

Lünendonk®-Study

# Digital Efficiency

Digital Technologies as a Tool for  
Increased Efficiency and Cost Reductions



A study conducted by Lünendonk & Hossenfelder GmbH  
in cooperation with

**DETECON**  
CONSULTING

**T - Systems**

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## Foreword



Mario Zillmann, Partner,  
Lünendonk & Hossenfelder

Dear Readers,

The year 2020, which began with such great hopes for economic progress, will probably take a special place in history books because of the unprecedented global COVID 19 pandemic. The COVID 19 crisis has abruptly drawn attention to the vulnerability of global supply chains and the consequences of not having prioritized strongly enough many digitalization issues such as artificial intelligence, the Internet of Things, and digital marketing and sales strategies in recent years. Quite honestly, however, the crisis was not as abrupt as many would like to think.

After more than ten years of continuous growth and globalization, the world economy cooled down noticeably in 2019, limiting growth of the German economy, which is very strongly export-oriented, to a mere 0.5 percent. Perceptive observers will not have been surprised to see the investment focus of companies in some of the so-called “early warning signal sectors” such as automotive, mechanical and plant engineering, or the chemical industry beginning to shift last year from growth to efficiency issues in response to the slowdown in the global economy. Emphasis was primarily on investments in digital technologies such as cloud computing, IoT, artificial intelligence, and robotics, developments that can now be exploited to realize efficiency gains that had not been achievable for a long time.

Important levers for the increased use of digital technologies are above all their ever-greater efficiency, short innovation cycles, and a simultaneous drop in prices for technologies such as storage space or processes thanks to the

enhancement of scaling opportunities. Digital efficiency, i.e., intelligent methods for increasing the efficiency of processes with the aid of digital technologies, is now one of the focal points in which companies are investing with a look ahead to the coming years.

Parallel to managing the economic situation, the global economy continues to change rapidly into a platform economy, and sectors such as automotive, financial services, trade, even the manufacturing industry are confronted with an enormous digital upheaval. Tech corporations and startups are taking advantage of digital touchpoints, a unique customer experience, and a high level of innovation to launch more and more frequent attacks against established companies. And the digital newcomers have mastered digital efficiency and can often achieve quality, technology, and cost leadership by combining the use of digital technologies.

This Lünendonk® study has taken a look at what large companies and corporations are planning for the future of digital efficiency in their operations. The telephone and personal interviews for this study were conducted between February and April 2020, a time when the majority of the study participants were preoccupied with the COVID 19 pandemic and coming to grips with its first foreseeable impact on their business.

The professional partners in this Lünendonk® study are the management consultancy Detecon and the IT service provider T-Systems. We want to thank both of our partners for their professional support! We hope you find our results interesting and – above all – useful.

Sincerely yours

Mario Zillmann  
Partner



## Summary



### FAILURE TO ACHIEVE PERFORMANCE TARGETS LEADS TO GREATER EMPHASIS ON DIGITAL EFFICIENCY

Companies that have **not** achieved their defined performance targets in the last five years place significantly more emphasis on their priorities for heightening efficiency in almost all areas than do the enterprises that have been able to achieve their targets. For instance, 71 percent of the former are making “very extensive” and “extensive” use of digital technologies such as AI, RPA, and cloud to increase the speed of processes.



### COMPANIES VIEW DIGITALIZATION MORE HOLISTICALLY

Eighty-nine percent of the companies have in place a strategy for digital transformation. In four of ten companies, this strategy has already been defined as cross-divisional; in the remaining 60 percent, it is still limited to isolated departments. In the middle term, however, many companies are taking aim at realization of a cross-divisional digital strategy that links the separate digital initiatives more closely with one another and implements the necessary change and adaptation processes within a holistic corporate context.



### INNOVATIONS TARGET DIGITAL EFFICIENCY

Over 80 percent of the companies surveyed are developing technological innovations with the goal of reducing costs and increasing efficiency. Moreover, greater flexibility and higher product quality are the heart of innovations.



### DIGITAL EFFICIENCY HEIGHTENS OPERATIONAL EXCELLENCE AND ACCELERATES COST REDUCTIONS

Process improvements and increased productivity are the most important issues when it comes to gaining efficiency through digital technologies. The retrospective view reveals that almost three-quarters (74%) of the companies have been able to improve process throughput times with the help of digital technologies and that 61 percent have noticed positive effects on customer satisfaction. Since digitalization, in addition to increasing efficiency, also opens the door to many use cases for the development of new data-driven business models, digital efficiency represents an important lever for future business success.



### ROOM FOR IMPROVEMENT IN UNDERSTANDING DIGITAL TECHNOLOGIES AND DATA

Barely one in three companies (36%) fully agrees with the statement that their employees already have the skills the company will require to complete its digitalization program. Another 49 percent agree with the statement at least in part. Above all, there is a lack of basic understanding of digital technologies, data, and the ways they can be used. As a result, there is also a lack of courage and motivation to use and benefit from the technologies and solutions.

# Demographics

## ASSESSMENT GROUPS OF THE 123 STUDY PARTICIPANTS

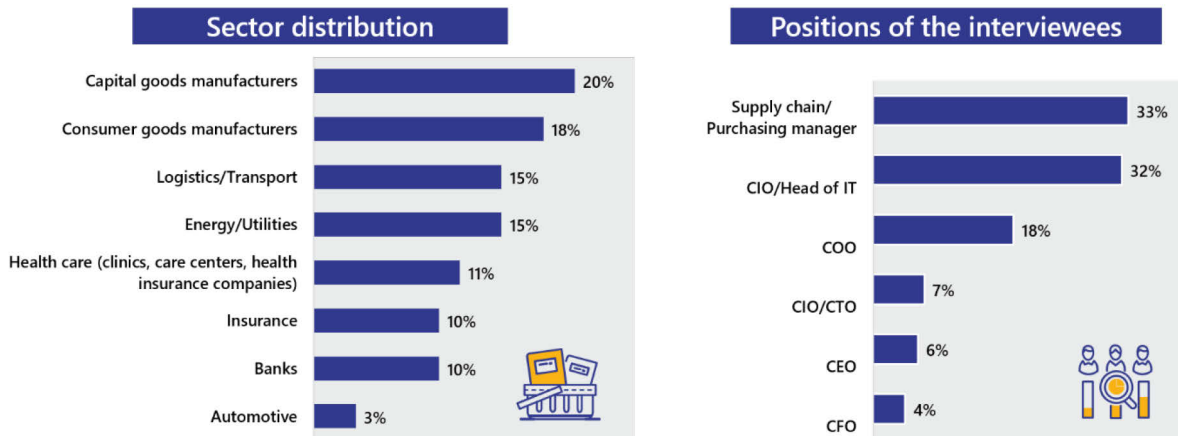


Figure 1: Question: In what industry does your company operate, and what is your position? All companies; n = 123

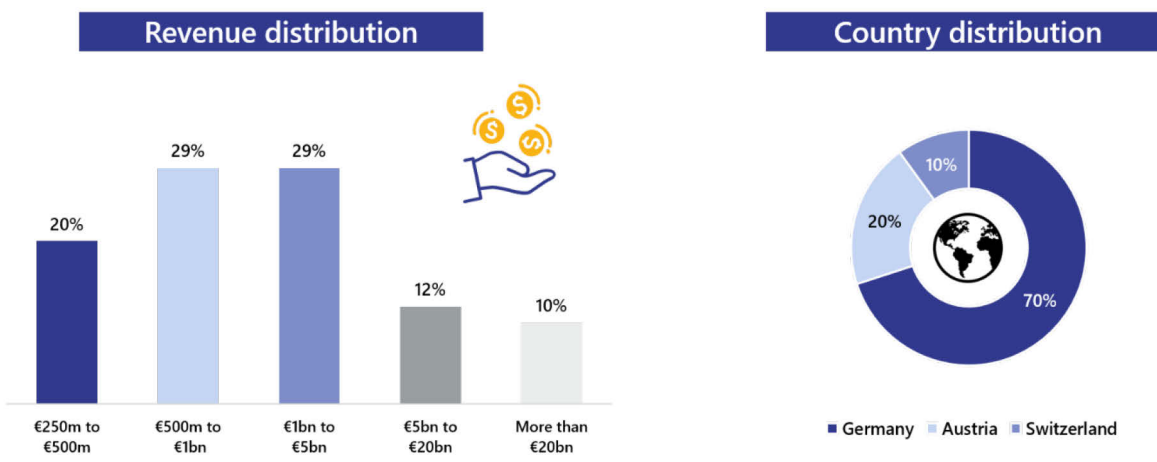


Figure 2: Questions: How much revenue did your company generate in 2019? In what country is your company's head office located? All companies; n = 123

## CHAPTER 1

# Determination of current status in a VUCA-World

In recent years, discussions have been more than happy to seize the concept of the “VUCA world” as a synonym for the transformation into a digital and platform economy – almost a little too happy, in fact, with the consequence that VUCA (volatility, uncertainty, complexity, ambiguity) has become a buzzword. Nevertheless, the term is indeed an apt description of the change to a platform economy that has been progressing since (at the latest) Apple’s introduction of the iPhone in 2007. Disruption – the replacement of an established business model with a new, innovative approach to selling products and services and to operating processes – is often cited in the same breath with VUCA.

In the last few years, disruption has been above all the consequence of platform-based business models, which have taken advantage of digital technologies such as big data analytics, cloud computing, artificial intelligence, or IoT to create new markets. This development is clearly illustrated by the comparison of the so-called Platform Index that includes the major stock market indices such as Nasdaq, Dow Jones, and DAX 30. The Platform Index, which comprises primarily US and Chinese platform providers such as Alphabet, Amazon, Facebook, Microsoft, Netflix, PayPal, and Tencent, has performed many times better than the Nasdaq, Dow Jones platform DAX 30 since 2016 – and not even the COVID 19 crisis has made any difference in this respect.

## SUCCESS FACTORS OF DISRUPTORS

In many industries, the last several years have seen repeated attacks on established companies launched by new providers operating with digital business models. The sectors financial services, retail trade, and media have been hit especially hard. The digital attackers do some things that are new and they do many things better:

- A high degree of automation and the use of artificial intelligence make their processes highly efficient, so they can offer products and services at lower prices while still realizing a higher margin.
- Since they use strictly digital distribution channels, they have almost unlimited opportunities for scaling.
- Digital products and services can be reproduced at will, which is why the marginal costs of digital business models are almost zero.
- They consistently align their strategies with the customer. Their added-value chains have been designed to achieve the best possible customer experience at all customer touchpoints.
- The bottom line is that platform providers can be cost leaders, quality leaders, and innovation leaders, all at the same time, a quality that distinguishes them from most traditional companies.

Although the developments just described are not new, many traditional companies have struggled in recent years to adapt to the changes in their environment and to realize their own digital transformation. Since the beginning of the COVID 19 crisis in mid-March 2020, however, the VUCA concept and its four facets of volatility, uncertainty, complexity, and ambiguity have become a tangible experience for a broad majority.

The COVID 19 crisis makes it particularly clear that long-overdue digitalization measures have failed to attract the required attention or to be assigned the necessary priority:

- Automation using AI services
- Digital sales and digital marketing
- Know your customer on the basis of data insights
- Process mining and digital twin for complete transparency of process performance and process optimization

- Corporate management based on information updated daily with self-service BI

### COVID-19 AND PROTECTIONISM ARE THE BIG THREATS

One often hears today that COVID 19 has accelerated digital transformation far more effectively than almost all the measures initiated in recent years together. The degree to which this is true is highlighted by the numbers of people working from home, shared work, digital communication tools (such as MS Teams, Zoom), contactless processes (scanner, mobile payments, etc.), and online business models (such as Comdirect, DocMorris, HelloFresh) and the high level of acceptance now enjoyed by these factors.

Still, the majority of the managers surveyed by Lünendonk do not necessarily view new competitors with completely digital products and services to be the greatest threat to their companies; their greater concern is the consequences of the coronavirus pandemic. More than half of the respondents (54%) rank the COVID 19 crisis as a “major” or “potentially major” threat to their companies.

Forty-eight percent of the surveyed managers now expect that one of the consequences of this shift in the perception of threats that has been brought about by the

COVID 19 crisis will be a jump in the investments in new digital technologies that their companies will be made. The majority of the companies that will be investing larger sums in the development and implementation of digitalization strategies are focusing primarily on enhanced efficiency and reduced costs (88%) – so-called digital efficiency.

Alongside the current COVID 19 pandemic, two other issues have dominated the political and economic agendas in recent years: the trade disputes between China, the USA, and the EU, and Brexit. Global tensions have a very dangerous impact on the economy of any country that is as heavily dependent on exports as Germany.

It will surprise no one that global trade restrictions resulting from a rise in protectionism pose a “major” and “potentially major” threat to more than one out of two companies (53%). Indeed, 68 percent of interviewed managers from the capital goods companies in the study rated these threats to be high, and managers from logistics companies were of a similar opinion (66%). Both industries are traditionally very closely entwined in global supply chains, which is why structural changes represent serious threats to them.

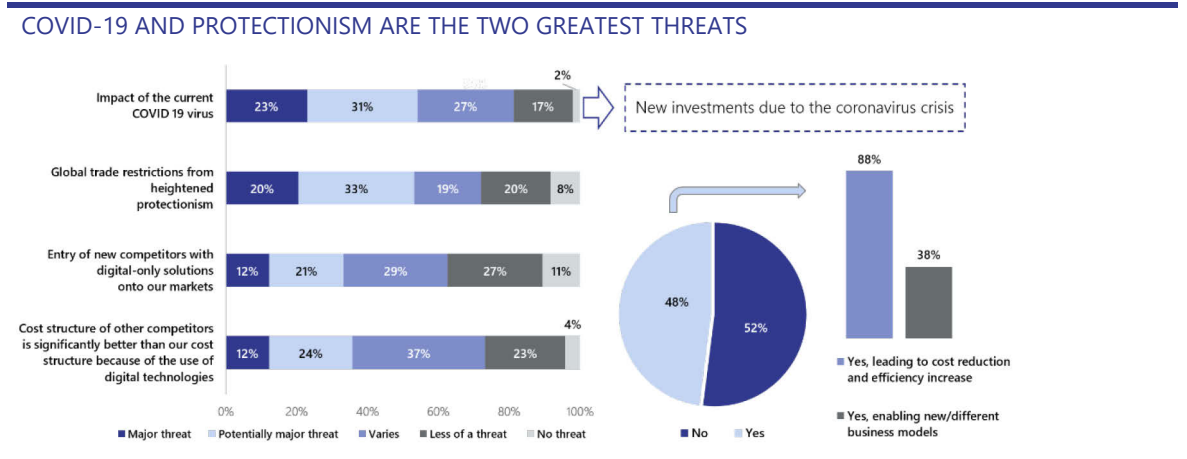


Figure 3: Questions: How do you assess the current economic environment in which your company is located with respect to the following parameters? All companies; scale from 1 = “No threat” to 5 = “Major threat”; n = 48 to 123; are plans for investments in new digital technologies rated at a higher priority owing to the current COVID 19 crisis? n = 50

### DISRUPTION THROUGH DIGITAL BUSINESS MODELS IS NOT AN ISSUE FOR MOST COMPANIES

Only one-third of the participants in the study (33%) regard the entry of new competitors as a “major” or “potentially major” threat. In contrast, more than one of two participants in the study from the financial sector (banks and insurance companies) state that new competitors with completely digital solutions represent a “major” threat to their companies. This comparatively high weighting by the surveyed financial service providers is a consequence (for example) of the success in recent years of neobanks such as N26, fintechs such as Scabable, or online-only insurance companies such as Wefox. However, technology groups such as the GAFAs (Google, Amazon, Facebook, Apple) or PayPal have also focused on realizing certain business models of banks (e.g., payment transactions, credit business) and insurance companies (above all, sales) more effectively than many of the established companies.

