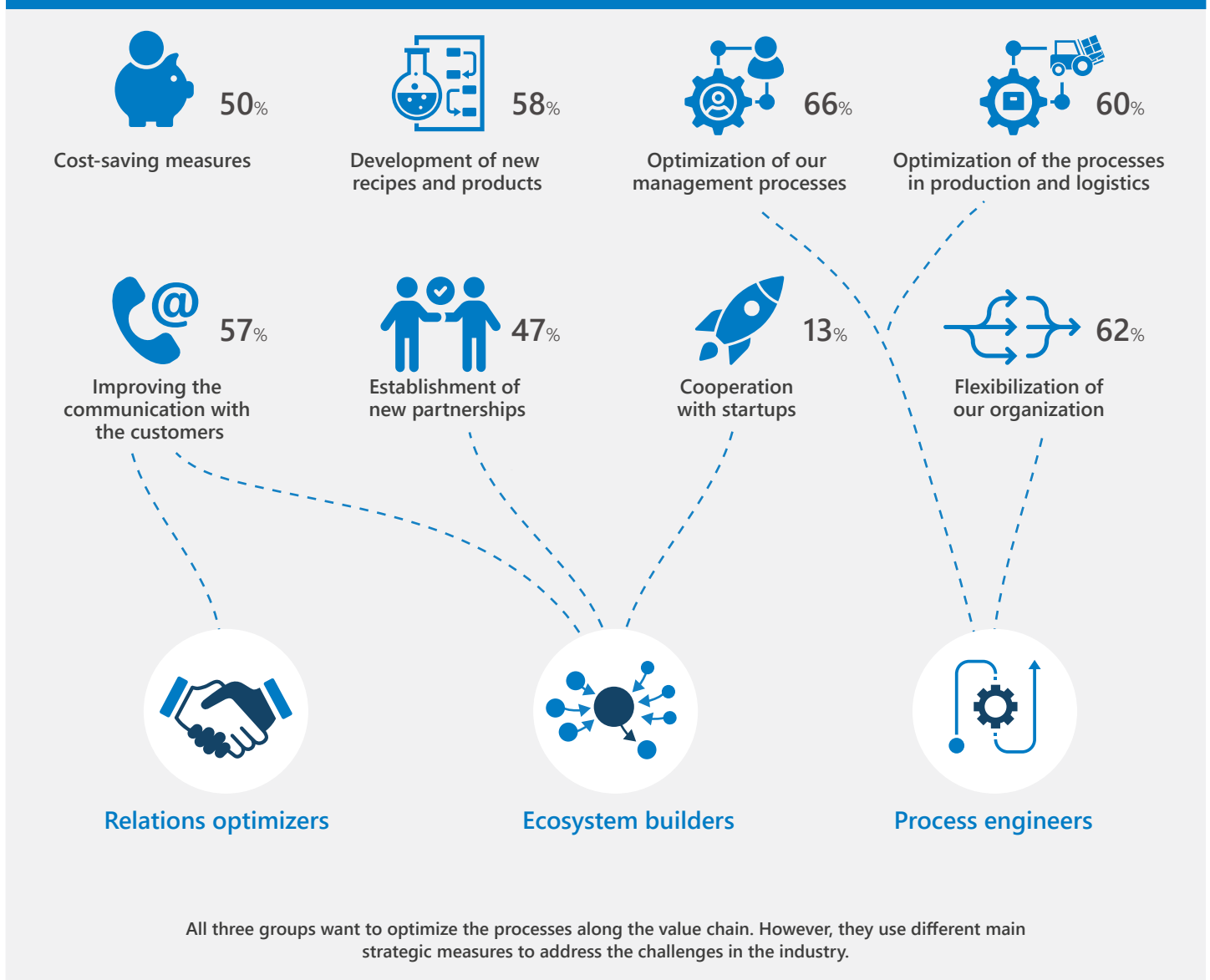
Which strategies do companies use to meet these challenges? The majority uses the opportunities of digitization to improve the processes along their value chain. For almost two-thirds (62 percent), the flexibilization of their organization is paramount. Besides the optimization of the management processes (66 percent), the development of new recipes and products (58 percent) is on the top list of strategic measures. More than every second study participant (57 percent) concentrates primarily on improving the communication with customers and business partners.

Future strategies for digitization

Almost all study participants concede a higher priority to a flexible and functioning process and organization structure than to their customer relations or the building of sustainably successful partnerships and ecosystems. However, three general priorities or future strategies of action emerge:

- The relation optimizers rely on customer relations and customer loyalty. In the first place, they improve their customer communication.
- The ecosystem builders also pursue this approach. However, they additionally want to establish new partnerships, for example by cooperating with, or participating in, start-ups. In this way, a lack in expertise should be compensated more easily, and the digital strategy should be developed faster.
- The process engineers rely on the improvement of management, organization, and product processes. Digital innovations are welcome as long as they increase product efficiency or strengthen their own business model.