One of the reasons why the surveyed banks and insurance companies perceive digital attackers as a “major” threat much more frequently is the ability of financial service providers to sell digital products and services to customers via digital channels; there are virtually no limits to the sale of banking products and insurance policies to large numbers of customers when digital-only or predominantly digital distribution channels are used. This opportunity has led platform providers and venture capitalists to concentrate especially closely on the financial services sector for years.

Another interesting finding of the study is that only 36 percent of the participants perceive the threat of digital technologies giving their competitors an edge with respect to cost structures as “major” or “potentially major.” The respondents from all the surveyed industries are almost unanimous about this point. Financial service providers are the one exception; one out of two respondents from this sector considers competitors’ cost structures to be a threat to their own business model and the positioning of their company. This assessment is also influenced by the fact that the processes in use at new,

online-only banks and insurance companies are generally more technologically advanced and leaner, leading to lower operating costs, greater efficiency, and an enhanced customer experience.

### MANY COMPANIES ARE NOT OPTIMALLY PREPARED FOR CRISIS SITUATIONS

Although the global economy has grown continuously over the past ten years, some of the surveyed companies have **not** been able to achieve the performance targets they have set for themselves during the past five years. Only 39 percent of the surveyed companies have fully achieved their targets in terms of revenues, EBIT margin, and market share.

Another 47 percent have been able to reach some of their defined performance indicators while 14 percent have failed to meet expectations. Logically, these low performers also rated the threats posed by protectionism, COVID 19, and digitalization as being much more substantial than did the high performers. These are also now the very companies that, in response to the COVID 19 crisis, are placing much greater emphasis on the development and realization of digitalization strategies to improve efficiency and cost structures.

#### ACHIEVEMENT OF PERFORMANCE GOALS

Has your company been able to achieve its performance targets over the last five years?

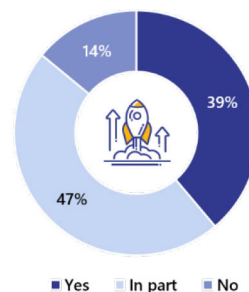


Figure 4: Question: Could you please give us an assessment of whether your company has been able to achieve its defined performance targets (in terms of revenues, EBITDA, market share) during the past five years? All companies; n = 121



## CHAPTER 2

## Assessment of Competitiveness

As trite as it may sound, it is true that competitive advantages are achieved when a company is better than its competitors. However, more and more companies are facing increasingly disruptive changes in their markets caused by new providers offering either digital-only or predominantly digital and innovative business models. In a highly volatile economy that is undergoing a dynamic transformation into a digital platform economy, competitive advantages achieved in the past are declining in value in many industries.

When analog business models are replaced by their digital counterparts, new factors come into play and are now considered competitive advantages:

- Efficient business and IT processes
- Exploitation of data and analysis competence
- Ability to monetize data, i.e., to utilize them to increase efficiency and to create new business models
- Development of platform-based business models and more tightly meshed integration of other companies into one's own added-value chain

When asked how their companies were positioned in comparison to their competition, the study participants considered themselves well positioned in some areas, less well in others. Less than half of the study participants, however, discerned a competitive advantage for their companies in the key areas of digital transformation in particular. This is certainly an alarming result for many of the study participants.

The interpretation of the following results is subject to a certain proviso. It became clear during some of the interviews that companies that rated their position in certain points as "excellent" or "good" in comparison with their competitors gave themselves a similar rating as well in

those cases in which they believed that the competition – much like their own enterprises – had made little progress in a specific area. This skewing means that the view of those respondents who saw their companies as "mediocre" or even "poor" in comparison with competition is somewhat more realistic.

### MAJORITY OF COMPANIES HAVE NOT YET ENTERED THE PLATFORM ECONOMY

Barely one out of two participants in the study (46%) perceived their company to be in an "excellent" or "good" position (in comparison with the competition in terms of the digital platform economy). Seventeen percent even believed that their company was a poor performer compared to the competition in this field. The surveyed banks posted especially good ratings while the majority of the responding managers of consumer goods manufacturers and energy suppliers saw their companies at a disadvantage compared to the competition when it came to building digital platform ecosystems or developing new platform-based products.

One of the success factors of platform ecosystems is the ability of companies to collect data, generate insights from them, and create value from these insights. While 49 percent of the participants in the study considered themselves to be in a "good" to "excellent" position when it came to the analysis of streaming data from the monitoring of processes, machines, and IoT-based products, 41 percent placed themselves in a mediocre position and 10 percent in a worse one.

Despite the enormous importance of data for Industry 4.0 business models, the managers of industrial companies in the survey who considered their companies to be in a



leading position when it came to the analysis of streaming data were in the minority. This self-assessment with regard to the ability to use and monetize the mountains of data resulting from digitalization and subsequently to secure competitive advantages from their data is rather surprising when viewed against the backdrop of the progressing shift to Industry 4.0 and to IoT-based business models in the manufacturing industry.

Clearly, a major part of the companies have not completely succeeded – despite all the hype about big data, artificial intelligence, and high investments in IoT – in drawing valuable conclusions from existing data for corporate management or in monetizing them in past years. This assessment is also reflected in the way the study participants perceived their companies with regard to the change to a data-driven organization. Only 44 percent of all study participants ranked themselves as “excellent” and “good” in comparison with their competitors when it came to aligning the organization, processes, culture, and management metrics to data-driven decision-making processes. The financial service providers and industrial companies in the survey believed they were especially well positioned in the comparison with their competitors.

One out of every two of the managers surveyed from these sectors considered his company to be in an “excellent” or “good” position. However, only one in five of the surveyed managers from the logistics and transport companies believed his company to be in a leading competitive position.

**NEED FOR IT INVESTMENTS REMAINS HIGH**

Only 53 percent of the participants in the study found that the technological state of their IT landscape in terms of interface openness and scalability put them in a better position than their competitors. In contrast, the remaining 47 percent did not give their IT good marks.

Industry 4.0 is one example. The digital factory and the digital twin, two critical elements of Industry 4.0, are characterized by the exchange of data across departmental and corporate boundaries as well as by a complete mapping of processes in the cloud. An important application example in industry is the digital (i.e., software-based) development of products (CAD) and the mapping of the product life cycle (PLM), processes for which data exchange is fundamental.

**MAJORITY OF COMPANIES DO NOT YET SEE THE STATUS OF THEIR DIGITAL TRANSFORMATION IN COMPARISON WITH THEIR COMPETITION AS OPTIMAL**

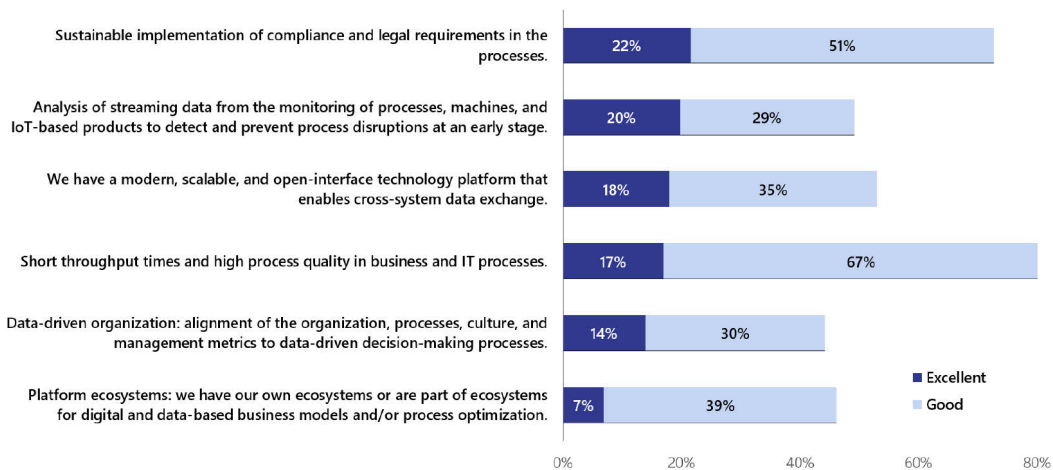


Figure 5: Question: How would you describe your company's position in comparison with your main competitors in terms of the following aspects? All companies; scale from 1 = "Very poor" to 5 = "Excellent"; only rated "Excellent" and "Good," n = 116 to 120

Although both the banking and industrial sectors must more and more often find a place for themselves within platform ecosystems, the banking and insurance managers surveyed see their companies in a leading competitive position with regard to a future-proof IT landscape far more often than the respondents from industry. In the eyes of their managers, the IT landscapes in the companies from the health care industry that were included in the survey also perform poorly in comparison with the competition.

#### THE PROCESSES ARE WORKING

But positive results can also be determined on the basis of the answers of the study participants. A clear majority of 84 percent consider their companies to be in a "good" to "excellent" position with regard to process throughput times and process quality. The implementation of

compliance and legal requirements in the processes also seems to work well for the majority of the surveyed companies. In particular, the surveyed banks (83%) and energy suppliers (76%) perform above average.

Companies that have achieved their performance targets over the past five years are in a significantly better position with respect to the competition in terms of process performance than those that have not been able to meet their performance targets. A quarter of the study participants from the group of low performers see their companies as no more than mediocre in terms of process performance compared to their competitors, whereas only 11 percent of the top performers in the survey rate themselves as mediocre or worse.



## CHAPTER 3

## Innovation Targets

### INNOVATIONS HAVE SHARPENED THEIR FOCUS ON EFFICIENCY ISSUES IN RECENT YEARS

In response to changing competitive conditions, many companies have budgeted massive increases in the investments earmarked for the digitalization of their processes and in the development of digital business models in recent years. Technological innovations in fields such as artificial intelligence or IoT play a particularly important role in the development of new business models and creation of competitive advantages. This is all the more true for digital transformation, where the successful and rapid adaptation of new (digital) technologies is of crucial importance.

Since most companies cannot develop digital innovations completely using their own resources owing to a lack of experience and technological competence, they often turn to cooperation with external partners. For ex-

ample, corporate spending on external IT service providers rose sharply in the period from 2010 to 2018, which is reflected in the annual growth of the German IT consulting market of 10.8 per cent during this period.

The responses to the question concerning the goals pursued by the surveyed companies with their innovations reveal that the primary expectations of most of the respondents from innovations were for a substantial acceleration of process times, reduced OPEX, and increased flexibility.

Just under half of the companies surveyed put the greatest emphasis on cost reduction/efficiency increase (51%) and increased flexibility (49%) when developing innovations. These two topics are of especially high relevance for the financial service providers surveyed as well as for logistics and transport companies.

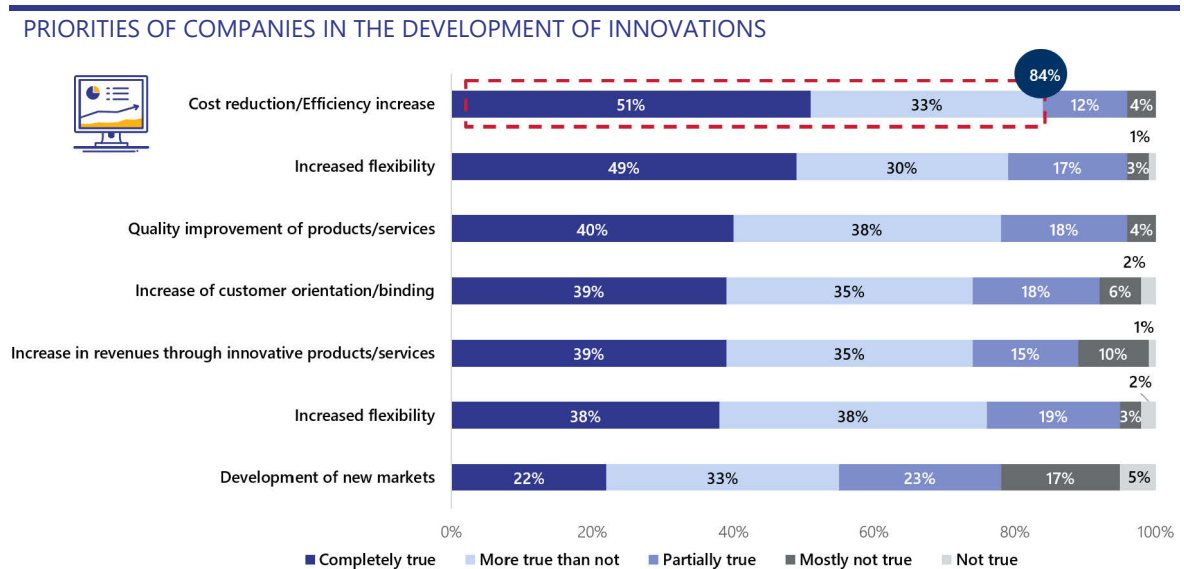


Figure 6: Question: What are your goals when it comes to developing innovations? All enterprises; scale from 1 = "Not true" to 5 = "Completely true"; n = 121 to 123

Fifty-nine percent of the study participants from the surveyed banks and insurance companies stated that cost reduction/efficiency enhancement and increased flexibility in their innovation management had the highest priority. Study participants from the logistics and transport sector were of a similar mind when ranking priorities.

Improvement in the quality of products and services is a top target for 40 percent of the companies when developing innovations. The surveyed industrial companies (49%) above all placed especially high importance on this objective. Innovations such as AI-based services in industry, for example, detect errors at an early stage, which leads to an extension of the service life of machines and systems and to a significant reduction or even complete avoidance of downtimes. Furthermore, sensors can be used to reject defective products and prevent them from ever becoming available for sale, minimizing costly recall or complaint processes.

#### DIGITAL EFFICIENCY AS A RESPONSE TO DIGITAL ATTACKERS

The focus on efficiency and cost optimization in recent years is no coincidence; for one, this is the response of many companies to the more effective cost structures implemented by competitors in the form of powerful digital processes through automation and data analytics in the past. Another point is that more and more of the providers entering the markets appear at the very beginning with predominantly or completely digital business models and generally benefit from highly efficient and lean processes.

Digital technologies such as artificial intelligence, robotics, and cloud computing play an especially important role in the conduct of operational excellence projects and the generation of competitive advantages. Particularly the companies that have **not** been able to achieve their revenue, EBIT, and market share targets in the last five years are now looking to innovations to increase their efficiency and flexibility and reduce costs.

The sharper focus on innovations in operational excellence by the low performers is more than necessary in view of the speed of innovation and the market success of digital attackers. For example, the logistics processes of online retailers such as Amazon or Zalando have for years been running with extraordinary efficiency because of the enormously high level of automation using AI services such as machine learning, natural language processing, and robotics, enabling these providers to offer products at lower prices than the traditional brick-and-mortar retail trade. Retailers and logistics providers are now making a big push to switch their processes over to digital distribution channels and to the collection and analysis of customer data in an effort to keep up.

The logistics industry has also had to accelerate rapidly its processes and shorten throughput times because of the massive increase in online orders in recent years. This has been achieved primarily through automation and process simplification. Technologies such as process mining, robotics, and AI began playing a major role some time ago. The previous pressure to increase efficiency and reduce costs in logistics has become even greater because of the COVID 19 crisis and the related sharp rise in the number of online orders.

A similar development can be observed in the banking sector, where neobanks with a cloud infrastructure based on APIs and microservices have lean and flexible process landscapes and can offer better and cheaper products and a significantly better customer experience.

In industry, for example, greater digitalization of operational processes such as production, R&D, and logistics makes it possible to test new ideas, concepts, and innovations in simulations and virtual operational startup with the help of the digital twin. The benefits are a massive reduction in development costs and significant acceleration of development processes. At the same time, realistic testing in real-time simulations improves product quality, which has an impact on market success.



### WEIGHTING OF DIGITALIZATION CONTENT HAS SHIFTED

In the last two years, however, there has been a significant shift in many companies away from the prioritization of innovation goals as component strategies and in a direction favoring digital efficiency. The [2018 Lünendonk® study "Innovative Business Models, Products, and Services"](#) posed the question about innovation targets even then. For the majority of the managers surveyed, the primary focus at that time was on customer-related topics such as boosting revenues through innovative products and services and improving competitiveness. These two topics are still important to the participants in this Lünendonk® 2020 study, but they have a much lower priority than in 2018.

Instead, many large companies and corporate groups are now increasing their investments in the alignment of their processes to the platform economy and the related cross-company data exchange in response to globalization and digitalization. Examples include the breaking down of complex and rigid IT processes into a flexible and micro-service-based modular process landscape. Some of the advantages are the faster adaptation of processes to changing customer and market requirements and the quicker and less elaborate connection of new digital solutions.

### INNOVATION OBJECTIVES ARE EVALUATED DIFFERENTLY IN THE INDIVIDUAL SECTORS

However, when it comes to the question of the objectives of innovations, it is also worth taking a look at the different perspectives of the study participants as related to their sector. For 55 percent of the industrial companies, banks, and insurance companies surveyed, increasing

revenues through innovative products and services currently has the highest priority during the development of innovations. The average across all the reviewed industries indicates that an increase in revenues is the top innovation target for only 39 percent of the companies.

The enhancement of customer orientation and customer loyalty is mentioned as a top innovation goal by the study participants from the surveyed banks, energy suppliers, logistics companies, insurance companies, and consumer goods producers much more frequently than by the surveyed managers from the other industries in the study. For example, a higher level of customer orientation is at the top of the list of the most important innovation goals in only one in five companies in the capital goods and health care industries.

One reason for the different weighting of customer centrality in innovation management is the historically stronger focus on the end customer in sectors strongly influenced by B2C business models such as financial services, consumer goods, logistics, and energy. Since the range of products and services, the number of competitors, and interchangeability are higher in these sectors, B2C companies tend to focus more strongly on customer centrality, i.e. the consistent alignment of the corporate strategy and all activities and processes to the wishes of customers.

Another point is that in many B2C industries there are more and more providers using digital technologies to create a customer experience that is perceived as unique at all relevant touchpoints (customer journey) and that sets them apart from the competition.

## CHAPTER 4

# Improvements Already Achieved Through the Use of Digital Innovations

Logically, a stronger focus on innovations to increase efficiency and reduce costs has an effect on the scope and impact of digitalization strategies (i.e., the implementation of innovations). According to the survey, three-quarters of the companies surveyed (74%) have succeeded in shortening process throughput times in the last two years with the help of digital technologies.

Above all, the logistics companies, consumer goods manufacturers, and financial service providers in the survey have been able to make progress in improving process speed – in some cases, significant improvement. As short response times and real-time communication (e.g., Track & Trace, digital factory, instant payments) are becoming more and more important in these sectors, it is not surprising that digital technologies such as machine-to-machine communication/APIs, robotic process automation, and AI have found increased use for process optimization in these industries.

However, 88 percent of the companies that have missed their performance targets in the past five years (low performers) have invested so heavily in digital efficiency that their process performance and with it their cost structure have now improved.

Customer satisfaction has also improved at 61 percent of the companies as a result of the increased use of digital technologies, leading to the conclusion that customer-related processes in these companies in particular have become more digitalized with the aim of improving the customer experience at the digital customer touchpoints. Moreover, as a result of the initiated digitalization strategies, the cost structure has developed positively in 60 percent of the companies during the last two years. However, one in ten of the participants in the study stated that

the cost structure had deteriorated as a result of the high investments in digitalization because the initial investments had no impact. Investments in digitalization initiatives have frequently had an average negative impact on the cost structure of the surveyed industrial and financial services companies, which are also the companies that in recent years have had to make the highest investments in digitalization.

For 18 percent of the companies that had failed to reach their performance targets, however, the investments in digitalization led to a poorer cost structure. This result can be explained by the fact that many digitalization projects require high investments that return benefits only in the long term rather than immediately.

## DIGITALIZATION HAS NOT YET UNFOLDED ITS FULL POTENTIAL

Interestingly, the use of digital technologies has not yet led to a demonstrable improvement in the quality of products and services at 46 percent of the companies surveyed.

Above all, the responding energy suppliers and insurance companies have rarely been able to record any progress in product quality in recent years.

In contrast, 75 percent of the study participants from the banking sector report higher product and service quality as a result of their digitalization strategies. The increasing introduction of agile models and DevOps in software development as well as the use of the software development platforms of hyperscalers (Amazon Web Services, Microsoft Azure, Google Cloud), for example, are having a positive effect here.



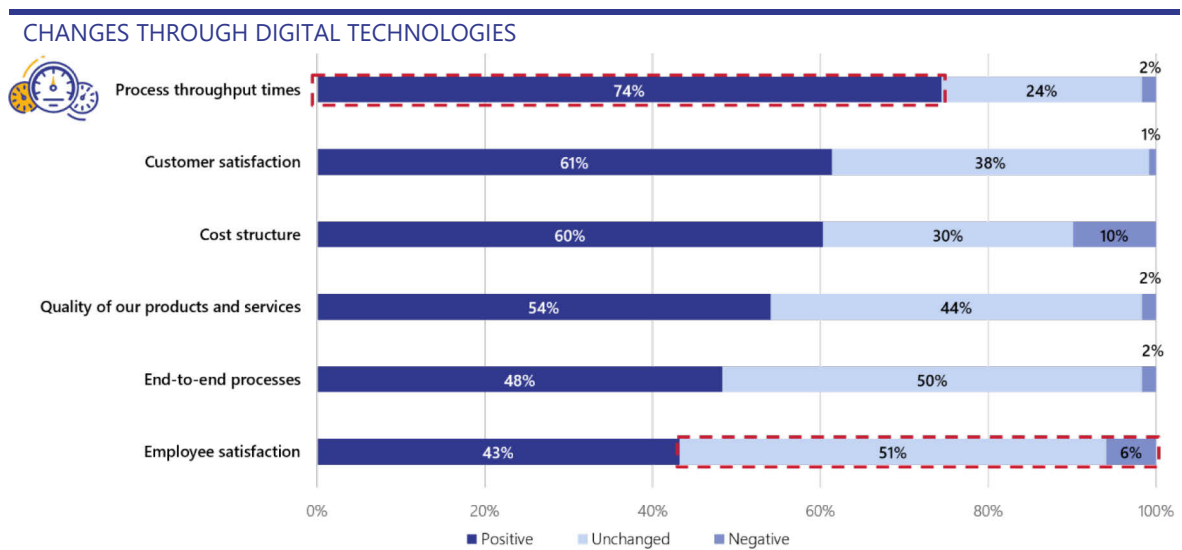


Figure 7: Question: What impact has the use of digital technologies had on the following factors in the last two years? All companies; "Negative", "Unchanged", "Positive", n = 118 to 122

But digital technologies are also having a significant positive impact on the quality of medical products and health care services in 64 percent of the companies in the health care sector.

#### MAJORITY OF COMPANIES ARE FAR FROM END-TO-END PROCESSES

Although process throughput times have accelerated in three out of four companies, only one out of two companies has been able to make progress in the networking of content-related processes to create a continuous (end-to-end) process design.

End-to-end processes have been at the top of most companies' technology agendas for years, but there are still too many breaks in most business processes that lead to inefficiencies owing to the lack of required interfaces. This hampers cross-channel and omnichannel strategies (just to mention two examples) that are now of immense importance for the sale of products via digital distribution channels. Furthermore, the evaluation and analysis of collected data across departmental and process boundaries is very time-consuming whenever the communication of separate databases with one another is limited.

When it comes to breaking down such process silos and connecting processes end-to-end, the surveyed banks appear to be the pioneers once again; 75 percent of the surveyed banks have taken a stronger end-to-end approach to the interconnectivity of their processes in the last two years. In contrast, only four out of ten study participants from the industrial companies in the survey report that the use of digital technologies has had a positive effect on process connectivity.

#### AN EMPHATIC DIGITAL EXPERIENCE IS NOT POSSIBLE WITHOUT END-TO-END PROCESSES

In a global economy increasingly based on digital business models, the best product is often just a mouse click away. A customer experience along the full range of the physical digital touchpoints (customer journey) that is perceived to be of high quality by customers is an important prerequisite for digital sales models. The COVID 19 pandemic has to no small extent increased the utilization of digital business models and increased the pressure on companies to push ahead with the digitalization of their distribution channels.

Cross- and omnichannel strategies currently play a very important role for many companies that have both brick-



and-mortar and digital customer touchpoints. An important element in this regard is the integration of processes – for example, being able to switch seamlessly and without loss of information among several channels (app, internet, store) during the process of purchasing a product or to retrieve status information in real time via all touchpoints (e.g., Track & Trace in logistics, availability of goods in online trade).

Another very important objective of innovation is an increase in competitiveness; this is in fact a top goal for 38 percent of all study participants. Banks and insurance companies (45%) and logistics and transport companies (44%) rely on innovations to increase competitiveness significantly more often than the average. In contrast, only 38

percent of the industrial companies surveyed give this goal top priority.

The health care sector, which labors intensely under cost pressure because of the flat-rate schedules per case, also frequently uses innovations to increase competitiveness. For example, 21 percent of the managers from the health care sector (clinics, medical care systems, health insurance companies) in the survey stated that they were looking to increase competitiveness through innovation. An additional 57 percent of the health care companies agree to at least a limited extent.



## CHAPTER 5

# The Interplay of Digital Efficiency and Customer Experience

## PAST SUCCESSES IN THE DIGITALIZATION OF CUSTOMER-CENTRIC PROCESSES

The stronger emphasis placed on efficiency issues in recent years described in the previous chapters is a consequence, among other things, of the fact that many companies had invested heavily in their customer front-end processes (sales, marketing, customer care, etc.) in earlier periods.

Most of the companies surveyed (60%) have set up multi-channel interaction (omnichannel) so that customers can use several digital and analog channels that have been linked together to form a complete end-to-end process.

Furthermore, 51 percent of the companies surveyed collect customer data at all relevant touchpoints and compile the information on a central analysis platform. By taking this approach, companies can gain valuable insights about their customers: what product categories interest them, how they respond to special offers, and how price-sensitive

they are. Logically enough, almost as many companies (53%) also use data analytics to analyze the collected data and find out more about their customers. There is a growing use of machine learning to identify patterns in (anonymized) customer data that can indicate future purchasing behavior, for instance.

Fifty-four percent of companies use automation tools for such purposes as the acceleration of order-to-cash processes or of the handling service requests. However, the majority of the managers surveyed describe the degree of automation of their customer-centric processes as “mediocre” and “low”.

These results nevertheless show that many of the responding companies launched and successfully implemented in the past a number of important digitalization initiatives aimed at heightening customer centricity.

### MAJORITY OF COMPANIES BELIEVE THEY ARE WELL-POSITIONED WITH RESPECT TO CUSTOMER CENTRICITY

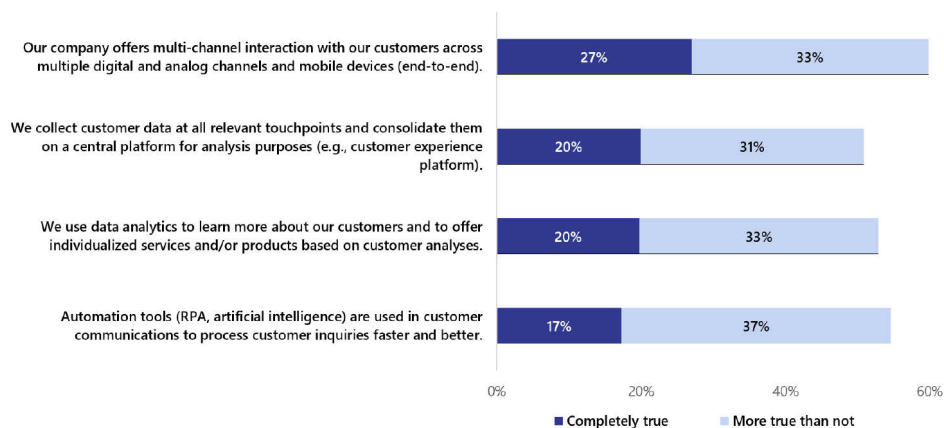


Figure 8: Question: Which of the following statements are true for the customer processes in your company? All companies; scale from 1 = “Not true” to 5 “Completely true”; presentation of “Completely true” and “More true than not”, n = 120 to 122



CHAPTER 6

# Technological Prerequisites in the Company

Investments in IT modernization have risen steadily in recent years. According to the [Lünendonk® study “The Market for IT Consulting and IT Services in Germany”](#), large companies and corporations have invested primarily in the modernization of their software landscape and underlying IT infrastructures in recent years.