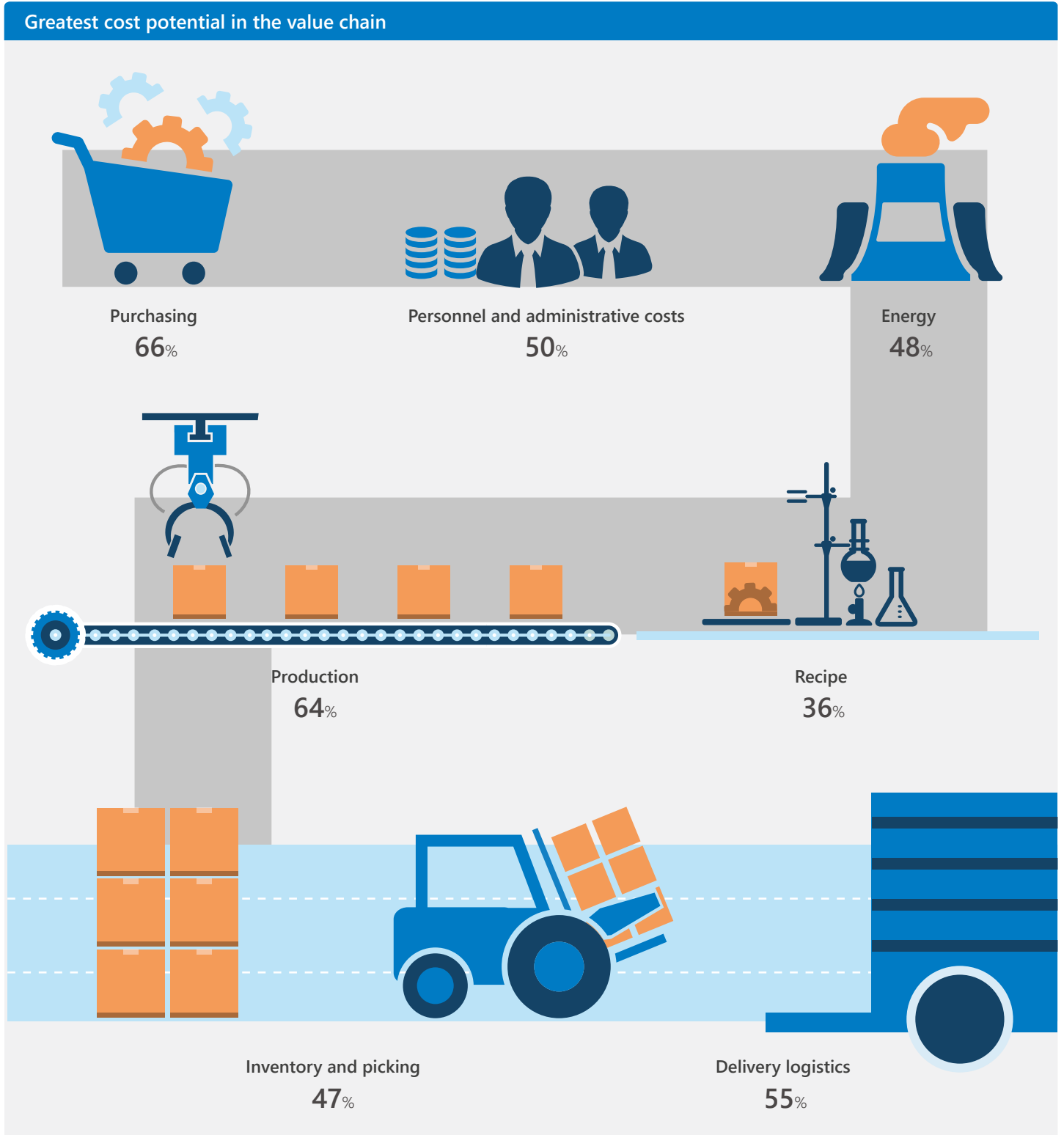
The most important measures to meet the challenges in digitization



Reduce costs

In light of the high pricing pressure, the focus is on costs in order to identify saving potentials. Around two thirds of the surveyed companies concentrate on the internal processes and operating procedures, especially in production as well as in the stock on hand and in logistics.

To focus on purchasing is also a classic option (65 percent). In how far this could be a cost reducer in the medium and long term, however, not only depends on raw material prices, but also on the innovation capability of suppliers and the concomitant design of the value chain network. Only a little more than one third of the respondents (36 percent) identifies significant saving potentials in the recipe area.



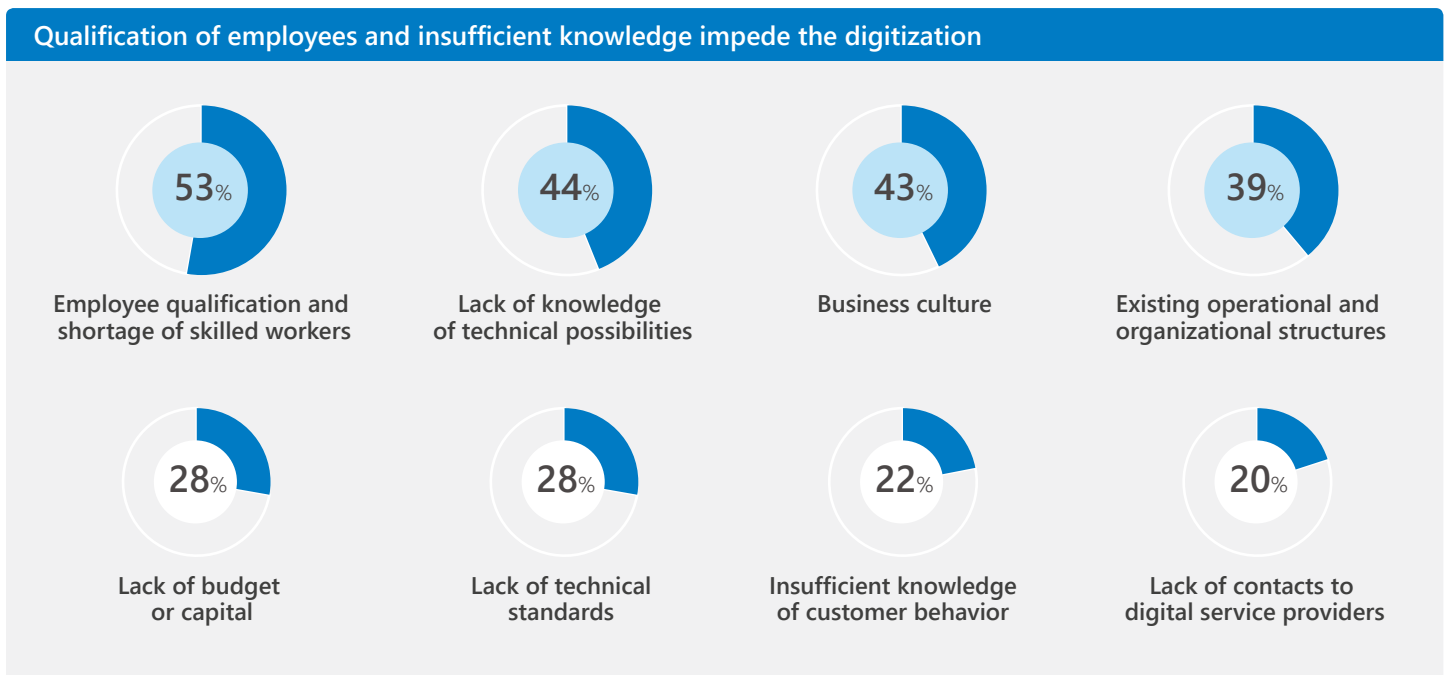
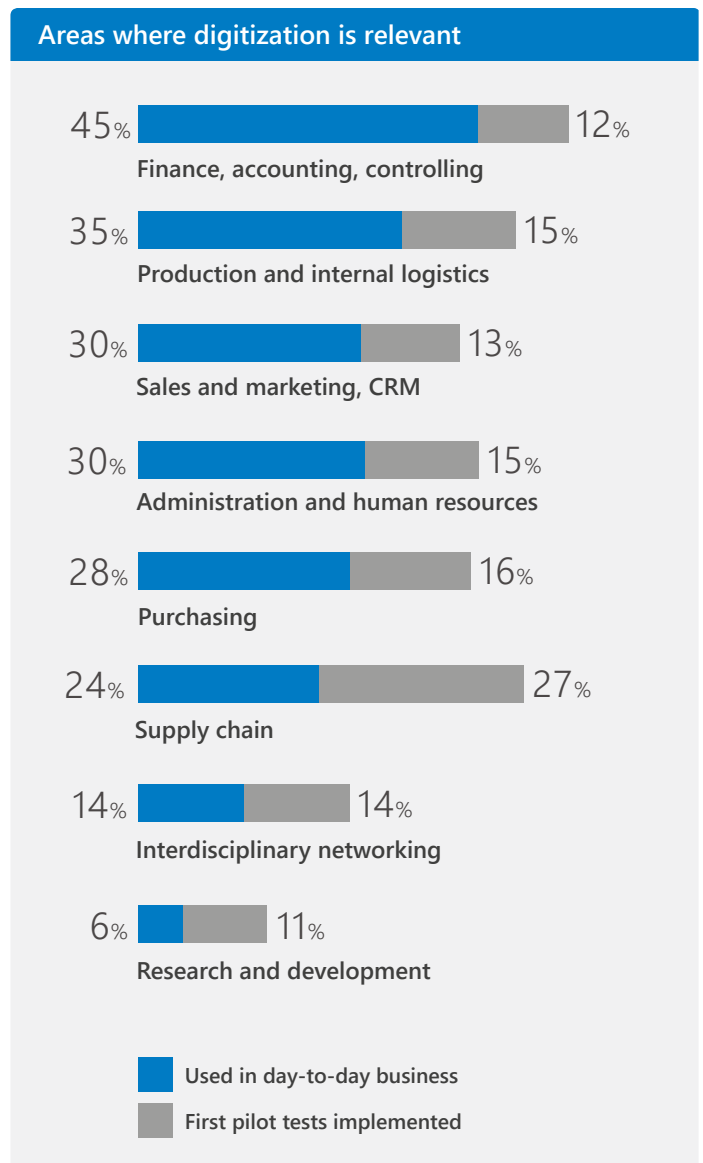
VII. Digitization and technologies