In IT modernization projects, obsolete legacy applications are often moved to the cloud and modernized there – by switching to internet-capable technology (e.g., Java), for example. Yet another strategy is the complete redesign of applications and the development of new software platforms.

Twenty-three percent of the participants in this Lünendonk® study consider their company to be “Far ad-

vanced” in the modernization of obsolete custom software while a further 43 percent consider themselves to be “Rather far advanced”.

## ONLY AVERAGE PROGRESS IN AUTOMATION TECHNOLOGIES

Another important investment topic of recent years (and one that will remain so in the future) was (and is) process automation. Technologies such as artificial intelligence (AI), machine-to-machine communication/APIs, and robotic process automation (RPA) play a key role in this sense.

Use cases for automation potential can be found in almost all positions, especially in administrative activities such as accounting, order processing, purchasing, and ordering or in the risk and compliance area for the identification of deviations or anomalies.

### ONLY ONE IN TWO COMPANIES IS FAR ADVANCED IN THE USE OF DIGITAL TECHNOLOGIES

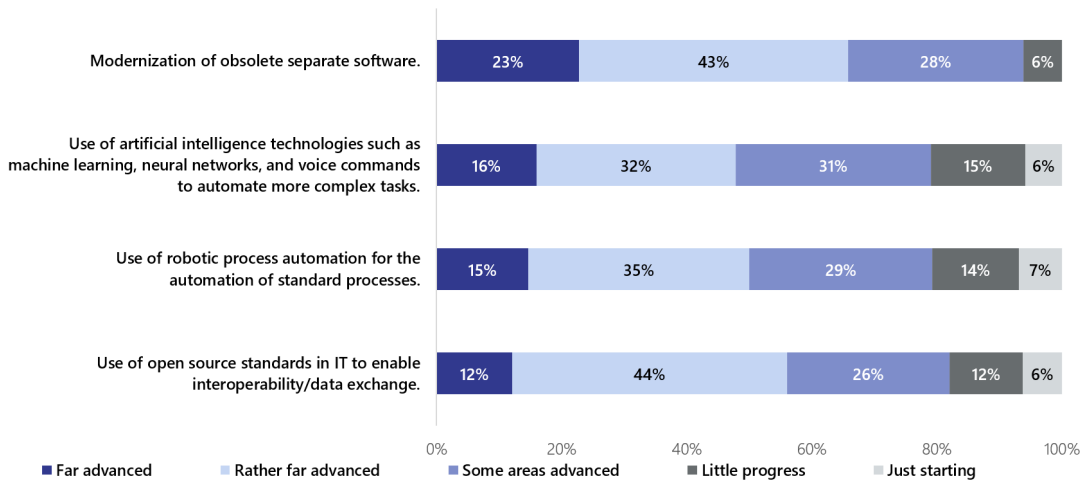


Figure 9: Question: How do you rate the status of your company with regard to the following topics? All companies; Scale from 1 = “Just starting” to 5 = “Far advanced”; n = 112 to 120



At present, one in two of the surveyed companies considers the use of AI and RPA to be either “Far advanced” or “Rather far advanced” while about 30 percent of them are in the middle range.

#### OPEN SOURCE IS CRITICAL TECHNOLOGY FOR DIGITAL BUSINESS MODELS

An important prerequisite for process automation and digital business models is the exchange of data across system boundaries – in other words, end-to-end processes. IT departments are relying more and more on open source standards (Java software, Linux, etc.) so that the new IT solutions can be connected to legacy IT systems quickly and without any major programming effort.

Statements by the surveyed managers indicate that more than one of two companies (56%) have already reached a highly advanced stage in the use of open source tools in their IT systems. In the survey’s comparison of the various industries, responding financial service providers and logistics and transport companies turn out to be far more advanced in the use of open source tools than (for example) the surveyed industrial companies; fewer than half of the study participants in the latter sector reported major progress.

#### TAKING THE MACHINE-TO-MACHINE COMMUNICATION ROUTE TO ARRIVE AT END-TO-END PROCESSES

Open-interface IT systems are an important prerequisite for a very important technology concept of digital transformation – namely, machine-to-machine communication (M2M).

M2M communication represents one of the key technologies for the automation of processes because consistently integrated processes cannot be designed unless IT systems and databases are connected by means of interfaces (APIs) and can exchange data.

Currently, 19 percent of the surveyed companies are using M2M communication.

The responding capital goods manufacturers in particular already use M2M more than average, partly because in IoT business models the operation systems (PLM, MES, etc.) must continuously exchange data with one another and with IT systems (ERP, CRM, etc.). As a consequence of the greater integration of logistics service providers in the industrial added-value chains, the data of the former must also be integrated into the data streams of the latter so that (for instance) spare parts deliveries are triggered directly whenever a predictive maintenance tool detects an imminent shortfall.

One interesting aspect of the results is that an above-average number of financial service providers surveyed are even now using M2M communication, which in banking is also known as an API platform. The Revised Payment Service Directive (PSD2) is in this instance only one of the factors playing a major role and that are intended to ensure the interoperational exchange of data using APIs within the institute’s own banking processes and with external partners.

#### INTERCONNECTIVITY CONTINUES TO ADVANCE

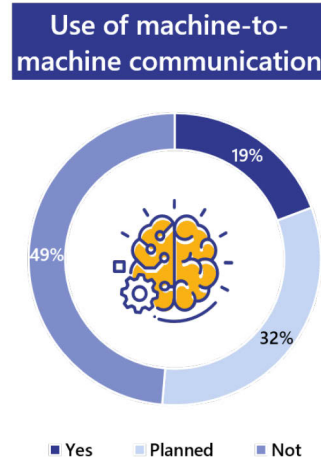


Figure 10: Question: Does your company use swarm intelligence (machine-to-machine communication) to connect machines, plants, and vehicles? All companies; “Yes”, “No”, “Planned”; n = 109

**CLOUD-FIRST APPROACH TO DIGITAL TRANSFORMATION**

Seeing the progress made by the surveyed companies in IT modernization, process automation, and their plans for the digitalization of their business processes, no one will be surprised to hear that half of the study participants say that their companies are rigorously pushing ahead with the transfer of their business and IT processes to the cloud.

For example, 56 percent of companies purchase new software predominantly as software as a service. Many software products are now only available as a cloud solution or as a cloud version that can also be operated in your own data center. Examples are the software products of the technology groups Microsoft, Salesforce, ServiceNow, or SAP as well as many other software providers.

As many as 68 percent of the financial service providers surveyed and 69 percent of logistics companies are pursuing the cloud-first approach when purchasing new software. A comparison revealed that only 29 percent of the energy suppliers surveyed stated that they procured new software predominantly as a cloud solution. Interestingly, only 52 percent of industrial companies

prioritize software as a service, which seems a little low in light of the challenges surrounding Industry 4.0.

In contrast, the industrial companies surveyed as well as companies from the health care sector pursue the strategy of mapping business processes in the cloud much more frequently than other sectors.

Among the health care companies surveyed, a high 60 percent have mapped their processes in the cloud, and 54 percent of the industrial companies surveyed have done so. These companies have taken an important step in the realization of the concept of the digital twin and towards highly efficient processes, whereby medicine is primarily concerned with a digital image of the human body that enables more effective detection of diseases, improves diagnostic capability, and fosters the development of therapies.

Just under half of the surveyed companies (49%) are migrating large parts of their IT landscape to the cloud while 16 percent currently still hold out against going to the cloud. The share of nay-sayers to the cloud is particularly high among energy suppliers and consumer goods manufacturers (29 percent each).

**THE CLOUD IS A KEY COMPONENT OF DIGITALIZATION STRATEGIES**

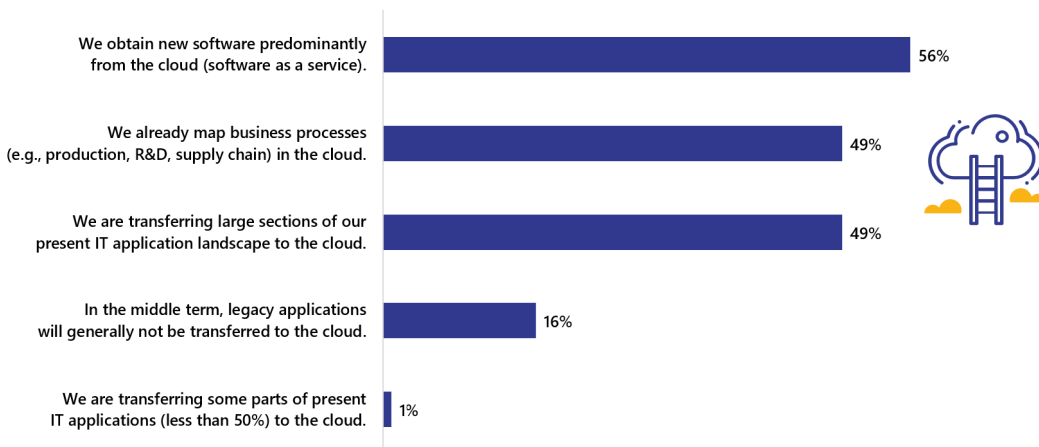


Figure 11: Question: In what way does your company use the cloud? All companies; multiple answers possible; n = 111



## CHAPTER 7

## Contents of Digitalization Strategies

Digital transformation is a complex and dynamic process of change that affects a company in all added-value areas. The complexity and dynamics of change vary from one industry to the next. There are industries in which traditional providers are particularly threatened by disruption from new providers with completely or predominantly digital business models. Retail trade, the banking sector, or media and publishing houses are examples of sectors that are particularly at risk of disruption.

By contrast, other sectors such as energy suppliers, large parts of industry, and the health care sector have so far escaped any major threats from disruptive business models. However, customer expectations concerning the offered products and services are currently changing drastically in these sectors as well. For instance, more and more customers presume the existence of digital touchpoints that they can use to obtain information about offers, to communicate and to exchange information with the company, and to purchase products and services.

Whereas in the past the drive for digitalization initiatives often originated in the departments and business units, this study shows that a large proportion of the surveyed companies (36%) are now pursuing a cross-departmental general strategy for digital transformation. This means that the necessary change and adaptation processes are developed and implemented more rigorously in a holistic corporate context than is the case with separate divisional strategies. The required cultural change can also be approached in a more holistic and sustainable way.

In contrast, 53 percent of the companies surveyed continue to assign responsibility for digital strategies to their business units. However, one in two of these companies is currently working on merging the individual division-specific digital strategies into an overall strategy for the entire company. The energy suppliers and companies from the health care sector in the survey are the parties in particular that will bundle their separate digital initiatives more strongly in future.

### IN FUTURE, MORE THAN ONE IN TWO COMPANIES WILL HAVE AN OVERARCHING DIGITALIZATION STRATEGY

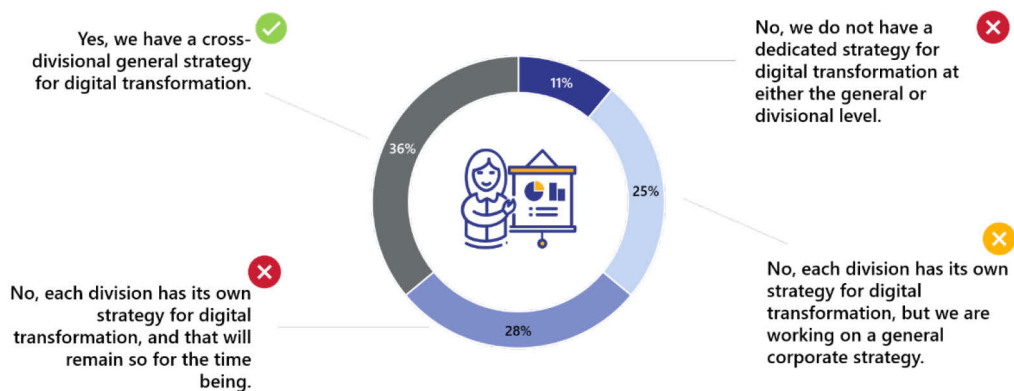


Figure 12: Question: Does your company have a cross-divisional general strategy for digital transformation? All companies; single answer; n = 120

According to the information from the responding managers, one in ten companies (11%) does not even have a dedicated strategy for digital transformation. The share is above average above all in the companies from the health care sector (15%) and the consumer goods industry (14%).

**FOCUS OF DIGITALIZATION PROJECTS**

With respect to content, a large proportion of companies will be very intensively involved in the development of innovations and new business models (34%) and in the topic of operational excellence (28%) over the next two years. In addition, 28 percent of the study participants place a very high focus on IT modernization.

However, the focus of the companies surveyed varies considerably, depending on whether or not they have been able to achieve their performance targets over the past five years. For example, 41 percent of the companies that did not achieve their performance targets state

that they have a “very strong focus” on operational excellence projects while another 47 percent say they have a “strong focus” on efficiency and cost optimization projects. In the same vein, this group of companies is now investing significantly more in IT modernization than those companies that have been able to achieve their performance targets over the past five years.

But there are also some significant differences depending on the specific industry. Eighty-two percent of the banks and insurance companies surveyed will be putting a “very strong focus” and “strong focus” on operational excellence topics in the next two years while 77 percent will simultaneously be putting a significant emphasis on the development of innovations and new business models.

The pressure to establish new (digital) business models is significantly more intense in the financial services sector due to the high competitive pressure from tech companies, neobanks, and online insurance companies.

**INNOVATIONS AND EFFICIENCY ISSUES ARE HIGH ON THE DIGITAL AGENDA**

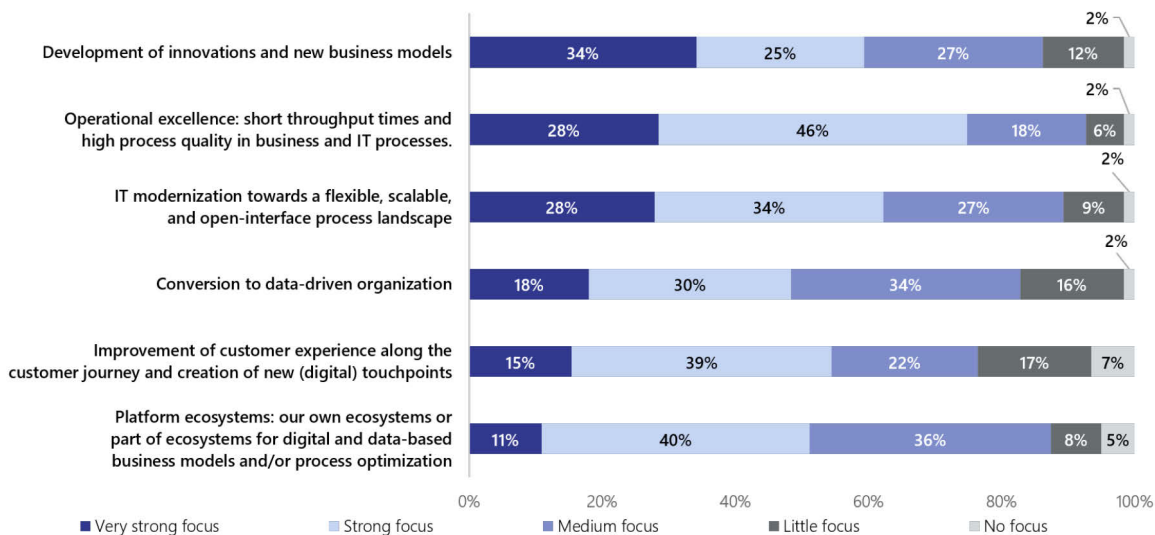


Figure 13: Question: What will be the focus of digitalization in your company over the next 24 months? Scale from 1 = “No focus” to 5 = “Very strong focus”; n = 120 to 123



According to the survey, 90 percent of the banks and insurance companies surveyed will also place a “very strong focus” as well as a “strong focus” on improving the customer experience during the customer journey and in the development of new digital touchpoints. A share of 58 per cent indicates that an above-average number of financial service providers are also placing major emphasis on generating digital platform ecosystems (API business).