Fields of application and challenges

Digitization is still most important in the areas of finance, accounting, and controlling: 44 percent utilize corresponding solutions here, 37 percent use or plan to use pilots. Another focal point of the digital initiatives concentrates on the core processes of production, internal logistics and supply chain. Only 18 percent of the interviewed companies do not focus their digitization measures on production and logistics.

The topics of sales, marketing and CRM are also among the upper third of the digital initiatives. 73 percent of the study participants confirm that they use corresponding solutions or that they are in the planning phase.

According to the surveys of the last two years, the biggest obstacle to implementing digitization in these and other areas is the insufficient qualification of the staff as well as the missing technical knowledge of possible solutions. This trend increased in 2019, and the topic now appears to be the number one obstacle – closely followed by a business culture that does not seem to match the new requirements.



Use of technologies in the companies

All interviewed companies use digital technologies in their daily business, are testing pilot projects or are at least planning them. However, the results also show that the responsible parties rather address single topics than the big systematic contexts.

Amongst others, this can be seen in the fact that almost all participants think that technologies like IoT, cloud computing, artificial intelligence (AI), robotics or Big Data are highly relevant for their business – in the future. A comparison with the previous year reveals that there are still uncertainties in daily operations with regard to which technologies should be tried and tested: In 2018, the respondents considered collaborative robots, AI and the blockchain as particularly promising. Yet in 2019, they rated IoT, AI and machine intelligence as well as predictive maintenance in the same way.

However, it is mostly true that in their daily operations, the companies rarely use these technologies. They prefer what is tried and true, especially the existing ERP systems.

The digital transformation is just in its infancy in many enterprises of the industry. The most striking findings in the planned or actual use of new technologies are:

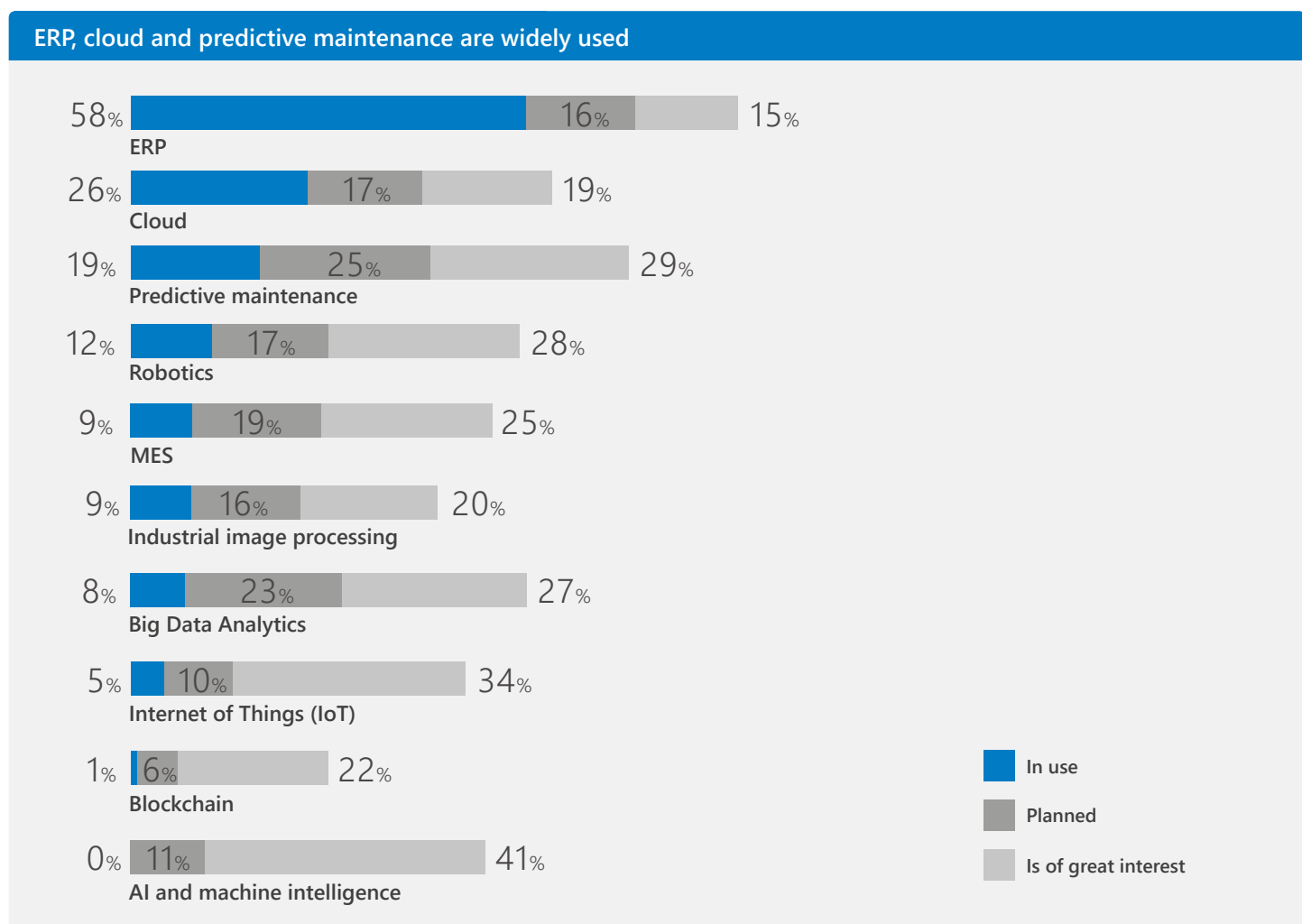
ERP systems, cloud solutions and predictive maintenance have a high degree of maturity within the food industry. Robotics, too, is gaining further importance.