In the energy sector, customer experience management has a higher weighting than in the other surveyed companies. But while the development of digital platforms is highly relevant for just under a third of the energy suppliers surveyed (36%), 56 percent of energy companies are investing in the “conversion to a data-driven organization”.

Among the industrial companies surveyed, 76 percent still consider operational excellence to be a major focus while, on the other hand, the development of innovations and new business models is a “very strong focus” and “major focus” in only 56 percent of industrial companies. Strikingly, 64 percent of the study participants from the capital goods industry stated that their digitalization strategies had a “very strong” or “strong focus” on the development of innovations and new business models. One in two of the automotive OEMs surveyed even places a “very strong focus” on innovations and new business models. This higher weighting of innovations among automotive and capital goods manufacturers is largely due to the fact that innovations are far and away the factors that can give them a competitive edge over companies that are leaders solely in terms of costs.

#### MAJORITY OF COMPANIES TAKE CONVERSION TO DATA-DRIVEN ORGANIZATION TOO LIGHTLY

Somewhat surprisingly, the conversion to a data-driven organization seems to be somewhat underrepresented in the digitalization plans in almost half of the companies. For example, 34 percent of the study participants stated that they had only a “medium focus” on setting up data-driven decision-making processes while 16 percent described no more than “low focus” on this point.

In the digital world, however, data-supported processes are a fundamental competitive advantage that enables players to identify opportunities and problems and take action quickly. However, detailed analysis shows that 65 percent of those companies that have not achieved their performance targets in the last five years will invest significantly more in data-driven decision-making processes than companies that have been able to achieve their performance targets (51%).

The past has shown that digital leaders are successful because, among other things, they can evaluate and analyze information directly at the place of its origin. Industrial companies, for instance, can benefit from the analysis of real-time data sent by a machine during the production of a product to carry out immediately a quality check and sort out defective parts. In digital sales, on the other hand, it is important to enhance the customer experience through customer insights – through product recommendations or offers relevant to the customer’s current situation (e.g., offering a temporary accident insurance policy shortly before the skiing vacation).



CHAPTER 8

# Measures to Increase Operational Excellence

The previous chapters have shown that the optimization of operational efficiency is an important competitive factor and therefore one of the top objectives in the development of innovations as well as of digitalization strategies.

Companies have a number of options they can exercise to improve efficiency. For one, they can optimize workflows; for another, they can accelerate processes. More than two-thirds of the participants in the study are currently devoting especially close focus on four topics:

- Simplification of processes so that employees have more time for added-value tasks
- Increased productivity through better utilization of capacity
- Avoidance of errors and duplication of work
- Creation of transparency regarding the status of machines and systems, value flows, and product quality

## FAILURE TO ACHIEVE PERFORMANCE TARGETS LEADS TO GREATER EMPHASIS ON DIGITAL EFFICIENCY

Companies that have not achieved their defined performance targets in the last five years give significantly more weight to their priorities for heightening efficiency in almost all areas than the enterprises that have been able to achieve their targets. For instance, 71 percent of the so-called low performers are making “very extensive” and “extensive” use of digital technologies such as AI, RPA, and cloud to increase the speed of processes. They are trying to make up for some of the omissions of recent years.

Only 56 percent of the study participants from all the companies surveyed stated that they wanted to employ digital technologies “very broadly” and “broadly” to accelerate process speeds.

### FUTURE MEASURES TO INCREASE EFFICIENCY

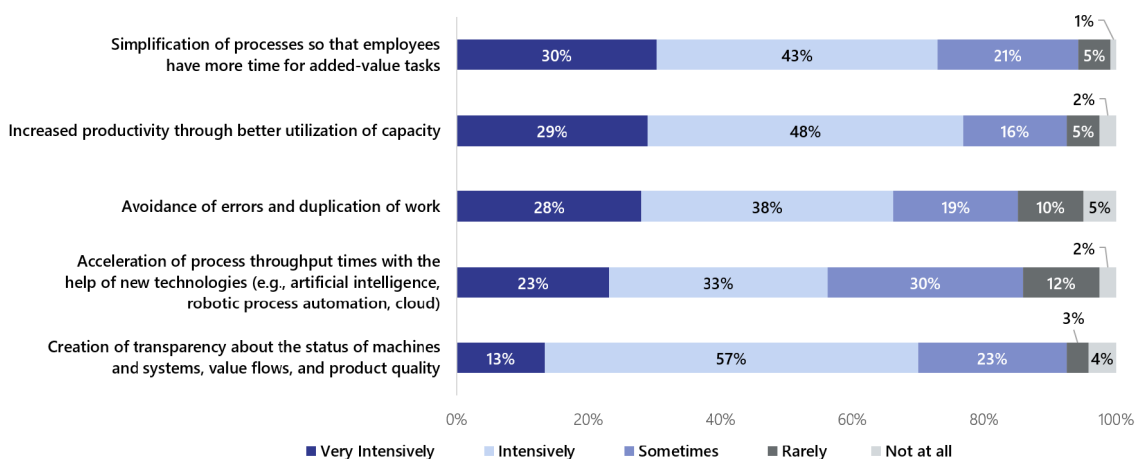


Figure 14: Question: Which of the following efficiency issues is your company currently addressing? All enterprises; scale from 1 = “Not at all” to 5 = “Very intensively”; n = 120 to 122



Almost 90 percent of the so-called low performers also have a “very strong” to “strong” digitalization focus on simplifying processes and avoiding errors and duplication of work.

In these two areas, process mining and robotic process automation (RPA) are increasingly being used as a combination to identify routine processes that are not running optimally and process breaks that lead to high processing costs and then to automate them with the help of RPA.

For example, manual booking processes or orders can be automated and input errors can be eliminated. In addition, RPA massively increases productivity because the software works around the clock and complex, but necessary, routine activities can be performed at lower costs. Another advantage of RPA is that automation successes can be achieved comparatively quickly and with less effort than with classic automation projects that require an adaptation of the IT backend processes.

#### FINANCIAL SERVICE PROVIDERS AND LOGISTIC COMPANIES INVEST MORE FREQUENTLY IN PROCESS QUALITY

Both the simplification of processes and the avoidance of errors and duplication of work are efficiency issues that are given above-average weight by the banks and insurance companies surveyed as well as by logistics companies. In these three industries, faster process processing times and higher process quality have a significant impact on customer satisfaction – for example, when damage claims are processed faster, payment requests are posted more quickly, or orders can be transmitted to the logistics provider for shipment more rapidly.

It is therefore not surprising that 83 percent of the logistics companies surveyed place the creation of transparency about the status of machines and systems, value flows, and product quality at the focus of their efficiency improvement projects much more frequently

than the other sectors surveyed. This topic plays an important role for no more than 43 percent of health care companies, but – somewhat surprisingly – for 71 percent of industrial companies.

#### HIGH EXPECTATIONS IN THE DIGITAL TWIN

An important technology concept for more transparency about the state of processes and for process simulation is the digital twin. It is used primarily for physical products (e.g., a machine, a vehicle, a production line, or an energy generation plant), but digital mapping of intangible products (services, processes) is becoming more and more common, usually in a private cloud environment.

The main point for the use of a digital twin is the evaluation of real-time sensor data that a machine or plant sends to the IT systems and their combination with artificial intelligence to draw conclusions about possible disruptions from the current status of the system. Downtimes can be significantly reduced, production costs lowered, and product quality increased. In addition, physical products can be developed first in a virtual environment and tested under real conditions before the actual physical engineering begins, reducing development costs and shortening the time to market. The digital twin also makes it easier to evolve or optimize products already in use as adjustments to the product can initially be made directly to its digital image and, if expedient, be imported via an update.

So the digital twin is an important technology concept for more transparency on the one hand and efficiency increases and process quality improvements and product developments on the other. The concept of the digital twin currently plays a role above all in industry and logistics.

At this time, 20 percent of the industrial companies surveyed use a digital twin for the digital mapping of their processes and for digital product development. Another 56 percent of the study participants from industry

stated that their companies are planning to introduce the digital twin. Among logistics companies, one-quarter of the companies (25%) already has one or more digital twins in use while another 63% have plans for their introduction.

Digital twins also play an important role in health care, especially for the early detection of complex diseases and for the simulation of therapies. Although only 15 percent of the health care companies surveyed are currently working with this technology concept, a further 62 percent are planning to introduce the digital twin.

For the surveyed banks and insurance companies, the digital twin does not currently play such a major role in comparison with the other sectors surveyed, although at least one in two financial service providers is considering the introduction of the concept. Yet for financial service providers, who often have to deal with very complex business and IT processes, a digital twin can help to provide transparency about the state of the processes. Digital twins can help to map processes in completely virtual form so that subsequently inefficiencies can be detected and a digitalization and optimization of internal process flows can be realized.

Of all the companies surveyed, 56 percent of the study participants are currently planning to introduce the concept of the digital twin. These plans underscore the high expectations of software-supported mapping of processes in the cloud and the trend towards data-supported processes.

USE OF DIGITAL TWIN

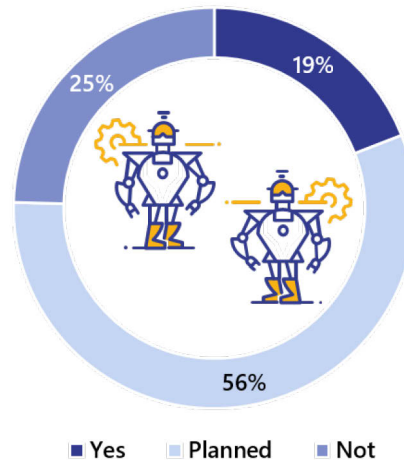


Figure 15: Question: Is there a digital twin for specific business processes? For example, to achieve transparency regarding processes and/or to enable frictionless data exchange? All companies; n = 110

MAJORITY OF COMPANIES TRY TO EXTRACT ADDED VALUE FROM THE DATA

Seventy percent of the companies surveyed already collect data along their entire added-value chain. Their main objective is to monitor processes continuously (inter alia, by using a digital twin of the processes) and to draw conclusions for process optimization. Complex workarounds that must be used by employees to compensate for missing interfaces between specific software applications and the consequent lack of automatic data transfers can be identified.

Yet another benefit is the comparison of process flows with benchmark data that serves the identification of complex processes and their subsequent simplification. For instance, order-to-cash processes of large companies often require a total of several hundred million process activities. In reality, a major part of this work is still done manually. The savings effects on the cost side result from the simplification of the processes and from the fact that fewer activities are required for a process or that some of the activities are automated.



**PROCESS MINING AND DIGITAL TWIN ARE TWO KEY ELEMENTS FOR THE IDENTIFICATION OF POTENTIAL FOR DIGITAL EFFICIENCY**

For a number of years now, the technological concept of process mining has been gaining increasing acceptance. Large companies and corporations in particular currently use process mining to analyze their processes (which are often nested and therefore enormously complex) and to identify optimization potential.

The technologies process mining and digital twin are closely related since process mining makes it possible to map transparently complex processes in digital twins, to uncover inefficiencies, and to conduct the optimization of internal process flows. The use of previous methods such as observations, surveys, and benchmark studies were able to monitor only a part of the processes at any one time, but the interaction of process mining and digital twin makes these actions possible for complete process chains.

Six out of ten study participants stated that their companies already use process mining tools to measure continuously process performance with the help of tools and to gain insights for optimization. The proportion of companies using process mining is particularly high in the financial services sector (73%) and in logistics and transport (83%).

Companies that have not achieved their performance indicators in the past five years use process mining comparatively less frequently.

A major proportion of companies using process mining already use AI tools to detect patterns and anomalies in the data of digitally mapped processes and products. Thirty-eight percent already use machine learning tools in combination with process mining while another 37 percent plan to use machine learning.

When it comes to AI, it is again the companies that have been able to achieve their performance goals in the past that are much more likely to be using this technology than those that have fallen short.

**USE OF DATA**

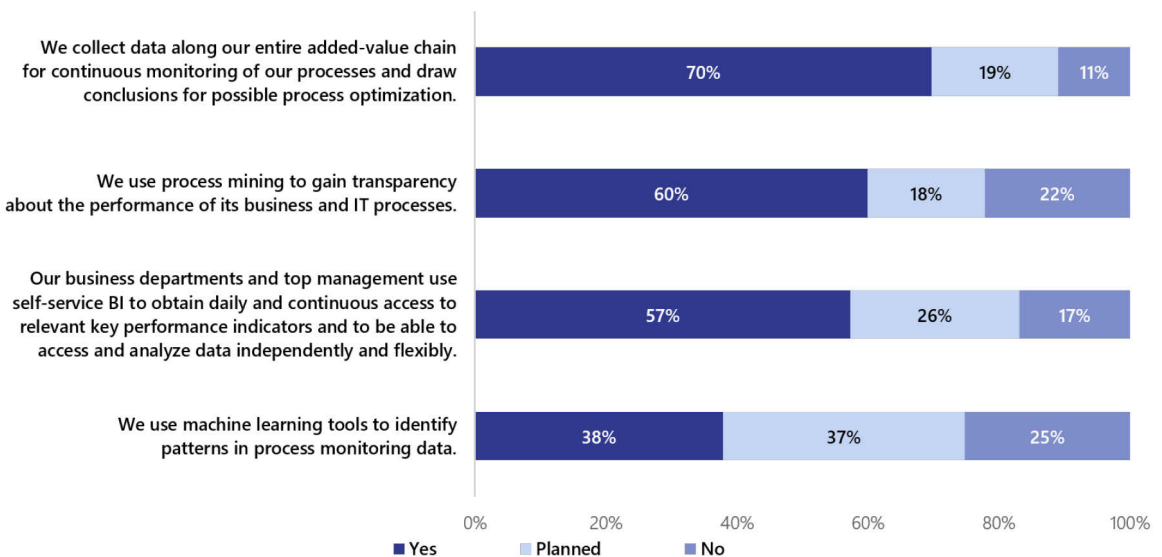


Figure 16: Question: Digitalization means that more and more information is available in digital form. How does your company currently use data? All companies; "Yes", "No", "Planned"; n = 113 to 121

**SELF-SERVICE BI IS GRADUALLY GAINING GROUND**

As a result of the rising flood of data, shorter market cycles, and greater volatility, corporate management in the digital age, which was previously based primarily on management reporting oriented to the past, is now changing to real-time management. Data increasingly serve as the basis for strategic and operational decisions (such as route planning and passenger management in logistics and long-distance traffic) or for forward-looking corporate management (for the identification of risks at an early stage).