Currently, the greatest interest is in artificial intelligence (AI) and the Internet of Things (IoT). However, these hardly play any role in the planning and implementation of digital initiatives today.

Dealing with the block chain seems to be irrelevant for the interviewed companies – although it offers much improvement potential regarding quality and sustainability issues (transparency and traceability).

Perspectives of digitization

Digitization offers many opportunities for the interdisciplinary integration. Nevertheless, 43 percent of the companies do not use any tools at all. Instead, many of them work on stand-alone solutions or individual projects that are isolated from one another. Research and development and thus the topic of innovation also clearly play a secondary role.

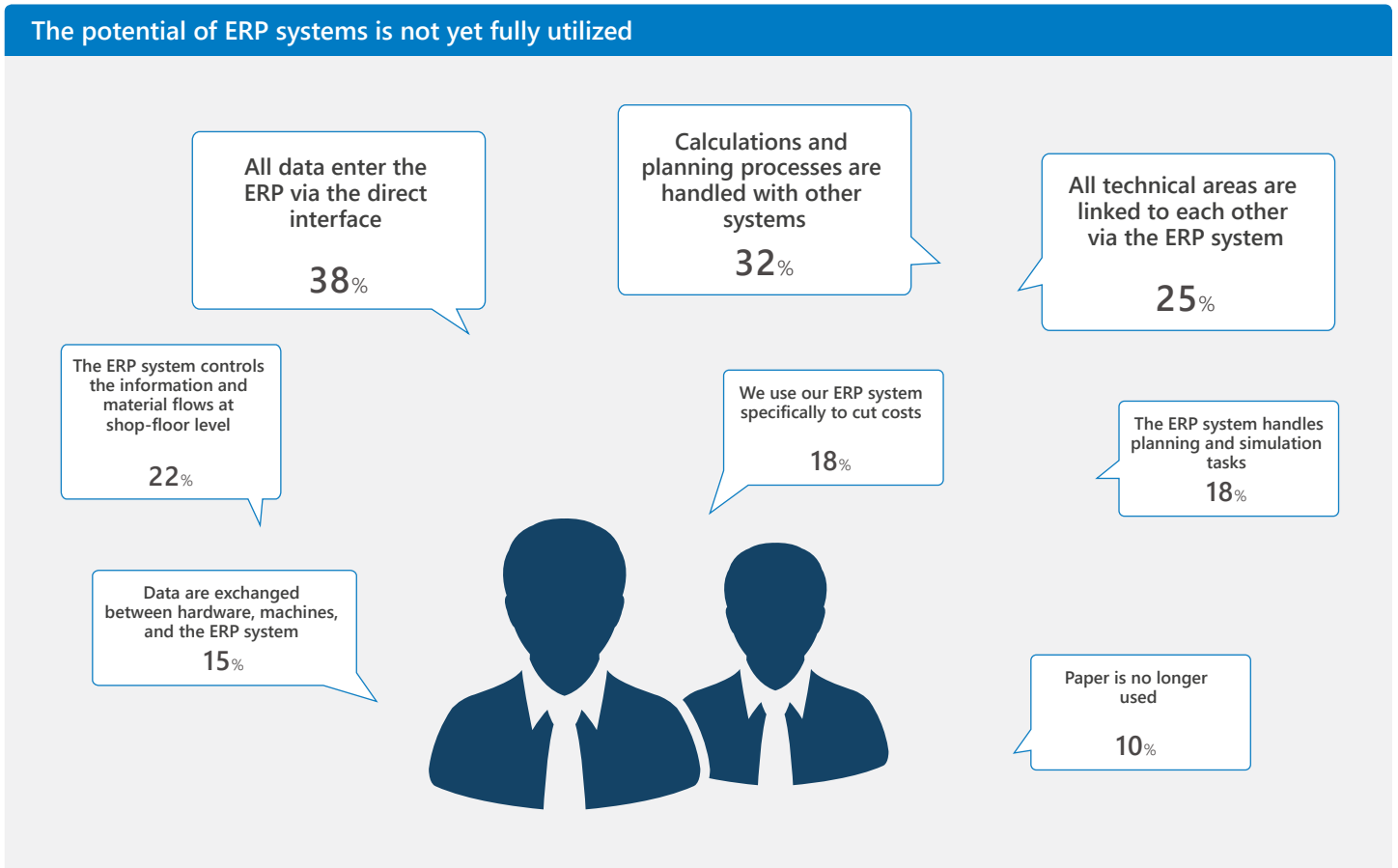


ERP and IT infrastructure

ERP systems are in use at many of the respondents' companies. However, the results indicate that due to the lacking IT skills in the technical departments, the application scenarios of modern ERP systems are strongly limited. This in turn blocks necessary digitization measures.

Besides, the much cited "IT readiness" is not as strongly represented in the companies we interviewed as is generally supposed. The lacking "IT thinking" and an inadequate

digital mindset significantly reduce the opportunities that could result from the use of ERP systems for the digitization projects in the companies. The potential of ERP systems as the future "central nervous system" for the companies is not by far exploited. It is quite characteristic that almost 68 percent of the companies still use paper when working with the ERP system; only 10 percent work without paper.



In addition, 64 percent of the interviewed companies confirm that the IT knowledge in the departments is insufficient. Only 38 percent confirm that they take IT components into account for new investments. Thus, it is not surprising that only one quarter of the participants rate the integration of all departments via the ERP system as important. Only 22 percent control their information and material flows on the shop floor via ERP. For data exchange, the situation is no better: Only 15 percent of the companies confirm that there is a data exchange between hardware, machines and the ERP

system in their daily practice, and they rate this process as important for their work.

The answers show that the possibilities of the ERP system in digitization have not yet been fully utilized. Besides the classic application fields in controlling, for calculations and for planning processes, there are many more application possibilities on the top floor as well as on the shop floor and on product level.

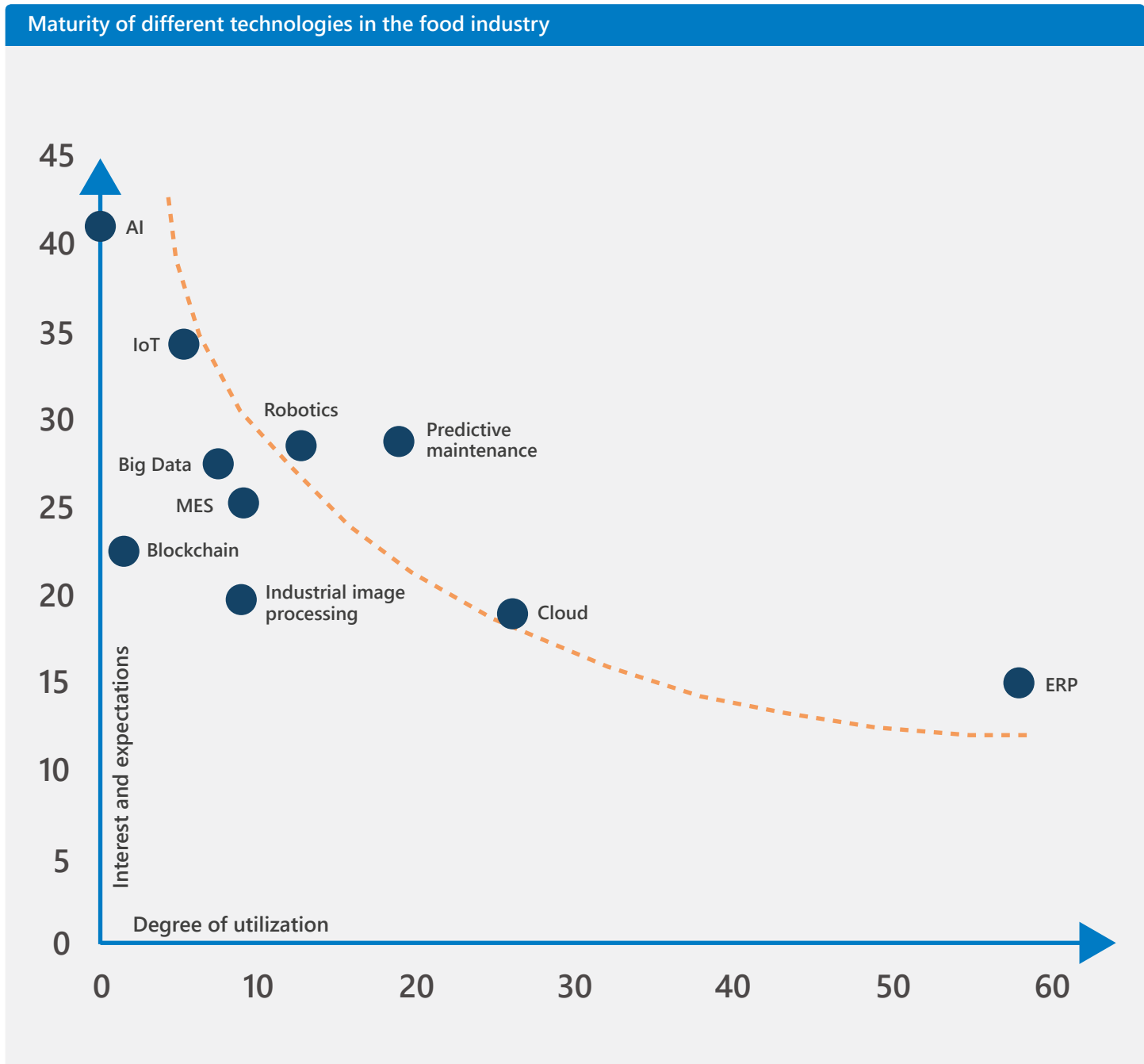
Between vision and reality: digital hype graph