Accurate predictions cannot be made without complete data of correct content. Moreover, owing to shorter decision-making cycles, it is becoming increasingly important for employees and managers to have direct access to either previously prepared key figures or to dashboards they can use to create analyses based on a clean and valid set of data without extensive effort (at the push of a button).

Fifty-seven percent of the companies already use this approach of self-service BI. The main focus is on the fast and complete integration of information from the various upstream systems and their inclusion in reporting tools. Tools such as Tableau, Qlik, or Power BI from Microsoft are examples of three leading self-service BI tools that have experienced a significant increase in utilization in recent years.

Interestingly, only 45 percent of the study participants from industry stated that they already use self-service BI. But 28 percent of the industrial companies surveyed are currently planning to introduce self-service BI. In contrast, 81 percent of the respondents from the logistics and transport industry stated that they already use such BI solutions.

**INVESTMENTS IN IT MODERNIZATION NECESSARY FOR SELF-SERVICE BI**

Collecting data and information and using the insights obtained from their analysis to take action for process optimization and marketing and sales measures is one of the success criteria of digital business models such as those offered by Booking.com, Zalando, Amazon, and other digital leaders. Continuous access to relevant key figures and a data model that is as uniform as possible are of crucial importance for data-based decision-making processes and digital business models. A common problem with reports, however, is that all the information required to create key figures is stored in different databases and, owing to the lack of modern interfaces (APIs), the retrieval of these data from separate storage locations for inclusion in reporting tools often involves major expenditures of time and effort.

During the transition to a data-driven company, it is very important to give the departments and management access to key figures at any given time – either updated daily or in real time. In the past, separate requests requiring major effort in the IT or BI department were still required in many companies before the required information could be extracted from the upstream systems and the key figures could be calculated.

The modernization of IT systems is consequently of great importance on the way to a data-driven company – for example, by first transferring isolated and obsolete separate software solutions to the cloud and later to a new technology platform. Furthermore, many companies are currently investing in the introduction of APIs (application interface programming) to improve the interconnectivity of their databases and IT applications.



## CHAPTER 9

## Change Processes Demand New Cooperation Models

During the development of innovations and the realization of digitalization strategies, factors such as responsiveness, speed, user experience, and quality are becoming increasingly important. This prompts more and more companies to try to establish interdisciplinary and cross-departmental collaboration models – and the resultant agility – for specific projects in which the above-mentioned factors play an important role.

According to 55 percent of the study participants, agile collaboration methods are used “frequently” to “very frequently.” A particularly large number of companies that frequently cooperate on an interdisciplinary and cross-divisional basis can be found among the surveyed financial service providers (64%) and logistics companies (94%). In contrast, only 44 percent of industrial

companies, 34 percent of energy suppliers, and 39 percent of health care companies stated that they “frequently” or “very frequently” use agile collaboration models.

Only very few companies (14%) are converting their entire organization to agile collaboration models. The logistics companies in the survey are most likely to be doing so (17%).

The majority of the companies (71%) will employ agile collaboration models solely in areas where they consider it to be expedient such as in IT, marketing, or product development. On the other hand, one in five of the industrial companies surveyed and 28 percent of the energy suppliers have at the moment no plans to introduce agile models in the future.

### USE OF AGILE COLLABORATION MODELS

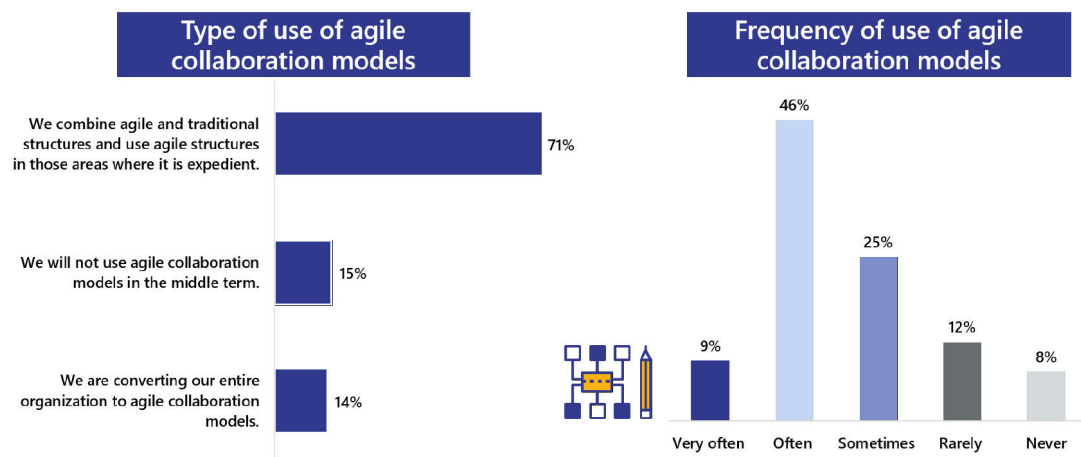


Figure 17: Questions: To what extent does your company use agile collaboration models (Scrum, SAFe, Spotify, Scrum@Scale, etc.)? All companies; Single answer; n = 116; Does your company use interdisciplinary and cross-departmental collaboration models (e.g., agile methods) when planning and implementing digitalization measures? All companies; n = 120

**SUCCESSSES ACHIEVED THROUGH AGILITY**

According to the majority of managers surveyed, the use of agile collaboration models leads to some improvements during the realization of projects. Above all, improvement in program and project management due to greater transparency about the status and goals of projects was achieved in 73 percent of the companies through greater agility in project realization. Among the banks and insurance companies surveyed, as many as nine out of ten respondents agreed with this statement – in contrast, only just under two-thirds of the respondents from industry and the energy sector agreed with it.

In six out of ten of the companies surveyed (59%), duplication of work in cross-departmental projects was reduced, which has a major impact on the speed of project realization and the quality of the project result. Improved cross-departmental collaboration enables 54 percent of companies to manage projects with a greater focus on overall success. It is important to involve as many of the involved divisions as possible from the outset and to focus on the overall objective.

More transparency, less duplication of work, and more focus of all project teams on the overall success led to

a higher quality of project realization in almost half of the companies (48%). This can be reflected in such results as an improved customer experience of digital solutions (apps, online platforms, etc.) or in end-to-end processes and the consequent higher degree of automation in the process chains.

The surveyed logistics companies in particular were more likely to achieve success in this area (67%) than the other companies. Only 43 percent of the study participants from industry and 29 percent from the energy sector, for instance, stated that the quality of project realization had improved so far through the use of agile methods.

A key objective in modern innovation management is the local development of ideas from employees for process improvements or new (digital) business models and the testing of these ideas as minimal viable products (MVP) and initial prototypes. The acceleration of innovation processes has so been fully achieved by agile approaches in no more than 39 percent of the companies surveyed; the level is above average, however, in logistics (53%) and especially low in the energy industry (31%) and health care companies (29%).

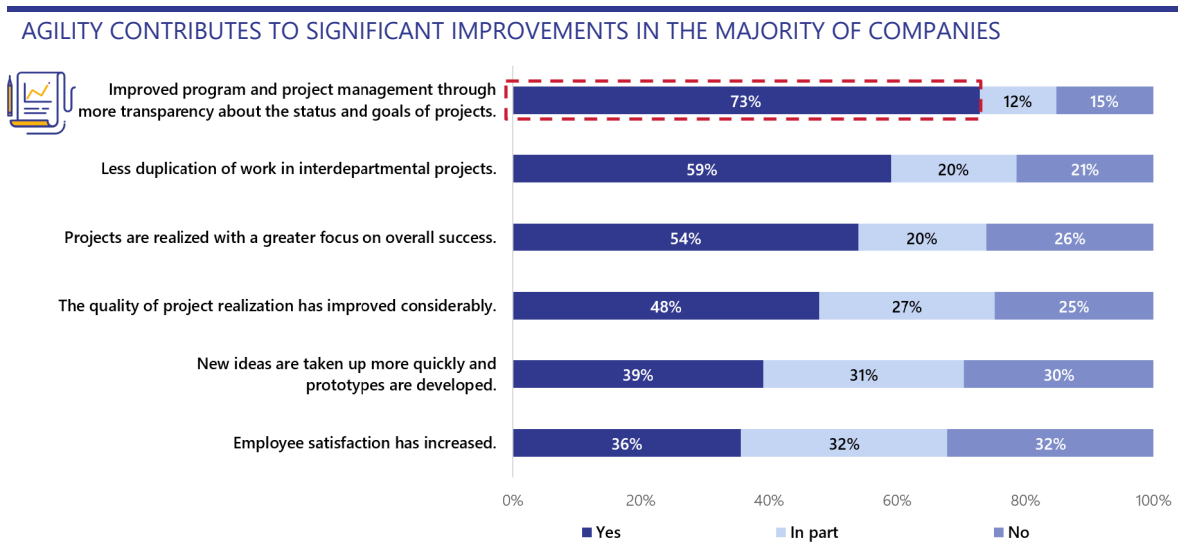


Figure 18: Question: What successes have already been achieved by applying agile collaboration models? All companies; "Yes", "In part", "No"; n = 115 to 118

The use of agile models also has an impact on employee satisfaction; for instance, it improves the coordination among multiple departments involved in projects by establishing joint teams, reduces duplication of work, or gives employees greater responsibility and latitude in self-organization. The responding managers in 36 percent of the surveyed companies noted that the general satisfaction of the employees had already increased. Another 32 percent said that employee satisfaction had improved at least in part thanks to more effective methods for the performance of projects. Interestingly, the use of agile methods in companies in the health care (57%) and logistics and transport (47%) sectors led to improved employee satisfaction significantly more often than in the other companies.

Although an especially high number of study participants with experience in agile collaboration methods were from the financial services sector, only about one in two (45%) reported higher employee satisfaction. One reason is obvious: the more agile transformation is driven forward, the greater the need to change or adapt existing forms of cooperation – and this affects the entire workforce.

Newly formed interdisciplinary teams, especially in large companies with complex structures, must first establish a common cultural foundation. Moreover, new forms of project realization (daily meetings, fast sprints, etc.) as well as the self-organization of agile teams often initially lead to points of friction and to a change in familiar working methods.

**MOST COMPANIES ARE INVESTING IN THE DIGITAL EMPOWERMENT OF THEIR EMPLOYEES**

The processes of adaptation and change that are inevitable during digital transformation also include the training of employees and managers in the skills required to participate in new technologies as one element and, as another, to use the new working and technologies at all.

While a large proportion of the companies surveyed (84%) provide their employees with modern digital devices (laptops, tablets, barcode scanners, etc.), only 60 percent of the study participants stated that their companies are investing in new business software that is easier for users to operate thanks to more intuitive user interfaces (user experience), a measure that can speed up the processing time of work steps and offer other benefits.

**COMPANIES STILL HAVE ROOM FOR IMPROVEMENT IN THE TRANSFER OF KNOWLEDGE AND NEW WORK STRUCTURES**

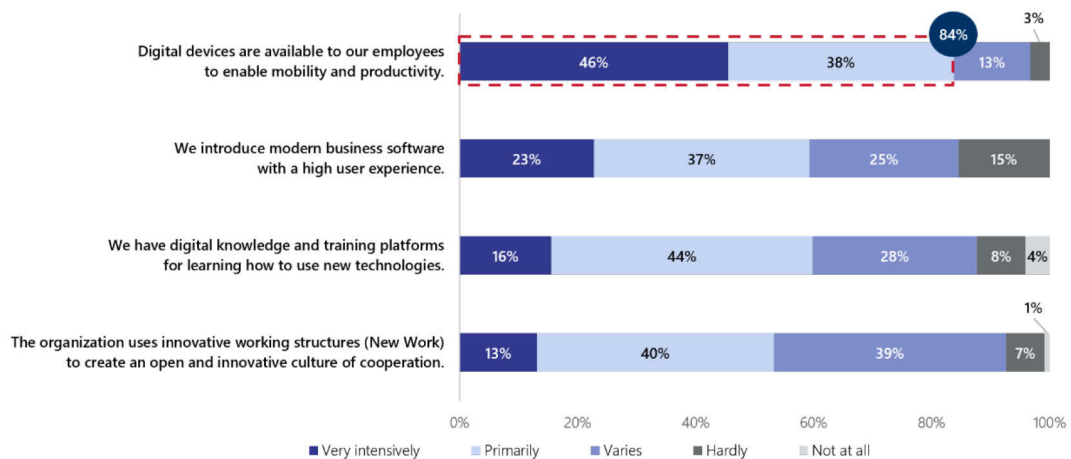


Figure 19: Question: To what extent does your company enable employees to use new digital technologies? All enterprises; scale from 1 = "Not at all" to 5 = "Very intensively"; n = 122 to 123



One important element of agile working relates to new forms of virtual and physical collaboration. In so-called New Work concepts, this includes being able to work from anywhere and in virtual rooms, to connect with one another using collaboration tools (MS Teams, Zoom, etc.), and to share data and knowledge at any time. In other words, New Work approaches are an important instrument for agile and efficient project realization and for modifying the classic process and organizational structure, which is strongly characterized by Tayloristic structures and clear hierarchies, to meet the requirements of digitalization.

More self-organization, more discussions on the team, more co-determination, and fast decision-making are only some of the principles of modern work methods. The structures that must be established for the creation of an innovative and open working environment are already “predominantly” or “largely” in place in 53 percent of the companies surveyed.

**POTENTIAL FOR DIGITAL LEARNING NOT FULLY EXPLOITED**

Only six out of ten of the companies surveyed provide to any major extent platforms for the transfer of digital knowledge and training at this time to their employees

so that they can effectively learn how to use new technologies and software solutions. It is interesting to note that 12 percent of companies currently make digital learning “hardly” or “not at all” available. The surveyed banks and insurance companies (72%) in particular frequently provide their employees with digital learning platforms at a level from “predominantly” to “largely.” In contrast, digital learning platforms are especially rare in the surveyed companies from industry (56%) and health care (50%).

**DIGITAL LEARNING IS NECESSARY**

According to the study participants, however, there is a need for digital learning as only 36 percent agree with the statement that all the necessary skills for digitalization exist in their companies. In many companies, employees often lack a general understanding of new technologies and of the opportunities to improve processes or develop new business models with the aid of data analysis.

More specific training and change management can also help to increase the motivation of employees to use new digital technologies and working methods. In fact, 22 percent of the participants in the study complained about a lack of motivation to use new technologies among employees.

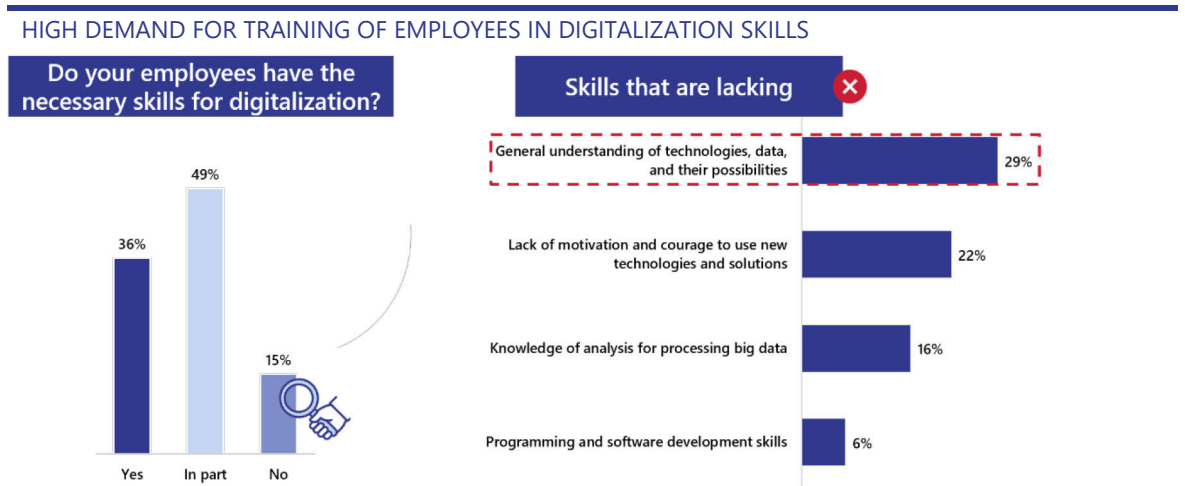


Figure 20: Question: Do the employees of your company have the skills that the company needs for digitalization? All companies; n = 123; Question: What skills in particular are lacking? All companies; Top 3 responses; n = 83



## Conclusion and Outlook

The majority of the large companies and corporations in the study have used the past few years to weather-proof themselves from crises (for one) and to bolster their defense against new attackers with disruptive business models (for another). Towards the end of 2018 and into 2019, the first signs of a slowdown in the global economy – exacerbated by the trade conflict between China and the USA, which also affected Europe as the most important trading partner of both countries – began to appear. The German gross domestic product was impacted as well, rising by no more than 0.6 percent in 2019 subsequent to increases of 1.5 percent in 2018 and a strong 2.5 percent in 2017.

### STUDY PARTICIPANTS PREPARING FOR CRISIS SITUATIONS

A look at the investments in digital technologies as early as 2018 and 2019 revealed a clear direction in movement as a result of the economic development that was even then cooling down in some areas: toward more automation and leaner processes to increase productivity and reduce costs and toward heightened migration of IT resources to the cloud.

In recent years, large companies in particular have been taking action with regard to their administrative processes, some of which were often very complex while simultaneously bringing little added value and were still very often performed with a high level of manual effort. With the help of robotic process automation (RPA), many companies have achieved a higher degree of automation and digitalization in their routine processes in a comparatively short time.

At the same time, analyses conducted by Lünendonk in 2019 showed that the utilization of the cloud in operating business processes had risen sharply and that more and more companies had moved their IT infrastructures

to the public cloud of the leading hyperscalers (Amazon Web Services, Google Cloud, Microsoft Azure).

### MAJORITY OF COMPANIES USE DIGITAL TECHNOLOGIES FOR DIGITAL EFFICIENCY

A consequence of these investments is that 74 percent of the companies surveyed have inter alia been able to reduce process throughput times and improve their cost structure through the use of digital technologies – partly due to the fact that progress in the use of the cloud and RPA is far advanced in one out of two companies. One out of two companies chooses cloud products when purchasing new software solutions and is transferring major sections of its existing IT to the cloud.

Efficiency and cost issues are also at the top of the strategic agenda of the responding companies when it comes to innovation management. One of the primary focal points for 84 percent is in the development of innovations for cost reduction/efficiency improvement. Three out of four companies are developing innovations to make their processes even more flexible and to improve further product and service quality.

Clearly, the objectives of innovations as elements of digitalization strategies have changed significantly in many companies over the last two years. The [2018 Lünendonk® study "Innovative Business Models, Products, and Services"](#) posed the question about innovation targets. For the majority of the managers surveyed, the primary focus at that time was on customer-related topics such as boosting revenues through innovative products and services and improving competitiveness. These two topics are still important to the participants in this 2020 Lünendonk® study, but they have a significantly lower priority than was the case in 2018.

It is clear that, in response to globalization and digitalization, many large companies and corporations are now investing more in aligning their processes with the platform economy and the associated cross-company data exchange. Examples include the breaking down of complex and rigid IT processes into a flexible and microservice-based modular process landscape. Some of the advantages are the faster adaptation of processes to changing customer and market requirements and the quicker and less elaborate connection of new digital solutions.

#### COMPANIES ARE (FINALLY) TRANSFORMING THEMSELVES INTO DATA-DRIVEN COMPANIES

Forty-eight percent of the companies surveyed want to push ahead with their transformation into data-driven companies in the future so that they will be prepared to meet the changed market requirements. In this sense, it will be particularly important to conduct corporate management and decision-making processes on the basis of data analyses and real-time key figures and to increase significantly response times and the time to market.

In a volatile world, data-based decision-making processes as well as fast and direct access to all control-relevant key figures are key management tools for proactive corporate management. What is more, some business processes cannot be optimized any further using classic optimization methods such as shared service centers, outsourcing, or software-supported (but not cognitive) workflows. In consequence, many of the surveyed companies are now focusing their attention more closely on AI tools as the logical evolution in predictive analytics. AI not only employs algorithms for data analysis and prognosis; intelligent AI software is increasingly able to recognize patterns in large amounts of data, either independently or with the partial support of machine or deep learning, which means it can carry out complete processes or routine tasks independently. Used in combination with robotics technologies such as RPA, it creates intelligent systems that can perform certain tasks with software support rather than manually.

By adding yet another new technology – process mining – inefficient processes and procedures can first be detected transparently and subsequently simplified by intelligent automation tools. More than one out of two of the companies surveyed (56%) in this Lünendonk® study would like to exploit the new technological opportunities arising from the combination of process mining, AI, RPA, and the cloud in the future.

In general, many of the study participants are already far advanced in the use of artificial intelligence (AI); in fact, 38 percent already use AI services such as machine learning for more effective discovery of patterns in their databases that can provide insights useful for process improvements or for customer needs.

#### DATA INSIGHTS ARE AT THE HEART OF ALMOST ALL DIGITALIZATION STRATEGIES

The increasing focus placed by the companies surveyed on the use of data analytics and artificial intelligence is no coincidence. In the digital world, the global economy is developing into a platform economy in which everything is interconnected (vehicles, machines, apps, household appliances, e-commerce systems, etc.) and data are constantly being produced. Data are the essential resource for digital business models and the global marketing of products and services.

In this changed environment, only data insights provide opportunities for the highly individual address of customers featuring marketing and communication measures tailored to their specific needs and for the optimal utilization of process capacities. Without the capabilities of AI or machine learning (ML) to analyze huge quantities of data such as social media data, sensor data, or text data in a very short time (in the cloud) and to discern patterns in this flood, it will not be possible to handle effectively the exponential growth of data and subsequently realize digitalization strategies so that they return the expected added value.

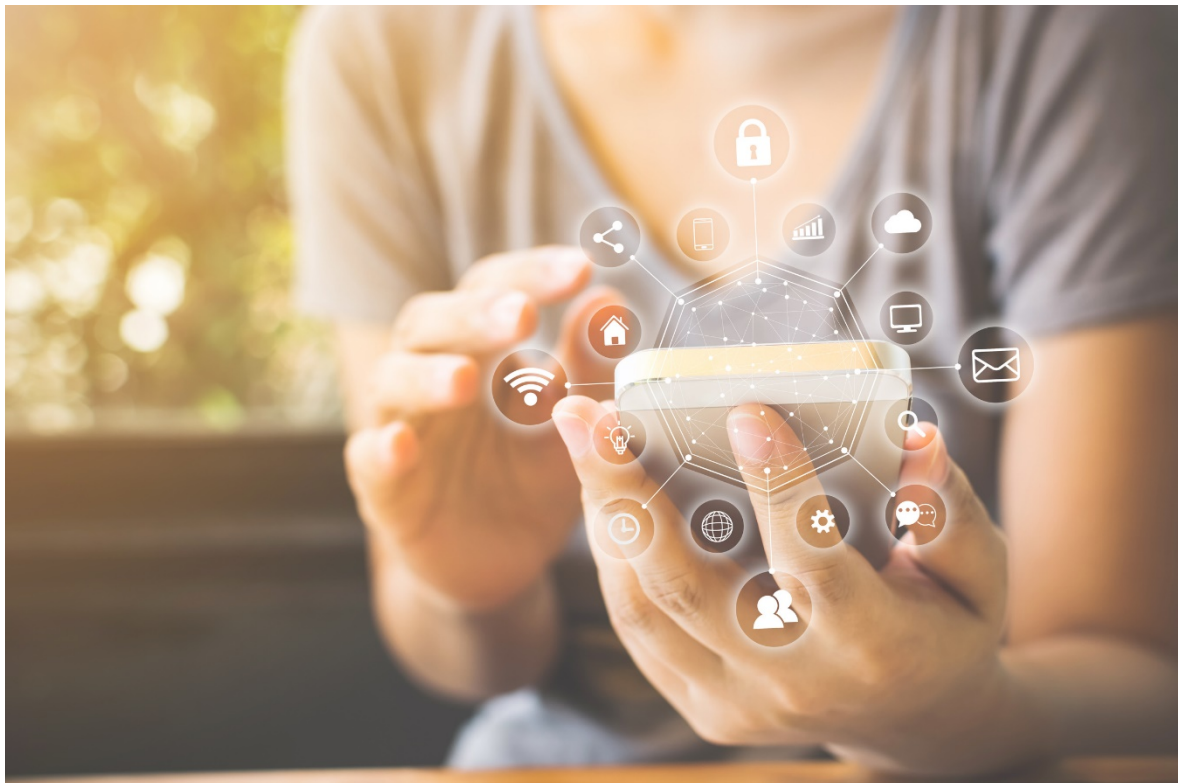


### DIGITAL EFFICIENCY LEADS TO THE DIGITAL EXPERIENCE

The results of the study show the critical importance of efficient business processes for the success of customer-centric strategies. Since more and more companies are setting up digital customer touchpoints – in response to the COVID 19 crisis, if not sooner – comprehensive (i.e., end-to-end) processes are becoming significantly more important for the success of digitalization strategies and digital business models. The long-lasting success of many disruptors is evidence that success is not determined solely by the customer/user experience at the front end; process quality and speed along all touchpoints of a customer journey are required. The current COVID 19 crisis has highlighted one further element especially sharply: companies that do not change and respond quickly to digitalization and changing customer requirements today will find it very

difficult to survive in the (digital) competition of the future. If nothing else, the lockdown and its restrictions on freedom of movement and contact to others as a response to COVID 19 made one thing perfectly clear: even though brick-and-mortar or physical distribution channels were restricted, consumption and communication via digital channels functioned very well.

A large proportion of customers will soon become accustomed to this “New Digital Normal” and will in future be less reluctant to turn their backs on providers who stick with traditional sales and communication channels. If companies using traditional business models (i.e., a sales approach relying heavily on brick-and-mortar and physical locations) do not adapt to the changed situation in the middle term, providers with digital-only or predominantly digital business models will continue to gain market share.



# Lünendonk in Discussion with the Study Partners

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DETECON INTERNATIONAL

**DETECON**  
CONSULTING

## Digital Efficiency: Data-based Decisions Make the Difference

**Björn Menden**Managing Partner and Head of  
Global Functional Chapter Digital  
Operations & Performance,  
Detecon International

**LÜNENDONK:** In following the “digital efficiency” approach, you look at the topic of digitalization from the perspective of efficiency. There have been waves of automation in the past, of course. What is different about this approach, and why is it becoming so urgent in the present situation?

**BJÖRN MENDEL:** Digitalization offers a wealth of new opportunities. In the past, automation has always gone hand in hand with standardization. This approach is limited by the increasing complexity of the processes. Digitalization brings intelligence into play. Process mining, for example, provides a good basis for making decisions that are actually based on data, providing a new level of quality in the management of processes and entire organizations. Data create transparency and are available in real time when modern technologies are used. The algorithms of artificial intelligence offer even more opportunities for processing these data. The gain in flexibility and speed has a direct impact on decision-making behavior – and this is where the major difference in comparison with previous automation efforts is to be found. I am convinced that data-based decisions

within the framework of a digital efficiency approach strengthen the resilience of companies; their benefits are not limited to improved efficiency.

**LÜNENDONK:** The Detecon Digital Efficiency Index reveals differences in digitalization and efficiency in various industries. How do you assess the present study results in comparison with the results of the index?

**BJÖRN MENDEL:** The results of the study support our expert assessment of the digital maturity of the various industries. This is confirmed by the specific differences among industries as well as by the heterogeneity of the characteristics in the various dimensions. To this extent, superimposing the results over one another offers an enlightening view and reveals the industries in which the focus is already on the consistent digitalization of value chains.

Financial service providers – banks in particular – are examples of a sector that is increasingly jettisoning its legacy systems and processes and repositioning itself in digitalized form – and not only at the private customer interface familiar to us all. Technologically, this sector is already far advanced, but strategically, it is often still searching for a response to the speed of innovation of the fintechs. The telecommunications industry, in contrast, has already undergone major changes in response to the pressure of digitalization, even though the issue of legacy technologies has not been fully resolved. The results of this study – just as other sources, by the way

– are regularly incorporated into the Detecon Index for the further broadening of the empirical basis

**LÜNENDONK:** The generation and use of data are at the heart of digitalization. How do you lead companies in the direction of a data-driven organization? Are there tools providing strong support to companies who are on this journey?