Despite a broad interest and high expectations in the new technologies and digital innovations, the companies do not yet see the strategic value of how and where they could be used.

They are interested in artificial intelligence, IoT, robotics, big data or blockchain, yet these technologies hardly play any role in daily operations. Although the group of the ecosystem builders focuses its activities on new partnerships, the required technological infrastructure to enable the cooperation with the partners is not on the agenda. Only 5

percent of the responding companies use the respective IoT platforms and IoT solutions.

Furthermore, the low relevance of industrial image processing is striking. Only 8 percent use it, although the potential of this technology to increase the efficiency in the digitization and automation in the companies is considered very high. This also concerns the MES systems (Manufacturing Execution System), which become increasingly important, especially in the interaction with ERP solutions and the shop floor management, but which only play a central role for 28 percent.

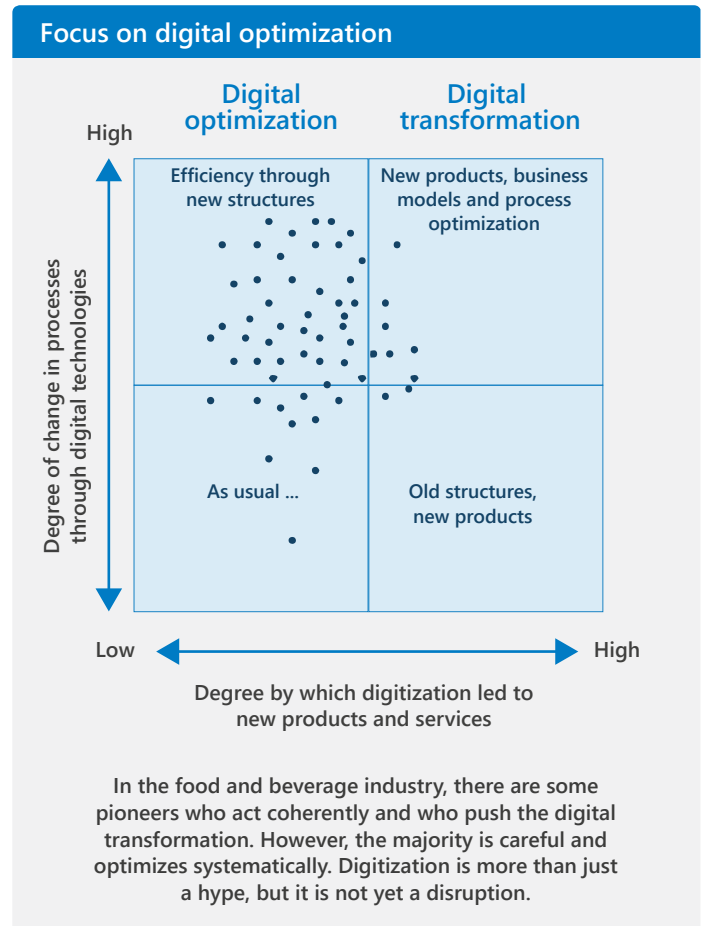


New ways through digitization

Less than 50 percent of the participants saw the opportunity of developing new business models through new technologies. The share of new digital products and services in turnover is correspondingly low. Only two percent of the participating companies generate a 20 percent turnover share with digital products and services.

Their activities focus on the optimization of processes in single areas on the one hand, and across all departments on the other, especially when ERP systems are taken into consideration. This was confirmed by 45 percent of the respondents. More than 30 percent admit that they do not use new technologies neither for product innovations, nor for new services.

Overall, it is apparent that currently rather a digital optimization than a digital transformation is taking place in the food industry. Even though digital projects are used in daily business, the majority of the participants pursues a digital strategy of small improvement steps. In view of this, it is hardly surprising that the small and medium-size companies, typical for the food industry, do not yet use the full range of digitization opportunities.



The majority pursues a digital strategy of small improvement steps

- 45% Digitization helps us to optimize today's processes across all business units.
- 45% Digitization helps us to improve today's processes in the different areas with a manageable scope.
- 30% So far, we have not used digitization for product innovations.
- 23% Besides using an ERP system, we hardly use the new opportunities of digitization.
- 22% Digitization allows us to create additional value for our customers in our products and services.
- 19% Digitization helps us to offer new products and services (for example, individualized food products, etc.).



VIII. Outlook: From hype to implementation

Before enterprises can start thinking about digitization, they need to invest in IT skills and the development of an IT strategy. The biggest obstacle for the industry representatives is to find suitable employees with the required IT expertise to implement their digital ambitions and to establish digital know-how in the enterprise.

Besides inefficiency in the organization of procedures and structures, missing budgets and lacking expert skills are mentioned most frequently as reasons for the slow implementation of digitization measures. The participants of the study see their own business culture and the current shortage of skilled workers as further obstacles blocking their way into digitization.

IT investments are different

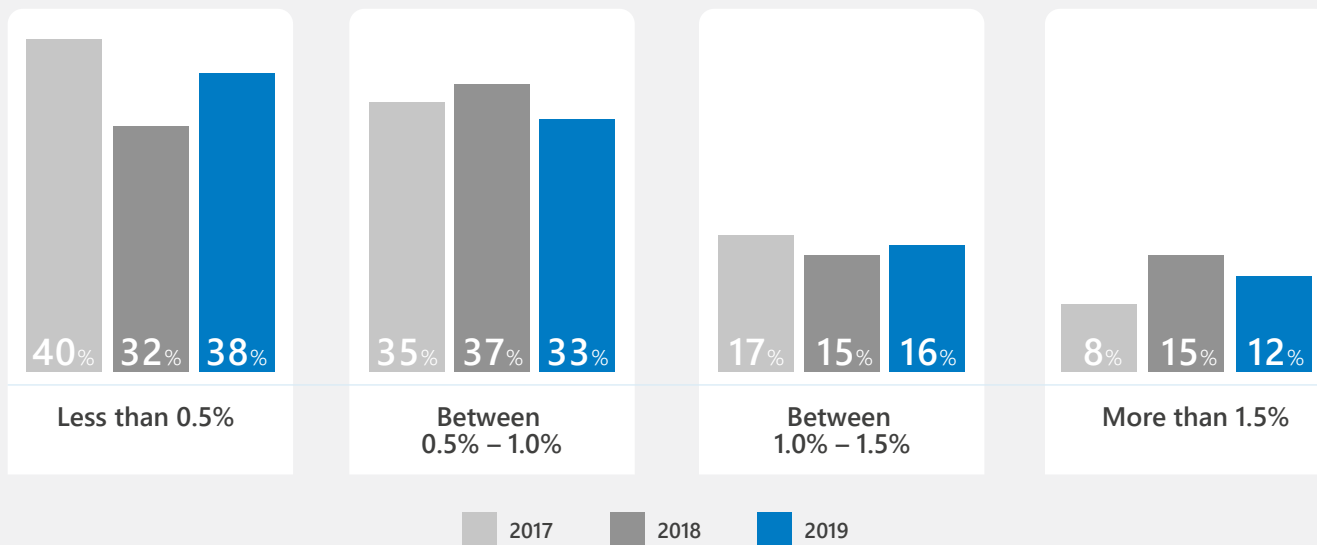
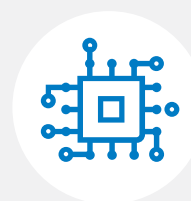
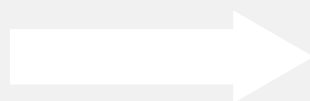
Last year's survey showed that the decision-makers followed words with action, investing in IT and digitization. The share of companies where this should have been more than 1.5 per

cent (in relation to sales) only slightly decreased. The leading group with 1 percent or more remained almost at a constant level among a little less than one third of the respondents (29 percent).

This year, it is apparent that companies with a clear strategic approach are much more ready to invest in digitization and to push digital projects now. The percentage of participants investing more in IT and new technologies is increasing compared to the previous years. The respondents do consider digitization as an opportunity and are optimistic about being able to shape their future and achieving their goals in spite of uncertainties.

The relations optimizers and ecosystem builders, in particular, invest overproportionally in IT and digitization to achieve their goals. All three groups invest significantly more in the two upper quartiles (in total, more than 40 to 50 percent) than the other participants do.

Investments in IT and digitization 2017-2019



Programmed for Your Success

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