**BJÖRN MENDEN:** The transformation to a data-driven organization is quite complicated and cannot be realized at the push of a button. The starting point is always the client's present situation in terms of its tool landscape and the related opportunities for the generation and evaluation of data as well as with regard to analytical skills and the prevailing culture in the company. In this sense, there is no blueprint. And even the best tool can never be the solution; it is always only one piece of the "puzzle of digitalization".

You cannot make consistently data-based decisions without complete organizational data, including information on cultural aspects, and full transparency of process data. These data must be merged and linked. And then a decision must be made about what you want to accomplish with the data and how to achieve your goals. The mindset is crucial here, but so are the competencies available in the company.

**LÜNENDONK:** The relevance for the use of digital technologies is widely understood, but utilizing them remains a difficult undertaking. How do you convince companies to begin their realization?

**BJÖRN MENDEN:** As we are seeing right now, the coronavirus pandemic is an unprecedented driver of digitalization! Many companies are now responding so that they can remain competitive. But we also see how companies that are already proactively using digitalization – for example, for the improvement of customer interaction – are now benefiting from their actions in a special way. Being a consultant, I can create a better understanding of digitalization, structure the approach, and support the selection of the appropriate tools – but the readiness to go digital must come from the companies themselves. The mindset and the skills and abilities on which a company depends must step up here.

**LÜNENDONK:** Is there a use case that can be used to demonstrate the benefits of a digital efficiency concept transparently and simply?

**BJÖRN MENDEN:** For example, we helped a European rail operator to digitalize the processes involved in the maintenance of its cars and trains, from real-time communication between employees using tablets during inspections to intelligent algorithms that optimize planning and maintenance on the basis of this communication. When we speak about the topic of process optimization, the impact of COVID 19 has revealed that digitalized supply chains have an enormous effect on the resilience of the added-value chain, and critical failures can be avoided or at least kept under control. We can clearly see this trend among the clients with whom we cooperate in the area of process mining and optimization. We have realized successful use cases for logistics-intensive topics such as port management or trade fair logistics in collaboration with our colleagues at T-Systems.



## Digital Change Begins in the Mind



**Ulrike Volejnik**  
Head of Business Area New Work,  
T-Systems Multimedia Solutions

**LÜNENDONK:** What key points should be at companies' focus during the modernization of their IT landscape?

**ULRIKE VOLEJNIK:** Many people and companies still believe that restructuring their business requires nothing more than the simple updating of the IT systems, the purchase of new hardware and/or software, the launch of separate projects, or the modification of processes without determining a genuine general strategy. But this is not even the first thing that decision makers should think about.

Digital change begins in the mind and then carries over to the transformation of the organization. It is not a question of technology and only technology. The involvement of the employees in deciding how to proceed with digitalization is absolutely fundamental, especially when it comes to improving collaboration and process optimization. Ultimately, it's all about working efficiently with digital tools and improving usability for every user. However, we can achieve such digital efficiency only if we also focus on the needs of the workforce and respond to their wishes and abilities, thereby

releasing their potential. What platforms, tools, or hardware are used is of secondary importance. We create digital efficiency by creating synergies within the company among existing competencies, including the IT division.

**LÜNENDONK:** How can companies develop interdisciplinary and cross-functional collaboration models and respond to the needs of all employees without turning the entire corporate culture upside-down?

**ULRIKE VOLEJNIK:** But that's exactly the point: we have to turn things upside-down to find new ways that lead to innovative solutions. If this also affects the corporate culture, the change process must include it as well. A company-wide change of processes and structures can, if well planned and supported, lead to the creation of previously unimaginable opportunities and business models. This is in turn based on interdisciplinary action and the cooperation among highly diversified departments. Everyone has his or her own take on the issues that is valuable, and appreciation of these viewpoints should be reflected in a company's culture.

If an enterprise is not prepared to embark on this journey, it will neither increase its competitiveness nor sustainably develop new markets or reduce costs. After all, innovation and change are not ends in themselves; they serve the purpose of evolution and optimization.

**LÜNENDONK:** Motivation and participation are fundamental to a technology-driven work culture. What do



you advise managers to do to motivate their employees and increase their satisfaction?

**ULRIKE VOLEJNIK:** Managers should ask their employees questions more often, identify their needs, and share their plans with them. Instead of thinking in terms of classic hierarchies, they should see their company as the social structure that it is. Each single component of this structure functions differently, and this in turn generates the dynamics of the whole. The specifics of the dynamics must be determined, and employees must be fostered on the basis of more exact targets. Employees who are actively involved in plotting the course and not suddenly presented with final decisions support this direction.

**LÜNENDONK:** What characteristics do companies that successfully digitalize and continually respond to current market developments have in common?

**ULRIKE VOLEJNIK:** Companies that successfully digitalize do exactly that; they constantly reposition themselves and orient themselves both to their surroundings and to their internal needs. Organizations that see change as an ongoing process and not as exhausting or a necessary evil will always have their ear to the ground and stay a step ahead of coming changes. This never-ending change, this constant disruption must be written into their own DNA. This starts with the selection of personnel, and the business model is by no means the final destination. Questioning processes, responsibilities, or

IT decisions does not bring the development of companies to a halt. On the contrary: the more people within the company are concerned with themselves, i.e., their individual abilities and their external impact, the more efficiently they will work.

**LÜNENDONK:** What opportunities do companies have to perform successfully the balancing act between transparency and co-determination on the one hand and economic management interests on the other?

**ULRIKE VOLEJNIK:** Anyone who is in management knows that this question will come up sooner or later, anyway. Organizations that flatten their formal hierarchies are of course confronted much earlier and much more often with the challenge of reconciling these two sides. I am, however, convinced that this reconciliation does not have to be a struggle; it can instead be compared to a pair of scales.

Managers have the task of balancing the two sides. They do this by trying something, falling down, getting up, and trying again. Transparency and economic action are not mutually exclusive. The more clarity there is about facts, the more understandable they become. This runs through the entire added-value chain and has an impact on productivity and efficiency. Digital means help to maintain the balance between the necessary degree of participation and transparency while at the same time maintaining sovereignty over critical business areas. After all, good management involves not only providing insight, but also setting clear boundaries.



T-SYSTEMS INTERNATIONAL



## New Potential Through Digital Technologies



**Stephan Salmann**  
Vice President Technology, Architecture  
& Innovation, T-Systems International

**LÜNENDONK:** What technologies will soon be ready for the market and open up new digitalization potential?

**STEPHAN SALMANN:** We differentiate among ten technology clusters that in comparison with – let's say – traditional technology enable innovative leaps forward. Technologies are developing rapidly in all areas. Cloud technologies have been established for many years, and artificial intelligence in all its forms is currently being introduced in almost all industries and business functions. Above all, AI services such as computer vision, natural language processing, or deep learning fall in this category. Furthermore, blockchain technologies are developing more traction and quantum computing is about to reach a stage of maturity for broad use.

**LÜNENDONK:** What about the future? What emerging technologies will be ready for productive use in companies in a few years?

**STEPHAN SALMANN:** When we look into the near future, I would highlight the following technologies:

1. Campus edge solutions enables smart distribution of algorithms and data between traditional cloud systems and "on-premise" data centers. We can use them to bring IT close to the systems that must be controlled, and this is particularly advantageous for the use of AI models in real-time control systems (Industry 4.0). When they are also supported with 5G connectivity, we add the bandwidth and transmission speed for handling massive volumes of data quickly and securely. The resulting benefits are self-evident and have a wide range of applications from industrial production, logistics, retail trade, public safety, and traffic control to health care.
2. I believe that blockchain technology will soon gain a solid footing. It is a method for confirming the accuracy of information and increasing security on the Internet. Without it, people and companies will not develop confidence in digitalization. From a business management point of view, it leads to a considerable reduction in transaction costs, which in turn reduce product prices or directly increase the profitability of the company. Smart contracts, crypto-currencies, trace control, and testimonial verification already demonstrate to us today what is possible.
3. Moreover, we will soon see data-sharing platforms becoming firmly established. Today, hyperscalers

such as AWS, Microsoft, and Google allocate massive volumes of data from private households and companies. The desire to regain control of our own data and to be able to participate economically in their use is becoming increasingly widespread. IT meets this need by providing data hubs that are operated on a fiduciary basis, so to speak, collecting data from a wide variety of companies and individuals and making them available to everyone. The EU has launched a European project called Gaia X that is particularly committed to this thought.

**LÜNENDONK:** To what extent will the COVID 19 crisis change the everyday life of companies and in what areas will new IT concepts emerge?

**STEPHAN SALMANN:** It is almost a truism that the COVID 19 crisis will change the way we work and live in the long term. This is often summarized in the term "New Normal." The coronavirus is acting as a catalyst for the digital transformation of companies. Remote collaboration is maturing, first in the corporate world and hopefully soon in education, and will remain with us. Being able to work everywhere, via different channels, interactively, and across company boundaries without being aware of distance, is still a challenge, but we are rapidly approaching its realization at this time.

During the first months of the COVID 19 crisis, we learned how vulnerable our cost-optimized supply chains are and are currently working to make them more resistant to crises. Supply chains are being replaced by networks interwoven with business continuity measures that can be activated at any time – localization/flexibilization of production, automation of processes, dynamic configuration of new networks that take into account logistics platforms.

We are also learning to interact with our customers more digitally and across all interaction points. Digital trade fairs, digital showrooms, virtual product

presentations, and AI-supported customer care are developing right now and will remain with us. Proximity and computer vision solutions in particular are available, and we are using them to restart our operating facilities rapidly without endangering the health of our employees and to support responsibly the "Back to Normal," not just the "New Normal".

**LÜNENDONK:** What are the key competencies that a company should have in place so that it can compete in the digital world?

**STEPHAN SALMANN:** Well, the first obvious key competence is the understanding of digital technologies. And you understand them best by using them and exploiting their potential as you use them. This perception of technology drives change in the sense of applying technology to business processes. The term "emergent strategy development" describes the fact that companies evolve more or less through technological experiments. This takes us to further competencies such as an innovative corporate culture (fail early) and management entrepreneurship – i.e., having the courage to try out new things and take risks. Of course, it also makes sense to learn from the mistakes made by others and to take advantage of the relevant expertise. Another necessary competency is the creation of business agility. Close cooperation of business and technological expertise in short, successive development cycles, interrupted and optimized by reflection and "lessons learned," supported by an integrated toolchain, have long proven their value. However, digital technologies today are highly diverse, and it is very difficult for a single company to test all the technological potential itself.

We are seeing growing cooperation among companies as they combine their expertise and develop solutions and competencies in response to a common



challenge. In this respect, integrators have an important role to play in digitalization, namely, acting as partners and catalysts to other companies.

**LÜNENDONK:** On the one hand, digitalization has been the dominant theme of the last ten years; on the other, applications 20 years and older are still in operation. How can these disparities be reconciled?

**STEPHAN SALMANN:** This contradiction does indeed exist. But how can a sophisticated analytics program function as long as the same data types are stored in different locations, i.e., in different data centers, and perhaps even structured differently? Over the course of many years, IT silos have formed, often reflected in the business organizational units of com-

panies (marketing, sales, production, etc.) and specifically designed for different business divisions or national branches. These silos deprive enterprise-wide digitalization programs of the groundwork for their success. If we now consider the aspect of time, we often find the use of obsolete technologies in today's IT landscapes, and their maintenance is becoming increasingly expensive. Most companies have built up technical debts of this type.

But there are in the meantime efficient concepts for breaking up these logjams. The disaggregated and obsolete IT landscapes can be transferred to modern landscapes that are often based in the cloud and continuously updated from that point on. These modernization programs create the necessary prerequisites for company-wide digitalization programs.

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COMPANY PROFILE



## Detecon International

Detecon is the leading technology management consulting company operating worldwide with headquarters in Germany; for more than 40 years, it has combined classic management consulting with outstanding technological competence. The focus of its activities is on the field of digitalization. Detecon supports companies from all areas of business as they employ state-of-the-art communication and information technology to adapt their business models and operational processes to the competitive conditions and customer requirements of a digitalized, globalized economy. Detecon's expertise bundles the knowledge from the successful conclusion of management and ICT consulting projects in more than 160 countries. Detecon is a subsidiary of T-Systems International, the non-proprietary digital service provider of Deutsche Telekom.

You can find out more about digital efficiency at <https://www.detecon.com/de/digital-efficiency>.

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COMPANY PROFILE



## T-Systems Multimedia Solutions

T-Systems Multimedia Solutions supports large corporations and medium-sized companies during their digital transformation. The market leader with an annual turnover of €180 million in 2018 uses its consulting and technical expertise to demonstrate new approaches and business models in the areas of industrial IoT, customer experience, New Work, and digital reliability. Employing a workforce of about 2,000 at seven locations, the digital service provider offers dynamic web and application management and, with the first certified test laboratory in the internet and multimedia industry, ensures the highest software quality, accessibility, and IT security.

T-Systems Multimedia Solutions has received the Social Business Leader Award from the Experton Group as well as the iF Design Award on several occasions and was among the winners of the Outstanding Security Performance Award in 2017. In addition, the Dresden-based company has been named one of Germany's best employers with the Great Place to Work Award on several occasions and was also named best consultant 2018 by the business magazine brand eins.

More detailed information is available at <http://www.t-systems-mms.com/>.

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COMPANY PROFILE



## T-Systems International

Sites in more than 20 countries, 37,900 employees, and external revenues of €6.8 billion (2019) make T-Systems, which maintains its head office in Europe, one of the world's leading non-proprietary digital service providers.

T-Systems guides and supports its clients along the road to digitalization. Our company offers integrated solutions for business clients. This Deutsche Telekom subsidiary is a one-stop shop for everything from secure operation of legacy systems and traditional IT and telecommunications services to transformation to the cloud, including international networks, from demand-oriented provision of infrastructure, platforms, and software to new business models and innovation projects on the Internet of Things. Its global reach for fixed and mobile networks, highly secure data centers, a comprehensive cloud ecosystem with standardized platforms and worldwide partnerships, and the highest level of security are the foundations of its business.

Detailed information about the company can be found at <http://www.t-systems.de/>.

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## Lünendonk & Hossenfelder

Lünendonk & Hossenfelder, head office in Mindelheim (Bavaria), has been analyzing European business-to-business (B2B) service markets since 1983. The market researchers focus on the sectors management and IT consulting, auditing, tax and legal consulting, facility management and maintenance, and personnel services (temporary employment, staffing).

Its portfolio includes studies, publications, benchmarks, and advice on trends, pricing, positioning, or award procedures. The large data stock enables Lünendonk to turn its findings into recommendations for action. The market research and consulting company has been publishing the “Lünendonk® Lists and Studies,” which are regarded as market barometers, for decades.

Years of experience, in-depth know-how, an excellent network, and, last, but not least, a passion for market research and people make the company and its consultants sought-after experts for service providers, their clients, and journalists. Every year, Lünendonk, in collaboration with a media jury, honors deserving companies and entrepreneurs with the Lünendonk Service Awards.

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